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ECONOMIC AND SCIENTIFIC POLICY **A**

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**Unconventional Monetary Policy
and Financial Market
Fragmentation in the Euro Area**

**Monetary Dialogue
November 2014**

COMPILATION OF NOTES



DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Unconventional monetary policy and financial market fragmentation in the euro area

Monetary Dialogue 17 November 2014

COMPILATION OF NOTES

Abstract

In this compilation of notes, key monetary policy experts analyse financial markets fragmentation in the euro area, comment on the role and constraints of the ECB in addressing problems in specific market segments/sectors/countries at challenging times for (conventional) monetary policy, assess whether the measures so far taken have achieved the envisaged objectives and consider whether additional unconventional monetary measures shall be envisaged as the economic recovery is losing momentum. The notes have been requested by the Committee on Economic and Monetary Affairs (ECON) of the European Parliament as an input for the November 2014 session of the Monetary Dialogue between the Members of the ECON Committee and the President of the ECB.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

AUTHORS

Daniel GROS, Cinzia ALCIDI, Alessandro GIOVANNINI, Diego VALIANTE (Centre for European Policy Studies)

Stefan COLLIGNON, Carlo MILANI (Scuola Superiore Sant'Anna and London School of Economics, Centro Europa Ricerche)

RESPONSIBLE ADMINISTRATOR

Dario PATERNOSTER

EDITORIAL ASSISTANT

Irene VERNACOTOLA

LINGUISTIC VERSIONS

Original: EN

ABOUT THE EDITOR

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To contact the Policy Department or to subscribe to its newsletter please write to:

Policy Department A: Economic and Scientific Policy

European Parliament

B-1047 Brussels

E-mail: poldep-economy-science@europarl.europa.eu

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INTRODUCTION

Financial markets fragmentation is a long-standing policy issue in the euro area. Since the eruption of the financial crisis, the European Central Bank (ECB) has adopted a battery of unconventional policy measures to withstand the adverse effects financial markets fragmentation on the real economy. These measures have been instrumental to improve financial conditions for the region as a whole, reduce risks premia and safeguard the working of the single monetary transmission mechanism.

However, financial markets in the euro area are still fragmented along national borders. Lending and borrowing activities in stressed countries remain difficult, hampering the effectiveness of single monetary policy. Moreover, recessionary forces now affecting also some large countries of the core and rising social stresses threaten the political commitment to sustain necessary adjustment efforts, with adverse implications for the euro area as a whole.

In the following, key monetary policy experts analyse financial markets fragmentation in the euro area, comment on the role and constraints of the ECB in addressing problems in specific market segments/sectors/countries at challenging times for (conventional) monetary policy, assess whether the measures so far taken have achieved the envisaged objectives and consider whether additional unconventional monetary measures shall be envisaged as the economic recovery is losing momentum. The main conclusions and policy options are summarised below.

The notes have been requested by the Committee on Economic and Monetary Affairs (ECON) of the European Parliament as an input for the November 2014 session of the Monetary Dialogue between the Members of the ECON Committee and the President of the ECB.

Daniel Gros *et al.* (Centre for European Policy Studies). The cross-country differences in the interest rates charged to non-financial corporations and households should not be used as an indicator of financial segmentation for the simple reason that the risks associated with lending vary enormously across countries. If countries differ in their business cycle, it is natural that banks in different countries charge different rates to their local customers. This is particularly the case when there are stark differences in the strength of domestic demand because SMEs tend to provide local goods and services. It should thus not be surprising that in countries where a sudden stop forced a strong fall in domestic demand, the SME sector is particularly affected because the risk of lending to this sector increases strongly. Banks in countries with weak domestic demand would thus need to increase their lending rates to SMEs (and households) because the risk of default of SMEs increases under these circumstances. Differences in funding costs constitute better evidence of financial fragmentation. We find that these differences are much smaller than those in lending rates. Moreover, differences in funding costs are declining. Differences in the cost of deposits, which constitute the most important funding source of banks, are now minor (on the order of 1%) and they are even smaller in the (unsecured) interbank market. The cost of access to ECB funding is of course strictly the same for all banks, constituting another limit to fragmentation. The remaining differences concern mainly securities, such as the bonds issued by larger banks. The rates on these bonds can and do differ. The key question here is whether the observed differences are due to risk factors specific to the bank (like its own rating) or whether they also depend on the 'nationality' of the bank. Some of the non-standard monetary policy measures of the European Central Bank (ECB), in particular the LTRO (long-term refinancing operation) and the more recent TLTRO (targeted longer-term refinancing operation) were explicitly designed to overcome fragmentation by offering banks throughout the euro area access to longer-term central bank credit at uniform

conditions. Large-scale asset purchase programmes by the ECB might further compress differences in funding costs across banks to the extent that they affect securities issued by banks. A purchase programme of government bonds, which is what is usually meant by (sovereign) quantitative easing (or QE), might at most have an indirect effect. QE in the euro area would at any rate be expected to operate via different channels than in the US, whose financial system is much more dependent on banks.

Stefan Collignon *et al.* (Scuola Superiore Sant'Anna, London School of Economics, Centro Europa Ricerche). Financial fragmentation is particularly detrimental for the return to economic growth as it prevents the ECB to transmit its policies to the real economy. It shows up in the large yield spreads for sovereign bonds as well as in the interest rate differential for SMEs and large firms for different member state economies. Our econometric evidence indicates that i) with the notable exception of large corporations, unconventional monetary policy has had a significant and negative effect on lending rates, meaning that the ECB's policies have contributed to reducing bank lending rates to the real economy; ii) euro area financial system converges towards stable equilibrium, but convergence is very slow; iii) the Euribor policy variable implies that conventional interest rate policies have become powerless; iv) sovereign bond yields have positive and significant effects only for bank lending to SMEs, but not for individual member states; v) large non-financial corporations are able to find alternative funding instruments and borrow in bond markets; vi) this forces banks to apply more equal funding conditions for large companies across Europe; vii) large firms operating in peripheral economies are still subject to national distortions; viii) there is a negative and significant impact of sovereign bond yields on mortgage rates, which could signal an improvement in this market segment due to the presence of an integrated covered bond market. Overall, ECB unconventional monetary policies have lowered bank lending interest rates, but these effects are unevenly distributed and less convincing for the peripheral economies. I suggest to reconsider my earlier proposal of Union Bonds, which could overcome market malfunctioning and improve the efficiency of monetary policy in the euro area.

NOTES

Financial fragmentation and quantitative easing

**Daniel GROS, Cinzia ALCIDI,
Alessandro GIOVANNINI, Diego VALIANTE**

IN-DEPTH ANALYSIS

Abstract

This paper finds that differences in bank lending rates to non-financial companies are not a good indicator of financial fragmentation since the risk of such lending is related to national economic conditions. This applies in particular to lending to SMEs. Differences in funding costs constitute a better indicator of fragmentation. Such differences have been declining and are much lower than differences in lending rates. Other indicators confirm that financial fragmentation is now declining. Monetary policy, even when operating with unconventional tools, should not be expected to eliminate rate differentials or differences in access to credit due to local economic conditions. Quantitative easing in the euro area will in any event have to operate through quite different channels than in the US, and its impact on bank lending will also depend on local financial structures.

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EXECUTIVE SUMMARY

With the outbreak of the sovereign debt crisis, credit-market conditions began to diverge significantly within the euro area. It thus appeared that the common monetary policy decisions of the ECB could no longer affect the availability of credit in a uniform manner throughout the entire area. In this sense, monetary policy seems to have become less effective. This problem affects 'standard' monetary policy operations in that changes in official interest rates no longer have the same impact on the cost of credit in all member countries. The problem has remained with the non-standard policy measures that the ECB has implemented so far.

The evidence that financial fragmentation is a problem comes from many studies, which have documented that the cost of loans to non-financial corporations (especially SMEs) has diverged across countries.

However, the cross-country differences in the interest rates charged to non-financial corporations and households should not be used as an indicator of financial segmentation for the simple reason that the risks associated with lending vary enormously across countries. If countries differ in their business cycle, it is natural that banks in different countries charge different rates to their local customers. This is particularly the case when there are stark differences in the strength of domestic demand because SMEs tend to provide local goods and services. It should thus not be surprising that in countries where a sudden stop forced a strong fall in domestic demand, the SME sector is particularly affected because the risk of lending to this sector increases strongly. Banks in countries with weak domestic demand would thus need to increase their lending rates to SMEs (and households) because the risk of default of SMEs increases under these circumstances.

Differences in funding costs constitute better evidence of financial fragmentation. We find that these differences are much smaller than those in lending rates. Moreover, differences in funding costs are declining. Differences in the cost of deposits, which constitute the most important funding source of banks, are now minor (on the order of 1%) and they are even smaller in the (unsecured) interbank market. The cost of access to ECB funding is of course strictly the same for all banks, constituting another limit to fragmentation.

The remaining differences concern mainly securities, such as the bonds issued by larger banks. The rates on these bonds can and do differ. The key question here is whether the observed differences are due to risk factors specific to the bank (like its own rating) or whether they also depend on the 'nationality' of the bank.

Some of the non-standard monetary policy measures of the European Central Bank (ECB), in particular the LTRO (long-term refinancing operation) and the more recent TLTRO (targeted longer-term refinancing operation) were explicitly designed to overcome fragmentation by offering banks throughout the euro area access to longer-term central bank credit at uniform conditions. Large-scale asset purchase programmes by the ECB might further compress differences in funding costs across banks to the extent that they affect securities issued by banks. A purchase programme of government bonds, which is what is usually meant by (sovereign) quantitative easing (or QE), might at most have an indirect effect. QE in the euro area would at any rate be expected to operate via different channels than in the US, whose financial system is much more dependent on banks.

1. INTRODUCTION

Growth in the euro area (EA) is still very weak. The European Commission's autumn forecast projects weak economic growth for the rest of this year (0.8%) and only partial strengthening in the course of 2015 (1.1%). Inflation continues to decline, triggered also by falling energy and food prices. The European Commission estimates the inflation rate at 0.5% in 2014 and 0.8% in 2015, both of which are still below the price stability target of 2%.

The Governing Council of the European Central Bank (ECB) in recent months has responded to this situation with further monetary easing to support the provision of credit with a refinancing operation targeting lending to small- and medium-sized enterprises (SMEs), the TLTRO (targeted longer-term refinancing operation).

The ECB faces a structural issue. All the unconventional monetary policy actions undertaken by the ECB so far (rate cuts, de-sterilisation, ABS purchases, long-term repos targeting SMEs) do not seem to have the same impact because financial markets appear to be segmented along national borders (home bias). Indeed, after the outbreak of the sovereign debt crisis, credit market conditions began to diverge significantly within the euro area and the transmission mechanism of monetary policy seems impaired.

The first section of this note, therefore, focuses on the measurement of financial fragmentation in banking sector. The evidence on quantity-based indicators of financial market integration, like cross-border holdings of securities and inter-bank loans is mixed. But these quantity-based indicators of cross-border integration seem less relevant for monetary policy than the rates charged to the real sector because these rates directly influence investment decisions.

One finds large differences in the rates charged by banks on loans to non-financial corporations. In particular for smaller loans one finds differences of up to 3-4 percentage points between the 'stressed' and non-stressed countries. In the parlance of economics, one must thus recognise that loans to local enterprises or households are not a homogenous good. A loan to an average SME in an economy that is doing well is inherently less risky than a loan to an average SME in a country where output and demand are falling. The real test of segmentation (in the banking sector) would thus be differences in banks' funding costs that are not justified by the riskiness of the bank itself.

The same reasoning can be expressed in another way: If local banks because of segmentation were to charge rates that were excessive relative to the risk they face locally, they should make large profits, unless, of course, they also face higher funding costs.

Most banks have a variety of funding sources, depending on their business model (see Ayadi and de Groen, 2014)). However, deposits still constitute the most important funding source for most banks. Moreover, a widely watched indicator of bank health is the loan-to-deposit ratio, which is around 100%. This would indicate that differences in the cost of obtaining deposits (mainly from households) should be the main indicator of financial segmentation. The interest rates that banks pay on deposits also show some differences, but the differences between the core and the stressed countries are much smaller than the differences in the rates charged on loans.

This relatively small degree of divergence in deposit rates constitutes evidence that financial segmentation is less severe than widely feared.

The second section focuses, instead, on the role that central banks can play to modify the current financial situation in the euro area. The analysis will focus on quantitative easing (QE), which is the most discussed policy option that the ECB has, by analysing its functioning to understand the possible implication for the euro area. The final section concludes.

2. FINANCIAL FRAGMENTATION: SETTING THE SCENE

A monetary union has a single monetary policy. But since the start of the euro crisis, financial conditions have diverged so much across member countries that one can no longer speak of a common monetary policy. The measures adopted by the ECB in Frankfurt no longer have an impact on financial markets in some member countries. The transmission mechanism of monetary policy is clearly impaired. This represents a serious problem for the ECB and its mission to safeguard price stability.¹

This fragmentation started with the recent sovereign crisis as a divergence in interest rates between core and peripheral countries, coupled with a concomitant dramatic drop in cross-country capital flows. Several ECB actions – including three long-term refinancing operations, with the latest targeted at SMEs' credit) have been undertaken with the objective of reducing this fragmentation.

Nonetheless, financial integration does not necessarily imply full convergence among interest rates across different countries at level of the final user. Indeed, differences in interest rates can and should reflect the credit risks of individual borrowers whose risk of default depends on the sectors and location they are operating in. The issue for the central bank is only that the funding costs among banks in its system do not diverge *ceteris paribus*, i.e. banks with similar risk should be able to raise funds at the same conditions independently of whether their legal headquarter resides in Germany or Italy.

Among others, the European Commission (2013) noted that the costs of loans to non-financial corporations (NFCs) (in this case, SMEs) have on average diverged across countries above what can be justified by the fundamentals of the firms in question. This divergence from the theoretical value was around 100 basis points for Italy and 200 basis points for Spain, thereby becoming an important drag on the growth of these SME-based economies.

The evidence is to some extent mixed for securities markets, which have not suffered major market segmentation events as a result of the financial crisis, most likely due to their limited cross-border integration before (and after) the crisis. The most visible indicator of segmentation emerged in the sovereign bond market, where yields (a price-based indicator) had first converged many years ago (Valiante, 2014).

2.1 Indicators of financial fragmentation and bank lending

The ECB has developed several indicators of financial integration (SYNFIT), distinguishing between volume-based and price-based indicators. The volume-based ones use data on cross-border holdings of assets and the extension of cross-border credit. The price-based indicators use data on prices, mainly interest rates on various securities and other forms of credit.

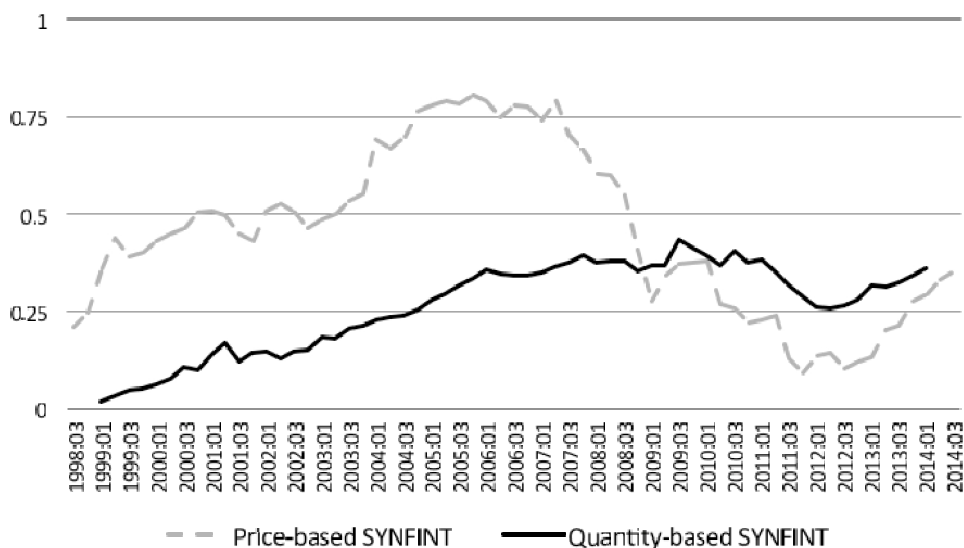
The broad trend has been that by the end of 2004, financial integration reached three times its original level at the end of 1998, in terms of price convergence and even more in relative terms for quantity indicators (see Figure 1).

At the outset of the financial crisis, price-based indicators dropped across the board due to a great divergence of prices and yields. Volumes were affected as well, but only with the deepening of the sovereign debt crisis and the following segmentation in the interbank market starting in 2011. Since the bottom was reached in 2012 and 2013, indicators of

¹ Benigno (2009) illustrates how the lack of financial integration can, for instance, affect the ability of a central bank to meet its price stability target.

financial integration seem to have recovered, at least partially, both for quantities and prices.

Figure 1. Price- and quantity-based SYNFINT



Source: ECB.

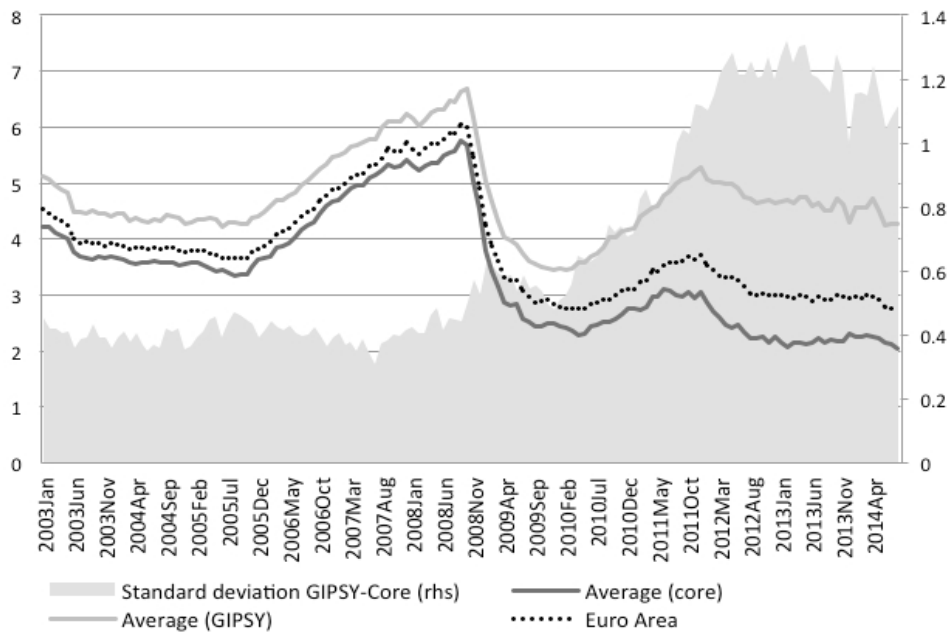
Note: SYNFINT is a synthetic indicator developed by the ECB that tracks and normalises in one value key price-based and quantity-based indicators for money markets (interbank), banking, bond and equity markets.

The indicators developed by the ECB are, however, of little direct relevance for monetary policy-making. It is often argued that the most direct and tangible consequence of this segmentation is the divergence in interest rates applied to firms across countries. These lending rates have indeed been increasingly diverging as shown in Figure 2 below.

However, differences in lending rates by themselves do not constitute sufficient evidence of financial fragmentation because they are affected by the risk of the borrower, which may on average be exposed to different sectors, different sizes of business, and operations may be concentrated in geographical areas with different macroeconomic fundamentals.

Banks refinancing costs are a better indicator to assess the state of financial fragmentation than interest rates on loans to clients. This key point has so far received much less attention.

Figure 2. Interest rates on loans to non-financial corporations

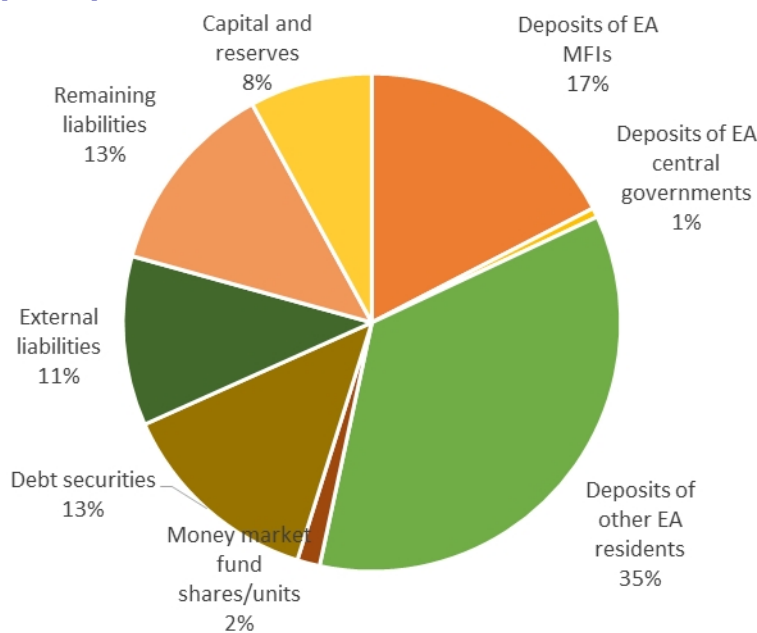


Source: ECB.

Note: “Core” includes Belgium, the Netherlands, Germany, Finland, France and Luxembourg. “GIPSY” stands for Spain, Greece, Ireland, Italy and Portugal.

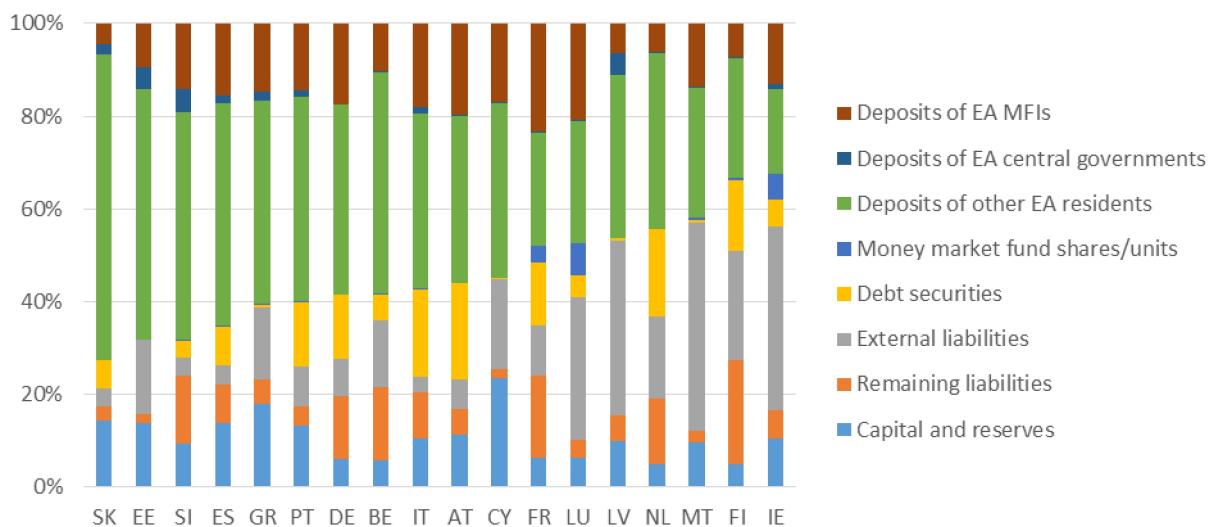
Most banks have a variety of funding sources, depending on their business model (see Ayadi and De Groen, 2014). **Figure 3** shows the main funding sources of banks in the euro area and the corresponding weights, and **Figure 4** highlights cross-country differences. They can rely on own deposits, borrowing from the interbank market, from private investors (equity, bonds or other instruments) and from central banks.

Figure 3. Funding mix for euro-area monetary financial institutions (excl. the Eurosystem)



Source: ECB MFI balance sheets Online, September 2014.

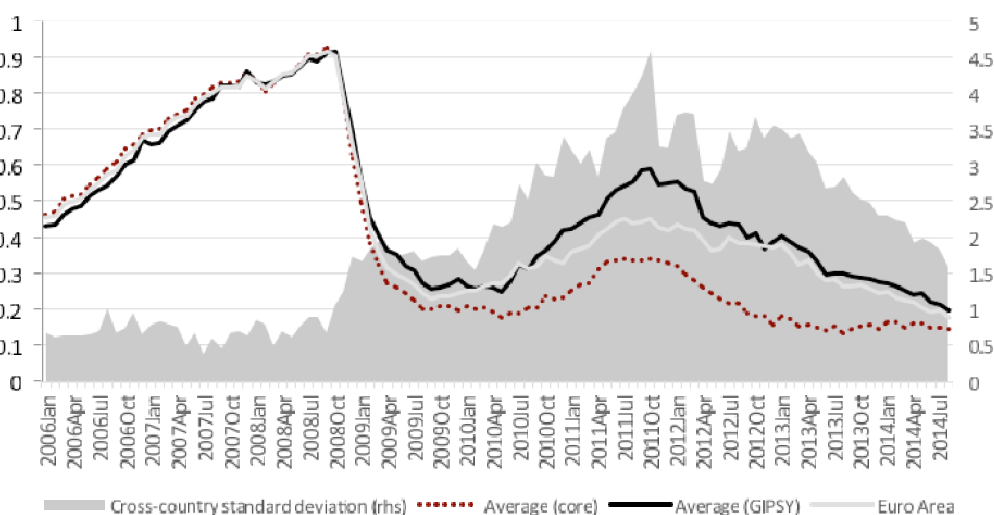
Figure 4. Funding mix cross-country differences, euro area MFIs (excl. the Eurosystem)



Source: ECB MFI balance sheets Online, September 2014.

Figure 3 shows that deposits are the most important funding source for most banks. This means that to get a sense of the degree of financial (dis)integration, the cross-country divergence in interest rates applied on deposits may be a good indicator. Figure 5 below shows the degree of variability between deposit rates charged by financial institutions to new businesses. It suggests the dispersion, measured here by the standard deviation, has diminished considerably and it is now back to levels last seen before the global financial crisis mutated into the euro crisis. Moreover, the average difference between the core and the financially stressed countries is now only a fraction of a percentage point (see Figure 5).

Figure 5. MFI rate on deposits with agreed maturity (new businesses)

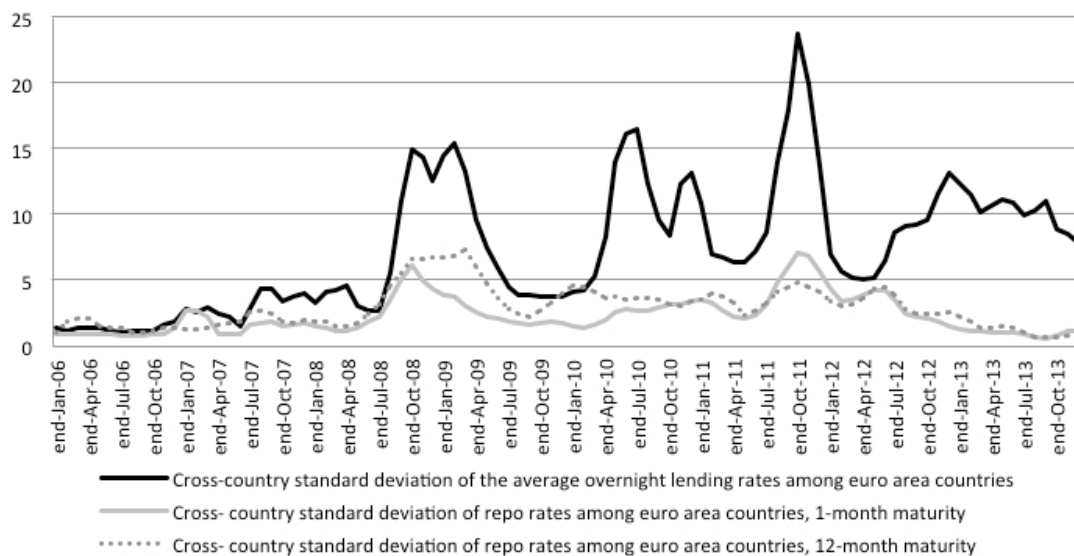


Source: ECB.

Note: "Core" includes Austria, Germany, Finland and France. "GIPSY" stands for Spain, Ireland, Italy and Portugal.

To confirm the picture on segmentation in funding sources, **Figure 6** shows indicators of how the unsecured (not collateralised) interest rates diverged across countries, compared to the secured lending (repo rates). In principle one could consider the overnight rate as riskless since the probability of a bank going insolvent during the next 24 hours (without warning) is close to zero. Moreover, overnight interbank lending should be protected from bail-in even if the bank has to be restructured. This is also why it is typically the main funding tool for banks in the interbank market.

Figure 6. Cross-country standard deviation of the overnight unsecured interbank market rate and repo rates



Source: ECB.

The divergence between overnight (unsecured) rates for banks across euro area countries has been constantly much higher than in the pre-crisis period and since then almost always above secured lending rates (i.e. the repo rates, whose standard deviation is also shown in the chart). However, the size of the divergences in the unsecured market is typically measured in basis points, and thus is much smaller than the divergences for bank loans shown above.²

These data confirm that, despite a significant drop in 2014, divergent conditions still exist in some specific segments like the interbank market, but this is too small to justify the uneven picture emerging from loans to firms.

2.2 Financial disintegration and security markets

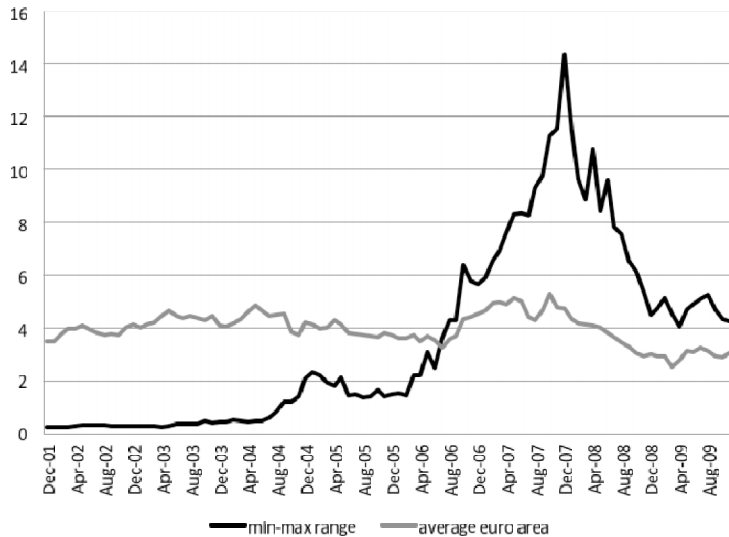
Financial integration does not only concern banks and their funding structure. Developed financial markets can provide diversified access to finance and therefore provide more protection to the financial system from asymmetric shocks. The United States, where bank lending only accounts for 25% of total sources of funding, have been able to act more swiftly on the banking system because they could rely on alternative sources of funding for the economy. Cross-border financial flows in European securities markets are still limited, despite recent progress in some areas (such as secondary trading of some liquid equity instruments). Financial fragmentation is therefore of limited concern at this historical

² The markets for secured funding have also been substantially affected by a massive ECB intervention, first with ordinary refinancing operations with full allotment and then with unconventional monetary operations, such as the refinancing operations with a 3-year maturity (LTROs).

moment for the European integration process. Securities also embed some level of risk sharing that the investor has to consider when purchasing these products, whether debt or equity instruments.

However, indicators show that financial fragmentation did occur. As shown in Figure 7 dispersion of sovereign bond yields increased at the height of the EMU crisis, but it recently has come back to levels close to when the sovereign crisis began in May 2010.

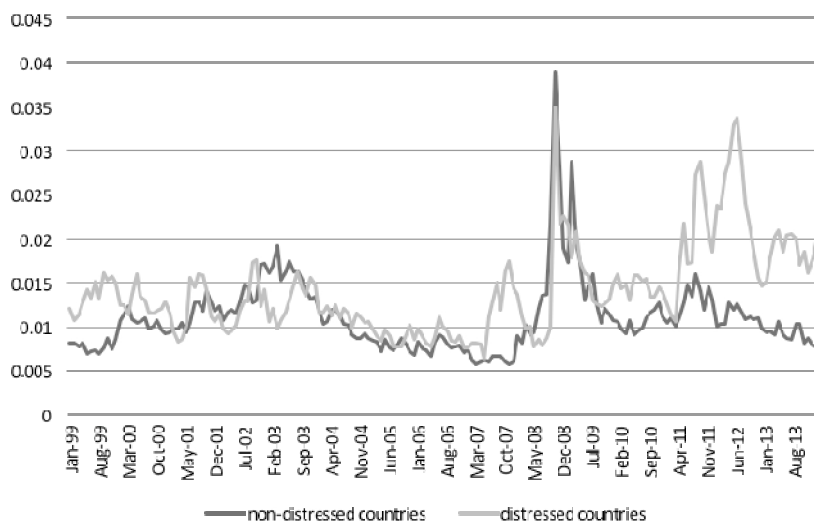
Figure 7. Dispersion of euro-area 10-year sovereign bond yields



Source: ECB.

Holdings, however, remain segmented at domestic level in the case of equity instruments, for distressed countries, as shown in Figure 8.

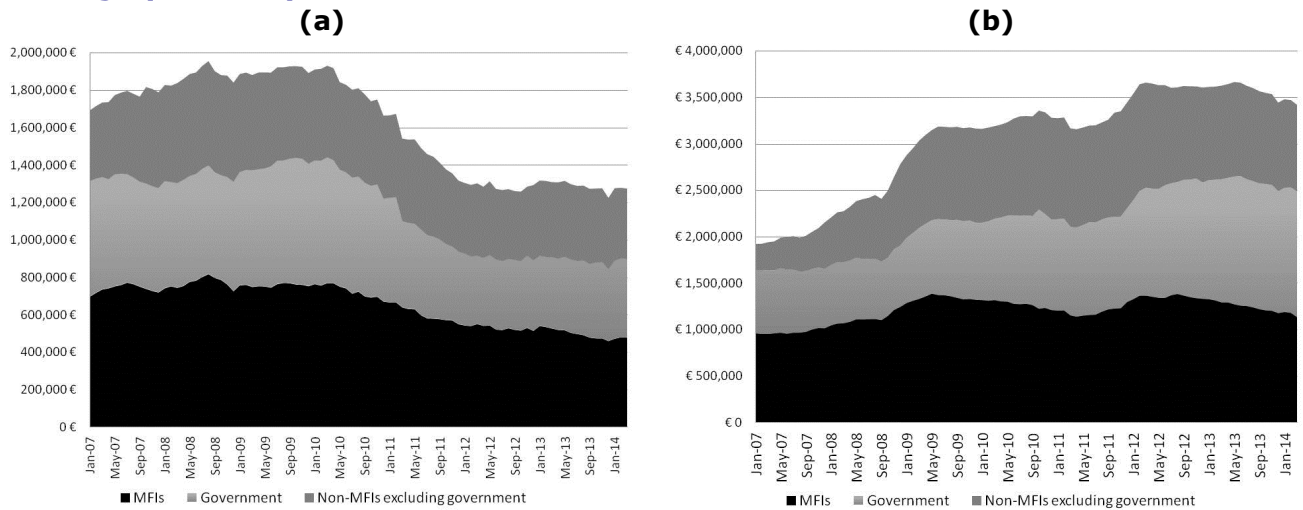
Figure 8. Equity market segmentation (Jan 1999-Feb 2014)



Source: ECB.

For sovereign bonds, the home bias has been driving the holding strategies of financial institutions vis-à-vis securities other than shares. This applies particularly to sovereign bonds. From 2010, as suggested by Figure 8, a more than €200 billion drop in financial institutions' holdings of securities issued by foreign governments has been offset by an increase of roughly €500 billion in holdings of domestic government securities (Valiante, 2014).

Figure 9. Securities other than shares, non-domestic (a) versus domestic (b) holdings (€ million), 2007–2013



Note: Up to March 2014.

Source: ECB from Valiante (2014).

3. WHAT CAN QUANTITATIVE EASING DO?

Overall, section 1 suggests that while some evidence of financial fragmentation persists, the situation has significantly improved relative to 2012. It also suggests that financial fragmentation is not the main reason for divergence in interest rate on loans to the real economy. This also suggests that the task of monetary policy should not be to focus on fragmentation. Then the question becomes: what can and should the central bank do?

Confronted with very weak recovery, especially in the periphery, and inflation dynamics far from its inflation target (below, but close to 2%), the ECB is being subjected to growing pressure to adopt additional unconventional monetary policy measures. This is the case despite the fact that in the last few months the ECB has expanded again its portfolio through the launch of the TLTRO and the purchase of ABS (asset-backed securities) and covered bonds (for a better discussion on these measures, see Alcidi et al., 2014b). The non-conventional measure not in use at the moment is quantitative easing (QE), that is, the direct purchase of financial assets (mainly government bonds).

The first QE in recent times was initially undertaken in Japan starting in March 2001, to make credible the commitment of the Bank of Japan to return to the zero interest rate policy. Fixed initially at around 5,000 billion yen, the quantitative target was raised several times, reaching 30,000 billion yen in May 2003, but it was never truly effective.

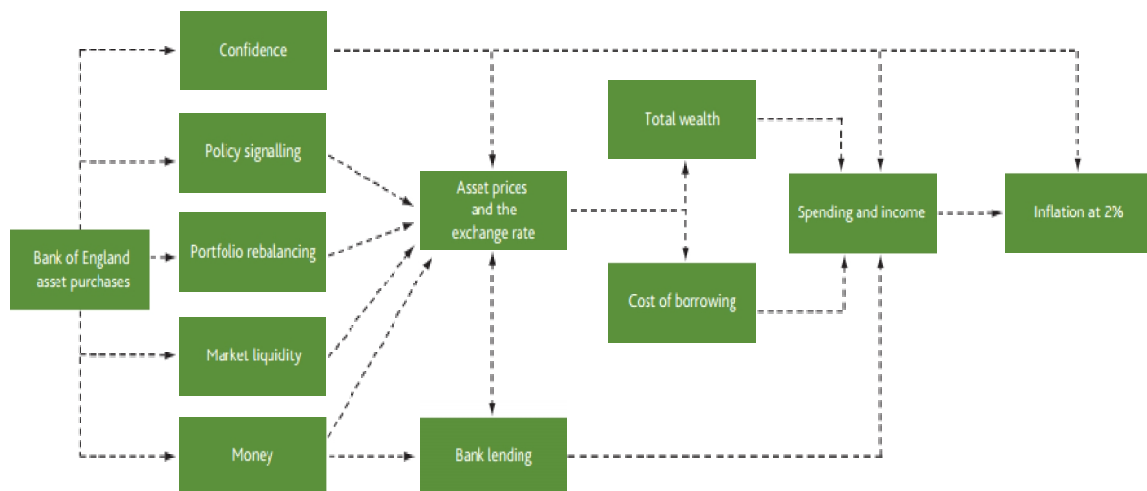
It was during the last financial crisis that QE has become a fundamental instrument in the toolkit of central banks. The US Federal Reserve (FED) and the Bank of England (BoE) resorted to it after 2008, and their balance sheets have expanded much more than that of the ECB (see Alcidi et al., 2012). The balance sheet of the Federal Reserve increased from around \$900 billion at the beginning of 2007 – a pre-crisis level – up to \$4,530 trillion by the end of October 2014. In the United Kingdom, where monetary policy has an inflation target similar to that of the ECB, the QE has expanded the BoE balance sheet up to £400 billion (starting from a pre-crisis level of around £50 billion).

This section describes the main channel through which the QE works in order to understand its potential impact on the euro-area economy and on the inflation level.

3.1 How QE works

There are a number of potential QE transmission mechanisms that can in principle affect inflation. The purchase of assets can link to inflation (and the economy) through different, direct and indirect, channels. **Figure 10** below illustrates these channels, which include expectations (confidence and policy signalling), portfolio rebalancing, market liquidity and money. The purchase directly affect asset prices (and interest rates, if assets are government bonds) and the exchange rate, which in turn have an effect on spending and income and hence on inflation.

The central bank's purchase of assets puts upward pressures on asset prices and it increases the money holdings of those who sold. Since money is not a perfect substitute for the assets sold, a rebalance of the sellers' portfolios takes place by their buying other assets. This has in turn an effect on the portfolio of sellers who now have excess money balances, who will also try to rebalance it.

Figure 10. QE transmission channels

Source: Joyce et al. (2011, p. 201).

But how effective would large-scale quantitative easing be in the euro area? If one leaves aside the effect of QE on expectations (policy signalling and confidence), the fundamental aim of any form of asset purchases by the central bank is, as mentioned above, to lower long-term market interest rates, by lowering long-term yields on long-term sovereign bonds. In other words, to flatten the yield curve.

This implies that QE is relevant and effective in economies in which:

- changes in the long-term market rates (say, 10-year) play an important part in the economy (as loans to non-financial corporations and mortgages, but also bond issuance); and
- long-term market rates can be lowered (i.e. are not already very low), but also in countries where a large part of the sovereign debt is held abroad, as it lowers interest rates on sovereign debt and reduce the magnitude of interest payments transferred to the rest of the world.

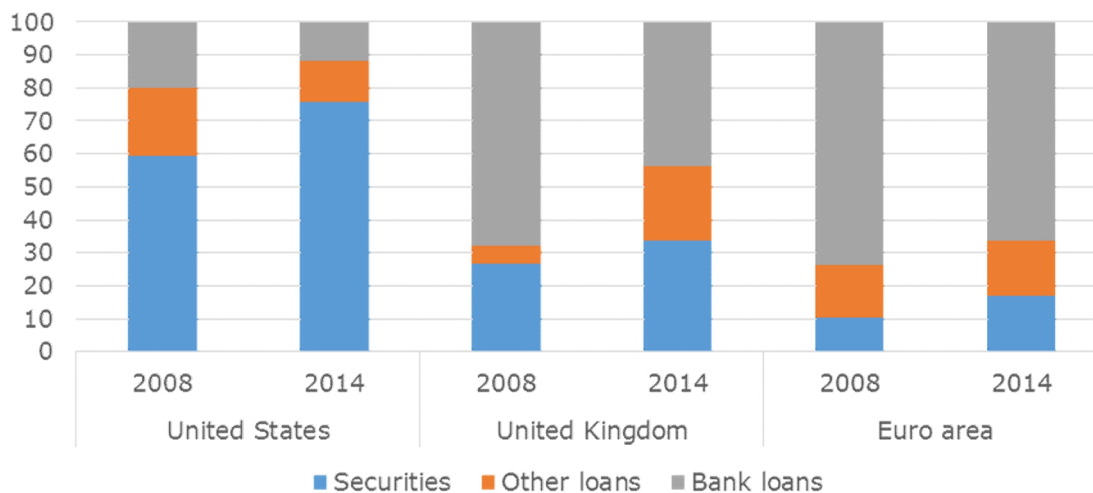
None of the two conditions are likely to be met by the euro area. Regarding the first point, the success of QE depends on the structure of funding of the economy. First, institutional investors must play a large role in the financial market and the funding emission of debt securities must also represent an important part of the financing of the economy. The more developed are these mechanisms, the higher is the expected impact of QE. Indeed the liquidity injected by the central bank, through the portfolio rebalancing, boost the prices of equities and debt securities alternative government bonds.

Since part of these assets are represented by securities issued by private actors to finance themselves (covered bonds, ABS, corporate bonds, mortgage loans and other debt instruments of the private sector), this leads to an increase in their demand and eases the credit conditions in these markets, with positive effects for the private actors. As these bonds usually have a longer maturity than bank loans (which are priced on the basis of the government bond yield curve), the effect of the QE is even more magnified, lowering the cost of capital for the corporate sector.

From **Figure 11** one could argue that QE is a priori more efficient in the United States than in the euro area, as funding in the latter is more based on bank intermediation. Bank loans account for only 12% of corporate credit in the United States, a percentage that is even lower than before the crisis (20%), while most of the credit comes from market-based

instruments. In the euro area, instead, these financial instruments represent less than 35% of the sources of lending, despite the steady rise in securities issued by non-financial companies since 2008, partly as a result of the falling cost of issuing bonds relative to bank loans (IMF, 2014).

Figure 11. Corporate borrowing (percent of total borrowing)



Source: Authors' elaboration based on data from IMF (2014).

Moreover, the maturities of the banking sector are typically not very long-term (ordinarily not much more than five years), given that banks themselves have little secure long-term financing. Given this financing structure of the banks, many long-term bank loans are extended on floating rates, especially in the southern part of the euro area. This constitutes an advantage right now given that short-term rates are close to zero. But it also implies that QE would not reach southern European households, whose mortgages are indexed to the Euribor rate and are already close to zero, nor the enterprises, as their bank loans are usually short-to-medium-term.

Considering the second element that is going to influence the effectiveness of QE, the long-term interest rates are now very low compared to the levels of two years ago, even below the pre-crisis level. Lower 10-year rates are unlikely to have a strong impact on the financing conditions of the corporate sector, and thus little impact on investment in the euro area.

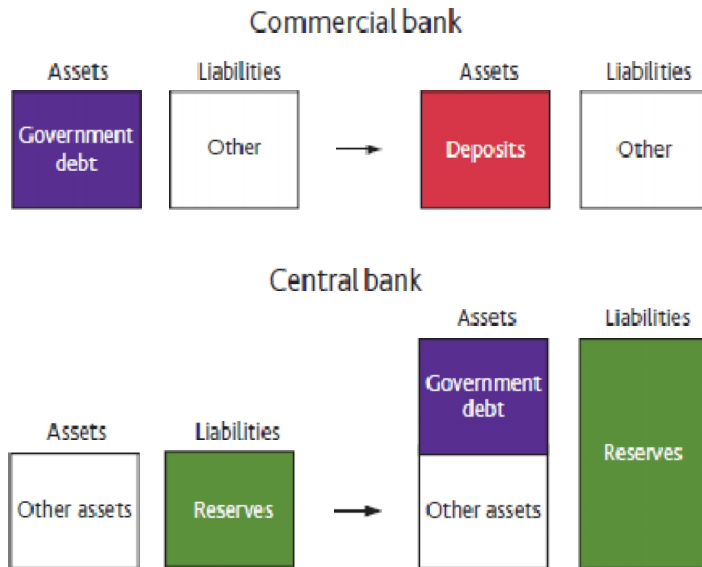
3.2 The effect of QE on banks' balance sheets: Evidence from the US and the UK

As observed above,, QE influences the economy via a multiplicity of different channels, a thorough analysis of which is beyond the scope of this Note. Nevertheless, it is worth dwelling on the effect that QE has on the balance sheets of banks and, more precisely, its potential effect on lending.

The quantitative easing affects MFIs, not only because the yields on government bonds are a benchmark for interest rates on loans, but also because banks are the largest sellers of securities acquired for monetary policy purposes. The figure below summarises the effect of QE on balance sheets of banks and national central banks. For ease of exposition, this highly stylised chart shows only assets and liabilities that are relevant to the transaction analysed, and the final effect depends on the structure of the financial system. For instance, in the case of the UK, a third player comes into the game, namely the pension funds, which actually hold the largest part of the government debt.

By considering only commercial banks and the central banks, it emerges how the latter purchase government debt from banks that, in turn, credit new reserves to the central bank, leading to a net expansion of central bank balance sheets. In this mechanism, new deposit assets completely replace the previous assets, i.e. the government bonds.

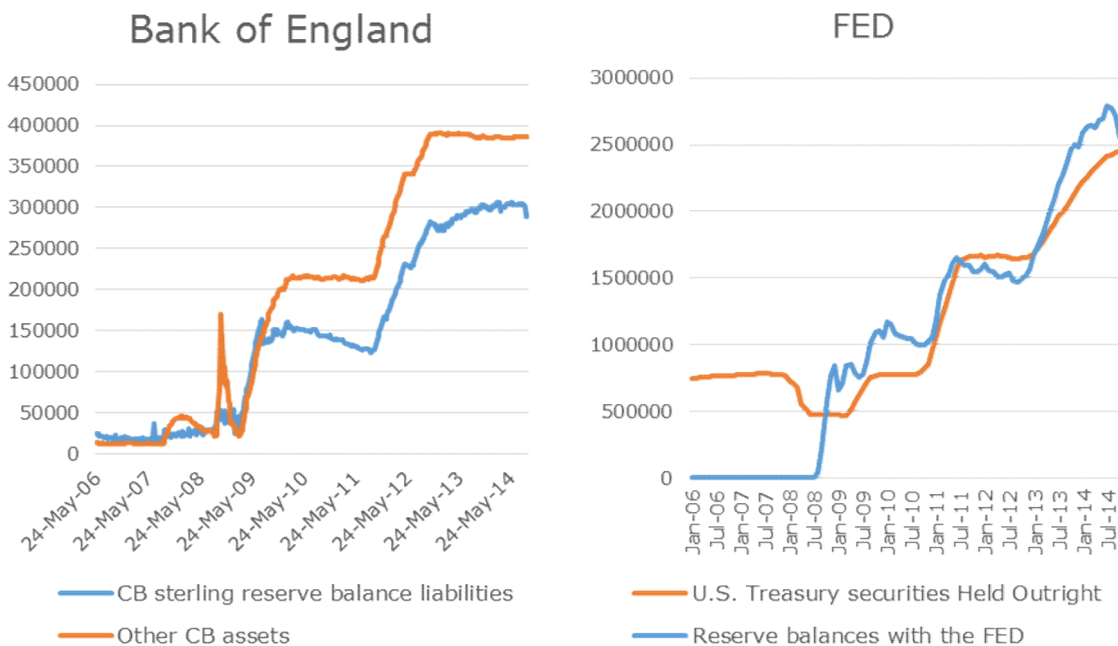
Figure 12. Impact of QE on balance sheets



Source: Authors’ own elaboration on 2013 data from Bank of England.

From the point of view of the central bank, the effect is, instead, an overall expansion of its balance sheet: the increase in assets (the government bonds bought under QE) is complemented by an increase on the liabilities side of the MFIs’ reserves held at the central bank. Figure 13 shows how the purchase is almost mirrored by an increase in reserves, by reporting the trend of these two variables for the FED and the BoE.

Figure 13. Evolution of reserves account and held securities in the BoE and FED balance sheets



Source: Authors’ elaboration on 2014 data from Bank of England and Federal Reserve.

From the chart above, it emerges how the primary goal of QE in the UK and in the US is not to directly affect banks' balance sheets, which remain more or less unchanged, as the fresh money obtained by the sale of government bonds is immediately 'parked' at the central bank. Rather, the primary goal is to free liquidity of banks and the other financial intermediaries from government bonds (which under Q.E become less attractive because they give lower yields) and encourage them to take riskier assets.

3.3 The effect of QE on bank lending

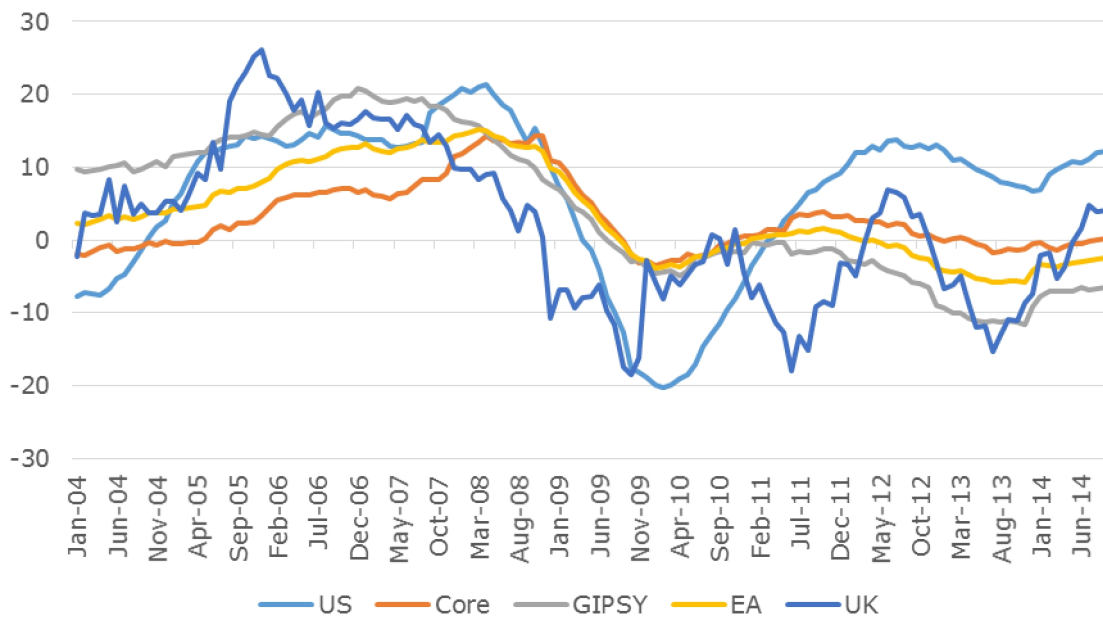
QE could in principle influence bank lending. When assets are purchased from non-banks (by the intermediation of the MFIs), the banking sector gains both new reserves at the central banks and a corresponding increase in customer deposits. Even if the central bank purchases directly from the banks, this leaves banks with new deposits to the central banks, which represent quasi-money. A higher level of liquid assets could then encourage banks to extend more new loans than they otherwise would have done (Joyce et al. 2011).

This channel was expected to be small when the QE programmes were started, due the strains in the financial system at the time and the resulting pressures on banks to reduce the size of their balance sheets (Joyce et al. 2011). However, now that funding conditions are improving, it could also be the case that the credit channel is operating and that the liquidity provided by the central bank results in higher bank lending. This channel would potentially be more important for the success of a possible QE in the euro area due to the absolute predominance, as we have seen before, of banks in the lending activity to the economy.

Without claiming to establish a causal link, Figure 13 shows the trend of credit during the pre/post-crisis periods, considering both the euro area as a whole and differentiation by core and peripheral countries. It is worth focusing mainly on loans to non-financial corporations (NFCs), as the loans to households for housing purchase have been stagnant after the crisis both in the euro area and in the US.

Interestingly enough, the figure shows how the average yearly growth of credit to NFCs before the crisis has been higher before the crisis in the euro-area peripheral countries than in the US or the UK. Nevertheless, the fall during the 2007-2009 financial crisis has been larger and more rapid in these two countries, than in the euro area. The credit cycle for the euro-area peripheral countries started to really deteriorate only after 2011, when the sovereign debt crisis started to hit the hardesConversely, since 2011, the loans to NFCs in the US started to grow again. Whether this is the result of QE or better economic conditions in the economy is hard to say, especially if we compare this trend with the one in the UK. Here the impact of Q.E. is less clear, despite the BoE, in addition to it, also launched the Funding for Lending Scheme (FLS) specifically designed to stimulate even more the lending bank (see Alcidi et al., 2014a).

Figure 14. Year-over-year growth rate of banks loans to non-financial corporations



Source: ECB statistical warehouse and FED, 2014.

4. CONCLUSIONS

Our analysis shows that financial fragmentation has been easing across the entire financial system. We also argue that what should matter for the question whether the monetary policy transmission channel is impaired or not or whether lending rates differ, but whether the funding costs for banks depend solely on their country of residence (and not on the riskiness of the bank itself). Differences in funding costs are much smaller than differences in lending rates and are declining rapidly. We conclude that only a small fraction of the existing differences in lending rates in core and peripheral countries can be explained by financial fragmentation. The most important part of the differences in the cost of credit is the result of different macroeconomic conditions across countries.

Monetary policy can thus do very little to solve this problem. Even unconventional measures, such as the LTRO and the TLTRO, can only provide enlarged access to central bank funding on an equal footing for all banks. What rates the banks then charge their customers cannot be influenced by the ECB. Moreover, the large write-offs and capital needs of banks in financially distressed countries suggest that these banks have not charged a high enough premium to compensate for the default risk they are facing on average.

A large-scale asset purchase programme of the ECB is unlikely to change this situation. We show that differences in the financial market structure mean that QE is likely to operate via different channels in a bank-based system, such as the one in the euro area. In particular, the portfolio balance effect in the euro area will be less strong (as securities markets matter less for the financing of investment) and due to the fact that the long-term interest rates are already very low. As a consequence, QE in the euro area is unlikely to produce any long-lasting effect on bank lending.

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NOTES



DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Unconventional monetary policy and financial market fragmentation in the euro area

Stefan COLLIGNON, Carlo MILANI

IN-DEPTH ANALYSIS

Abstract

At the brink of deflation and a third recession in seven years, the Euro Area needs stimulative policies. While quantitative easing has pulled the US and UK economies out of the crisis, unconventional policies in the Euro Area have not had this effect. The note explains why that is so and what could be done to remedy the situation. It also produces new evidence for the success for ECB unconventional policies, although they do not significantly overcome financial fragmentation and remove the home bias in banks' portfolios.

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EXECUTIVE SUMMARY

- Quantitative easing has helped the United Kingdom and the United States to return to economic growth and create new jobs, but that policy has not yet been tried in the Euro Area.
- Unconventional monetary policies by the ECB differ from the experiences in other countries by focusing primarily on repairing the credit channel for the transmission of monetary policy.
- Financial fragmentation is particularly detrimental for the return to economic growth as it prevents the ECB to transmit its policies to the real economy. It shows up in the large yield spreads for sovereign bonds as well as in the interest rate differential for SMEs and large firms for different member state economies.
- Our econometric evidence indicates that
 - The most remarkable result is that in most cases, with the notable exception of large corporations, unconventional monetary policy has had a significant and negative effect on lending rates, meaning that the ECB's policies have contributed to reducing bank lending rates to the real economy.
 - In the long run the Euro Area financial system converges towards stable equilibrium, but the convergence is very slow.
 - The Euribor policy variable implies that conventional interest rate policies have become powerless.
 - Sovereign bond yields, have positive and significant effects only for bank lending to SMEs, when the overall Euro Area is considered, but not for individual member states.
 - Large non-financial corporations are able to find alternative funding instruments and borrow in bond markets. This forces banks to apply more equal funding conditions for large companies across Europe. However, we note that large firms operating in peripheral economies are still subject to national distortions.
 - We find a negative and significant impact of sovereign bond yields on mortgage rates, which could signal an improvement in this market segment due to the presence of an integrated covered bond market.
- Overall, unconventional policies pursued by the ECB have lowered bank lending interest rates to the real economy, although these effects are unevenly distributed and less convincing for the peripheral economies.
- Given the detrimental effects of financial fragmentation, I suggest to reconsider my earlier proposal of Union Bonds, which could overcome market malfunctioning and improve the efficiency of monetary policy in the Euro Area.

INTRODUCTION

While the Euro Area seems to be sliding into deflation and possibly its third recession in seven years, the United States has returned to sound economic activity and satisfactory job creation. This success has been attributed to the unconventional monetary policies, called quantitative easing (QE), pursued by the Federal Reserve Bank. Similar developments are observed in the United Kingdom. By contrast, the ECB has not implemented quantitative easing so far, although it is now considering this option. However, in the Euro Area, QE raises a number of technical and political questions, some of which will be discussed in this note.

Under normal circumstances, the central bank conducts monetary policy by setting the short term interest rate which affects the quantity of money and credit through the price mechanism. Following this conventional logic, interest rates have been slashed world-wide during the financial crisis, and they have reached levels close to zero in most advanced economies. Yet, when the price for money is effectively zero, the price channel for transmitting policy measures breaks down and monetary policy becomes powerless. This is why alternative policies are needed. The Bank of Japan, the US Fed and the Bank of England have engaged in quantitative easing, which consists largely in outright buying of financial assets from commercial banks by the central bank. This provides liquidity reserves to banks with high liquidity preference in an environment of general uncertainty, but *ceteris paribus*, it will also increase the market price of the financial assets bought and thereby lower their yields. This ought to stimulate the economy and help to bring back growth.

However, in the Euro Area this mechanism does not work correctly. The Euro Area is primarily bank-financed,¹ so that yields in the bond market do not so much affect corporate borrowing but banks. Difficulties in the banking sector will therefore quickly spill over into the real economy. While national banking systems may have idiosyncratic problems, as just revealed by the ECB financial stress tests (ECB, 2014), the financial crisis has made things even worse by disintegrating European financial markets. Due to the sovereign debt crisis, significant credit and default risk assessment of national debt have fragmented the previously emerging integrated financial Euro-market. If the creditworthiness of the issuer of the financial asset is reduced by economic and political shocks, banks may wish to get rid of these risky assets (so-called fire sales). As the supply in the markets will increase, bond prices will be pushed down and yields shoot up, unless the central bank buys the excess supply as a “buyer of last resort”. Such purchases could lower the quality of the central bank’s balance sheet and cause losses if debtors default. Given that central bank profits are transferred to national treasuries, such policies would have ultimately consequences for taxpayers. In integrated economies with a single government that issues sovereign debt, such risks are quasi inexistent and government bonds are considered as riskless securities.² For the Euro Area, the big policy issue regarding quantitative easing is whether the default risk of national debt bought by the European Central Bank would outweigh the benefits from stimulating the economy and re-igniting economic growth which will *in fine* also increase government revenue and reduce default risks.

¹ In the Euro Area, more than 70% of the external financing of the non-financial corporate sector is provided by banks, and less than 30% by financial markets (and other funding). In the United States it is the other way around. See (Cour-Thimann and Winkler, 2013).

² In extreme cases when the government can no longer service its debt, a non-independent central bank may be forced to monetize the debt and generates inflation (the so-called inflation tax), but such developments are far from likely in OECD countries.

The European Central Bank has implemented unconventional monetary policies in the wake of the crisis, although these policies differ significantly from quantitative easing as implemented elsewhere. The Bank of England has overwhelmingly bought UK government bonds (“gilts”) from the non-bank private sector through its QE operations and the Fed has bought US Treasuries as well as mortgage backed securities. By contrast, the ECB balance sheet was increased - as in the other cases - largely through repo operations - that is, through the provision of loans (many long term) in exchange for collateral (much of which are bank loans and not government bonds).³ This method may have been appropriate in the European context where financing is mostly bank-based rather than market based and no Eurobonds and hardly any European securities exist and most financial assets are issued in national markets, but it creates problems with respect to collateral which banks can use to obtain the required liquidity.⁴

Before the financial crisis, European markets were becoming increasingly more integrated, mostly in capital markets and wholesale banking. Default risks seemed fairly low and bond yields and lending conditions converged to similar conditions. However, with the financial crisis the fragmentation of financial markets has returned as severe and often exaggerated variances in default risks appeared for government debt as well as for private debt. This development has weakened cross-border inter-bank lending; it has made the funding of banks more difficult and has increased the home-bias in asset portfolios of banks, especially in the stressed economies in Europe's south. The deepening fragmentation has now become a serious obstacle for the conduct of monetary policy in the Euro Area and for the return to economic growth and full employment.

Given the present environment of falling inflation and stagnant or even negative growth, the ECB is right to reflect how to stimulate the economy. But the institutional framework of the Euro Area is an obstacle for the implementation of quantitative easing, which has so successfully pulled the United States out of the crisis. This note highlights why this is so and what could be done against it.

³ See Joyce et al. 2012 for a discussion

⁴ The ECB has continuously made allowances for the deteriorating quality of securities from Euro Area crisis countries as part of its unconventional policies, but the drawback is the weakening of its own balance sheet. See Al-Eyd and Pelin Berkmen, 2013; Cour-Thimann and Winkler, 2013.

1. THE DIFFICULTIES OF MONETARY POLICY TRANSMISSION IN THE EURO AREA

1.1. Unconventional monetary policy in the Euro Area

The ECB has taken a range of unconventional actions to address weaknesses in the Euro Area's financial system, primarily aimed at safeguarding monetary transmission. As a complement to rather than a substitute for standard interest rate decisions, the ECB's non-standard measures were aimed at supporting the effective transmission of monetary policy to the economy rather than at delivering additional direct monetary stimulus (Cour-Thimann and Winkler, 2013). Despite these measures, Euro Area financial markets have become more fragmented, driving retail interest rates in stressed markets far above those in the core. This has impeded the flow of credit and undermined the transmission of monetary policy (European Commission, 2013).

Table A1 in Annex 1 gives an overview of the policy measures taken since the beginning of the financial crisis. Without doubt, the most successful unconventional measure by the ECB was the announcement of the OMT (Outright Monetary Transaction) program whereby the central bank would purchase, under clearly defined conditions, unlimited amounts of sovereign bonds issued by Euro Area member states. This program applies to government debt of crisis countries under ESM surveillance and is therefore not suitable for generally stimulating quantitative easing. Its purpose was to reduce *excessive yield differentials* between member states. The announcement of the OMT program has contributed to the narrowing of national government bond yield spreads relative to Germany and is therefore a sign that the bond market has somewhat reduced the degree of financial fragmentation. However, the transmission from monetary policy from public debt yields to private credit markets for non-financial corporations and households has been less successful, because the economic conditions in crisis countries (high debt leverage and austerity) have seriously weakened banks' balance sheets.

The main purpose of the ECB's unconventional measures was to repair the "credit channel" of monetary policy, which has been impaired by financial fragmentation. Economic theory has highlighted a number of transmission channels by which the central bank can affect price stability and economic activity. The two most important mechanisms are the interest and the credit channel. The interest channel works through the cost effect on lending and borrowing by banks to the economy, therefore largely affecting the demand for credit and money. The credit channel amplifies the effects of the interest channel by rationing the supply of credit because of constraints resulting from overleveraged corporate balance sheets and because banks are unwilling to lend (Bernanke and Gertler, 1995).

Studies⁵ have found some evidence for the bank-lending channel during normal times in at least some Euro Area countries, but no strong evidence for the Euro Area as a whole. Since the crisis, however, evidence for the credit channel has been strong, with adverse consequences from both bank lending and balance sheet channels. These disruptions of the credit channel are largely due to national idiosyncrasies in financial structures and regulations. The ECB has remedied some malfunctioning by its unconventional policies, but given its function as a lender of last resort and liquidity provider for the Euro Area as a whole, its influence on the fractured structure of the European banking system is rather limited. As a consequence, for the ECB non-standard measures are a complement to rather than a substitute for standard interest rate policy (Cour-Thimann and Winkler, 2013).

⁵ See: Al-Eyd and Pelin Berkmen, 2013; Cicarelli et al., 2013; ECB, 2002; 2010; Hempell, and Kok Sorensen, 2010;

With the Euro Area now bordering the risk of deflation, the ECB has recognized the need for actively stimulating the economy as a complement to structural reforms (Draghi, 2014 a). Given that policy interest rates are close to zero, quantitative easing would be the appropriate response. Yet, with the lack of integrated financial markets, it is unlikely that quantitative easing in the Euro Area would work with the efficiency one has witnessed in the United States, the United Kingdom or even in Japan.

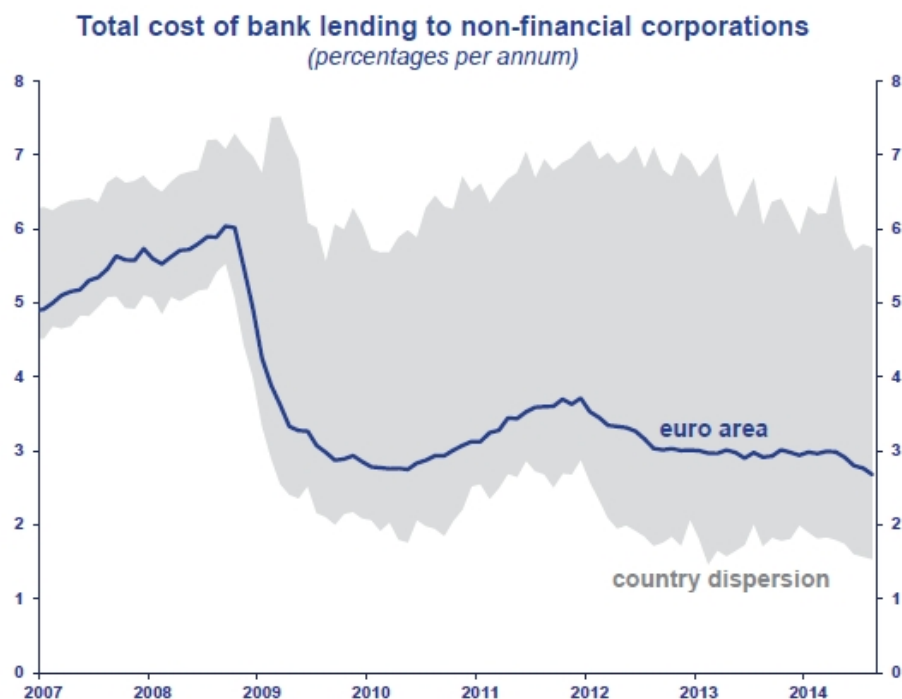
1.2. Financial fragmentation

Financial fragmentation is defined as "differences in the functioning and performance of financial markets of different jurisdictions caused by obstacles to the free movement of capital and/or financial services across borders" (European Commission, 2013). Since the financial crisis, cross-border inter-bank lending has weakened and the home-bias in their asset portfolios has increased (Collignon, 2012). Banks' funding costs on wholesale markets and the cost of credit insurance (CDS) are now often reflecting the perceived solvency of the country where the respective bank is located rather than the individual solvency of the borrower. The spreads of sovereign bond yields relative to the German Bund are an expression of these assessments, but in fact they are only the beginning of a vicious circle, which causes large differentials of borrowing costs for small and medium sized enterprises (SMEs). Credit is on average around 150 base points more expensive for SMEs in the southern crisis countries than it is in the north, and even in Germany has the spread between SMEs and large firms more than doubled. Large corporations have been less affected by irregularities in bank lending, because large firms have made greater use of the corporate bond market (the relative volume of Euro Area corporate bond issuance has increased). Nevertheless, this fact is also pointing to a higher degree of disintermediation and to unmet demand by banks for corporate borrowing.

While Obstfeld and Rogoff (2000) still thought that the reasons for home bias are one of the "six major puzzles of international macroeconomics", we have recently made progress in understanding at least some of the underlying causes. According to Al-Eyd and Pelin Berkmen (2013), "financial market fragmentation in the Euro Area reflects a combination of factors. Among these, elevated bank counterparty risks, new and pending regulatory hurdles (e.g., higher liquidity ratios and 'bail-in' procedures), and the increased subsidiarization of banks' business models (partly related to the rise of regulatory 'ring-fencing' in some countries) have undermined cross-border bank flows, particularly to the periphery, and contributed to diverging term funding costs relative to core countries. At the same time, dampened growth prospects - and for certain countries, the prolonged period of low policy rates (particularly where significant portions of banks' mortgage books are tied to low Euribor rates) - have been weighing on banks' profitability and capital positions. This reinforces the need for banks to deleverage and de-risk their balance sheets".

One of the problems is inefficient overlapping supervisory regulation for cross-border operating banks, but incoherent national economic policies with unequal degrees of fiscal and wage restraint are also contributing to differential performances in the non-tradable sector. As a consequence, the crisis was much deeper in the periphery and non-performing loans affect banks' balance sheets in different countries very unevenly; this fact spills over into lending rates and volumes. The pressure to de-leverage increases therefore for fragile economies and pushes them into prolonged recessions. However, these problems cannot be solved by monetary policy - although the new supervisory competences of the ECB are useful for identifying them; they require the recapitalization of fragile banks (ECB, 2014).

The chart in Figure 1, presented by ECB President Draghi (2014) at the recent Euro Summit, clearly shows the widening gap of bank lending costs between member states since the beginning of the Euro-crisis.

Figure 1.

Source: ECB. Latest data: August 2014.

Notes: The country dispersion is calculated as min/max over 18 euro area countries. The indicator is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes.

6

1.3. Monetary policy transmission in Europe's fragmented markets

Financial fragmentation is a serious handicap for monetary policy. Cour-Thimann and Winkler (2013) present a good overview of the measures taken by the ECB in the different phases of the crisis. They conclude that during the first period after the Lehman shock, “the evidence available suggests that the non-standard measures taken in October 2008 have been instrumental in stabilizing the financial system and the economy, as well as in ensuring price stability.” In the second phase of the sovereign debt crisis in Greece, Ireland and Portugal, the ECB established its Securities Markets Programme (SMP) to ensure depth and liquidity in those market segments that were dysfunctional. “The SMP was effective at the outset, and led to some stabilization in markets as well as to an immediate and substantial decline of government bond yields.” In the third stage, when the sovereign debt crisis spilled over into Spain and Italy in the summer of 2011 and their government bond markets risked becoming dysfunctional, the ECB reacted with large volumes of liquidity provision. In the end it was the announcement of the OMT which restored the functionality of the system.

However, these measures were not equivalent to quantitative easing, at least in the proportions observed in the USA or the UK. Because the ECB lends against collateral, it is not “printing money” in the sense of American securities purchases. Often considerable “haircuts” (discounts) apply to repo operations especially when the paper offered is subject to default risks in peripheral member states. This generates effectively higher funding costs for banks in crisis shaken countries and slows down the return to economic growth. It reinforces financial fragmentation.

Banks and non-financial corporations in crisis countries have overleveraged their balance sheets before the crisis and this needs to be corrected. However, the correction is even

more severe when the reduction of investment lowers GDP and employment (negative growth). The proper way to reduce leverage is to recapitalize firms by additional shareholder funds, not by liquidating assets to repay debt. This is an economic policy issue outside the monetary policy domain. However, as Cour-Thimann and Winkler (2013) have demonstrated in a flow-of-funds framework, if all sectors in the economy seek to deleverage simultaneously, these actions will lead to self-defeating dynamics in aggregate, with leverage increasing as a result of lower asset prices, when measured at market value.

This “paradox of leverage” must be solved by increasing the value of assets for the economy as a whole so that total-economy leverage ratios can improve via the denominator (the assets) instead of via the numerator (debt). They argue (p.30-36) that “obtaining a higher valuation of assets can be seen to be the implicit, if not explicit, rationale for large-scale asset purchases/quantitative easing by some major central banks and can contribute to addressing the ‘paradox of leverage’. (...)The central bank can then be thought of as the ‘ultimate sector’ with a capacity to issue safe and liquid liabilities, which are readily accepted (despite low remuneration) by other sectors. It is the ultimate sector which can ‘leverage up’, in case of need, by expanding its balance sheet as well as by changing its composition and risk profile.”

Hence, the purpose of QE is not just the provision of liquidity (as the ECB has already done during the crisis), but also the management of the yield curve and the structure of asset prices (as the Fed has done). I will argue below that the fragmentation of financial markets in the Euro Area is an obstacle for such policies.

2. THE IMPACT OF UNCONVENTIONAL POLICIES ON FINANCIAL MARKETS

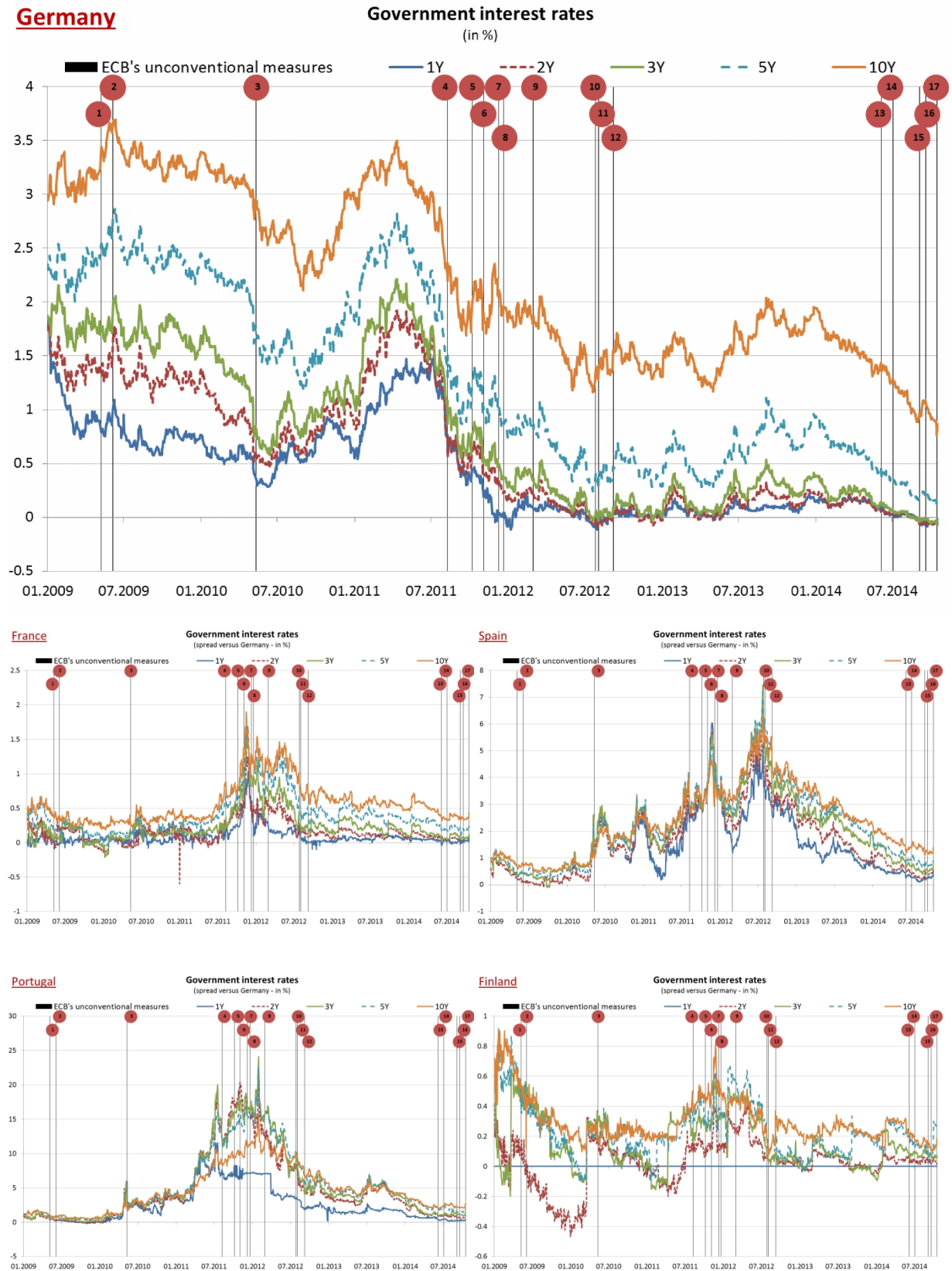
In Figures 2 and 3 we trace the evolution of government bond yields and bank lending interest rates to the private sector against the events of unconventional monetary policies announced and undertaken by the ECB. The horizontal lines indicate the policy event described in Annex 1. The first panel in each figure shows the overall interest development in Germany, the other panels the spread relative to Germany.

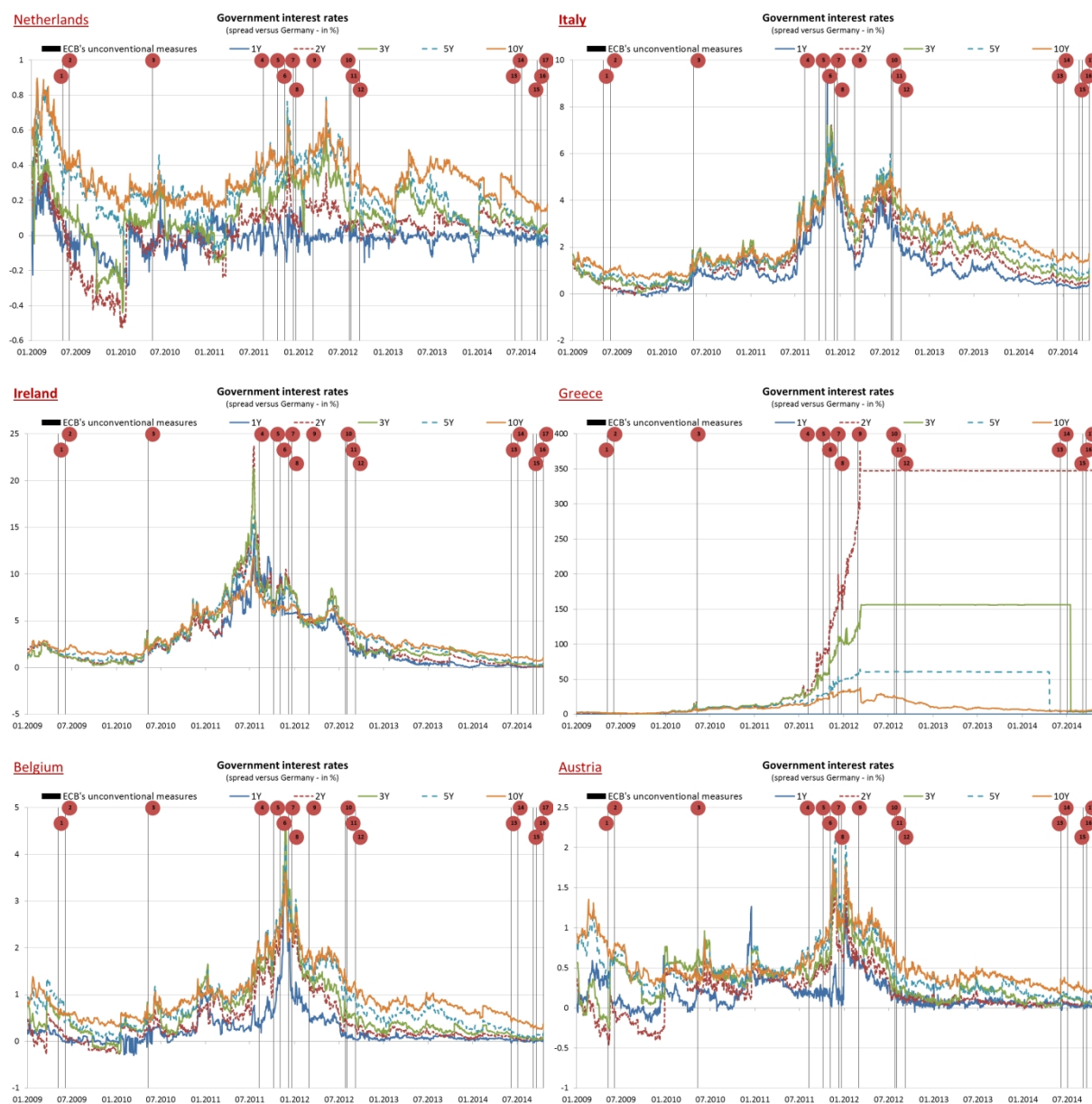
2.1. The impact on bond market yields and spreads

German yields on 10-year bonds have come down from 3.5% in 2011 to less than 1 percent in 2014. When the ECB started to implement a range of non-conventional policy measures in the mid-2011, yields on short term maturities fell to a level close to zero. In core countries like France, Belgium, the Netherlands and Austria, short term yields remained close to German levels, although longer term yields (5 and 10 years) had noticeable spreads over the German Bund. These long term spreads are clearly a reflection of the break-up risks ("redenomination risk", see Al-Eyd and Pelin Berkmen, 2013) at the height of the euro crisis, which were reduced as a consequence of the OMT announcement by ECB President Mario Draghi in London in 2012. However, even for core countries significant risk differentials persist on long term sovereign debt.

In the stressed economies of southern Europe (Spain, Italy, Portugal, Greece) yields spreads have been significant and excessive over the full range of all maturities. This is a clear indicator for the persistent fragmentation of Europe's financial markets. Reducing these yield spreads would have a significant impact on lending rates in the periphery. Ireland is the only country of the crisis economies where short term yields have converged to German levels. Not surprisingly it has improved its economic condition significantly. Ireland has now reached a point where it is closer to the core economies than to the periphery.

Figure 2. German Bond Yields and spreads for selected countries





Source: Our elaborations on Thomson-Reuters Datastream data.

2.2. The impact on bank lending

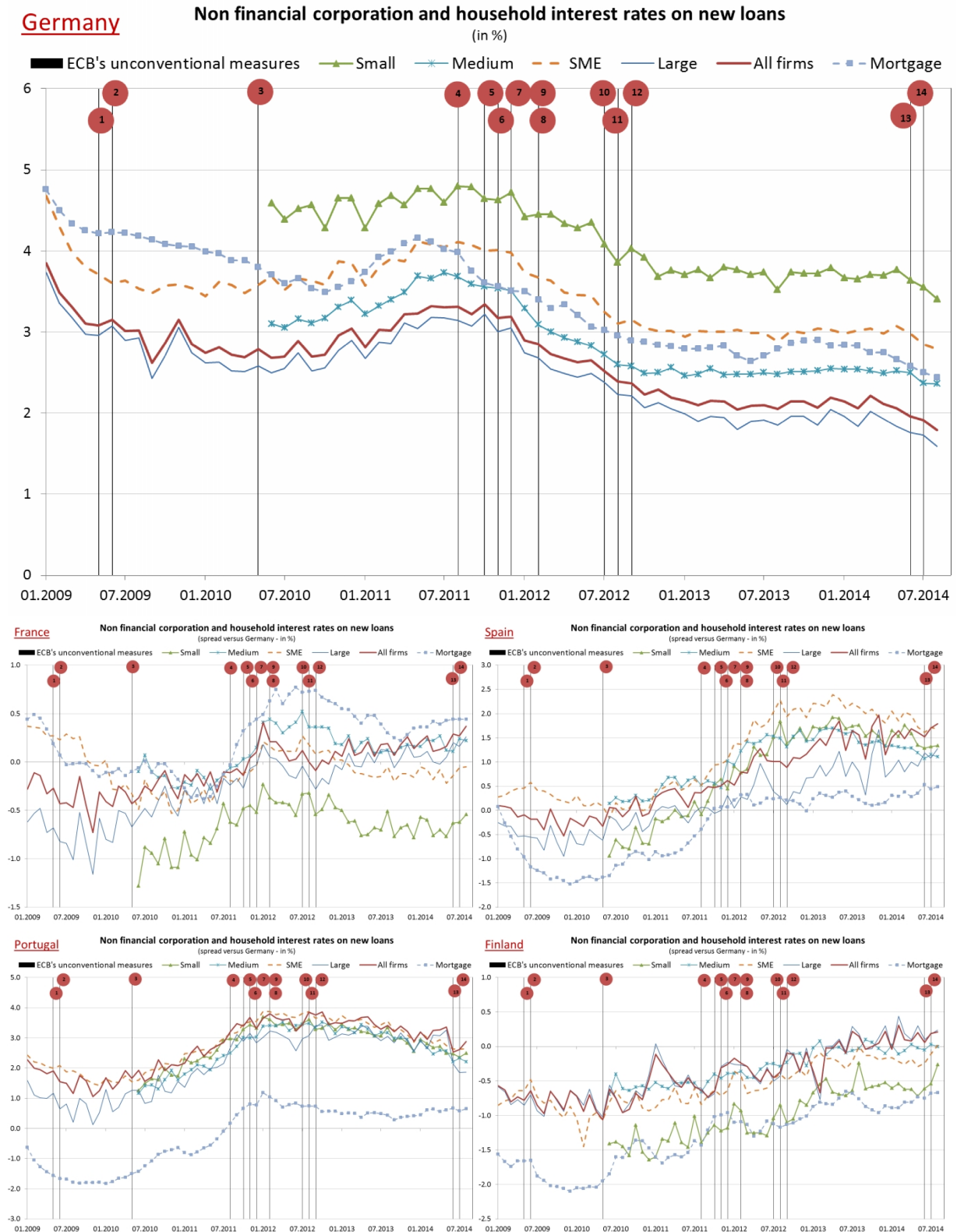
Figure 3 shows the evolution of lending rates to small, medium, and large enterprises and the aggregate indicator for SMEs and all firms, as well as mortgage lending rates to households. German rates reached their peak in mid-2011 and came down following the OMT announcements, although less than the bond yields in Figure 2.

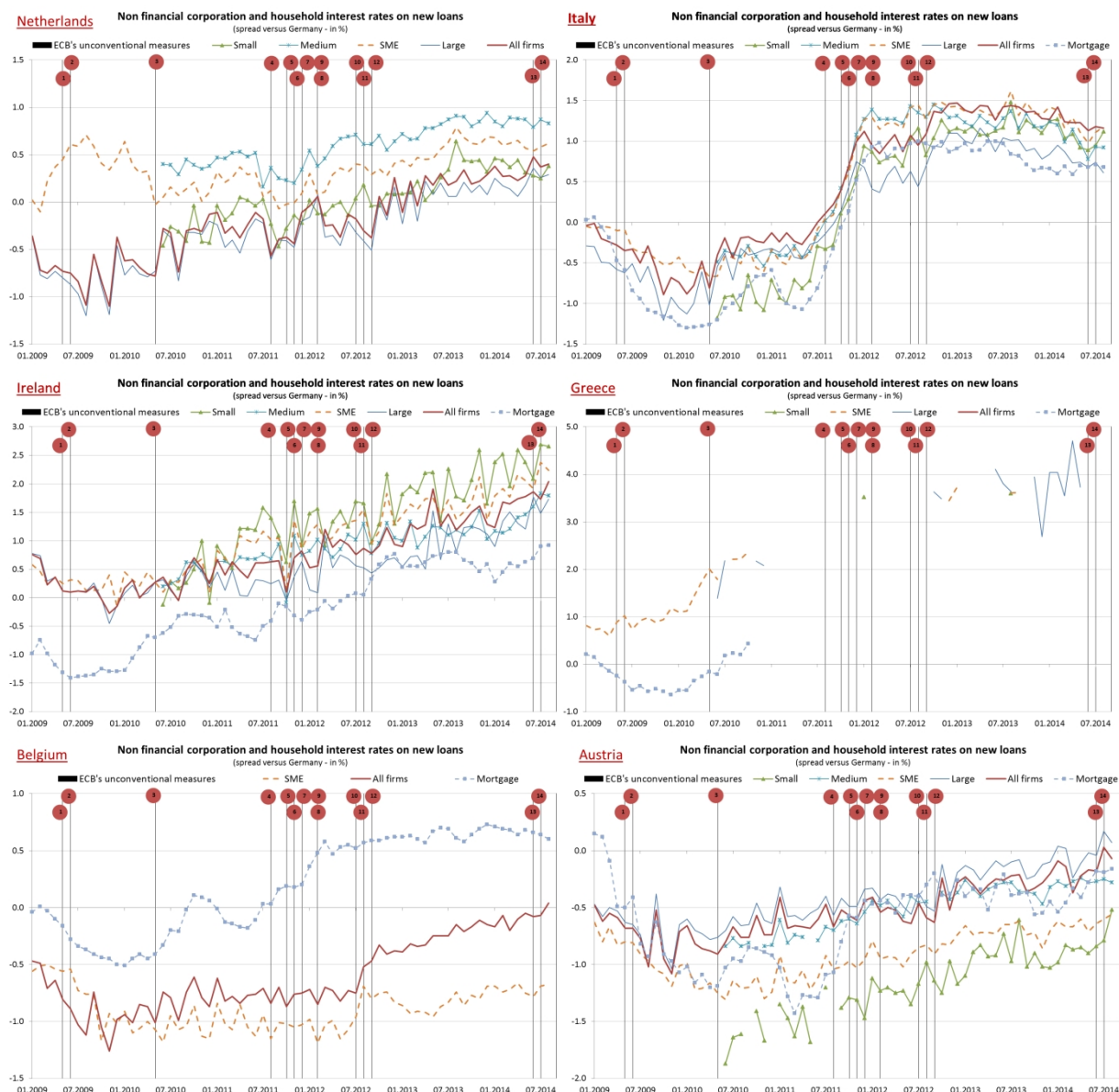
The fragmentation of financial markets is significant for lending to the real economy. Interestingly, in many core countries, with the exception of Austria, but also in France and Italy, lending rates from banks to firms were below German levels at least until mid-2011. This is a clear sign for inefficiencies in the euro-loan market, and particularly in the German banking sector. During mid-2011 and mid-2014, the gap started to narrow, primarily because lending rates outside Germany increased.

In the crisis countries, lending rates went up during the Euro-crisis, but stabilized at a high level above German rates since the beginning of the OMT policies. Clearly these interest

spreads are a major factor in disrupting economic activity in the fragile southern economies and preventing the Euro Area from returning to growth and job creation.

Figure 3. NFC lending rates and private mortgage rates in Germany and spreads in some selected countries





Source: Our elaborations on Thomson-Reuters Datastream data.

2.3. Econometric evidence

Visual inspection of Figures 2 and 3 seems to indicate an inverse relation between government bond yields and bank lending interest rates to the private sector, at least in the core countries. A deeper analysis shows that this is only valid for mortgage rates, and may be explained by the opportunities for banks to issue covered bonds, and for large corporations to access to borrowing in the bond market.

Annex 2 gives the results of panel estimates for bank lending in the different market sections dependent on the development of 10 year government bonds and the monetary policy variable of the 3 months Euribor and the policy dummy of unconventional policy measures (UP) (as shown in Figures 2 and 3 by the vertical lines).

Table A2.1 in Annex 2 presents the results for the Euro Area countries based on the straightforward fixed-effect estimator. The outcome indicates that in the long run the Euro Area financial system converges towards stable equilibrium, but the convergence is very

slow (the autoregressive coefficient is between 74% and 93% on the basis of the dependent variable considered).

The most remarkable result is that in most cases, with the notable exception of large corporations, the unconventional policy dummy is significant and negative, meaning that there is clear evidence that the ECB's policies have contributed to reducing bank lending rates to the real economy. However, considering the two subsamples of the core economies (Austria, Belgium, Finland, France, Germany and the Netherlands) versus periphery (Greece, Ireland, Italy, Portugal and Spain), we find that this effect is stronger in the first group of countries (Tables A2.2 and A2.3, respectively). Hence, these policies are actually aggravating financial fragmentation, despite the overall positive effects.

We also note that the policy variable Euribor is positive and significant for the overall Euro Area, but is hardly significant in peripheral economies, which implies that conventional interest rate policies have become powerless.

Taking into account sovereign bond yields, we find that their effect is positive and significant only for lending to SMEs, when the overall Euro Area is considered. In our view, this outcome is an evidence that large non-financial corporations are able to find alternative funding instruments, and in particular to exploit the possibility of borrowing in bond markets, forcing banks to apply more equal funding conditions for large companies across Europe. However, we note that, together with SMEs, large firms operating in peripheral economies are subjected to national conditions, which distort the proper functioning of the Euro Area economy.

The competition of integrated bond markets could also imply inverse correlation between sovereign bonds and bank lending. Such inverse relation would occur when banks prefer to lend to governments rather than the private sector because fiscal consolidation has reduced the risk premium for sovereign debt. In order to test this possibility, we conduct a robustness test on a different subsample of countries (Table A2.4). In this test Germany, Portugal, Italy and Greece are excluded because from Figures 2 and 3 they do not seem to show a trade-off between sovereign bonds and bank lending. Although there is no significant inverse correlation between sovereign bonds and bank lending to firms, the relation is subject to large variation between member states. Moreover, we find a negative and significant impact of sovereign bond yields on mortgage rates, which could signal an improvement in this market segment due to the presence of an integrated covered bond market.

Table A2.5 reports robustness results from a different estimation method, the so called system-GMM estimator (or Arellano–Bover estimator). We find that the unconventional policy dummy is robust to this test. In this case the dummy is negative and significant also for large firms. However, the test of exogeneity of instrument subsets rejects the null hypothesis that instruments are exogenous. As a consequence, this result should be considered with caution. The Euribor 3-month is hardly significant in this robustness test, when this variable is considered endogenous. This outcome could signal that unconventional policies and other market conditions have a relevant impact on interbanking activities. Finally, sovereign bond yields have, generally speaking, a positive and significant effect. Nevertheless, with respect to large non-financial corporations the same caution about the interpretation of results should be applied.

To summarize, we find significant evidence that the unconventional policies pursued by the ECB have lowered bank lending interest rates to the real economy, although these effects are unevenly distributed and less convincing for the peripheral economies.

3. A COMMENT ON OPEN MARKET OPERATIONS IN THE EURO AREA

Given the examples of the UK, the US and other advanced economies, but also the impact of unconventional policies by the ECB, one may conclude that the outright purchase of securities by the European Central Bank, i.e. quantitative easing, could improve economic activity in the Euro Area. However, we have also seen that due to the fragmentation of financial markets, such measures are not likely to be efficient and would have unequal effects in different member states.

The problem is that European banks lack a safe security that could be used as collateral to access liquidity under equal conditions for all. There is no euro-equivalent for gilts or Treasury bills and bonds. Under the pressure of events, the ECB has set up programs to purchase *sovereign debt from crisis countries*, but not from the Euro Area in general. In other words, the home bias in commercial bank portfolios generates a negative bias in the Central bank's asset portfolio. While unconventional policies have worked in diffusing the acute crisis, they have not solved the deeper problem of financial fragmentation, which weakens the efficiency of European monetary policy.

Furthermore, by buying low grade sovereign debt from crisis countries, the ECB would weaken its own balance sheet and incur risks of potential defaults and future losses to taxpayers. Significant opposition in member states against the OMT and other crisis programs has been founded on these considerations and potential worries. A large program of quantitative easing would force the ECB to buy even more risky securities. The political acceptance for such a policy may not be high, especially in Europe's north.

The problem would not occur if the Euro Area had a significant stock of Eurobonds, which would play a role similar to gilts and US Treasury bonds. However, Eurobonds do not exist and the political will to back European bonds by a European tax authority is also out of question. A different instrument would therefore be needed to facilitate quantitative easing in the Euro Area.

In my note in March 2011 to the Committee on Economic and Monetary Affairs of the European Parliament I have made a proposal for integrating European financial markets by issuing Union Bonds.⁶ It suggests a European Agency, most suitably the EMS, would issue Euro Bonds against a portfolio of sovereign bonds that reflects the proportions of share capital in the ECB. These Union Bonds are therefore a form of asset backed security. No additional guarantees from member states are needed to create these Union Bonds. The volume for a significant market ought to be 60 percent of Europe's outstanding public debt. The theoretical yield on these bonds would be the weighted average of national bonds.

The attractiveness of Union Bonds would be derived from a commitment by the ECB to use them in outright monetary purchases and to grant the most favourable status to Union Bonds for repo operations. They could therefore become a privileged instrument to conduct monetary policy, including quantitative easing. Commercial banks would swap their national sovereign debt against a European security issued by the ESM, thereby reducing the home bias in their portfolio. Thus, rather than selling to the ECB, they would sell their national debt to the ESM. This has the advantage that the ECB would not have to absorb low grade securities in fire sales. It would, therefore, keep its balance sheet clean.

The default risk, however, would be transferred to the issuing authority (the ESM) and would be shared between all member states in proportion of the ECB capital. This is, of course an indirect mutualisation of sovereign risks with potential losses accruing to the ESM

⁶ See Collignon, 2011

rather than the ECB, but it would be controlled by fiscal authorities which are governed by the fiscal compact. This is where such responsibilities belong. Fiscal policies, taxing and spending, are political decisions that must be taken by democratically elected governments. Taking central bank independence seriously means not to push the ECB into a situation where it is forced to conduct undesirable operations in high crisis situation. However, Union Bonds also provide a better deal for taxpayers, as they prevent loading the ECB balance sheet with risky debt (the mirror effect of home bias discussed above), which would imply that the potential losses from buying risky national debt could be higher than the potential losses in the ESM's weighted portfolio of assets held against Union Bonds.

The advantage for commercial banks consists in the fact that they would have stronger balance sheets. They would get rid of inefficient home biases, especially in the high risk member states, and this fact ought to improve cross-border interbank lending. The scheme also gives them access to liquidity under equal conditions with all other banks (equal haircuts), so that banks and firms would compete on equal footing in core as well as periphery member states.

Hence, the creation of Union Bonds is a win-win proposal that would remedy some important problems resulting from Europe's fractioned financial markets.

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ANNEX 1.**Table A1. Main ECB announcements of unconventional monetary policy measures**

Event number	Date	Description
1	07 May 2009	Announcement of the Covered Bond Purchase Programme 1 (CBPP1)
2	04 June 2009	Publication of the technical details of the CBPP1
3	10 May 2010	Announcement of the Securities Markets Programme (SMP)
4	08 August 2011	Publication of the active implementation of the SMP
5	06 October 2011	Announcement of the Covered Bond Purchase Programme 2 (CBPP2)
6	03 November 2011	Publication of the technical details of the CBPP2
7	08 December 2011	Announcement of two Long Term Refinancing Operation (LTRO) with 36-month maturity
8	20 December 2011	Call for bids of the LTRO1
9	28 February 2012	Call for bids of the LTRO2
10	26 July 2012	Draghi's statement to do "whatever it takes" to save the euro
11	02 August 2012	Announcement of the Outright Monetary Transactions (OMT)
12	06 September 2012	Publication of the technical details of the OMT
13	05 June 2014	Announcement of several Targeted Long Term Refinancing Operation (TLTRO) with 48-month maturity
14	03 July 2014	Publication of the technical details of the TLTRO
15	04 September 2014	Announcement of the ABS Purchase Programme (ABSPP) and of the Covered Bond Purchase Programme 3 (CBPP3)
16	18 September 2014	Call for bids of the TLTRO1
17	15 October 2014	Publication of the technical details of the CBPP3

Source: Rivolta (2014) up to 2012; our elaborations later.

ANNEX 2.

In order to test the effect of ECB's unconventional policy measures we estimate the following monthly panel data for the 17 Euro Area countries:⁷

$$R_{i,t} = k + \alpha_i + \beta_1 \cdot R_{i,t-1} + \beta_2 \cdot Gov10Y_{i,t} + \beta_3 \cdot Eur3M_t + \beta_4 \cdot DUP_t + \varepsilon_{i,t} \quad (1)$$

The endogenous variable (R) is equal, alternative, to ECB's harmonized lending rates on new business operations to SMEs, further classified in small and medium firms, large enterprises, all firms and mortgage to household for house purchase. We also include one lag term of the dependent variable among explanatory variables, which transform our panel in a dynamic one. *Gov10Y* is the monthly average of the 10-year government bond yield, while *Eur3M* is the monthly average of the 3-month Euribor. *DUP* is a dummy equal to 1 in the month in which the ECB announced, or described in more details, at least one of the unconventional policy measures reported in Table A1, 0 otherwise.

Data are taken from Thomson-Reuters Datastream. As time span we consider the period from January 2010 to October 2014 (last available data), i.e. the period with the maximum fragmentation of the market as clearly recognizable in Figure 2 and 3. However, the results are robust to larger time span periods.⁸

We estimate eq. (1) using the fixed-effect estimator. Taking into account that in our database T is large (58 months) and N is small (between 9 and 11) the fixed-effect is an unbiased estimator of dynamic panel data (see, e.g., Roodman, 2006).

However, we also estimate eq. (1) with the system GMM estimator (or Arellano–Bover estimator), developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998), method that allows to consider the potential endogeneity of regressors.

⁷ Because for some small countries data are missing, the number of countries was reduced to 9 or 11 depending on the variable considered.

⁸ Estimation outputs based on this robustness test are available upon request.

Table A2.1. Regression results - Euro Area countries¹

In the table are reported the estimation results of eq. (1) using the fixed-effect estimator. The period considered is from January 2010 to October 2014.

	Dependent variables (R) – Lending rates to					
	Small	Medium	SMEs	Large	All firms	Mortgage
R _{t-1}	0.844*** [0.060]	0.828*** [0.034]	0.893*** [0.031]	0.739*** [0.054]	0.841*** [0.030]	0.932*** [0.013]
Gov10Y _t	0.020** [0.008]	0.021* [0.010]	0.016*** [0.004]	0.019 [0.016]	0.013 [0.011]	0.004 [0.006]
Eur3M _t	0.059* [0.026]	0.088*** [0.019]	0.064*** [0.014]	0.128** [0.046]	0.084*** [0.021]	0.066*** [0.011]
DUP _t	-0.022* [0.011]	-0.044*** [0.013]	-0.045*** [0.010]	-0.004 [0.009]	-0.028*** [0.008]	-0.030** [0.012]
Constant	0.587* [0.281]	0.472*** [0.133]	0.314** [0.124]	0.556*** [0.170]	0.368*** [0.084]	0.158*** [0.040]
R squared	0.976	0.978	0.985	0.935	0.971	0.978
F (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Number of countries	9	9	11	10	10	10
Obs	442	444	570	515	560	514

Notes: Cluster-robust standard errors appear in parentheses. We use Stata10 (xtreg command) for all calculations. *, **, *** indicate statistical significance of the parameters at 10%, 5% and 1% significance level, respectively.

¹ The Euro Area countries include Austria, Belgium, Finland, France, Germany, the Netherlands, Greece, Ireland, Italy, Portugal and Spain.

Table A2.2. Regression results - Euro Area core economies¹

In the table are reported the estimation results of eq. (1) using the fixed-effect estimator. The period considered is from January 2010 to October 2014.

	Dependent variables (R) – Lending rates to					
	Small	Medium	SMEs	Large	All firms	Mortgage
R _{t-1}	0.783*** [0.046]	0.726*** [0.040]	0.762*** [0.026]	0.546*** [0.089]	0.637*** [0.070]	0.899*** [0.026]
Gov10Y _t	0.034 [0.031]	0.050* [0.023]	0.004 [0.019]	-0.025 [0.039]	-0.029 [0.028]	0.034 [0.020]
Eur3M _t	0.109* [0.042]	0.141** [0.031]	0.164*** [0.022]	0.350*** [0.067]	0.274*** [0.052]	0.043 [0.029]
DUP _t	-0.022 [0.013]	-0.035* [0.015]	-0.050*** [0.012]	-0.020 [0.014]	-0.036* [0.014]	-0.026 [0.014]
Constant	0.628** [0.182]	0.587** [0.134]	0.610*** [0.080]	0.815** [0.234]	0.731** [0.189]	0.180 [0.097]
R squared	0.956	0.95	0.961	0.825	0.871	0.99
F (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Number of countries	5	5	6	5	6	5
Obs	242	244	336	280	336	280

Notes: Cluster-robust standard errors appear in parentheses. We use Stata10 (xtreg command) for all calculations. *, **, *** indicate statistical significance of the parameters at 10%, 5% and 1% significance level, respectively.

¹ The Euro Area core economies include Austria, Belgium, Finland, France, Germany and the Netherlands.

Table A2.3. Regression results - Euro Area peripheral economies¹

In the table are reported the estimation results of eq. (1) using the fixed-effect estimator. The period considered is from January 2010 to October 2014.

	Dependent variables (R) – Lending rates to					
	Small	Medium	SMEs	Large	All firms	Mortgage
R _{t-1}	0.807*** [0.122]	0.808*** [0.071]	0.896*** [0.068]	0.727*** [0.067]	0.852*** [0.039]	0.954*** [0.019]
Gov10Y _t	0.032* [0.011]	0.026** [0.007]	0.018 [0.010]	0.030* [0.014]	0.018 [0.010]	-0.003 [0.001]
Eur3M _t	-0.02 [0.104]	0.047 [0.028]	0.045 [0.072]	0.036 [0.025]	0.036 [0.024]	0.088** [0.030]
DUP _t	0.001 [0.037]	-0.025 [0.029]	-0.034 [0.022]	0.006 [0.022]	-0.027* [0.010]	-0.025 [0.021]
Constant	0.915 [0.674]	0.647 [0.306]	0.407 [0.324]	0.737* [0.275]	0.468* [0.149]	0.124 [0.079]
R squared	0.938	0.955	0.962	0.916	0.957	0.946
F (p-value)	-	-	0.000	0.000	-	0.000
Number of countries	4	4	5	5	4	5
Obs	200	200	234	235	224	234

Notes: Cluster-robust standard errors appear in parentheses. We use Stata10 (xtreg command) for all calculations. *, **, *** indicate statistical significance of the parameters at 10%, 5% and 1% significance level, respectively.

¹ The Euro Area peripheral economies include Greece, Ireland, Italy, Portugal and Spain.

Table A2.4. Robustness tests on the Euro Area sample¹

In the table are reported the estimation results of eq. (1) using the fixed-effect estimator. The period considered is from January 2010 to October 2014.

	Dependent variables (R) – Lending rates to					
	Small	Medium	SMEs	Large	All firms	Mortgage
R _{t-1}	0.783*** [0.135]	0.701*** [0.121]	0.856*** [0.081]	0.573*** [0.103]	0.754*** [0.068]	0.894*** [0.031]
Gov10Y _t	0.002 [0.022]	0.004 [0.015]	0.003 [0.012]	-0.022 [0.015]	-0.014 [0.011]	-0.008* [0.004]
Eur3M _t	0.079 [0.074]	0.154* [0.076]	0.083 [0.049]	0.255** [0.095]	0.144* [0.064]	0.083*** [0.009]
DUP _t	-0.032* [0.015]	-0.045** [0.013]	-0.061*** [0.007]	-0.01 [0.011]	-0.034** [0.010]	-0.034** [0.012]
Constant	0.841 [0.585]	0.862* [0.390]	0.445 [0.290]	0.923** [0.233]	0.597** [0.173]	0.295** [0.098]
R squared	0.952	0.935	0.968	0.727	0.91	0.979
F (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Number of countries	6	6	7	6	7	6
Obs	292	294	392	336	392	336

Notes: Cluster-robust standard errors appear in parentheses. We use Stata10 (xtreg command) for all calculations. *, **, *** indicate statistical significance of the parameters at 10%, 5% and 1% significance level, respectively.

¹ The Euro Area subsample include Austria, Belgium, Finland, France, the Netherlands, Ireland and Spain, while Germany, Greece, Italy and Portugal are not included.

Table A2.5. Robustness tests on the estimation method

In the table are reported the estimation results of eq. (1) using a two-step system-GMM estimator (or Arellano–Bover estimator) with forward orthogonal deviations as transformation. R_{t-1} , $Gov10Y_t$ and $Eur3M_t$ are considered as endogenous. “GMM-style” instruments are collapsed in order to limit the instrument count; only the 12-month lag is included. We use DUP and country dummies as standard instruments. The constant is not included. The period considered is from January 2010 to October 2014; the sample of countries is the same of table A2.1.

	Dependent variables (R) – Lending rates to					
	Small	Medium	SMEs	Large	All firms	Mortgage
R_{t-1}	0.981*** [0.013]	0.992*** [0.009]	0.978*** [0.010]	0.958*** [0.016]	0.977*** [0.015]	0.990*** [0.003]
$Gov10Y_t$	0.021 [0.017]	0.006* [0.004]	0.020 [0.013]	0.021** [0.008]	0.016* [0.008]	0.008*** [0.002]
$Eur3M_t$	0.027 [0.028]	0.027 [0.027]	0.028 [0.037]	0.059** [0.024]	0.030 [0.021]	0.009 [0.015]
DUP_t	-0.045** [0.019]	-0.064*** [0.023]	-0.048* [0.026]	-0.043*** [0.013]	-0.052** [0.022]	-0.037** [0.017]
Chi squared	0	0	0	0	0	0
AR2 test (p-value) ¹	0.434	0.773	0.567	0.252	0.788	0.395
Number of instruments	11	11	13	12	12	12
Hansen test (p-value) ²	0.578	0.521	0.521	0.427	0.428	0.583
Difference-in- Hansen test (p-value) ³	0.220	0.674	0.332	0.021	0.576	0.401
Number of countries	9	9	11	10	10	10
Obs	442	444	570	515	560	514

Notes: Standard errors appear in parentheses; the Windmeijer correction is applied. We use Stata10 (xtabond2 command) for all calculations.

*, **, *** indicate statistical significance of the parameters at 10%, 5% and 1% significance level, respectively.

¹ Arellano–Bond test for AR(2) in differences.

² Test of joint validity of instruments.

³ Test of exogeneity of instrument subsets. Null = GMM instruments for levels are exogenous.

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