

# Discussion of “Policy Spillovers and Synergies in a Monetary Union”\*

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## 1. Introduction

The financial crisis that started in the United States in 2007 hit Europe hard. Two quarters after the bankruptcy of Lehman Brothers in September 2008, German real GDP had fallen by about 6.5 percent—more than in any periphery country (Greece, Ireland, Italy, Portugal, and Spain). However, while Germany and the rest of the core European countries started to recover, the euro-area periphery suffered a second wave of the crisis in 2010, associated with concerns about the sustainability of government debt. The paper by Arce, Hurtado, and Thomas studies the policy response in this type of environment.

## 2. Summary

The authors build a two-country open-economy model with nominal rigidities and financial frictions. In each country, households consume differentiated domestic and foreign goods, value housing services (assumed to be proportional to the stock of housing), and dislike hours worked. Households can be of two types: constrained and unconstrained. The difference between the two types is their degree of patience. As in Iacoviello (2005), households are subject to a collateral constraint that limits their debt to a fraction of the expected value of housing in the following period. Differently from most of the literature, however, debt contracts are assumed to be long term. In each period, households repay only a fraction  $1 - \gamma$  of their total outstanding liabilities. A second departure from most

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of the literature is that the collateral constraint is asymmetric. In response to a large negative shock that sufficiently reduces the value of collateral, households cannot obtain new credit and need to repay the fraction of long-term debt that matures in a given period.

Entrepreneurs combine capital (equipment), commercial real estate, and labor to produce an intermediate input, which is then sold to retailers in a competitive market. Entrepreneurs accumulate capital and are subject to a collateral constraint similar to that of the households. Retailers operate in monopolistic competition and set prices on a staggered basis (Calvo 1983). Construction firms and capital producers transform the final consumption good into real estate and equipment, respectively, subject to adjustment costs. Finally, labor unions set the nominal wage on behalf of the household on a staggered basis.

In each country, a fiscal authority collects lump-sum taxes and distortionary labor and profit taxes to finance an exogenous level of spending. The two countries are assumed to form a currency union. The common monetary authority sets the nominal interest rate for the whole area following a feedback interest rate rule that responds to the union-wide CPI inflation rate.

The authors construct a crisis scenario as a combination of two shocks. The first is a large negative demand shock (a discount factor shock) that hits both countries symmetrically. The second is a deleveraging shock that only hits the home country (the periphery), modeled as a tightening of the collateral constraint parameter  $m_t$  for both households and entrepreneurs. As a result of the two shocks, GDP in the periphery falls by 4 percent after two years, while GDP in the core is roughly unchanged. Inflation falls in both the core and periphery by about 2 percentage points. The shocks are large enough to drive the nominal interest rate at the zero lower bound (ZLB) for four quarters.

Against this backdrop, the authors consider three types of policies. The first are structural reforms that permanently reduce markups in the periphery. The second is a fiscal expansion in the core. Finally, the third is forward guidance on nominal interest rate by the common monetary authority. As in Andrés, Arce, and Thomas (2015), structural reforms have positive effects on the level of output, both in the short and in the long run. However, structural reforms are deflationary, especially at the ZLB. Conversely, a

fiscal expansion in the core and forward guidance are expansionary. Moreover, the latter two policies reinforce the positive effects of structural reforms, mitigating their deflationary consequences and supporting the GDP recovery. Thus, the authors conclude that these three policies have strong synergies if implemented jointly in a crisis.

### 3. Comments

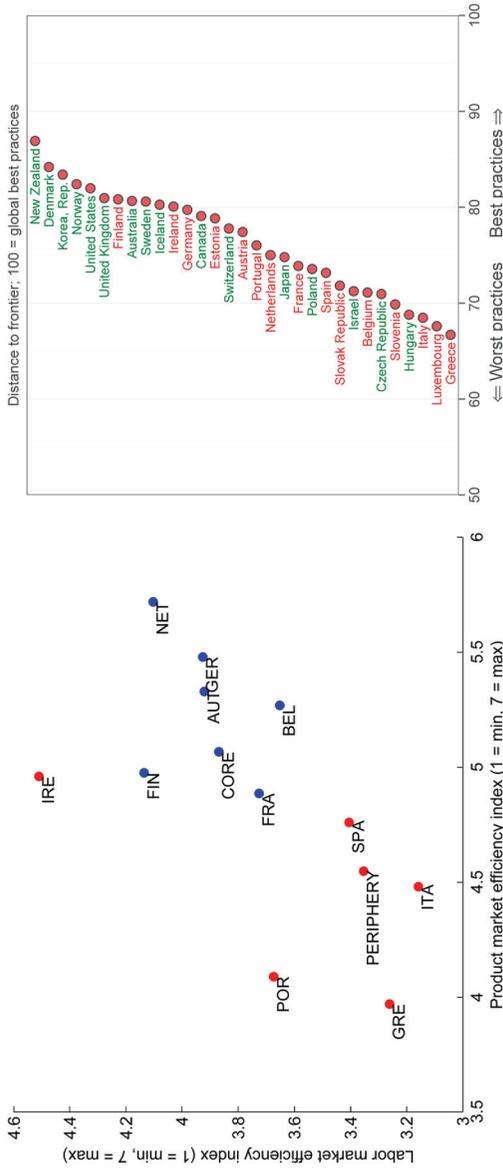
The authors have written a nice and timely paper. The issue is certainly at the forefront of the policy debate. As the second wave of the crisis in Europe had an asymmetric nature, the policy response became quite problematic. The presence of a common currency prevented exchange rate devaluations. In addition, the very nature of the crisis made any significant fiscal expansion virtually impossible. Finally, the ZLB constrained the degree of monetary accommodation.

In this context, structural reforms emerged as one of the few, if not the only, viable option. Prominent members of various institutions (e.g., Barroso 2012; Draghi 2015) have strongly urged peripheral countries to implement a broad set of labor and product market reforms. Periphery countries (perhaps with the exception of Ireland in some dimension) score very low in indexes of product and labor market efficiency (left panel of figure 1), as well as in the ease of doing business (right panel of figure 1).

#### 3.1 *The Case Against Structural Reforms*

The literature shows that the long-run effects of structural reforms are unambiguously positive. When modeled (as in this paper) as a reduction in markups, structural reforms that close the competitiveness gap between the periphery and the core generate large permanent gains on the level of output, of the order of 5 percentage points (Bayoumi, Laxton, and Pesenti 2004). In the short run, however, markup reductions are associated with deflationary pressures. In normal times, the central bank can lower interest rates to stabilize inflation, but at the ZLB monetary policy accommodation is impaired. In a standard two-country model of a monetary union, Eggertsson, Ferrero, and Raffo (2014) show that, under reasonable

Figure 1. Indexes of Product and Labor Market Efficiency and Ease of Doing Business



Notes: The left panel shows indexes of product (horizontal axis) and labor (vertical axis) market efficiency (source: Schwab 2011). The right panel shows the index of ease of doing business (source: World Bank Group 2014).

parameterizations, structural reforms at the ZLB can be contractionary in the short run, in spite of significant long-run benefits.<sup>1</sup>

The paradox of structural reforms at the ZLB can be easily illustrated in the context of a simple New Keynesian model. For simplicity, consider a closed economy in which aggregate demand is described by a forward-looking Euler equation,

$$y_t = \mathbb{E}_t y_{t+1} - \sigma^{-1}(i_t - \mathbb{E}_t \pi_{t+1} - r_t^e), \quad (1)$$

where  $y_t$  is output,  $\pi_t$  is the inflation rate,  $i_t$  is the nominal interest rate,  $r_t^e$  is the (exogenous) efficient real interest rate (the real interest rate that would prevail absent nominal rigidities and markup shocks), and  $\sigma > 0$  is the coefficient of relative risk aversion. Aggregate supply is described by the forward-looking Phillips curve

$$\pi_t = \kappa y_t + \beta \mathbb{E}_t \pi_{t+1} + \kappa \psi \omega_t, \quad (2)$$

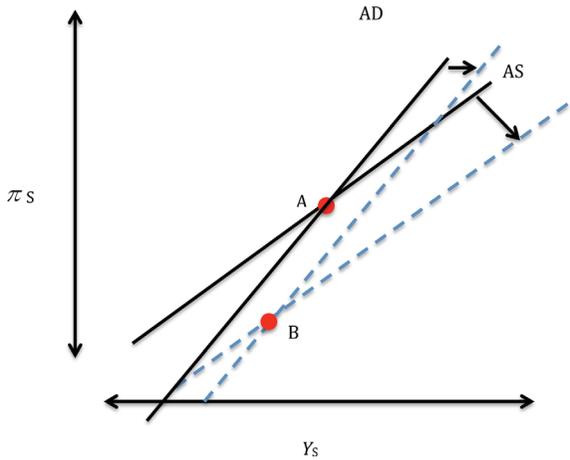
where  $\kappa$  and  $\psi$  are combinations of structural parameters, and  $\omega_t$  is a wedge between the first-best and the flexible price of output, due to firms' market power and time-varying markups in the labor market. Suppose further that monetary policy implements strict inflation targeting ( $\pi_t = 0 \forall t$ ). In this simple model, output becomes a negative function of  $\omega_t$  ( $y_t = -\psi \omega_t$ ). Structural reforms that reduce markups in product and labor markets would boost output both in the short and in the long run by lowering  $\omega_t$ .

At the ZLB, however, the short-run adjustment can flip sign. Consider a negative shock to the efficient real interest rate, such that  $r_S^e < 0$  (where a subscript  $S$  stands for short run). Assume that this shock is large enough to drive the nominal interest rate to the ZLB. The efficient real interest rate reverts back to the steady state with probability  $1 - \mu$ , while the crisis persists with probability  $\mu$ . Under the assumption that once the shock reverts back to the steady state another crisis will never occur, the model can be written in terms of a short-run and a long-run equilibrium. The latter coincides with the "normal-times" equilibrium, in which lower markups

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<sup>1</sup>In fact, in Eggertsson, Ferrero, and Raffo (2014), the larger the scope of the reforms, and hence their long-run output gains, the worse the short-run consequences are.

**Figure 2. Contractionary Short-Run Effects of Structural Reforms in a Simple New Keynesian Model**



boost output. Therefore, long-run output remains a negative function of  $\omega_L$  (where a subscript  $L$  stands for long run). The short-run equilibrium is instead described by the following two relationships:

$$\text{AD: } y_S = y_L + \frac{\sigma^{-1}\mu}{1-\mu}\pi_S + \frac{\sigma^{-1}}{1-\mu}r_S^e \tag{3}$$

$$\text{AS: } \pi_S = \frac{\kappa}{1-\mu\beta}y_S + \frac{\kappa\psi}{1-\mu\beta}\omega_S. \tag{4}$$

Note that, at the ZLB, aggregate demand is upward sloping in a  $\{y_S, \pi_S\}$  space. Structural reforms still have long-run gains, and they shift the aggregate demand curve to the right (because  $y_L = -\psi\omega_L$ ). However, the very same structural reforms, if implemented in the short run (i.e., if  $\omega_S = \omega_L$ ), are deflationary, shifting also the aggregate supply curve to the right. In equilibrium, the economy may end up with lower output and lower inflation than if structural reforms had not been implemented (point B in figure 2).<sup>2</sup>

The worst-case scenario could occur if a country is forced to implement structural reforms in a crisis and its government does not

<sup>2</sup>The equilibrium outcome is ultimately a quantitative question, as the relative adjustment of aggregate demand and supply depends on parameter values.

enjoy wide support. Under these circumstances, political instability may force the incumbent government to resign. The new government may be less committed to the reform plan, or may have even run on a platform opposing the reforms. Anticipating this outcome, the long-run gains of the reforms may become highly uncertain, while the short-run costs would still remain present. This scenario is reminiscent of the recent events in Greece, as well as of Latin American economies following the financial crises of the 1980s.<sup>3</sup> For this reason, Draghi (2015) has emphasized the importance of credibility in implementing structural reforms.

### *3.2 The Case For Structural Reforms*

The previous considerations would suggest that the optimal strategy would be to commit to implement structural reforms once the economy is out of a crisis, and the central bank can provide support through monetary accommodation (Fernandez-Villaverde, Guerron-Quintana, and Rubio-Ramirez 2012).<sup>4</sup> Obviously, this commitment may not be credible. In a crisis, financial market participants expect countries to immediately undertake concrete steps that correct structural economic problems. In this sense, a short-run contraction, possibly deeper than the initial recession, may be necessary to navigate through the crisis.

A second argument in favor of structural reform is related to investment. One limitation of the negative results in Eggertsson, Ferrero, and Raffo (2014) is the absence of capital accumulation. In the discussion of that paper, Fernandez-Villaverde (2015) points out how the increase in the effective real interest rate, due to a combination of deflation and the ZLB, would actually stimulate investment.<sup>5</sup> A counterargument to this line of reasoning is that financial frictions that impair demand, and are modeled in reduced form as a

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<sup>3</sup>In a recent paper, Funke, Schularick, and Trebesch (2015) document how political turnover (with extremist parties gaining consensus) and street protests increase significantly in times of crisis.

<sup>4</sup>See also Eggertsson, Ferrero, and Raffo (2014) for a state-contingent implementation of delayed reforms.

<sup>5</sup>This mechanism is at work in Gerali, Notarpietro, and Pisani (2015), who consider the effects of structural reforms in a small open economy that belongs to a currency union.

discount factor shock, are likely to also negatively affect investment (Eggertsson 2012).

One of the merits of Arce, Hurtado, and Thomas's paper is to explore this channel in details. Building upon Andrés, Arce, and Thomas (2015), the authors allow for capital accumulation, but also include financial frictions, in the form of collateral requirements for both households and firms. At a first sight, the tightening of collateral constraints seems to weaken the case for reforms. The deflationary pressures associated with the reforms should aggravate the deleveraging process along the lines of a typical debt-deflation spiral. Two effects work in the opposite direction. First, the income effect of structural reforms boosts asset prices. This channel is related to what, in practice, is often termed "the confidence effect." The reason why financial markets react positively to reforms is that the expectation of higher output in the future raises asset prices today. Second, the presence of long-term debt in the model tempers the typical debt-deflation mechanism. Taken together, structural reforms in this paper have positive effects on real activity, in spite of the short-run deflationary pressures.

While the positive effects that operate via asset prices may not be as strong with different financial frictions, the authors have made a first important step in the direction of gaining a better understanding of the investment channel of structural reforms.

### *3.3 The Holy Trinity*

Arce, Hurtado, and Thomas propose a combination of policies that, at least in theory, works well to deal with a crisis like the one recently experienced by the euro-area periphery. Structural reforms boost long-term output prospects and carry positive short-run gains through the response of asset prices. Unconventional monetary policy mitigates the deflationary pressures.<sup>6</sup> And fiscal expansions in countries that are not under stress (like the euro-area core in this case) avoid negative cross-country spillovers. This package could constitute the "Holy Trinity" of the policy response in a crisis.

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<sup>6</sup>The paper focuses on forward guidance. In a model that breaks the irrelevance of open-market operations (e.g., Chen, Cúrdia, and Ferrero 2012), quantitative easing would likely play a similar role.

International institutions should seriously consider this type of policy recommendation in future crisis episodes, with particular emphasis on the synergies among the different policy measures.

The case of monetary support through unconventional policies is rather obvious. The crisis by itself creates deflationary pressures that structural reforms amplify, especially because the implementation occurs at the ZLB. To the extent that inflation stabilization is one of the objectives (if not the only one) of monetary policy, central banks should be easily convinced to adopt unconventional measures when the interest rate has reached its lower bound.

The case for fiscal stimulus in the core is less obvious. In the crisis scenario that the authors construct, GDP in the core only falls by half a percentage point on impact, and recovers in less than a year. Structural reforms in the periphery create a negative spillover on the core through the trade channel, because the periphery is now more competitive. But this effect is small (a quarter of a percentage point on impact) and short-lived. In practice, core countries that predicate fiscal virtue may be hard to convince to undertake a substantial fiscal expansion to contain a relatively small slowdown in economic activity.

#### **4. Empirical Observations**

Besides political-economic considerations, two other limitations influence the analysis in this paper. The first is that, while already quite rich in many respects, the model does not distinguish between tradable and non-tradable sectors. Structural reforms affect markups for all firms and for the periphery labor market as a whole. Available empirical evidence (see table 1) reveals that the competitiveness gap between core and periphery is particularly severe in the service sector. On one dimension, this evidence suggests that the experiment in the paper may over-estimate the effects of structural reforms, as in the paper those are applied to the whole economy. Additionally, product and labor market liberalizations in the service sector do not significantly affect the terms of trade and are unlikely to bring about large variations in the trade balance. Therefore, one of the channels of transmission highlighted in this paper might be muted.

The second limitation is the lack of strong evidence in support of the positive effects of structural reforms. Structural reforms seem

**Table 1. Estimates of Product Market Markups**

	Italy and Spain	France and Germany
Aggregate	1.36	1.25
Manufacturing	1.17	1.14
Services	1.48	1.33
<b>Source:</b> Conway, Janod, and Nicoletti (2005).		

a clear case of “theory ahead of the data.” One exception is the recent paper by McAdam and Stracca (2015). The authors construct a database of labor market reforms for the period 1970–2015 and study their effects on various labor market variables and macroeconomic aggregates. Their findings point to a dichotomy. Reforms appear to have a positive impact on employment but no effect on income growth.<sup>7</sup> As a result, the labor share of income decreases, since reforms that reduce markups would boost employment but decrease wages for given income. While the consequences for employment are consistent with the theory in this paper, the absence of any effect on income questions the significance of the long-run gains on output, which are at the core of the model. Furthermore, the fall in the labor share of income raises concerns about the political economy of structural reforms and the possibility that this type of liberalization may actually foster inequality.

## 5. Conclusions

Arce, Hurtado, and Thomas have written a timely and important paper. Their analysis takes stock of what we have learned during the crisis, and proposes a new package of economic policies (the “Holy Trinity”) to deal with similar future episodes. The package consists of a combination of structural reforms, unconventional monetary policy measures, and a fiscal expansion in trade partners with fiscal capacity. Structural reforms imply long-run output gains. Their negative short-run consequences for real activity can

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<sup>7</sup>The study also finds that reforms supported by monetary and fiscal accommodation have a somewhat stronger positive effect.

be compensated by a positive reaction of asset prices. In addition, unconventional monetary policy can accommodate the deflationary pressures implicit in markup reductions. Finally, a fiscal expansion in trade partners less affected by the crisis can mitigate the negative cross-country spillovers.

The credibility element of structural reforms, and of the monetary and fiscal support, is crucial for the long-run benefits to have a short-run impact, via income effects and asset prices. In my discussion, I have highlighted the political-economic constraints that structural reforms may face, as well as some empirical limitations of the analysis.

More research, especially on the empirical side, is clearly needed to understand the short-run effects of structural reforms and hence become confident in their ability to successfully deal with crisis episodes.

## References

- Andrés, J., O. Arce, and C. Thomas. 2015. "Structural Reforms in a Debt Overhang." Unpublished, Bank of Spain.
- Barroso, J. M. 2012. "The 2012 State of the Union." Closing Remarks at the Plenary Session of the European Parliament, Strasbourg, France, September 12.
- Bayoumi, T., D. Laxton, and P. Pesenti. 2004. "Benefits and Spillovers of Greater Competition in Europe: A Macroeconomic Assessment." NBER Working Paper No. 10416.
- Calvo, G. 1983. "Staggered Prices in a Utility-Maximizing Framework." *Journal of Monetary Economics* 12 (3): 383–98.
- Chen, H., V. Cúrdia, and A. Ferrero. 2012. "The Macroeconomic Effects of Large-scale Asset Purchase Programmes." *Economic Journal* 122 (564): F289–F315.
- Conway, P., V. Janod, and G. Nicoletti. 2005. "Product Market Regulation in OECD Countries: 1998 to 2003." Working Paper No. 419, OECD Economics Department.
- Draghi, M. 2015. "Structural Reforms, Inflation, and Monetary Policy." Speech at the ECB Forum on Central Banking, Sintra, Portugal, May 22.
- Eggertsson, G. 2012. "Was the New Deal Contractionary?" *American Economic Review* 102 (1): 524–55.

- Eggertsson, G., A. Ferrero, and A. Raffo. 2014. "Can Structural Reforms Help Europe?" *Journal of Monetary Economics* 61: 2–22.
- Fernandez-Villaverde, J. 2015. "Discussion of 'Can Structural Reforms Help Europe?'" *Journal of Monetary Economics* 61: 23–29.
- Fernandez-Villaverde, J., P. Guerron-Quintana, and J. Rubio-Ramirez. 2012. "Supply-Side Policies and the Zero Lower Bound." Unpublished, University of Pennsylvania.
- Funke, M., M. Schularick, and C. Trebesch. 2015. "Politics in the Slump: Polarization and Extremism after Financial Crises, 1870–2014." Unpublished, Free University of Berlin.
- Gerali, A., A. Notarpietro, and M. Pisani. 2015. "Structural Reforms, Investment and Zero Lower Bound in a Monetary Union." *The Manchester School* 83 (2): 120–39.
- Iacoviello, M. 2005. "House Prices, Borrowing Constraints, and Monetary Policy in the Business Cycle." *American Economic Review* 95 (3): 739–64.
- McAdam, P., and L. Stracca. 2015. "Structural Reforms for Inclusive Growth? Empirical Evidence from the OECD." Unpublished, European Central Bank.
- Schwab, K., ed. 2011. *The Global Competitiveness Report 2011–2012*. Geneva: World Economic Forum.
- World Bank Group. 2014. *Doing Business 2015: Going Beyond Efficiency*. Washington, DC: World Bank.