

II. Special topics on the euro area economy

II.1. Structural reforms at the zero lower bound ⁽¹²⁾

This section discusses the impact of structural reforms on economic activity in the short term in a macroeconomic environment in which the zero bound on monetary policy rates is temporarily binding, ruling out further standard monetary expansion to accommodate supply-side policies. Comparing recent academic contributions that portray structural reforms as counter-productive at the current juncture with QUEST model results suggests that the short-term output effects of reforms can be negative because of the real interest rate effect. However, negative effects are small in a model environment such as QUEST that incorporates a larger number of transmission channels. Short-term effects also depend on the specific reform measures. QUEST results, furthermore, do not support the idea that delaying structural reforms for the foreseeable future would improve economic conditions at the zero bound. The policy implications are that warnings of adverse effects from structural reforms at the current juncture appear to overemphasise potential short-term costs and that postponing reforms is not a good alternative.

The case for structural reforms

The main rationale for advocating structural reforms in product and factor markets is their beneficial effects on output, income and employment in the medium and longer term. Recent analysis using the European Commission's QUEST model illustrates the significant medium- and long-term efficiency and per-capita income gains that can be expected from product market reforms and labour-market-related education and tax reforms. ⁽¹³⁾ Similar results have been obtained with other macroeconomic models. ⁽¹⁴⁾ Empirical

studies also show positive long-term effects from structural reforms. ⁽¹⁵⁾

A second argument for structural reforms is that structural policies strengthen the resilience of economies to macroeconomic disturbances by shortening the duration of cyclical fluctuations and reducing cumulative output losses in the aftermath of contractionary shocks. ⁽¹⁶⁾

Thirdly, simple models of aggregate supply and demand suggest that structural reforms with positive supply-side effects boost competitiveness and therefore mitigate the decline in output associated with falling domestic demand in the context of current account rebalancing. Growth of the denominator in debt-to-GDP ratios should also improve the sustainability of private and public debt and lower debt-elastic risk premia in financing costs. ⁽¹⁷⁾

Reforms at the ZLB: the sceptical view

Recent debates in academic and policy circles have questioned the desirability of structural reforms in an environment of depressed demand. While the positive impact of such reforms on long-term output, employment and debt sustainability remains undisputed, the controversy concerns their short-term effects.

In particular, it has been argued that structural reforms are counter-productive in the short- to medium-term if monetary policy is constrained at the zero lower interest-rate bound (ZLB) and, hence, unable to accommodate the supply expansion. ⁽¹⁸⁾

and M. Pisani (2013): 'Structural reforms and macroeconomic performance in the euro area countries: a model-based assessment', *International Finance*, vol. 16(1), 23-44.

⁽¹²⁾ Section prepared by Lukas Vogel.

⁽¹³⁾ See Varga L., W. Roeger, and J. in 't Veld (2013): 'Growth effects of structural reforms in southern Europe: the case of Greece, Italy, Spain and Portugal', *European Economy Economic Papers*, 511 and European Commission (2013): 'The growth impact of structural reforms', *Quarterly Report on the Euro area*, Vol. 12, No 4, pp. 17-27.

⁽¹⁴⁾ For analyses with, e.g., the IMF GIMF and the ECB EAGLE models see Lusinyan L., and D. Muir (2012): 'Assessing the macroeconomic impact of structural reforms: the case of Italy', *IMF Working Papers* 13/22, and Gomes S., P. Jacquinot, M. Mohr,

⁽¹⁵⁾ For a summary see, e.g., Bouis R., and R. Duval (2011): 'Raising potential growth after the crisis: a quantitative assessment of the potential gains from various structural reforms in the OECD area and beyond', *OECD Economics Department Working Papers*, No 835.

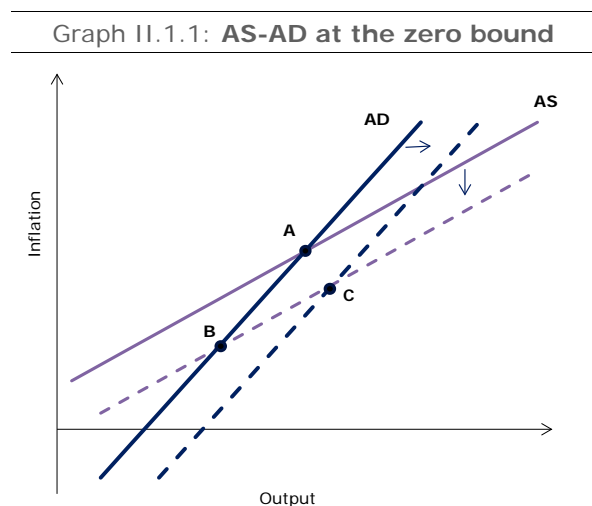
⁽¹⁶⁾ See Duval R., and L. Vogel (2008): 'Economic resilience to shocks: the role of structural policies', *OECD Journal: Economic Studies*, vol. 2008(1), 1-38.

⁽¹⁷⁾ In the short run, nominal GDP may, however, decline and debt-to-GDP ratios increase following reforms with deflationary effects. See, e.g., Vogel L. (2012): 'Structural reforms, fiscal consolidation and external rebalancing in monetary union: a model-based analysis', *Economic Modelling*, vol. 29(4), 1286-1298.

⁽¹⁸⁾ Eggertsson G., A. Ferrero, and A. Raffo (2014): 'Can structural reforms help Europe?', *Journal of Monetary Economics*, vol. 61(C), 2-22.

The contractionary short-term effect rests on the reforms' impact on real interest rates. Structural reforms that enhance aggregate supply in the economy put downward pressure on prices. The price decline pushes up the real interest rate for the given (fixed) nominal policy rate at the ZLB. If aggregate demand declines with higher real interest rates, the increase in real rates will depress rather than stimulate economic activity.

The point can be illustrated in the simple diagram of aggregate supply (AS) and aggregate demand (AD) in Graph II.1.1. The key difference between the standard AS-AD diagram and Graph II.1.1 for the ZLB environment is that the AD curve slopes upwards rather than downwards in the latter. If the ZLB is binding, higher inflation lowers real interest rates, which stimulates interest-sensitive demand. The economy's equilibrium point is the intersection of AS and AD.



Source: Based on Eggertsson *et al.* (2014)

Product or labour market reforms have two effects: First and foremost, the AS schedule shifts downwards as the upward pressure on costs and prices declines for any level of output. Second, reforms shift the AD schedule to the right, as expected increases in future income/wealth and investment profitability increase consumption and investment demand for given current levels of inflation.

It is the first effect (AS shift) that is contractionary at the ZLB. The AS shift amplifies deflationary pressures, which leads to higher real interest rates and aggregate demand contraction. The second effect (AD shift) is inflationary. Depending on the relative strength of the two effects, reforms may be

contractionary or expansionary at the ZLB in the short term. ⁽¹⁹⁾

Eggertsson *et al.* (2014) use a small-scale dynamic general equilibrium model to assess the quantitative impact of reforms. In particular, they look at price and wage mark-up reduction in the non-tradable sector in an environment with depressed demand and binding ZLB. They find substantial reform-induced downward price adjustment that increases the real interest rate significantly and amplifies the output contraction. ⁽²⁰⁾

Reforms at the ZLB: results with QUEST

The previous conclusions derive from a small-scale macroeconomic model in which the real interest rate effect of higher inflation dominates demand-enhancing wealth and price competitiveness effects.

The policy experiment of one percentage-point (pp) wage and price mark-up cuts in the non-tradables sector was replicated in a two-sector (tradables and non-tradables) and multi-region version of the QUEST model with a group of reforming euro-area countries, the rest of the euro area and the rest of the world. ⁽²¹⁾ The (purely illustrative) aggregate of reforming euro-area countries accounts for 30% of euro-area GDP, which approximately equals the proportion of euro-area GDP accounted for by Greece, Italy, Portugal and Spain combined. The mark-up reductions are implemented only in the model aggregate block of reforming euro-area countries.

The QUEST model offers a more detailed picture of the economy than the small model in Eggertsson *et al.* (2014). In particular:

QUEST includes investment in physical capital, which grows in response to profitability-enhancing structural reforms, strengthening the outward shift of the AD schedule;

⁽¹⁹⁾ As Eggertsson *et al.* (2014), *op. cit.*, state, 'the question of which effect dominates is ultimately quantitative' (p. 10).

⁽²⁰⁾ More precisely, a permanent one percentage-point (pp) reduction in wage and price mark-ups lowers the inflation rate by 0.5 pp, increases real interest rates by 0.4 pp and reduces output by an additional 0.1 pp compared with the no-reform baseline. See Table 3 in Eggertsson *et al.* (2014), *op. cit.*, for more information.

⁽²¹⁾ To replicate the Eggertsson *et al.* (2014), *op. cit.*, policy experiment, the reform is limited to a mark-up reduction, whereas nominal and real rigidities such as the degree of price and wage stickiness are held constant.

QUEST includes liquidity-constrained (LC) households as well as households that try to smooth their spending over the long term (NLC). Liquidity-constrained consumers are insensitive to changes in real interest rates, but benefit from falling price levels to the extent that the latter increase the purchasing power of wage and transfer incomes; and

QUEST includes trade with the rest of the world, which amplifies price competitiveness effects associated with lower domestic goods prices.

Table II.1.1: Impact of reforms in ‘normal times’, euro-area periphery (1)

Year	1	2	3	4	5	10
Real GDP	0.09	0.26	0.38	0.46	0.50	0.65
Employment	0.09	0.15	0.19	0.21	0.22	0.31
Consumption	-0.12	0.01	0.18	0.28	0.33	0.48
Liquidity-constrained	0.44	0.95	1.31	1.55	1.71	2.10
Intertemporally optimising	-0.32	-0.33	-0.23	-0.18	-0.16	-0.10
Investment	0.63	1.17	1.38	1.43	1.43	1.34
Exports	0.05	0.15	0.24	0.31	0.36	0.51
Imports	-0.03	-0.07	-0.06	-0.04	0.00	0.08
GDP deflator	-0.39	-0.75	-0.89	-0.93	-0.94	-1.03
Consumer price index	-0.36	-0.68	-0.80	-0.83	-0.84	-0.90
Real effective exchange rate	0.58	0.95	1.09	1.13	1.15	1.24
Nominal interest rate	-0.04	-0.04	-0.02	0.00	0.00	0.00
Real interest rate	0.43	0.16	0.05	0.01	0.01	0.02
Public debt (% of GDP)	0.05	0.03	-0.15	-0.36	-0.56	-1.18
Trade balance (% of GDP)	-0.02	-0.03	-0.02	-0.02	-0.01	-0.02

(1) Results in the upper and lower parts of the table indicate percentage and percentage-point deviations from the no-reform baseline respectively. An increase in the real effective exchange rate (REER) indicates real effective depreciation.

Source: DG ECFIN.

The combination of a 1 pp price and wage mark-up reduction in the euro-area periphery’s non-tradable (services) sector has small but positive short-term GDP effects in the QUEST model in ‘normal times’, i.e. away from the ZLB (Table II.1.1). The reform package is fully implemented in year one, but rigidities in prices and wages delay their adjustment to the new long-term equilibrium. Reacting to deflationary pressure, the central bank reduces nominal interest rates on impact, but the reduction remains moderate given the limited weight of the region (30 %) in the euro-area’s aggregate output and inflation. Consequently, the

real interest rate in the euro-area periphery increases temporarily even without ZLB. ⁽²²⁾

At the binding ZLB (Table II.1.2), the short-term impact of the reforms on output is also slightly negative in the QUEST model, but the effect is one order of magnitude smaller than in Eggertsson *et al.* (2014). ⁽²³⁾ The initial decline in real GDP relative to the pre-reform baseline is due to the contraction of interest-sensitive domestic demand.

Table II.1.2: Impact of reforms with binding ZLB, euro-area periphery (1)

Year	1	2	3	4	5	10
Real GDP	-0.01	0.13	0.29	0.38	0.43	0.57
Employment	0.01	0.06	0.13	0.16	0.18	0.26
Consumption	-0.28	-0.20	0.01	0.15	0.22	0.38
Liquidity-constrained	0.35	0.76	1.09	1.34	1.51	1.92
Intertemporally optimising	-0.51	-0.54	-0.38	-0.28	-0.24	-0.16
Investment	0.27	0.71	1.02	1.19	1.24	1.24
Exports	0.02	0.08	0.16	0.22	0.27	0.41
Imports	-0.06	-0.16	-0.19	-0.18	-0.14	-0.02
GDP deflator	-0.46	-0.91	-1.11	-1.19	-1.22	-1.39
Consumer price index	-0.43	-0.84	-1.01	-1.08	-1.11	-1.25
Real effective exchange rate	0.40	0.85	1.05	1.11	1.13	1.21
Nominal interest rate	0.00	0.00	-0.01	-0.02	-0.02	-0.01
Real interest rate	0.59	0.27	0.10	0.03	0.01	0.02
Public debt (% of GDP)	0.17	0.32	0.20	-0.01	-0.22	-0.98
Trade balance (% of GDP)	-0.03	-0.03	-0.02	-0.01	-0.01	-0.02

(1) Results in the upper and lower parts of the table indicate percentage and percentage-point deviations from the no-reform baseline respectively. An increase in the real effective exchange rate (REER) indicates real effective depreciation.

Source: DG ECFIN.

The negative short-term response of output to a deflationary mark-up reduction remains small and limited to the initial year. However, given the additional and countervailing mechanisms in the QUEST model highlighted above:

Corporate investment increases in the QUEST simulations in the short term also at the ZLB, as the decline in mark-ups reduces firms’ profit requirements for new projects; ⁽²⁴⁾

⁽²²⁾ The situation of a small country in monetary union is in this sense similar to that of a country with independent monetary policy at the ZLB, so that small unilateral reformers find themselves continuously in a quasi-ZLB environment.

⁽²³⁾ In the simulations underlying Table II.1.2, the ZLB is binding for euro-area monetary policy for the initial two years.

⁽²⁴⁾ Comparison between Tables II.1.1 and II.1.2 shows that investment increases less strongly at the ZLB given the larger increase in real interest rates. Even at the ZLB, investment

Liquidity-constrained households' consumption increases in QUEST and dampens the decline in private consumption caused by the falling demand from intertemporally optimising households. Liquidity-constrained households consume their disposable period income (after-tax wage and transfer income) and do not respond directly to changes in the real interest rate. For them, the positive effect of falling goods prices and increasing employment on real household income translates into higher consumption; and

The reforms in Tables II.1.1 and II.1.2 improve the price competitiveness of the periphery relative to the rest of the euro area and the rest of the world as a result of declining production costs. The export volume increases and the import volume declines, giving a positive trade impact on output. ⁽²⁵⁾

Hence, the QUEST results suggest a more positive assessment of the short-term effects of structural reforms than Eggertsson *et al.* (2014) and related contributions. The mark-up reductions considered here have only small negative initial output effects in the simulations at the ZLB. ⁽²⁶⁾ Non-standard monetary policy measures, which are absent in the model simulations, should further mitigate possible negative demand and output effects of structural reforms at the ZLB.

Given the nominal and real rigidities in goods and factor markets, it takes time for the long-term effects of structural reforms to materialise fully. ⁽²⁷⁾

Reforms at the ZLB: which measures?

The previous discussion has argued that elements of economic structure that are embedded in more complex macroeconomic models such as QUEST mitigate the contractionary effects of deflationary product and factor market reforms at the ZLB.

Besides the impact of economic structure, short- and long-term effects also depend on the type of individual reform measures that are implemented.

The mark-up reductions in Eggertsson *et al.* (2014) and Tables II.1.1 and II.1.2 are short-cuts for structural reforms with strong deflationary effects. To replicate the Eggertsson *et al.* (2014) policy experiment, reforms in Tables II.1.1 and II.1.2 are restricted to mark-up reductions, while adjustment frictions such as the degree of price and wage stickiness are kept constant.

Structural reform packages that increase price and wage flexibility in addition to mark-up reductions could dampen, or even prevent, contractionary short-term effects of deflationary supply-side reforms at the ZLB. Reducing adjustment frictions would, in particular, accelerate the speed at which enhanced competition led to gains in the purchasing power of wages, lower investment prices and improved price-competitiveness for domestically produced goods.

Furthermore, other structural measures have smaller short- and medium-term price effects and are, hence, less exposed to the adverse real interest effect at the ZLB. Such measures include a number of tax reforms, such as a tax shift from labour to consumption, R&D policies and policies to improve labour-market matching. ⁽²⁸⁾ The weaker the deflationary impact in the short term, the

demand still increases in response to the reforms and mitigates the demand decline.

⁽²⁵⁾ Compared with the 'normal times' scenario (Table II.1.1), exports increase by less and imports decline by more at the ZLB (Table II.1.2). Monetary accommodation in 'normal times' leads to exchange rate depreciation, which strengthens export demand, but stronger domestic demand also dampens the import decline in this case. The real effective exchange rate (REER) depreciation is weaker given the lack of monetary accommodation at the ZLB, implying less short-term export growth. Weaker domestic demand also reduces import volumes at the ZLB, however.

⁽²⁶⁾ An additional channel through which reforms may support demand in the short term is the value of collateral. Andrés J., Ó. Arce, and C. Thomas (2014): 'Structural reforms in a debt overhang', Banco de España, *Documentos de Trabajo*, No 1421, show in a model-based analysis that structural reforms can shorten the duration of deleveraging and binding credit constraints by improving the value of collateral. The endogenous shortening of private demand compression would also tend to shorten the ZLB duration, adding to the gains from structural reforms. The version of QUEST used in this section does not incorporate this additional channel. The authors also stress that negative demand effects of debt deflation (a common argument against deflationary reform in high-debt environments) are less relevant when debt is predominantly long-term.

⁽²⁷⁾ For an empirical characterisation of the sluggish pass-through see Bouis R., O. Causa, L. Demmou, R. Duval, and A. Zdzienicka, (2012): 'The short-term effects of structural reforms: an empirical analysis', *OECD Economics Department Working Papers*, No 949.

⁽²⁸⁾ The beneficial effects of, for example, a shift in taxation from labour-based social security contributions to consumption also take time to fully materialise given nominal and real rigidities in the economy. However, the tax shift does not show the temporary output contraction observed for the deflationary mark-up reduction at the ZLB in Table II.1.2, because the deflationary impact of falling labour costs is accompanied by an inflationary impact of higher consumption taxes.

smaller the ZLB-related real interest rate effect is, with its negative impact on demand and output. ⁽²⁹⁾

Current versus future reforms

Lags in the pass-through of structural reforms to real variables are a function of nominal and real rigidities in the economy. Rigidities in prices and wages, in particular, slow their adjustment and dampen the real interest rate increase at a temporarily binding ZLB. These lags in the pass-through are incorporated in the model simulations in Tables II.1.1 and II.1.2. ⁽³⁰⁾

Another type of lag is the delayed implementation of reforms. Following the Eggertsson *et al.* (2014) model, delayed implementation is a virtue rather than a vice as long as the reform announcement is credible.

Credible commitment to future reforms — so the argument goes — raises expectations of future output and income levels, generating a positive wealth effect. Intertemporally optimising households will step up consumption immediately in response to higher expected future wealth, thus stimulating current demand and output. The positive impact of the wealth effect might even be larger at the binding ZLB where it will not be dampened by the monetary tightening that would typically occur in normal times. ⁽³¹⁾

The case for commitment to future reforms seems problematic already on political grounds, because it would require economic agents to have correct expectations about a fully credible commitment to reform. Time inconsistency problems or simple

doubts in the private sector would substantially weaken, or even invalidate, the argument. ⁽³²⁾

Even in the case of credible commitment and full anticipation, however, the advantage of a credible future over current reforms rests on the strength of the wealth effect and intertemporal substitutability. In this context, the factors that mitigate the negative short-term effects of structural reforms at the ZLB in the richer structure of the QUEST model also reduce the *current* benefits from *future* reforms.

Table II.1.3 shows QUEST results for a scenario with credible commitment to future reforms. More precisely, the wage and price mark-up reductions of the same size as in Tables II.1.1 and II.1.2 (1 pp) are implemented now in year three rather than year one. The announcement is credible, so that households and firms anticipate and react to the future impact of reforms. ⁽³³⁾

Table II.1.3: Impact of future reforms with current ZLB, euro-area periphery (1)

Year	1	2	3	4	5	10
Real GDP	-0.08	0.00	0.21	0.37	0.45	0.61
Employment	-0.09	-0.09	0.08	0.16	0.19	0.26
Consumption	-0.33	-0.38	-0.14	0.10	0.23	0.43
Liquidity-constrained	0.04	0.27	0.76	1.17	1.44	1.97
Intertemporally optimising	-0.46	-0.62	-0.46	-0.28	-0.20	-0.12
Investment	0.50	1.00	1.28	1.41	1.43	1.31
Exports	0.04	0.12	0.20	0.28	0.34	0.48
Imports	-0.03	-0.09	-0.12	-0.11	-0.07	0.06
GDP deflator	-0.14	-0.38	-0.68	-0.84	-0.89	-0.99
Consumer price index	-0.11	-0.32	-0.60	-0.74	-0.79	-0.87
Real effective exchange rate	0.31	0.59	0.91	1.07	1.12	1.20
Nominal interest rate	0.00	0.00	-0.01	-0.02	-0.01	0.00
Real interest rate	0.23	0.31	0.21	0.06	0.01	0.03
Public debt (% of GDP)	0.14	0.30	0.29	0.09	-0.15	-1.05
Trade balance (% of GDP)	0.00	0.00	0.01	0.01	0.01	-0.02

(1) Results in the upper and lower parts of the table indicate percentage and percentage-point deviations from the no-reform baseline respectively. An increase in the real effective exchange rate (REER) indicates real effective depreciation.

Source: DG ECFIN.

The results shown in Table II.1.3 do not support the idea that the credible announcement of future reforms would prevent the negative short-term effects of contemporaneous reforms at the ZLB.

⁽²⁹⁾ On the other hand, some reform measures, such as a reduction in job protection, can have negative short-term effects for output even under normal monetary conditions. See Varga *et al.* (2013), *op. cit.*, for a comparison of short-, medium- and long-term effects of different structural policy measures in QUEST. Differences in the impact of particular reform measures on prices in a dynamic macroeconomic model are also stressed by Cacciatore M., R. Duval, and G. Fiori (2012): ‘Short-Term Gain or Pain? A DSGE model-based analysis of the short-term effects of structural reforms in labour and product Markets’, *OECD Economics Department Working Papers*, No 948. See Bouis *et al.* (2012), *op. cit.*, for an empirical analysis of the effects of various labour and product market reforms over different time horizons.

⁽³⁰⁾ For an empirical characterisation of these lags see Bouis *et al.* (2012), *op. cit.*

⁽³¹⁾ In the words of Eggertsson *et al.* (2014), *op. cit.*, delayed implementation ‘retains the long-run benefits of structural reforms without imposing the short-term costs in terms of deflation’ (p. 19). The same argument is made in Fernández-Villaverde, J., P. Guerrón-Quintana, and J. Rubio-Ramírez (2011): ‘Supply-Side Policies and the Zero Lower Bound’, *NBER Working Papers* 17543.

⁽³²⁾ Full *ex-ante* legislation of future reforms may provide a (partial) remedy to the commitment problem.

⁽³³⁾ As before, the ZLB is binding in years 1 and 2.

Instead, the short-term output and employment effects in Table II.1.3 are more negative than the corresponding results in Table II.1.2.

The real interest rate increases less strongly in the short term in the case of credibly pre-announced future reforms than in the case of current reforms, stabilising the consumption demand from intertemporally optimising households compared with the case of current reforms.⁽³⁴⁾ Investment also reacts more positively in the short term to the expected increase in profitability given the more moderate counteracting real interest rate effect.

However, these two elements are outweighed by other factors. First, future reforms do not increase the purchasing power of current income. The increase in consumption by liquidity-constrained households is delayed, which undoes its strongly positive short-term contribution in Table II.1.2.

Second, postponing the implementation of reforms also delays improvement in price competitiveness and the resulting switch in spending from imported towards domestic goods. The delay in the improvement of net trade volumes also weighs negatively on the short-term response of domestic output.

Taken together, simulations with a model that incorporates various countervailing channels do not support the idea that postponing reforms is better than implementing them at the ZLB.

Conclusions

This section has discussed the impact of structural reforms at the zero lower bound (ZLB) based on recent literature and simulations with the QUEST model, with a particular focus on negative short-term effects on economic activity.

The binding ZLB tends to reduce the short- and medium-term gains from structural reforms. Reforms with strong deflationary impact may even

lead to temporary output losses as a consequence of rising real interest rate in the absence of monetary accommodation. Small countries in a monetary union that implement structural reforms unilaterally face a similar situation.

However, the small-scale economic models that suggest significant contractionary short-term effects from structural reforms tend to neglect a number of mitigating channels which dampen the negative effect of rising real rates on economic activity. These channels include the impact of reforms on the profitability of investment, the disposable income of liquidity-constrained households and the competitiveness effect in external trade.

Simulations with DG ECFIN's QUEST model, which incorporates the channels mentioned above, suggest that short-term effects can indeed be negative. However, the negative impact is smaller than suggested by related results in the recent literature. The impact also depends on the precise nature of the reform measures. Mark-up reduction, which has been the focus of the analysis, has relatively strong deflationary effects, which amplifies the contractionary real interest effect at the ZLB. Non-standard monetary policy measures, which are absent in the model simulations, should furthermore mitigate negative demand and output effects at the ZLB.

Beyond the problem of credible commitment, judging by the impact on economic activity the results do not, in the end, support the idea that commitment to future reforms would outperform implementing them now at the ZLB. Elements that counteract the real interest rate effect of current reforms at the ZLB, such as the presence of liquidity constraints and price competitiveness, also dampen the expansionary effect of expected future reforms and income gains.

The policy implication of the analysis is that recent warnings of adverse effects from structural reforms at the current juncture overemphasise potential short-term costs. While it is certainly true that an accommodative monetary policy stance facilitates the adjustment in 'normal times', reforms in a ZLB environment do not seem to imply significant short-term costs in terms of economic activity. The results also suggest that postponing reforms (even with fully credible commitment) is not a good alternative.

⁽³⁴⁾ This is the channel emphasised by Eggertsson *et al.* (2014), *op. cit.*. The presence of price and wage stickiness in the model is the reason for the real interest rate to increase at the ZLB even in the case of *future* reforms. Households and firms anticipate the impact of future reforms on future wage and price levels. With wage and price stickiness (due either to binding wage and price contracts or a desire to smooth price and wage adjustments over time), current wage- and price-setting already incorporates these expectations and leads to partial downward adjustment of wages and prices even in pre-reform periods.