

# RESEARCH *Highlights*

## 1/2018

BANCA D'ITALIA  
EUROSISTEMA



### Contact Us:

☎ (+39) 06-47921



[temidiscussione@bancaditalia.it](mailto:temidiscussione@bancaditalia.it)

Website:

[www.bancaditalia.it](http://www.bancaditalia.it)

Via Nazionale, 91

00184, ROMA

## IN THIS ISSUE

### Population aging is keeping interest rates low

Several explanations have been put forward for the decline of interest rates to historically low levels. Some authors emphasize real, structural factors, others cyclical and financial phenomena; however, the empirical evidence regarding their importance is scarce. A recent research proves that adverse demographic developments can explain a large share of the fall in interest rates in the euro area.

### Did weak banks exacerbate the Great Recession?

Do banks with low capital extend excessive credit to weak firms, and does this matter for aggregate efficiency? Using a dataset that covers bank-firm relationships in Italy in the period 2004- 2013 a recent research finds that indeed under-capitalized banks were less likely to cut credit to non-viable firms and this increased the failure rate of healthy firms, while reducing that of non-viable firms. Yet, overall aggregate effects were negligible, as were the effects on TFP dispersion.

### Structural reforms may entail transitory losses

Product and labor market reforms can imply non-negligible, albeit temporary, employment costs according to recent evidence for OECD countries. Such costs can be attenuated by an appropriate timing and sequencing of the policies, and vary with country specific institutions.

**The RH is not reviewed by the Board of Directors of the Bank of Italy and views expressed are those of the authors and writers of the summary and do not involve the responsibility of the Bank. The RH is not copyrighted and may be reproduced freely with appropriate attribution of source.**

# Population aging is keeping interest rates low

Nominal and real interest rates have been decreasing since the mid-1980s and have reached historically low levels in the aftermath of the global financial crisis. Economists are debating the most likely causes of this long lasting trend. Since the trend is common across many countries, albeit with some variations, global factors figure prominently among candidate explanations.

Two accounts for the persistent decline of interest rates have been put forward in the literature: one sees the main factors in financial deregulation and increasing demand for safe assets (Borio, 2014; Lo and Rogoff, 2015), the other in structural economic changes that have led to a persistent imbalance between demand for investment and supply of savings (Summers, 2014; Eggertsson and Mehrotra, 2014). Understanding why interest rates have fallen so low is not just an interesting academic puzzle, it is essential for the conduct of monetary policy and the assessment of financial stability risks. Furthermore, establishing the causes of this fall is also key in determining what to expect in the future concerning the level of the equilibrium interest rate.

In [On secular stagnation and low interest rates: demography matters](#) (Banca d'Italia, Working Paper No. 1137), Giuseppe Ferrero, Marco Gross and Stefano Neri address both of these questions. Taking stock of the literature that links the decline in real interest rates to structural factors, they empirically assess the role of demography in Europe. They conclude that the increase in dependency ratios, a result of population ageing and falling fertility, explains a sizeable part of the decline in nominal

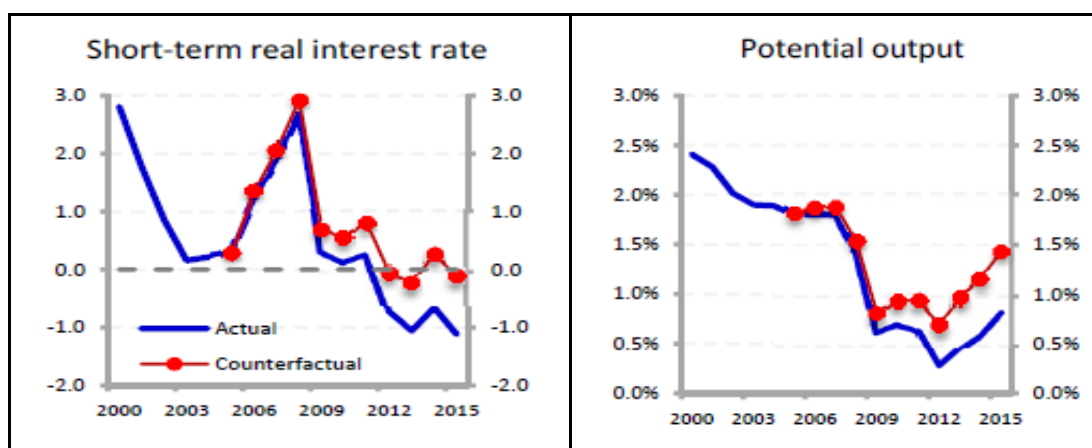
and real interest rates since the global financial crisis. Furthermore, the demographic projection for the next future imply that short and long-term real interest rates would remain below the pre-crisis levels.

*Population aging, measured by the dependency ratio, has significantly compressed the short-term real interest rate in the euro area*

The empirical analysis is based on a dynamic panel vector autoregressive model with 11 endogenous and 2 exogenous variables (dependency ratio and population growth), for the 19 euro-area countries and spanning the period from 1990 to 2015. The data, whose frequency is annual, are taken from the AMECO database of the EC. Estimates (obtained using the corrected least square dummy estimator first proposed by Kiviet, 1995) reveal that real GDP, potential output, inflation, investment and consumption growth depend negatively on changes in the dependency ratio. These also leads to a negative relationship between dependency ratio and short- and long-term real interest rates.

Based on these results the authors proposed two counterfactual simulations to assess the importance of demography in the most recent fall on interest rates and to evaluate the weight that future population dynamic will likely exert on short- and long-term rates.

**Figure 1 - Counterfactual projections – 2006-2015: euro area**  
(percentage point)

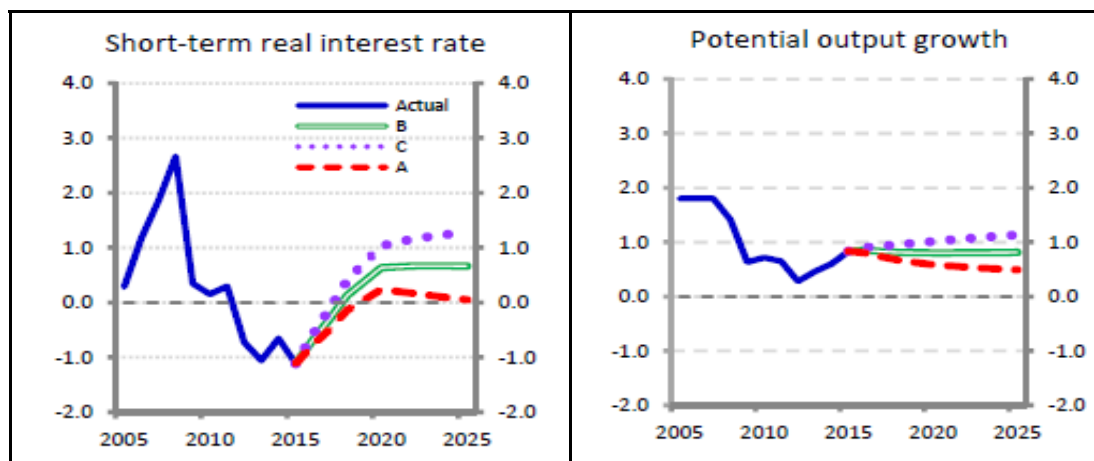


The historical counterfactual assessment is conducted by setting to zero all increases occurred to dependency ratios between 2006 and 2015 and then comparing the path of interested rates simulated under this assumption with the historical one. The increase in the dependency ratio observed between 2006 and 2015 has significantly compressed the short-term real interest rate by 0.5

percentage points and potential growth by 0.3 points, while differences in the paths of the real long-term rates are negligible (Fig. 1).

The forward-looking counterfactual assessment is conducted under three alternative hypothesis concerning the dependency ratio: under scenario A, ratios are aligned

**Figure 2 - Forward-looking scenarios (2016-25) : euro area**  
 (percentage point)



for all the countries with the EC projections, under scenario C ratios remain constant at their 2015 levels; under scenario B ratios are assumed to stay halfway between the first two hypothesis. Results imply that the projected evolution of the dependency rate will keep potential growth around post-crisis levels and the equilibrium real rate close to zero also over the next decade (Fig. 2).

Hence, according to these results, adverse demographic developments in the euro area may continue exerting downward pressures on short- and long-term nominal and real interest rates, potentially limiting the ability of

monetary policy to fully adjust its stance. In terms of policy conclusions this analysis suggests that fiscal policies that encourage later retirement and promote innovation and investment in R&D might reduce the negative influence of structural factors on the pace at which real interest rates increase from current historically low levels. Such policies are also necessary to limit the negative impact of ageing on long-term growth prospects.

— **Riccardo Cristadoro**

## References

- Borio, C. (2014). "The financial cycle and macroeconomics: what have we learnt?", *Journal of Banking and Finance*, Vol. 45, pp. 182-198.
- Eggertsson, G. B. and N. Mehrotra (2014). "A model of secular stagnation", in *Secular Stagnation: Facts, Causes, and Cures*, C. Teulings and R. Baldwin, (eds.), Centre for Economic Policy Research.
- Lo, S. and Rogoff, K. (2015). "Secular stagnation, debt overhang and other rationales for sluggish growth, six years or", Bank for International Settlements, Working Papers, No 482.
- Summers, L. H. (2014). "US economic prospects: secular stagnation, hysteresis, and the zero lower bound", *Business Economics*, Vol. 49, No 2.

# Did weak banks exacerbate the Great Recession?

One old question in macroeconomics concerns the role of the financial sector in transmitting, amplifying or, why not, absorbing macroeconomic shocks and in general disturbances to economic activity.

The recent financial crisis has forcefully revamped interest in this question. How the incentives and mechanisms governing the allocation of credit to firms can affect aggregate productivity? What are the main channels through which bank characteristics can have sizeable and prolonged real effects? With reference to the European crisis, it is often argued in the financial press that banks weakness and an inefficient allocation of credit may have prolonged the stagnation and delayed the recover. Conversely, a large literature has discussed the relevance of credit frictions as a driver of the misallocation of factors of production and studied the impact of such misallocation on GDP and TFP growth, especially after financial crises.

In [Credit misallocation during the European financial crisis](#) (Banca d'Italia, Working Paper No. 1139), Fabiano Schivardi (LUISS University), Enrico Sette and Guido Tabellini (Bocconi University) contribute to this debate by studying a particular type of financial friction – called “zombie lending” – that might be responsible for the slow recovery that followed both the great recession of 2007-2009 and the Eurozone sovereign debt crisis of 2011-2013. Zombie lending refer to the fact that, especially during a recession or in the aftermath of a financial crisis, banks that are under-capitalized may be particularly averse to absorb losses and may therefore be relatively more willing to keep lending to weak firms that otherwise would not be able to service their debt (Caballero et al. 2008, Acharya et al. 2016).

Using a unique dataset that covers almost all bank-firm relationships in Italy in the period 2004-2013, the authors investigate to what extent banks with low capital extended excessive credit to weak firms during and after the two consecutive crises, and whether this credit misallocation had important real effects on aggregate outcomes. To preview their results, they find that: (i) undercapitalized banks were less likely to cut credit to non-viable firms; (ii) the resulting credit misallocation increased the failure rate of healthy firms and reduced the failure rate of non-viable firms; and (iii) nevertheless, the adverse effects of credit misallocation on the growth rate of healthier firms were negligible, as were the effects on TFP dispersion. This goes

against previous influential findings that instead found sizeable aggregate real effects of credit misallocation.

In a first step of the analysis the authors try to establish a link between capital adequacy and zombie lending, i.e. to test the hypothesis that banks with low capital ratios are more likely to extend credit (or slower to cut credit) to zombie firms in the crisis period. Their regression exercise points to both statistically and economically significant results, as they imply 2 percentage points of additional yearly credit growth going to zombie firms if bank capital is below the median, corresponding to a 25% increase relative to the average yearly contraction of bank credit of -

---

*Weakly capitalized banks are less likely to cut credit to non-viable firms. Yet, overall banks' capitalization does not affect the “absolute” performance of healthy firms*

---

8% during the crisis.

Having established the existence of zombie lending, the authors proceed to ask if and to what extent this phenomenon affected real economic activity. They focus on three main dimensions: (1) zombie lending may impact on the growth prospects of existing firms (hurting healthy competitors); (2) it may affect the composition of bankruptcies (after all, the term “zombie” is meant to indicate a non viable firm that survives only thanks to bank lending); or, finally, (3) it may have implications on the dispersion of productivity across firms.

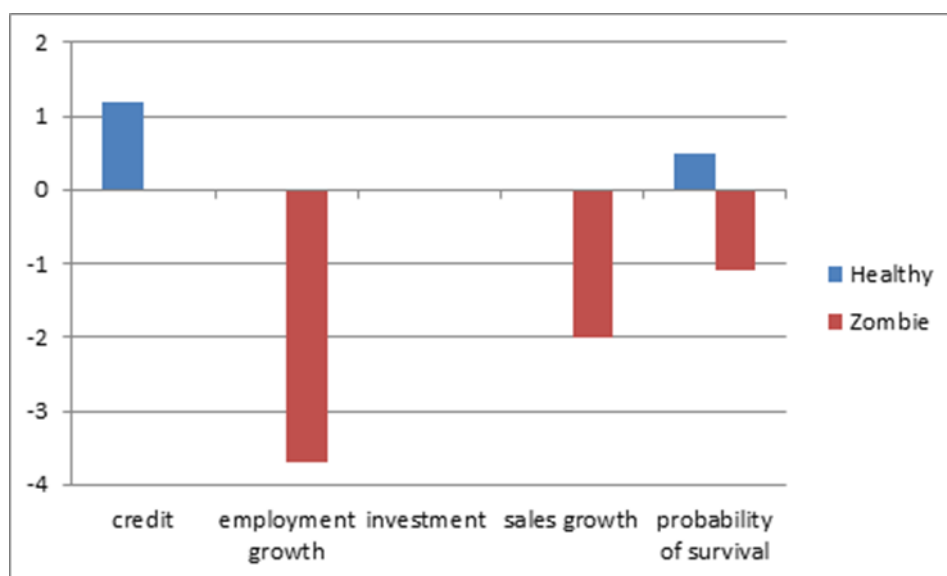
On the first dimension (performance of healthy vs zombie firms) they find that, overall, banks' capitalization does not affect the “absolute” performance of healthy firms. This is a controversial findings, since previous literature tends to find a sizeable effect of zombie lending on the performance of non zombie firms. The difference stems from a better identification strategy with respect to previous literature. The authors note that previous findings may suffer from two main weaknesses. First, the previous literature only identifies the impact of zombie lending on healthy firms relative to zombie firms. It is therefore not very informative of what happens to healthy firms in absolute terms. Second, the identification approach it uses does not account for the fact that aggregate (industry) shocks may

have differential impacts on healthy and unhealthy firms. For example, when performance follows a normal distribution, aggregate shocks that shift the entire distribution to the left mechanically generate a negative correlation between the share of zombies and the relative performance of healthy firms, even in the absence of spillover effects between zombie and healthy firms possibly arising from zombie lending. As a consequence, using a different identification approach, the authors find that healthy firms grow less strongly relative to zombie

firms, but this is entirely driven by an improvement in the performance of zombie firms: while the relative effect is negative, the total effect of zombie firms on healthy firms is zero.

On the second and third dimensions, the authors find more conventional results. With reference to the extensive margin, zombie lending leads to an excessive survival of zombie firms and an excessive exit of healthy firms. With reference to TFP dispersion, again the authors find no

**Figure 1. Real effects of banks' recapitalization during the crisis**  
(percentage point)



evidence that banks' capital had any impact on misallocation during the crisis.

In a final section of the paper the authors perform an interesting thought experiment to reckon what would be the aggregate effects on economic activity of recapitalizing the banking system. In a counterfactual scenario, they envisage a public intervention that injects enough capital in weaker banks so that all banks with a capital ratio below the median reach the median itself.

Figure 1 shows that such a capital injection (approximately 4 billion euro) would have yielded only negligible aggregate effects: in zombie firms employment shrink by 4%, while sales go down 2%; on the other hand, healthy firms witness only a small increase in their survival probability. Overall, investment is unaffected for both types of firms and, as a result, aggregate activity rise only between 0.2% and 0.35% during the crisis years.

## References

- Acharya, V. V., T. Eisert, C. Eufinger and C. W. Hirsch (2016) "*Whatever it takes: The real effects of unconventional monetary policy*", mimeo. Available at SSRN 2740338.
- Caballero, R. J., T. Hoshi and A. K. Kashyap (2008) "*Zombie Lending and Depressed Restructuring in Japan*", American Economic Review, Vol. 98, pp. 1943-77.



# Structural reforms may entail transitory losses

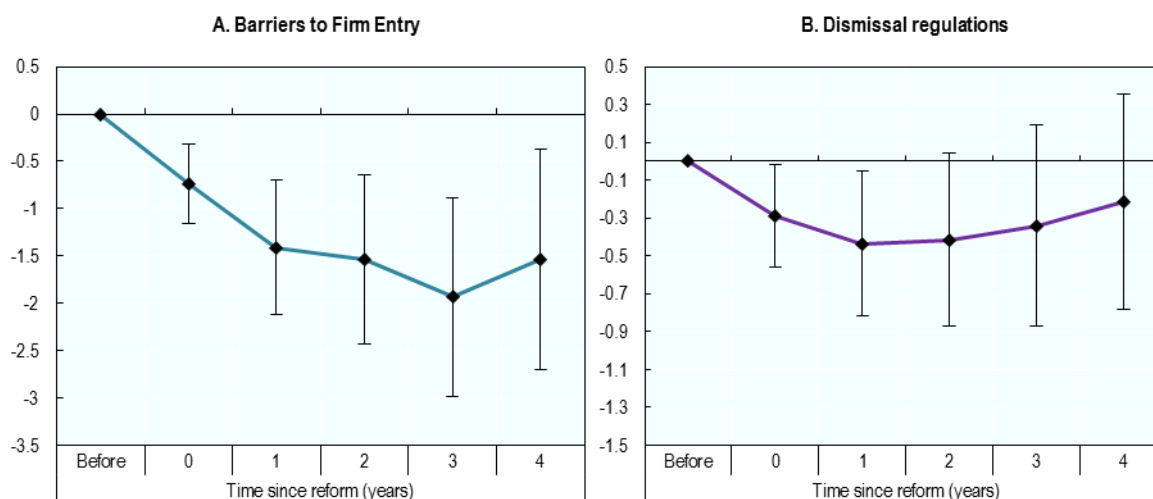
Structural reforms feature prominently in the political agenda of many countries to promote and sustain economic growth. And yet, the pace of reforms slowed down during the recent recession and subsequent sluggish recovery both in developed and emerging economies. (OECD 2016; IMF 2016a). These trends have partly been traced to increasing concerns that, despite their perceived long-term benefits, structural reforms may entail costly transitory adjustments whose burden becomes especially worrying in periods of persistent economic and employment slack. But are such concerns grounded?

In theory, product or labor market reforms may induce temporary losses in output or employment in presence of market frictions (Gerali et al. 2015; Cacciatore and Fiori, 2016). In practice, however, little is known as to the empirical relevance of such losses, or, perhaps more importantly, as to whether appropriately designed policies could help attenuating them (see Boeri et al, 2015; IMF 2016b). In [Is it going to get worse before it gets better? The short term employment consequences](#)

[of product and labor market reforms](#) (ILR Review, March 2018), Andrea Bassanini (OECD) and Federico Cingano attempt to make progress in answering these questions. Their focus is on the employment responses to reforms removing barriers to entry in product markets (PMR reforms) and lowering the cost of dismissals (EPL reforms).

Drawing on more than 30 years of cross-country industry data, the paper shows that both PMR and EPL reforms entail non-negligible – though transitory – employment losses on average. Panel A of Figure 1 shows that, for example, a reduction of barriers to entry in network industries induces employment to fall below its pre-reform level during the first three years (with a minimum loss of nearly 2% in the 3rd year). Similarly, Panel B shows that one year after the “average” reform of dismissal legislation (i.e. one lowering the OECD indicator of EPL as in the average of all the reform episodes in the data) employment in dismissal intensive industries is around 0.5% below its pre-reform level (relative to other industries).

**Figure 1 - Structural reforms and short-run employment changes**  
(Estimated cumulative change employment following the reform, in percentage)



Note: The chart reports point estimates and 90%-confidence intervals of the cumulated employment effect of structural reforms. Panel A reports the employment response to a reform of product market regulation (PMR). It is estimated on data on network industries (Energy, Transport and Communication) across OECD countries and corresponds to a reform lowering the regulation index (the OECD-ETCR index) by one point. For reference, such a reduction occurs over a 2-year period for 1/3 of the reform episodes in the data. Panel B reports the differential employment response to an “average” reform of employment protection legislation (EPL) for regular contracts (one reducing the OECD indicator by 0.2 points) between 2 industries whose dismissal rates differ by 1 percentage point. Employment levels before the reform are normalised to 0.

In both cases these negative short-term consequences can be contained, according to the analysis. For one thing, employment losses turn out to be smaller, if not negligible, for product and labour market reforms implemented during economic upswings. Indeed, when aggregate output is growing above its potential, as usually

*The employment costs of structural reforms vary with the underlying economic conditions and institutional features*

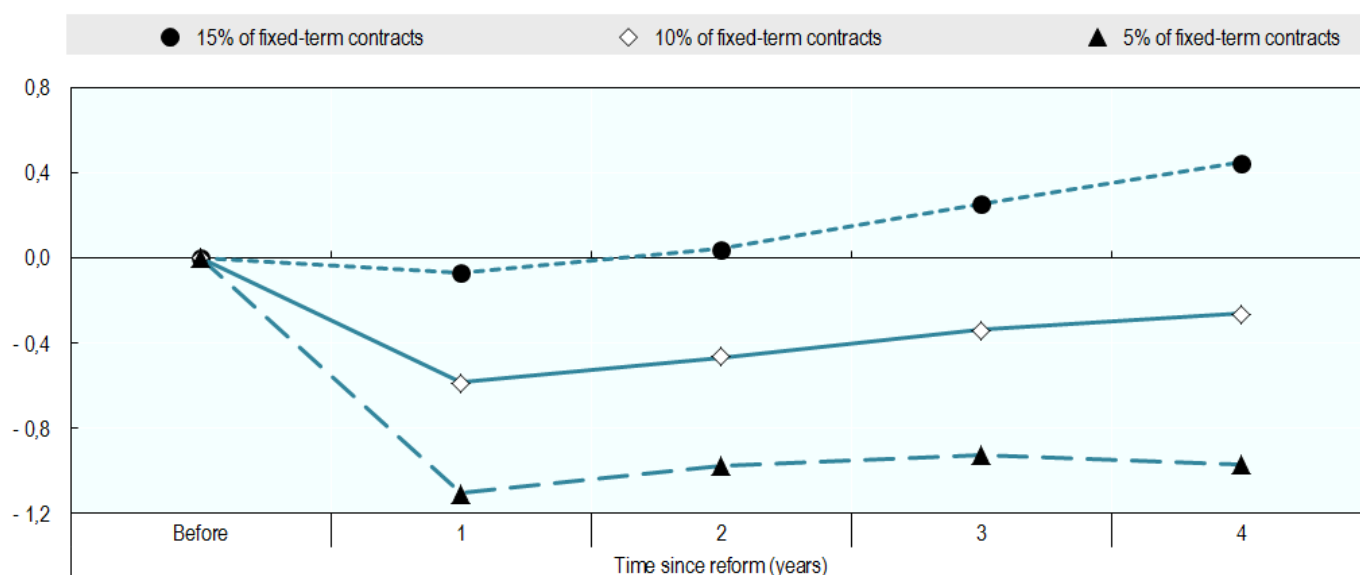
occurs in the years following a recession period, hiring is scaled up while there are no or few inefficient jobs to be destroyed.

These qualifications are confirmed in the paper evaluations of the recent EPL reforms in Estonia (2009), Spain (2012) and Slovenia (2013), which were implemented at different stages of the business cycle in countries with significantly different degree of labor market segmentation.

Finally, the paper has implications for the sequencing of product and labor market reforms. It finds that while the costs of lowering entry barriers are higher when employment legislation is light, those of dismissals legislation benefits from light product market regulation. This suggests that a highly regulated country interested in reforming both domains could minimize the short-term costs of its policy package by deregulating product markets before the labor market (as in Blanchard and Giavazzi, 2003).

— Federico Cingano

**Figure 2 - Incidence of fixed term contracts, flexibility enhancing EPL reforms and employment**  
(Estimated cumulative change of industry employment, in percentage)



Notes: For 3 different levels of the share of fixed-term contracts, the charts report point the differential employment response between 2 industries whose dismissal rates differ by 1 percentage point to an "average" reform of employment protection legislation (EPL) for regular contracts (one reducing the OECD indicator by 0.2 points). Employment levels before the reform are normalised to 0.

## References

- Boeri, T., P. Cahuc and A. Zylberberg (2015) "The Costs of Flexibility-Enhancing Structural Reforms: A Literature Review", OECD Economics Department WP, No. 1227
- Cacciatore M. and G. Fiori (2016) "The Macroeconomic Effects of Goods and Labor Markets Deregulation", Review of Economic Dynamics, Vol. 20, pp. 1-24, April.
- Gerali, A., A. Notarpietro and M. Pisani (2015) "Structural Reforms, Investment and Zero Lower Bound in a Monetary Union" Manchester School, Vol. 83, pp. 120-139
- IMF (2016) A Guiding Framework for Structural Reforms - Staff Note For The G20
- OECD (2014), Chapter 4 of the OECD Employment Outlook, OECD Publishing, Paris
- OECD (2016) Economic Policy Reforms 2016. Going for Growth Interim Report, OECD Publishing, Paris

**The Bank of Italy Research Highlights(RH) is issued for informational purposes and presents a short summary of selected working papers recently produced by the Bank's Department of Economics and Statistics. The RH is intended to make preliminary research results available to economists as well as a wider audience than the usual readers of Working Papers in the hope of encouraging discussion and stimulating a debate. To this end the summaries highlight the main results and policy conclusions of the researches, while keeping technical details to a minimum.**

**The RH is not reviewed by the Board of Directors of the Bank of Italy and views expressed are those of the authors and writers of the summary and do not involve the responsibility of the Bank.**

**The RH is not copyrighted and may be reproduced freely with appropriate attribution of source.**

## THIS ISSUE WAS PREPARED BY:

**Editorial Board:** Piergiorgio Alessandri, Federico Cingano, Riccardo Cristadoro, Andrea Gerali, Marco Magnani (coordinator), Roberto Sabbatini, Massimiliano Stacchini.

**Editorial assistants:** Roberto Marano and Paola Paiano.

**For general info:** [temidiscussione@bancaditalia.it](mailto:temidiscussione@bancaditalia.it)