Discussion of "Labor Tax Reforms, Cross-Country Coordination, and the Monetary Policy Stance in the Euro Area: A Structural Model-Based Approach"

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1. Introduction

Labor market and tax reforms are high on the policy agenda of many European countries and are repeatedly recommended by international organizations like the European Union, the OECD, and the European Central Bank as necessary measures for stimulating the economic growth potential. In that context, reducing labor tax wedges is considered instrumental for reducing structural unemployment and increasing labor market participation. But fiscal space is limited and unevenly spread across countries in Europe. Therefore an optimal design of fiscal reforms is absolutely necessary to reach a maximum impact on employment without derailing public finances. The optimal design of the fiscal stimulus depends on the specific transmission channel of alternative measures. A detailed understanding of the transmission mechanism is therefore important.

The paper by Jacquinot, Lozej, and Pisani (this issue) investigates the impact of lowering labor taxes. The authors use the EAGLE (Euro Area and Global Economy) model, a structural multi-country model for the euro area, to investigate this issue. EAGLE is well suited for analyzing this type of policy question, as it contains an explicit specification of the labor demand and labor supply considerations together with a set of tax variables. The multi-country setup also allows for analyzing the country spillover effects. For this exercise, the authors have used an extended version of the model with a public sector, employing around 20 percent of the working force, and a labor market with search-and-matching frictions. Unemployed workers can choose the sector in which they search for jobs.

The paper investigates the impact of permanently lowering labor taxes for firms and for households in the home economy, which is calibrated to represent the German economy within the euro area. Both policies stimulate economic activity and reduce unemployment. A reduction in household labor taxes of 1 percent of GDP stimulates both employment and hours worked per person and results in a 0.9 percent increase in output in the long run. The reduction in firm taxes has very similar effects, raising output slightly less (0.7 percent). The negotiated gross real wage responds very differently to the two measures and in such a way that the reduction in the tax wedge is shared by both parties in the bargaining process. A combined tax reduction in the home economy and the rest of the euro area reinforces the impact of the tax reduction, but the magnitude of the spillover effects remain very modest. The paper also considers the interaction of the tax instruments with monetary policy. The expansionary effects are realized faster in a simulation experiment in which the interest rate response of the central bank is switched off during the first eight quarters after the shock. This amplification works for both household and labor taxes without much differentiation between the two tax measures.

For my discussion, I repeated the simulation experiments using the original EAGLE model (see Gomes, Jacquinot, and Pisani 2010). That model contains a labor market with differentiated labor and market power for wage setters. The wage-setting process is characterized by a standard Calvo model to captured the nominal wage stickiness. This feature is absent in the extended EAGLE version with bargaining that is used in the paper under consideration. Based on the original model version, I argue that there is an important difference between the impact of labor taxes on firms and households: the presence of sticky wages substantially magnifies the impact of lower labor taxes for firms. Because the transmission channel of firm and household taxes is very different with sticky wages, it follows that the interaction of both tax instruments with the monetary policy accommodation under the ZLB is also very different.

2. Lower Contributions for Firms or Households

The paper suggests that lower taxes for households or for firms have similar effects and that the effects of lower household contributions

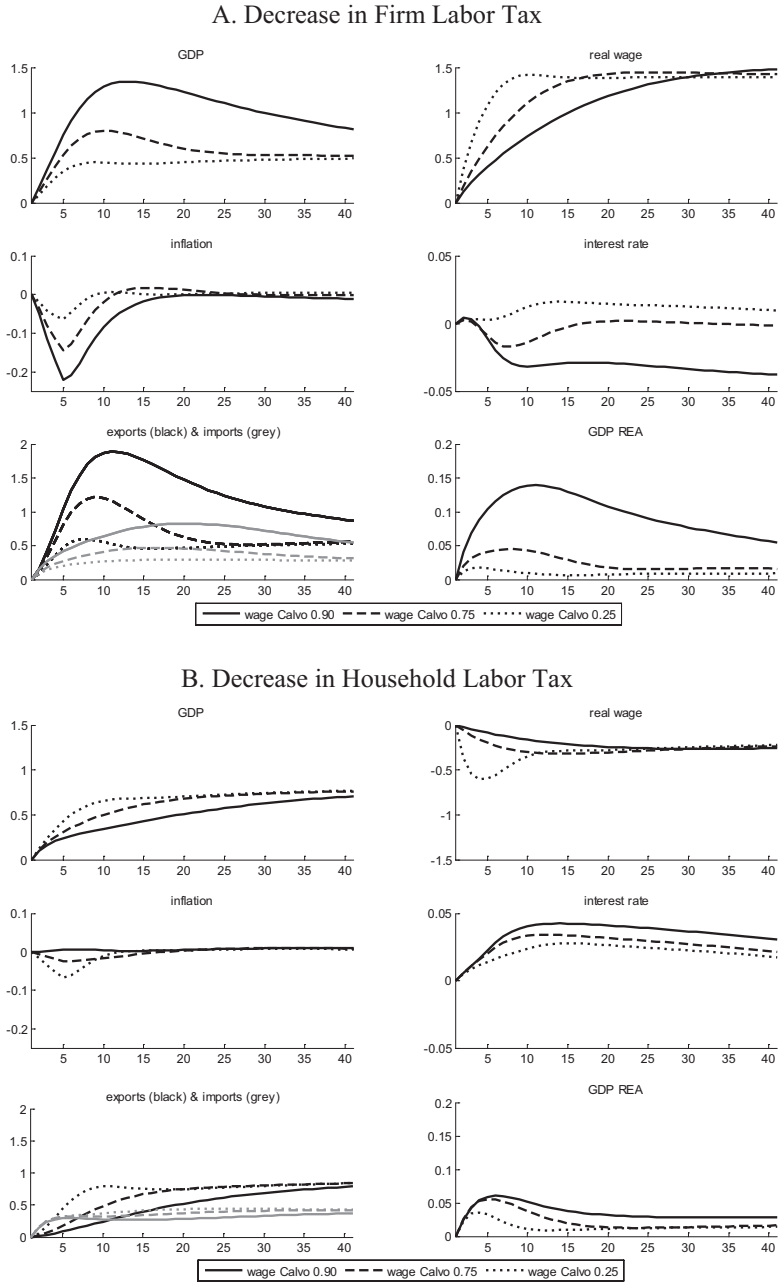
slightly dominate in the long run. This finding stands in sharp contrast with recommendations that my colleagues at the National Bank of Belgium have formulated in the past on alternative ways to finance the social security system (see National Bank of Belgium 2011). In this advice, model simulations favored strongly a reduction in firm contributions to reinforce the overall employment effect. It turns out that the assumptions on wage flexibility are crucial for understanding these different conclusions.

In order to illustrate this argument, I simulate a permanent reduction in taxes using the original EAGLE model and assuming alternative assumptions on the wage stickiness: in figure 1, three calibrations are compared with the Calvo probability for wage adjustment equal to 0.25, 0.75, and 0.90. Panel A presents the impact of firm labor taxes, while panel B summarizes the effect of lowering household labor taxes.

Under almost-flexible wages (Calvo = 0.25), taxes on firms and households have very similar effects on GDP, and the impact resembles the results presented in the paper with the bargaining setup. The output effects in my simulations are slightly smaller because the original EAGLE version considers only the intensive labor supply margin, while the bargaining setup allows for a combination of the intensive hours worked decision and the extensive employment decision. With flexible wage setting or with period-by-period bargaining, wages can respond quickly to the tax change. In such a context it is basically irrelevant whether taxes are levied on households or firms, as the periodic bargaining allows for an immediate sharing of the surplus among both parties.

Note that in both simulation experiments, the long-run effect of lower household taxes is dominating the long-run effect of lower firm taxes. This result is a mechanical implication of the way the simulation experiment is set up because the same percentage-point reduction in firm and household taxes induces a different reduction in wage costs after the wage renegotiations have taken place. A decrease in household taxes leads to a decrease in the wage agreed with firms, so that the tax reduction is shared among both parties. The lower gross wage, which makes up the tax base, adds on top of the reduction in the tax rate. The opposite happens with a reduction in firm labor taxes. In this case, the wage renegotiations result in higher wages so that households can also benefit from the

Figure 1. Decrease in Labor Tax by 1 Percent of GDP in Home Economy for Different Assumptions on Wage Stickiness in the Original EAGLE Model



reduction in the tax wedge. This means that the tax base increases, and this offsets partially the reduction in the tax rate. The cost for public finances of the firm tax reduction is therefore systematically lower than for the same percentage drop in the household tax. The impact of the same percentage-point decline in the two tax measures is also different on the private decisions of households and firms. A 1 percentage point reduction in the household tax induces a larger percentage reduction in the marginal rate of substitution compared to the impact of a 1 percentage point reduction in firm taxes on the marginal cost. The different impact on these two concepts will exactly correspond with the tax wedge between the total wage cost for firms and the net wage for the household. This means that to generate a completely neutral tax shift, both for public finances and for the private-sector optimization, one should consider a reduction in firms' taxes of $(1+\tau_{\mathrm{f}})/(1-\tau_{\mathrm{n}}-\tau_{\mathrm{h}})$ percentage point—where τ_{f}, τ_{n}, and τ_{h} are, respectively, the tax rates on firms' labor cost, household income, and household labor tax—for a 1 percentage point increase in household tax.

With higher wage stickiness present in the model, the impact of the two taxes starts to deviate because the reoptimization of the wage takes time. This process changes substantially the transmission mechanism of the two shocks as illustrated in figure 1 for the Calvo wage probability equal to 0.75 and 0.90. With sticky wages, the tax reduction for firms lowers their marginal cost in a persistent way. In this context, firms are stimulated to increase their supply and to lower prices. These positive supply effects are reinforced by the accommodating monetary policy response. This supports aggregate demand and results in a temporal overshooting of the long-term output expansion. With sufficiently high wage stickiness, these expansionary effects can be huge and persistent. With lower household taxes and sticky wages, the interaction works in the opposite direction. In this case, the transmission of the shock works mainly through the demand channel: as households experience an increase in net wage income, they tend to raise their consumption expenditures. This channel is particularly active in the EAGLE model, with a fraction of households (25 percent) behaving as hand-to-mouth consumers. On the other hand, the supporting effect of the increased net wage on labor supply is realized only slowly because wages adjust only gradually to the increased labor supply. On top,

the power of the demand channel is offset by the restrictive monetary policy response and the absence of any substantial supply and price adjustment on the firm side. The higher the wage stickiness, the smaller is the expansionary output effect for this instrument.

This exercise suggests that there can be large dynamic differences between the two types of tax measures. The reduction of firm contributions works via a different transmission mechanism that mainly affects the supply side of the economy, while lowering taxes for households operates mainly via income and aggregate demand. Not surprisingly, this different nature of the transmission mechanism will also be crucial when we analyze the two measures in a ZLB context.

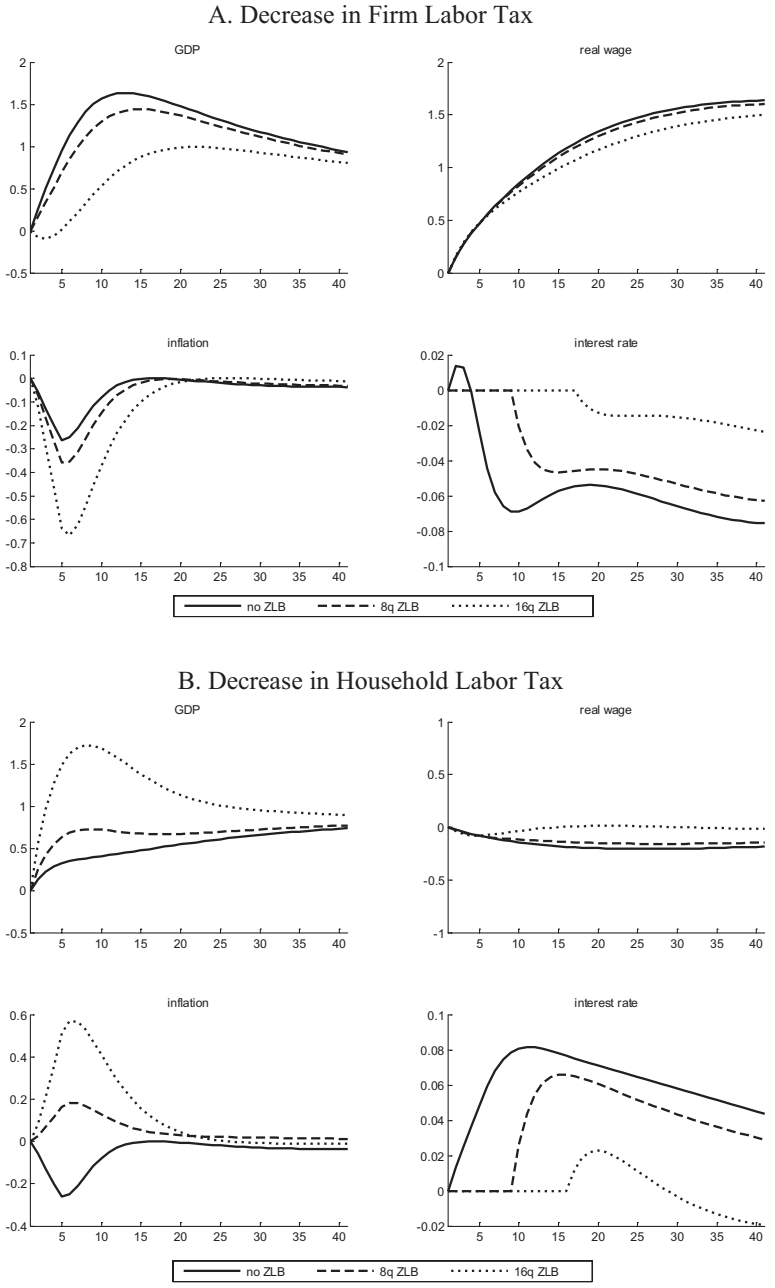
Figure 1 also provides information on the spillover effects of lower taxes in the home country on the rest of the euro area. It turns out that both tax instruments always generate positive spillover effects. For both instruments, the spillover effects are positive functions of the degree of wage stickiness. These results suggest that there is no reason to fear competitive fiscal devaluations. Countries can use the fiscal space that is available to reduce their distortionary taxes without waiting for a coordinated action. But in all experiments, the magnitude of the spillover effects remains small.

3. Monetary Interaction under ZLB

Jacquinot, Lozej, and Pisani observe that the impact of the tax reduction is increased in a situation where the monetary policy response is constrained by the zero lower bound. In their simulations, the amplification is moderate and mainly concentrated in the short run. Also, the amplification is similar for both tax instruments. In our simulations, the interaction between the tax instruments and the monetary policy response turned out to be more complicated once wage stickiness is taken into account in the model.

Figure 2A shows the effect of a reduction in firm labor taxes in the original EAGLE model with high nominal wage stickiness (Calvo = 0.90) for three different monetary policy reactions: the standard benchmark monetary response as described by the Taylor rule and similar to the response in figure 1, a situation in which the zero lower bound is expected to be binding for eight quarters at the moment that the tax reduction is announced and implemented, and a situation in which this zero lower bound is anticipated to hold

Figure 2. Decrease in Labor Tax by 1 Percent of GDP in Both Home Economy and Rest of Euro Area with High Wage Stickiness and Alternative Assumptions on the ZLB Duration



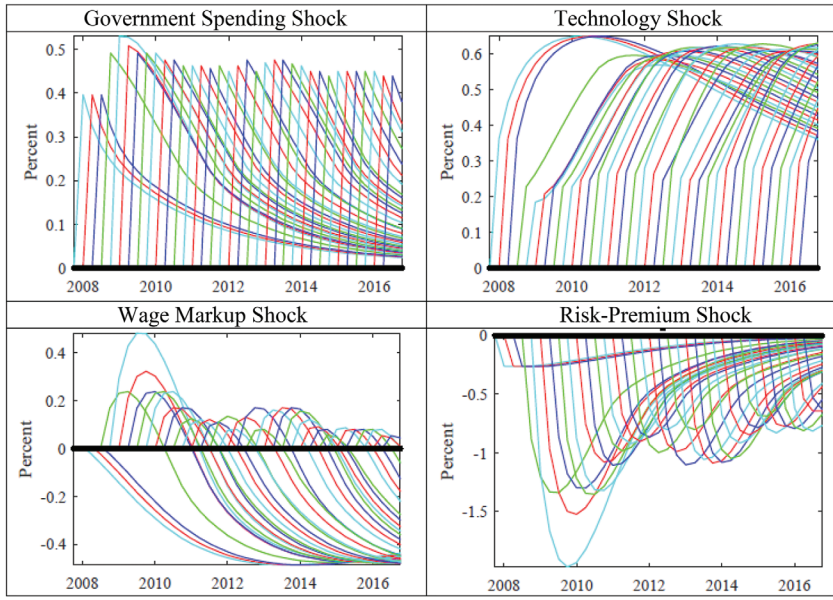
for sixteen quarters. We follow the exercises presented by Jacquinot, Lozej, and Pisani and consider a joint decline in the tax rates in the home economy and in the rest of the euro area. The expansionary output effect of a decline in the firm tax rate is much smaller when the ZLB constraint is binding and can even become negative during the first years when the ZLB is expected to hold for a long period. This effect is consistent with our previous classification of the transmission mechanism of the firm tax reduction as a typical supply-side instrument. The reduction in the marginal cost and the resulting decline in inflation increase the real interest rate, and this process reinforces the deflationary spiral typical for a liquidity trap situation.

Interestingly, the mechanism of the ZLB works exactly the opposite way for a decrease in household taxes. With high wage stickiness, the transmission of this tax is crucially dependent on the demand channel, and without the standard restrictive policy response, this demand effect will support output and induce more inflationary pressure. The longer the anticipated duration of the ZLB constraint, the more expansionary the effect of the household tax will be.

The relative effectiveness of the two tax instruments is thus completely reversed when monetary policy is highly constrained. These observations are in line with the concerns about supply-based policy interventions as raised by Eggertsson (2010) and Eggertsson, Ferrero, and Raffo (2014), specifically in the euro-area context. On the other hand, Blanchard, Erceg, and Lindé (2017) have illustrated the strong amplification and spillover effects of positive government demand programs in the core countries of the euro area in persistent ZLB situations. All these experiments are performed in calibrated models, and therefore it remains an empirical question how strong these ZLB effects are in the real world.

In order to respond to this last question, Lindé, Maih, and Wouters (2018) have estimated a version of Smets and Wouters (2007) with alternative approaches to implement the ZLB. Their results show a strong improvement in the marginal likelihood for models with substantial time-varying impulse response functions during the period when the ZLB was binding. Figure 3 summarizes some of the relevant impulse response for this discussion. The figure illustrates how the impulse response functions have changed over time: the first three lines, representing the responses during the first

Figure 3. Estimated Impulse Response Functions Dependent on the Anticipated ZLB Duration in Lindé, Maih, and Wouters (2018)



three quarters of 2008, reproduce the effects that apply when the standard policy reaction is active. The subsequent lines represent the time-varying impulse response functions for each quarter since 2008:Q4—the first period in which the ZLB started to be binding for the federal funds rate in the United States. The results for four shocks are shown. First of all, the government expenditure shock is considered: a one-standard-error shock of 0.5 percent of GDP tends to stimulate output by less than 0.5 percent in normal times. The fiscal multiplier increased to slightly above 1 in 2009 when the ZLB is binding and converged back to the standard short-run multiplier value of around 0.8 afterwards. Also, the impulse response of the technology shock is affected by the ZLB, with the output effect reduced by the deflationary effect of the shock. For both these two shocks, the time variation in the responses remains modest, and for the technology shock no sign reversal in the output effect is observed. While these two shocks received most attention in the literature on

the impact of the ZLB on the transmission of shocks in the New Keynesian models, the impact on other supply and demand shocks can in fact be much more outspoken. For instance, the estimated impact of the wage markup shock on output is changing in sign over the short and intermediate horizon since 2009 when the ZLB started to be binding. Also the risk premium shock, a pure demand shock in the Smets-Wouters model, turns out to be very sensitive to the ZLB constraint. The outcomes for these shocks suggest that the two tax instruments, either firm labor tax, as a typical supply shock, or household labor tax, as an example of a demand shock, can also be very sensitive to the ZLB constraint not only in theoretical experiments but also in empirically estimated models.

4. Conclusion

The paper of Jacquinot, Lozej, and Pisani provides a useful illustration of how structural models like the EAGLE model can be used to evaluate the transmission and the impact of various fiscal instruments. In such an exercise, it is important to test the sensitivity of the results to alternative model and parameter assumptions. The results presented in this discussion suggest that the impact of various policy instruments can be substantially different depending on the details of the implementation. Understanding the details of the transmission channel is therefore important for an optimal design of these reforms. The impact of the policy measures also depends on the broader macroeconomic context and the interaction and accommodation by other policymakers. This implies that conditional policy simulations should be conducted that incorporate the state-dependent reactions of other policymakers and economic sectors. The ZLB is one example of such a constraint, but the activation of financial constraints or other capacity constraints might also be relevant in these conditional experiments. The paper by Arce, Hurtado, and Thomas (2016) contains another excellent example of such a policy analysis in the euro-area context.

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