

## SYNERGIES BETWEEN MONETARY POLICY AND NATIONAL POLICIES IN A MONETARY UNION

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*This article analyses, in the context of a monetary union, the existence of positive synergies between a monetary policy geared towards keeping interest rates low for a relatively prolonged period and demand and supply-side stimulus measures implemented by national authorities.<sup>1</sup> For this purpose, various exercises are carried out using a macroeconomic model that reproduces a context of persistently low inflation in a monetary union, with nominal interest rates constrained by an effective lower bound, like the one that currently characterises the euro area. The analysis conducted suggests that national stimulation policies (such as fiscal expansions in those members of the union with scope for them and structural reforms in those with less efficient markets) have greater expansionary effects on economic activity and inflation in the short and medium term when, in parallel, the common central bank applies an expansionary monetary policy to keep interest rates low for an extended period.*

### Introduction

The global financial crisis that began in 2008 led to a severe and prolonged contraction in the activity of the main developed economies, accompanied by a notable decline in inflation rates that has continued up to the present. That said, developments across countries and regions have been uneven, so that, while GDP growth and inflation have recovered notably in the United States, in the euro area growth remains weak and inflation is still below the medium-term price stability benchmark (i.e. below, but close to, 2%).

Against this background, the euro area monetary authorities, and some of the main international economic institutions, have stressed the need for euro area national governments to take measures to supplement the efforts made in the area of monetary policy.<sup>2</sup> These measures include, on one hand, the need for countries to introduce structural reforms to improve the efficiency of their product and factor markets and to promote higher potential growth and, on the other hand, the possibility that fiscal policy should assist monetary policy in those countries where there is scope for it to do so.

An important issue in this context is the possibility that each of these economic policy measures may reinforce the expansionary effects of the others, i.e. there may exist positive synergies between monetary policy and national supply and demand policies. The presence of such synergies between different economic policy tools would be a further reason in favour of their joint implementation.

This article analyses the existence of such synergies in a context intended to approximate the economic situation currently facing the euro area, i.e. a monetary union characterised

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1 This article is a summary of the following paper: Ó. Arce, S. Hurtado and C. Thomas (2016), "Policy Spillovers and Synergies in a Monetary Union", *International Journal of Central Banking*, 12 (3), pp. 219-277. Also available as *Documento de Trabajo, No 1540*, Banco de España.

2 See, for example, Banco de España (2015), "Inflationary dynamics of the Spanish economy in the context of the euro area", *Annual Report, 2014*, Chapter 4, pp. 63-84; L. M. Linde (2015), speech at the *XXXI Conferencia del Círculo de Economía*, Sitges, 30 May 2015; M. Draghi (2015), "Structural reforms, inflation and monetary policy", introductory speech at the *ECB Forum on Central Banking*, Sintra, 22 May 2015, and C. Lagarde (2016), "The Case for a Global Policy Upgrade", *Farewell Symposium for Christian Noyer*, Banque de France, Paris, 12 January 2016.

by persistently low levels of inflation, weak growth, low interest rates (with limited scope for further reductions given the effective lower bound) and, in some countries, the need for households and firms to deleverage. For this purpose, various quantitative exercises are presented, to highlight the mechanisms which, in a context like the one described, may give rise to positive synergies between monetary policy, fiscal policy and structural reforms. The second section of the article describes the basic aspects of the model used and the third section examines in detail the effects of the joint application of various policies by the different economic authorities of the monetary union and their transmission channels.

## A macro-financial model of monetary union

The macroeconomic model used approximates the euro area by considering two different regions: the periphery and the core. Markets in both regions are characterised by a number of frictions. In financial markets, households and firms borrow long term, their capacity to borrow being constrained by the market value of the assets that serve as collateral in lending transactions.<sup>3</sup> Also, product markets and the labour market suffer from certain imperfections that limit the degree of competition and efficiency.<sup>4</sup> These two regions have different initial levels of private debt, that in the periphery being higher, and the latter suffers a more acute and lasting tightening of its financial conditions. This model can therefore be interpreted as a stylised representation of the functioning of monetary union characterised by asymmetry in the behaviour of certain markets and in the starting conditions of the member countries.

A baseline scenario, constructed on the basis of the model, is presented below, which is then used to simulate the impact of various economic policy measures. This starting scenario is designed to replicate some of the main elements that characterise the current macro-financial situation in the euro area, such as i) the liquidity trap which arises because the ECB's nominal reference interest rates are at (or very close to) their effective lower bound; ii) expectations of low inflation for a prolonged period; and iii) private sector deleveraging in certain member countries.

In order to reproduce these current circumstances of the euro area, first, a negative shock common to the entire monetary union is introduced into the model, which reduces consumer demand. The negative impact of this shock on actual inflation at the overall monetary union level leads the central bank to reduce nominal interest rates to their effective lower bound, resulting in a liquidity trap. Second, the credit conditions in the periphery are considered to suffer a negative shock that solely affects this region, inspired by the financial origin of the recent global crisis, which leads households and firms to face a prolonged phase of gradual deleveraging.<sup>5</sup>

It is important to stress that the duration of the liquidity trap and of the private sector deleveraging phase are endogenous, in the sense that the former continues until the inflation of the monetary union recovers sufficiently, following the negative shocks described, for the central bank to raise interest rates, and the latter continues until the balance sheet position of households and firms improves sufficiently to allow the flow of new credit to resume. Economic policies may affect the duration of these two processes, for example, shortening the private deleveraging phase.

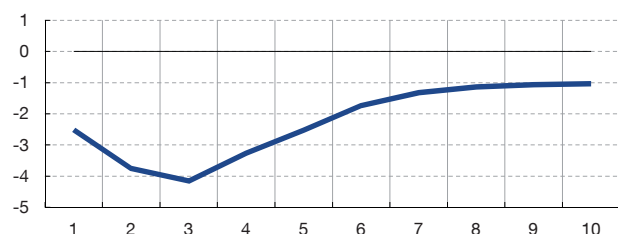
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<sup>3</sup> Specifically, real estate assets, both residential and commercial, are used as collateral for loans.

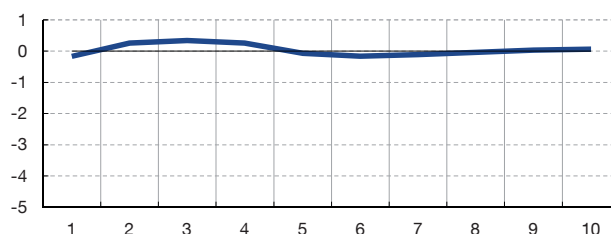
<sup>4</sup> The product market is subject to competitive distortions, so that firms apply a mark-up over their marginal cost, while prices are partially rigid. In the case of the labour market, similar distortions are considered, specifically the nominal wages paid enjoy a positive mark-up over the reservation wages, and they are reviewed only occasionally.

<sup>5</sup> In particular, a gradual and permanent reduction in the maximum loan-to-value ratios for loans to households and firms is simulated.

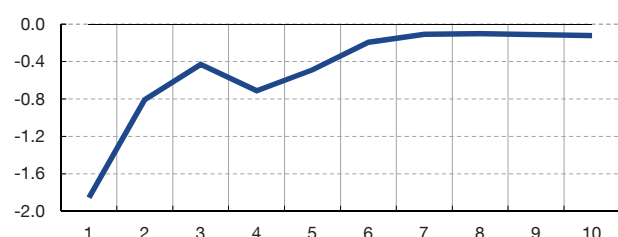
1 GDP IN THE PERIPHERY



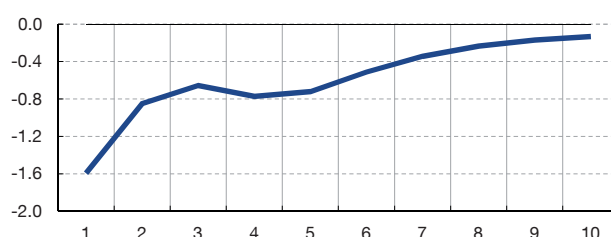
2 GDP IN THE CORE



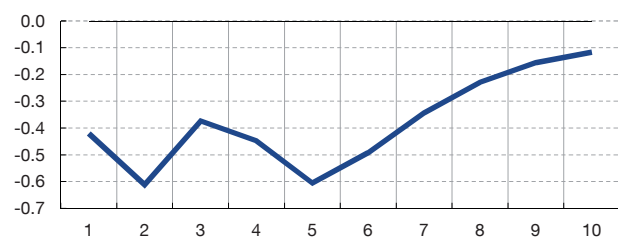
3 INFLATION IN THE PERIPHERY



4 INFLATION IN THE CORE



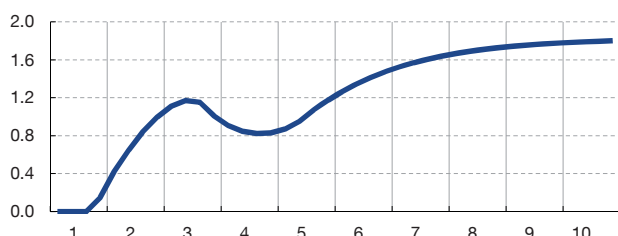
5 REAL INTEREST RATE IN THE PERIPHERY



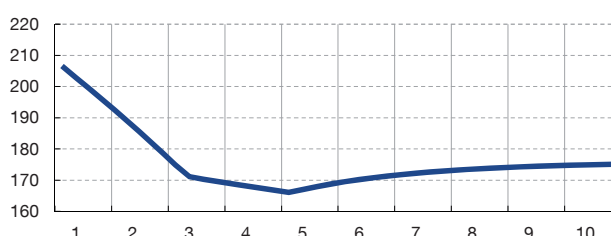
6 REAL INTEREST RATE IN THE CORE



7 NOMINAL INTEREST RATE IN THE MONETARY UNION



8 TOTAL DEBT/GDP RATIO IN THE PERIPHERY



— BASELINE SCENARIO: DELEVERAGING IN THE PERIPHERY AND INTEREST RATE ZERO LOWER BOUND IN THE MONETARY UNION

SOURCE: Banco de España.

a Deviations from the initial steady state, except for the nominal interest rate and the debt/GDP ratio which are in levels. Horizontal axis in years.

Although the model incorporates a broad range of realistic elements, its calibration is not designed to reproduce quantitative variable responses that can be interpreted from an empirical perspective. Accordingly, the magnitudes in the exercises presented below are only illustrative of the qualitative behaviour of the channels and of the most relevant variables of the model.

Chart 1 shows the response of the main variables of both regions in the scenario described. The negative shocks mentioned above lead to a very sharp contraction in GDP in the periphery, where the contraction of private credit exerts a considerable negative impact on the spending of households and firms, while the impact on the rest of the area is modest,

due, among other factors, to the sharp reduction in nominal and real interest rates. The latter, however, is not sufficient to avoid a persistent decline in inflation rates in both regions which increases the real value of the payments associated with nominal debt, through the “debt deflation” channel (known as the “Fisher effect”), which hinders the deleveraging process in the periphery.<sup>6</sup> The decline in inflation in the monetary union as a whole leads the central bank to reduce the nominal interest rate until it reaches its lower bound (which, for simplicity, is assumed to be 0%) during the first year.

After approximately a year, inflation in the monetary union as a whole improves sufficiently for the nominal interest rate to leave its lower bound. In the periphery, after several years of deleveraging, firms and households recover their access to new lending, with the consequent rise in the volume of lending and economic activity.<sup>7</sup>

## The role of economic policies

The possibility of a scenario that includes the above-mentioned adverse factors (demand weakness, aggravated in the periphery by deleveraging, and very low inflation for a prolonged period, with nominal interest rates at their lower bound) poses significant challenges for the application of the various economic policies at euro area level. Among the measures proposed in this context to reduce the negative impact of these adverse factors, three have particularly attracted the attention of the authorities: structural reforms in product and factor markets, countercyclical fiscal policies and non-standard monetary policy measures. The macroeconomic model described above allows the approximate incorporation of various measures in these three categories, and their impact in relation to the baseline scenario described in the previous section to be assessed. The following exercises show the effect of these measures and the possible interactions between them.

## THE AGGREGATE EFFECTS OF NATIONAL POLICIES

With respect to structural reforms, various measures applied in the periphery to increase the degree of competition in product markets and to reduce labour market inefficiencies are considered below.<sup>8</sup> As an example of countercyclical fiscal policy, a temporary expansion of public spending in the core of the monetary union is considered.<sup>9</sup>

Chart 2 shows the effects (with respect to the baseline scenario) of the two national level policies: structural reforms in the periphery (green lines) and fiscal expansion in the core (red lines). This latter measure has a temporary expansionary effect in the region in which it is applied, and also – albeit a smaller one – in the neighbouring region. The reason is that, with nominal interest rates at their lower bound during several periods, the inflationary impact of this measure tends to reduce real interest rates in both sets of countries, producing a positive spillover in the periphery. In this respect, in contrast to what would happen if monetary policy were not constrained by the nominal interest rate lower bound, the fact that the monetary authority does not raise its interest rates in response to the inflationary impact of this fiscal measure means that it has a considerably more expansionary effect on the activity and prices of the area as a whole.<sup>10</sup>

6 For a detailed analysis of this mechanism, in the context of a similar model, see J. Andrés, Ó. Arce and C. Thomas (2014), Structural Reforms in a Debt Overhang, *Documentos de Trabajo*, No 1421, Banco de España.

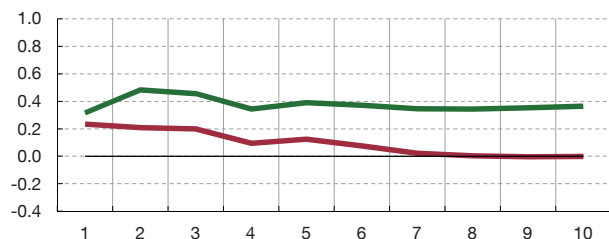
7 The deleveraging phase is somewhat longer for households because, as seen in practice, the average maturity of their debt is longer.

8 As mentioned, the model incorporates monopolistic distortions in product markets and in the labour market, so that prices incorporate a mark-up over the marginal cost of production (price mark-up) and nominal wages incorporate a mark-up over the reservation wage (wage mark-up). Thus, the structural reforms in the periphery consist of permanent reductions in price and wage mark-ups, specifically of 1% in each case.

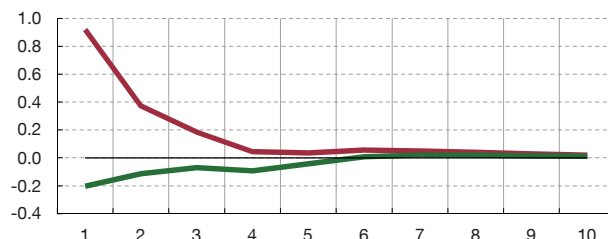
9 In particular, it is assumed that the expansion of public spending is 1% of core GDP.

10 For a detailed analysis of the spillover of fiscal policy across the countries/regions of monetary area, see also O. Blanchard, C. J. Erceg and J. Lindé (2016), “Jump-Starting the Euro Area Recovery: Would a Rise in Core Fiscal Spending Help the Periphery?”, *NBER Macroeconomics Annual 2016*, vol. 31.

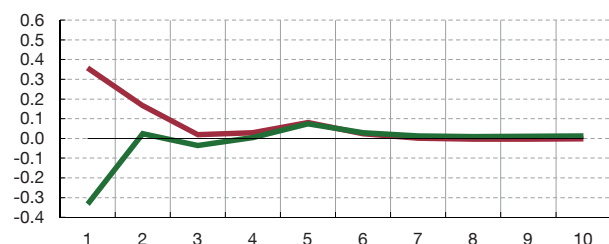
1 GDP IN THE PERIPHERY



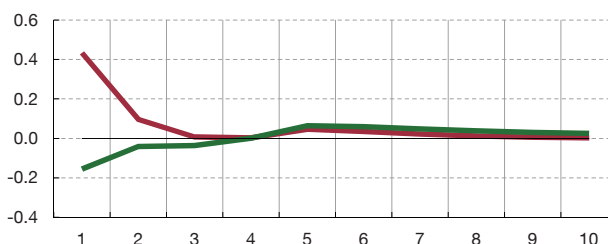
2 GDP IN THE CORE



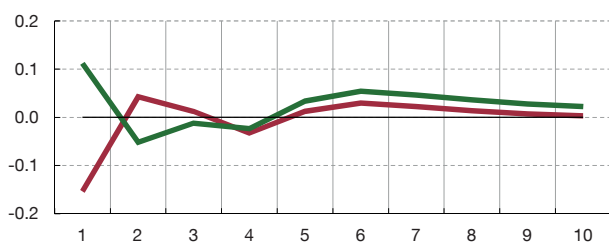
3 INFLATION IN THE PERIPHERY



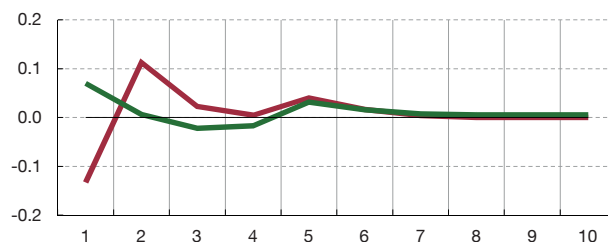
4 INFLATION IN THE CORE



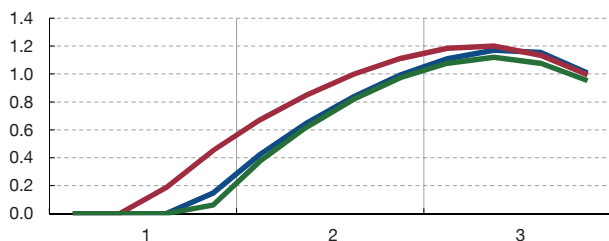
5 REAL INTEREST RATE IN THE PERIPHERY



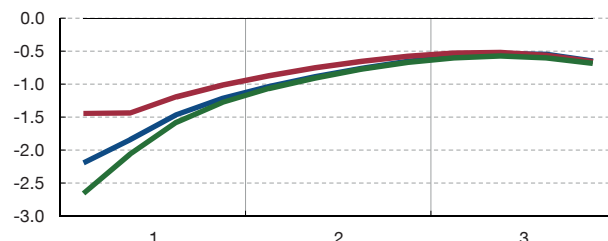
6 REAL INTEREST RATE IN THE CORE



7 NOMINAL INTEREST RATE IN THE MONETARY UNION (LEVEL)



8 INFLATION IN THE MONETARY UNION (LEVEL)



— BASELINE SCENARIO: DELEVERAGING IN PERIPHERY AND INTEREST RATE ZERO BOUND

— FISCAL EXPANSION IN THE CORE

— STRUCTURAL REFORMS IN THE PERIPHERY

SOURCE: Banco de España.

a Marginal effects of structural reforms in the periphery and public expenditure in the core on a baseline scenario with deleveraging and zero interest rates. Deviations from the baseline scenario, except for the nominal interest rate and inflation in the monetary union which are in levels. Horizontal axis in years.

Structural reforms in the periphery boost economic activity in this region not only in the medium and long-term, as one would expect, but also in the short term, basically as a result of their positive impact on external competitiveness and private deleveraging. In particular, the anticipation of the medium and long-term positive effects stimulates, through the expectations channel, short term spending and hiring, which, in turn, helps to mitigate the duration and intensity of the contractionary deleveraging process and, therefore, to bring forward the recovery.<sup>11</sup> Such reforms, however, unlike in the case of

<sup>11</sup> See J. Andrés, Ó. Arce and C. Thomas (2014), cited in Footnote 6 above, for a detailed analysis of the short-term effects of structural reforms in a model similar to the one used here.

fiscal expansion in the core, have a deflationary impact. This, along with interest rates that remain temporarily unchanged at their lower bound, pushes up real interest rates and has a slightly negative indirect effect on economic activity in the core. This latter effect arises precisely as a result of exhaustion of the monetary stimulus, through further reductions in nominal interest rates, which occurs in the presence of a liquidity trap. In fact, in alternative simulations,<sup>12</sup> in which the central bank preserves its capacity to reduce interest rates, structural reforms in the periphery generate a positive effect in the neighbouring region.

In order to analyse whether synergies may exist between the aforementioned national policies and monetary policy, a comparison is made between the effects of jointly implementing the two national policies considered above under two alternative reference scenarios: i) one in which no non-standard monetary policy measures are applied (i.e. the baseline scenario described in the second section), and ii) another in which the common monetary authority undertakes to keep the nominal interest rate at the lower bound for a longer period than would be consistent with its usual monetary policy rule.<sup>13</sup> In this way, the monetary authority implements a policy of forward guidance for the future path of monetary policy, like the one recently applied by the ECB.<sup>14</sup>

Chart 3 shows the effect of the national policy package under the two reference scenarios described in the previous paragraph. In the absence of forward guidance (blue lines), the combination of the two national policies has expansionary effects on the GDP and inflation of both sets of countries. When these measures are implemented simultaneously with an announcement by the central bank that interest rates will be kept low for a relatively long period (red lines), the expansionary effect of the same national policies increases appreciably; i.e. positive synergies are generated between these two sets of policies (national and monetary).

These synergies operate through various channels. First, as indicated above, the package of national policies has expansionary effects on economic activity in the medium and long term, especially as a result of the permanent positive effect of the structural reforms on activity in the periphery. In this context, a non-standard monetary policy, like the one considered here, which aims to produce a downward shift in the path of real interest rates, which agents use to discount future income flows, contributes to increasing the present value of future gains in activity and employment generated by the structural reforms, which boosts in turn the consumption and investment of households and firms in the short term.

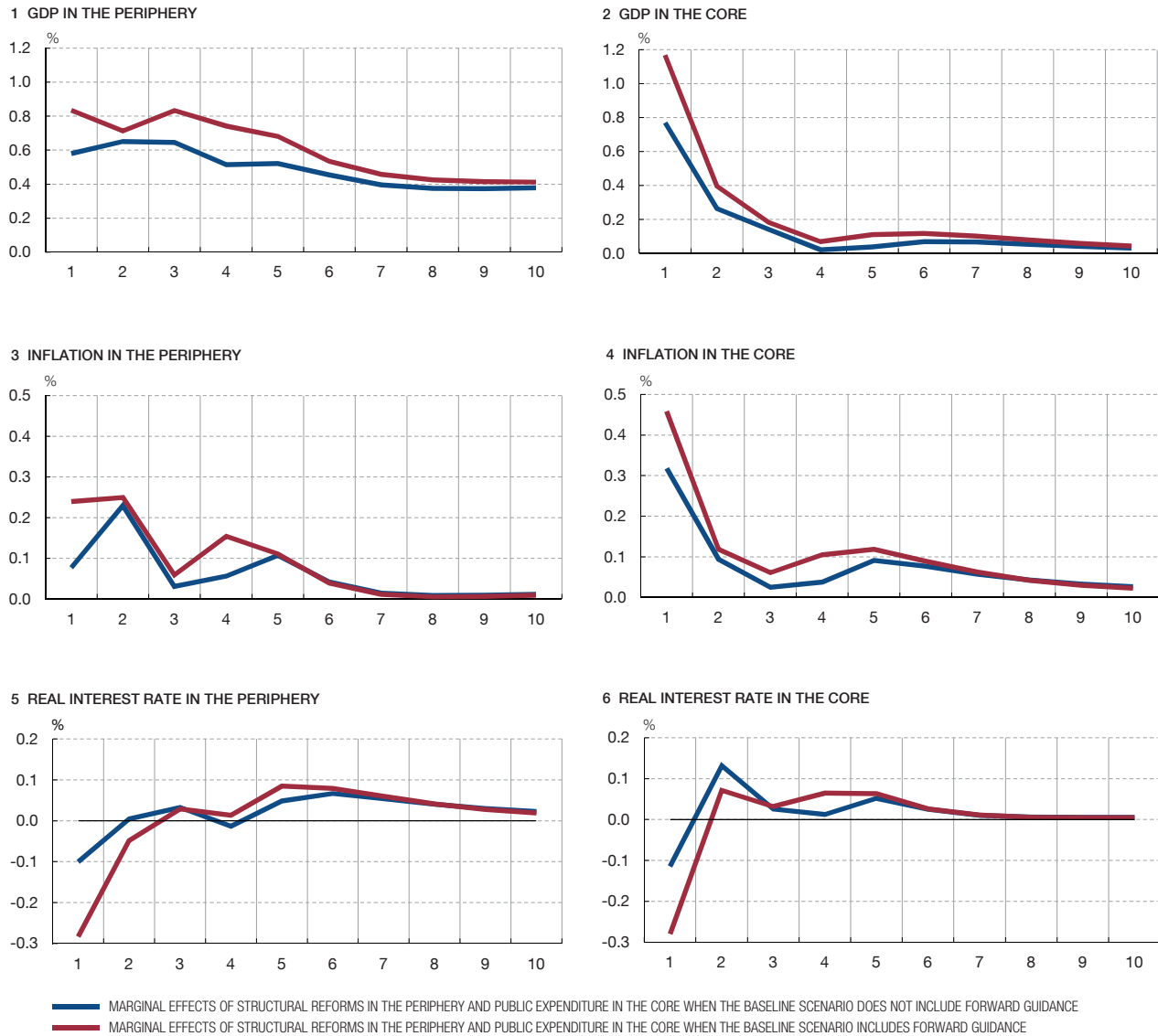
Second, an expansionary fiscal policy in the core of the monetary union, which generates inflation in the area as a whole, helps to mitigate some of the deflationary effects associated with the introduction of structural reforms in the periphery. In this respect, the fiscal measure considered in this exercise helps to ease the constraints on monetary policy to provide anti-deflationary stimulus when its standard instrument (short-term interest rates) comes up against its lower bound.

Finally, it should be noted that, in the absence of a non-standard monetary policy like the one considered here, national policies may affect the moment at which the central

<sup>12</sup> These simulations are not shown in these charts, but are available in Figure 4 of Ó. Arce, S. Hurtado and C. Thomas (2016), cited in Footnote 1 above.

<sup>13</sup> In the exercises presented below this additional period is assumed to be six months. The conventional monetary policy rule in the model is a Taylor rule, whereby the nominal interest rate rises when the inflation of the whole of the monetary union deviates from its long-term target.

<sup>14</sup> See B. Coeuré (2016), "The ECB's operational framework in post-crisis times", speech at the *Economic Policy Symposium*, 27 August 2016, Federal Reserve Bank of Kansas City.



SOURCE: Banco de España.

a Effects of structural reforms in the periphery and public expenditure in the core, with and without forward guidance in the baseline scenario. Deviations from the respective baseline scenario. Horizontal axis in years.

bank abandons the lower bound to nominal interest rates. Thus, a fiscal expansion in the core, through the inflationary pressure it generates, will tend to bring forward the moment at which the central bank begins to raise interest rates above their lower bound (see Chart 2.7, which compares the path of nominal rates in the baseline scenario with that which would exist with isolated national policies); this earlier rise in rates, in the absence of monetary measures conducive to a path of exceptionally low rates, would tend to partially counter the expansionary effect of the fiscal expansion.<sup>15</sup> By contrast, a commitment on the part of the central bank to keep the interest rate at its lower bound for a relatively prolonged period eliminates this moderating effect, boosting the

<sup>15</sup> See C. J. Erceg and J. Lindé (2014), "Is There a Fiscal Free Lunch in a Liquidity Trap?", *Journal of the European Economic Association*, 2 (1), pp. 73-107, for a detailed analysis of how, in a context in which standard monetary policy is constrained by the interest rate lower bound, fiscal expansions by the fiscal authority affect the moment at which the central bank abandons such lower bound.

expansionary effect of the fiscal stimulus and generating positive synergies between these two demand stimulating policies.<sup>16</sup>

## Conclusions

This article analyses the possible presence of synergies in the joint application of a non-standard monetary policy geared to keeping interest rates at low levels for a relatively prolonged period, and demand and supply-side stimulus measures implemented by the national authorities of a monetary union.

For this purpose, a general equilibrium model of an asymmetrical monetary union is used, which enables a context of persistently low inflation in the monetary union as a whole with nominal interest rates constrained by their effective lower bound, like the one which currently characterises the euro area, to be reproduced.

The analysis conducted suggests that, in such a context, national stimulus policies (such as fiscal expansions in those members of the union with the necessary fiscal scope and structural reforms in those countries with less efficient markets and little fiscal scope) have greater expansionary effects on economic activity and inflation when, in parallel, the common central bank undertakes to keep interest rates on an unusually low path for a prolonged period. These results, therefore, suggest that the complexity of the current macro-financial environment of the euro area may be compatible with the existence of potentially significant positive synergies between the supply and demand-side policies of the different economic authorities.

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<sup>16</sup> As can be seen in the Chart 2.7, structural reforms in the periphery, being deflationary, have the opposite effect to the fiscal expansion in the core, on the future path of nominal interest rates. However, their effect on the inflation of the monetary union is dominated by the inflationary impact of the fiscal expansion on the core, when the two national policies are considered jointly.