BANCA D'ITALIA

EUROSISTEMA

IN THIS ISSUE

Benefits of gradualism or costs of inaction? Monetary policy in times of uncertainty

When uncertainty about the true state of the economy concerns fundamental relationships like the slope of the Phillips curve, it is optimal to follow a prudent approach in removing monetary policy stimulus.

Outline of a redistribution-free debt redemption fund for the euro area

High public debts in several euro area countries constitute a major risk for the financial stability of the whole area. To address this problem, it may be advisable to accompany fiscal consolidation efforts at the country level with the launch of a European debt redemption scheme.

The effect of the ECB's corporate sector purchase programme on firms' funding costs

The corporate bond purchase programme of the ECB, which sought to enhance the pass-through of the monetary policy to the financing conditions of the real economy, led to a substantial decrease in the spreads at issuance of the eligible bonds.

Bank resolution and public backstop in an asymmetric banking union

An optimal feasible banking union allows fiscally stronger countries to obtain aid from the common public backstop for bank resolution even when they are not facing a crisis, while weaker countries are granted aid only in such case.

In times of higher uncertainty, a gradual approach to monetary policy is warranted

Dealing with uncertainty about the true state of the economy is one of the main challenges faced by central banks when conducting monetary policy. In recent years, structural factors, along with those related to the financial cycle, may have changed crucial parameters for monetary policy, such as the natural interest rate and the slope of the Phillips curve, thus rising uncertainty concerning their actual value.

In a seminal work, Brainard (1967) suggested that in presence of high uncertainty, it is often optimal for policymakers to respond to exogenous shocks to the economy by changing their instrument less than would be optimal if all parameters were perfectly known (the so called "Brainard conservatism principle"). This principle has found wide acceptance, also in actual monetary policy implementation. However it has been challenged by various researchers on the basis that a cautious approach today might lead to even higher volatility of the key economic variables in the future, thus making a more aggressive policy warranted instead (Walsh, 2004).

A recent paper, **Benefits of gradualism or costs of inaction? Monetary policy in times of uncertainty** (Banca d'Italia, Working Paper No. 1205) explores this question in a simple two-equation New-Keynesian framework, where some parameters are assumed to be time-varying and imperfectly observed by the Central Bank. It studies the question whether a Central Bank under uncertainty should pursue a more or less aggressive policy than what is optimal when all parameters are known by focusing on two potential sources of uncertainty: imperfect knowledge of the level of the natural rate of interest and of the slope of the Phillips curve.

To explore the issue, the paper proposes a general method to account for uncertainty on any subset of parameters of the model, thus improving on the existing literature (Söderström, 2002; Kimura and Kurozumi, 2007) and providing a complete analytical characterization of the solution in a forward-looking New-Keynesian model with parameter uncertainty.

The answer thus obtained to the question is not univocal: it depends on the nature of the shock and on the relationship between the degree of uncertainty and the persistence of the shock.

When the uncertainty concerns the natural rate of interest, the optimal response by the Central Bank is not different from the full information case, when no uncertainty surrounds the key economic variables considered by the Central Bank. Indeed, this situation does not give rise to any present or future trade-off between inflation and output gap, nor it affects agents' expectations on these two variables.

> *During periods of high uncertainty but low persistence of shocks, a cautious and gradual approach to monetary policy should be pursued*

The conclusion is different for the second scenario, when the central banker does not know the actual slope of the Phillips curve. In this case it is optimal for the Central Bank to modify its reaction with respect to the full information case.

A prudent policy, along the lines suggested by Brainard is warranted when the uncertainty is high and the persistence of the shock to the Phillips Curve is low (i.e. when the range of possible values of the parameter determining the trade-off between stabilization of output and of inflation is large while the effects of the shock hitting the curve are short lived). The contrary is true in the opposite case (see Figure 1).

The case of high uncertainty and low persistence is possibly the most relevant in today's economic environment. Hence, the results confirm that a

Figure 1

Optimal Central Bank reaction
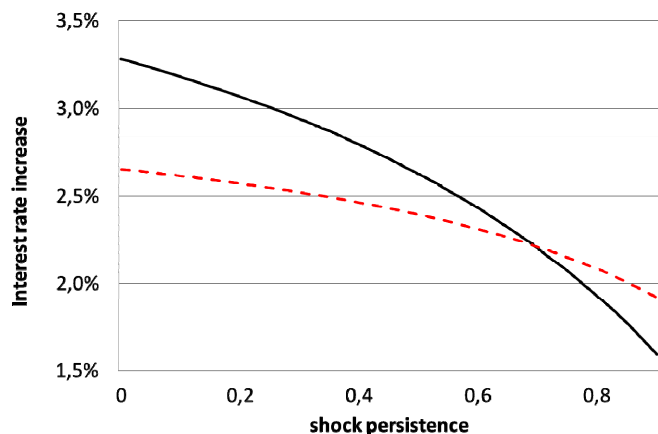
Note: In the figure the on impact interest rate increase to a positive cost-push shock is reported in the case of no uncertainty and in the one when there is uncertainty on the slope of the Phillips Curve for various levels of persistence of the cost-push shock..

pragmatic approach to monetary policy decision-making is appropriate, since a gradual and prudent recalibration of the expansionary stance makes it possible to reduce macroeconomic volatility when there is significant uncertainty over the monetary policy transmission mechanism and when positive shocks hit the most volatile components of the consumer price index.

— **Giuseppe Ferrero (Bank of Italy)**
Mario Pietrunti (Bank of Italy)
Andrea Tiseno (Bank of Italy)

References

Brainard, W. C. (1967). Uncertainty and the Effectiveness of Policy. The American Economic Review, 57(2), 411-425.

Ferrero, G., Pietrunti, M., & Tiseno, A. (2019). Benefits of gradualism or costs of inaction? Monetary policy in times of uncertainty (No. 1205). Temi di Discussione, Bank of Italy Working Paper

Kimura, T., & Kurozumi, T. (2007). Optimal monetary policy in a micro-founded model with parameter uncertainty. Journal of Economic Dynamics and Control, 31(2), 399-431.

Söderström, U. (2002). Monetary policy with uncertain parameters. Scandinavian Journal of Economics, 104(1), 125-145.

Walsh, C. E. (2004). Implications of a Changing Economic Structure for the Strategy of Monetary Policy (No. qt84g1q1g6). Center for International Economics, UC Santa Cruz.

High public debts in the euro area: can a European redemption fund help?

The crisis left several euro area members with a legacy of high public debts. This puts at risk the financial stability of the whole area

Ten years marked by a double-dip recession left a legacy of high public debts in several member states of the Economic and Monetary Union (EMU). High public debt is a major source of financial vulnerability as it exposes the country, even if fundamentally solvent, to the risk of a sudden loss of market confidence. It also creates contagion risks for its neighbors. What happened in Europe in 2010 following the adverse fiscal developments in Greece is an evident example of such panic-driven spillover: funding costs in other countries of the EMU "periphery" were affected to an extent beyond what would have been justified by their fundamentals and all countries suffered due to market fears of a euro break-up.

The problem of a high public debt to GDP ratio should be addressed first and foremost at the national level, by achieving and maintaining adequate primary surpluses. However, fiscal prudence alone will take a long time to bring the public debt back to (at least) pre-crisis levels; in the meantime, all countries of the EMU would remain exposed to the risk of a sovereign debt crisis arising suddenly in one or more high-debt countries.

Serious fiscal consolidation efforts at the country level could be complemented by a European Redemption Fund, in order to secure the reduction of legacy debts

Against this background, a recent paper by Marika Cioffi, Pietro Rizza, Marzia Romanelli and Pietro Tommasino ("Outline of a redistribution-free debt redemption fund for the euro area", Banca d'Italia, Occasional Working Papers No. 479) explores the feasibility and desirability of a European Redemption Fund (ERF). The ERF is defined as a common financial vehicle which issues bonds guaranteed by all participant countries; the resources raised from the issuance of "ERF bond" would be used either to buy and hold to maturity a corresponding amount of national sovereign bonds or to redeem them altogether; no other expenditure may be financed by the Fund's bond.

Similar Funds have been proposed in the past. Some aim at implementing a common fiscal policy (e.g. Minenna and Aversa, 2018) or at easing the safe-asset shortage (Brunnermeier et al. 2011)[1]. Others share the same objectives of the ERF[2], i.e. to provide a temporary instrument to speed-up the national debt reduction processes and eliminate the risk of systemic crises. However, most proposals imply some form of (explicit or implicit) cross-country subsidies, which may encourage moral hazard; in the end, this represents the main objection put forward by those who are against any form of fiscal risk-sharing within the EMU.

The Redemption Fund can be designed in such a way to avoid systematic cross-country transfers: high-yield countries would pay more than the low-yield ones; payments to the ERF are similar in spirit to fair insurance premia

The main feature of the ERF is that the yearly transfers to the scheme differ across countries, reflecting the sovereign yields prevailing before the start of the Fund: high-yield countries, therefore, would pay more than the low-yield ones. In this perspective, payments to the ERF are similar in spirit to fair insurance premia, which the member states should be willing to pay in order to get rid of the risk of systemic crises. Contrary to most previous plans, this approach would rule out any form of systematic subsidization from fiscally strong to fiscally weak countries. At the same time, the average payment from the States can be calibrated to ensure that the ERF debt is put on a downward path.

For example, the authors show that under a reasonable macroeconomic scenario and very prudent assumptions about the cost of ERF debt – which is set equal to the weighted average of the rates paid by governments on their own sovereign debts[3] – if each

---

[1] Differently from Minenna and Aversa (2018), management of the Fund's resources is totally "passive": they can only be used to service the ERF debt. Differently from Brunnermeier et al. (2011), no "tranching" is envisaged for the ERF debt.

[2] See in particular: German Council of Economic Experts (2011), Parello and Visco (2012), Paris and Wypolsz (2014), Corsetti et al. (2015).

euro-area country transferred to the ERF an amount of national bonds equal to 60 per cent of its GDP, there could be a steady decline of both the ERF's debt (it would go down to around 40 per cent in 10 years and below 30 per cent of total GDP in 20 years, reaching zero in 2065) and of the total debt of the euro area (ERF's debt plus what remains of national sovereign debts within the member states - Figure 1).

Figure 1

Projected debt dynamics
(% of Euro area GDP)

- - - ERF
— Total (National debts + ERF debt)
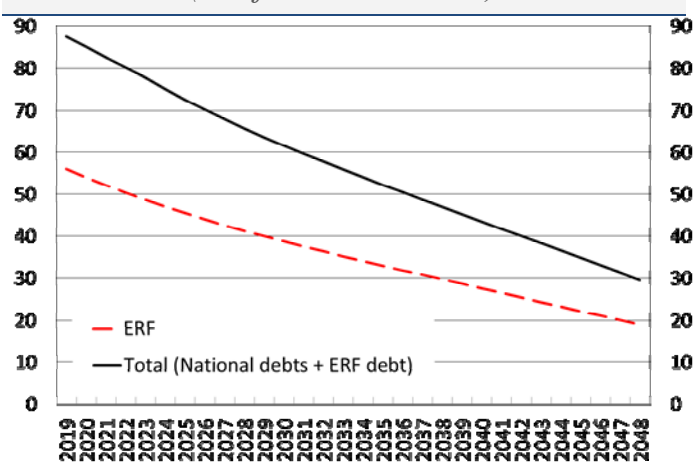
Although the scheme is temporary, it does not envisage a fixed expiration date, before which all the ERF's debt has to be redeemed. This introduces an element of counter-cyclicality: during recessions the payments to the ERF decrease in nominal value, thus lowering the effort required for a country and therefore enhancing the credibility of its commitment to the scheme.

Clearly, the ERF is not a panacea; for example, the the incentives to respect the deficit limits set by the EU fiscal rules would not be increased . However, the Fund does not exacerbate moral hazard, either. Actually, as the remaining national debt would be low enough that the risk of panic-driven equilibriums is ruled out, market yields would reflect only fiscal fundamentals, and therefore provide better (dis)incentives at the margin for the borrower.

> *The credible commitment of all member states to pursue sound fiscal policies is a precondition for the successful implementation of an ERF*

It should be stressed again that a precondition for the successful launch of an ERF is the credible commitment of all members to pursue sustainable fiscal policies. Under this commitment, the Fund would protect euro area countries from the vagaries of financial markets and - for those engaged in fiscal consolidation efforts – it would increase the probability of success. In other words, the contribution of the proposed scheme would be twofold: more risk sharing and, at the same time, more risk reduction.

— **Marika Cioffi (Bank of Italy)**
Pietro Rizza (Bank of Italy)
Marzia Romanelli (Bank of Italy)
Pietro Tommasino (Bank of Italy)

References

Brunnermeier, M., L. Garicano, P. Lane, M. Pagano, R. Reis, T. Santos, D. Thesmar, S. Van Nieuwerburgh, and D. Vayanos (2011), "European Safe Bonds", The Euronomics Group.

Corsetti, G., L. P. Feld, P. R. Lane, L. Reichlin, H. Rey, D. Vayanos, and B. Weder de Mauro. (2015), A new start for the Eurozone: Dealing with debt, Monitoring the Eurozone 1, CEPR Press, London, UK.

German Council of Economic Experts (2011), "Assume responsibility for Europe", Annual Report 2011/12.

Minenna, M. and D. Aversa (2018), "A Revised European Stability Mechanism to Realize Risk Sharing on Public Debts at Market Conditions and Realign Economic Cycles in the Euro Area", Economic notes, forthcoming.

Parello, C. and V. Visco (2012), "The European Redemption Fund: A Comparison of Two Proposals", Politica Economica, vol. 28(3), pp. 273-306.

Pâris, P. and C. Wyplosz (2014), "PADRE: Politically Acceptable Debt Restructuring in the Eurozone", Geneva Special Report on the World Economy 3, ICMB and CEPR.

[3] This assumption is conservative as it rules out any benefit stemming from the elimination of tail risks and from the higher liquidity of the ERF bond with respect to national bonds. In the example, countries pay to the ERF a yearly amount equal

The effect of the ECB's corporate sector purchase programme on firms' funding costs

In recent years, some asset purchase programmes of central banks have been extended to comprehend securities issued by the private sector, in addition to public sector securities. Examples of such unconventional monetary policy tools include the purchases of corporate bonds by the Bank of Japan (BoJ), the European Central Bank (ECB) and the Bank of England (BoE). The aim of these programmes was to enhance the pass-through of the monetary policy measures to firms' funding costs. The literature trying to assess the effects of these programs is growing but still limited (Abidi and Miquel-Flores, 2018; Grosse-Rueschkamp et al., 2019; Zaghini, 2019).

The ECB's corporate sector purchase programme (CSPP), announced in March 2016, was characterised by a higher volume of transactions relative to the size of the European corporate bond market, compared to the programmes of the BoJ and the BoE. This feature renders it particularly suitable for assessing the effects of central bank purchases of private sector securities. Such assessment is especially needed because purchases of corporate bonds may have different effects on yields than those of government bonds. For instance, the corporate bond market is relatively illiquid, and corporate bonds are predominantly traded on over-the-counter markets rather than on exchanges. Hence, existing studies analysing central bank purchases of securities issued by the public sector may not provide much guidance about the effects of the CSPP (Krishnamurthy and Vissing-Jorgensen, 2011; Joyce and Tong, 2012; D'Amico et al., 2012).

In "*A Regression Discontinuity Design for Categorical Ordered Running Variables Applied to Central Bank Purchases of Corporate Bonds*" (Bank of Italy, Working Papers No. 1213), Fan Li, Andrea Mercatanti, Taneli Mäkinen and Andrea Silvestrini develop a new statistical approach which can be used to investigate the effects of central bank purchases of corporate bonds. Specifically, their approach allows estimating the impact of the CSPP on the spreads of bonds issued after the announcement of the programme. By exploiting the fact that only bonds whose highest rating was above a threshold were eligible for purchase, the new technique evaluates the effect of the programme by focusing on bonds with a rating around this eligibility threshold. Given that these bonds are highly comparable except for their eligibility status, any differences in their spreads can be attributable to the programme. The novelty of this approach lies in measuring the distance of each bond to the threshold in terms of its probability of being assigned a sufficiently high rating to be eligible for the programme.

Descriptive analysis suggests that the announcement of the CSPP was followed by a decrease in the average spreads at issuance (Figure 1). A particularly notable fall occurred for bonds with a rating (BBB-) just above the eligibility threshold, which suggests that the programme indeed affected bonds differently on the two sides of the cutoff.

Figure 1

Bond spreads at issuance by rating, before and during the programme
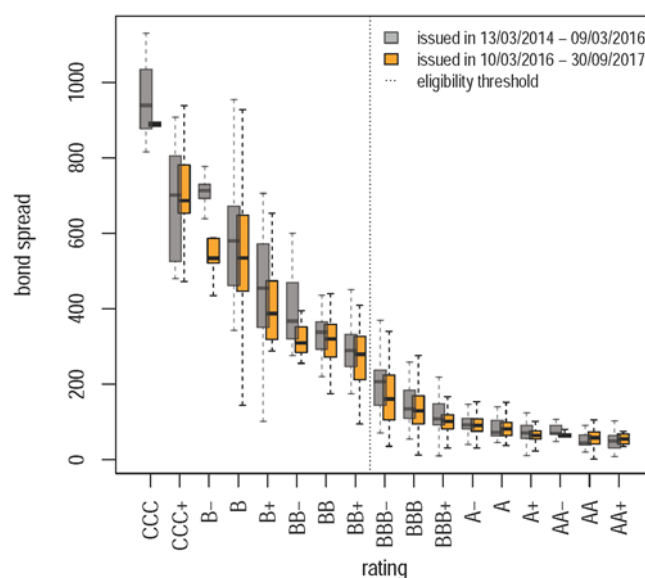
The estimates obtained using the new technique show that during the one and a half years after the announcement of the programme eligibility for the

CSPP had a negative effect, in the order of 35–50 basis points, on bond spreads at issuance.

> *Unconventional monetary policy is effective in improving the financing conditions of the private sector*

The effect of the CSPP on bond spreads at issuance is larger than the impact its announcement had in the secondary market (Abidi and Miquel-Flores, 2018). This difference could reflect the higher liquidity of those bonds which are actively traded in the secondary market. On the other hand, the effect is somewhat smaller than that found by Zaghini (2019), who considers all the bonds issued after the announcement of the programme. The difference potentially reflects the "local" nature of the new estimates, which are based on the bonds with ratings around the eligibility threshold.

Given that in the sample which is used to conduct inference the average amount of bonds issued exceeded 600 million euros and their average spread at issuance was above 200 basis points, a decline in the range of 35-50 basis points corresponds to a substantial reduction in the funding costs of the eligible issuers.

Taken together, the results suggest that central bank purchases of private sector securities can enhance the transmission of unconventional monetary policy measures to firms' funding costs.

— **Fan Li (Duke University)**
Andrea Mercatanti (Bank of Italy)
Taneli Mäkinen (Bank of Italy)
Andrea Silvestrini (Bank of Italy)

References

Abidi, N., and I. Miquel-Flores (2018). "Who benefits from the corporate QE? A regression discontinuity design approach", Working Paper Series, No 2145, European Central Bank.

D'Amico, S., English, W., López-Salido, D. and E. Nelson (2012). "The Federal Reserve's large-scale asset purchase programmes: Rationale and effects", The Economic Journal, 122 (564), pp. F415-F446.

Grosse-Rueschkamp, B., Steffen, S. and D. Streitz (2019). "A Capital Structure Channel of Monetary Policy", Journal of Financial Economics, forthcoming.

Joyce, M.A.S. and M. Tong (2012). "QE and the Gilt market: A disaggregated analysis", The Economic Journal, 122, F348-F384.

Krishnamurthy, A. and A. Vissing-Jorgensen (2011). "The effects of Quantitative Easing on interest rates: Channels and implications for policy", Brookings Papers on Economic Activity, pp. 215-287.

Zaghini, A. (2019). "The CSPP at work: Yield heterogeneity and the portfolio rebalancing channel", Journal of Corporate Finance, forthcoming.

Bank resolution and public backstop in an asymmetric banking union

At the peak of the European sovereign debt crisis, the June 2012 Euro Summit instructed the creation of a eurozone banking union based on three pillars: a centralized supervision, a common resolution mechanism backed by a mutualised backstop and, finally, a European Deposit Insurance Scheme (EDIS). The first two pillars are now almost completed, while the realization of the third has been postponed. The failure to establish an EDIS is not the only problematic aspect of the banking union: while the common resolution rules severely restrict State intervention in banking crisis and impose that losses are first absorbed by banks' shareholders and creditors, a sufficiently funded fiscal backstop ready to step in when losses are not covered with the bail-in of private stakeholders is still not operational. The main obstacle towards the completion of the eurozone banking union has been the core countries' concern that it may lead to net transfers of funds towards the periphery.

Many observers judge the progress towards the construction of the euro area banking union still insufficient. The European Commission has recently issued a communication identifying "a last resort common fiscal backstop for the single resolution mechanism" as a critical missing element to complete it. The International Monetary Fund, in turn, has also warned that the banking union currently falls short of providing sufficient risk sharing across countries.

A recent paper, '[Bank Resolution and Public Backstop in an Asymmetric Banking Union](#)' (Banca d'Italia, Working Paper No. 1212), by Anatoli Segura and Sergio Vicente, provides a theoretical framework to study alternative designs of a fiscal backstop characterized by different degrees of optimality and reflecting the heterogeneity of countries participating to the banking union.

Realistically, the model assumes that raising public funds to conduct the bail-out of a failing bank entails a deadweight loss stemming from the associated increase in distortionary taxes. While a bail-in resolution, which imposes losses on debtholders, generates a costly disruption in the economy where the bank resides whose magnitude is assumed to be better assessed by the domestic authority. The optimal resolution policy is derived trading off these costs and taking into account that, when a country undergoes a sovereign crisis, the cost of rising public funds domestically to bail-out a failing bank is exceptionally high and thus the recourse to foreign countries' funds reduces the overall bail-out costs, making risk-sharing a better solution.

The paper first characterizes the risk-sharing agreement that would maximize the well being of the union at large, and then analyzes whether such optimal agreement is feasible or not.

The optimal agreement prescribes a co-funding of bail-outs, by which countries with a stable fiscal position contribute to partially fund a bail-out by a country undergoing a fiscal crisis. Financial aid from fiscally stable countries reduces the cost of bail-outs by limiting the contribution of a fiscally troubled country facing an unusually high cost of funds. The agreement includes a positive contribution by the home sovereign to prevent this country from overstating the need for a bail-out. The optimal bail-out funding mix between the home sovereign and the common fiscal backstop strikes a balance between reducing the frequency of bail-outs and limiting their public funding cost when they are conducted.

This risk-sharing arrangement minimizes the total resolution cost but induces a positive expected net transfer from stronger countries, since they are less likely to experience a sovereign crisis. As a result, the optimal agreement is feasible only when countries' fiscal strength is not too dissimilar.

When countries differ substantially in their fiscal strength, ensuring the voluntary participation of the stronger countries requires adjusting this optimal framework to reduce their net contribution to the common fiscal backstop by cutting the contribution of fiscally stronger countries to bail-out banks abroad, and by making other countries provide financial aid to bail-out domestic banks in fiscally strong countries even when there is no overall gain from sharing the burden.

Table 1

Funding options to bail out a bank in a country undergoing a crisis and their effect on frequency and total funding cost of bail-outs

Bail-out funding	Bail-out frequency	Total funding cost of bail-outs
Only home sovereign	Low	High
Only common backstop	High	Low
Optimal funding mix	Medium	Medium

The optimal feasible banking union thus allows fiscally stronger countries to obtain aid from the common fiscal backstop even when those countries "do not need" aid, while aid from the common backstop to weaker countries is only granted when "they really need" it, and in a lower amount than in a banking union with more similar countries. This result is reminiscent of Tirole (2015), who finds that the optimal feasible mutual insurance pact among countries that may experience a sovereign debt crisis depends on their degree of asymmetry in fiscal strength.

> *Ensuring the participation in the banking union of countries with initially stronger fiscal positions requires granting them laxer conditions to access the common fiscal backstop*

An interesting property of the optimal feasible risk-sharing agreement is that it leads to a net expected transfer from the fiscally weaker sovereigns towards the fiscally stronger ones when the degree of asymmetry in their fiscal positions is substantial. In this case, while the stronger countries benefit from an expected positive net transfer inflow, the weak countries obtain the strong countries' aid when it is most valuable, that is, when they concurrently experience a sovereign crisis and a bank failure.

When the resolution authorities can intervene on banks ahead of the potential deterioration of their assets, the optimal early intervention policy is asymmetric: it prescribes forbearance with the stronger country's banks, allowing their continuation under contingencies in which it would be efficient to shut them down; while it is tight with banks in weaker countries, forcing their liquidation under contingencies in which it would be better to let them continue. The rationale for this asymmetric early intervention policy is that it reduces the stronger countries' expected net transfers in the resolution phase encouraging their voluntary participation in the banking union.

Finally, the authors consider the case of banks whose debt is held in more than one country. They find that cross-country stakes partially realign home and foreign countries' objectives, enhancing the welfare gains from a banking union.

— **Anatoli Segura Velez (Bank of Italy)**
Sergio Vicente (Queen Mary University London)

References

Tirole, J., 2015. Country solidarity in sovereign crises. American Economic Review, 105(8), 2333--63.

THIS ISSUE WAS PREPARED BY: