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Labour market differences and monetary policy in the euro area*

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Differences in labour market institutions and regulations between countries of the monetary union can cause divergent responses even to a common shock. We augment a multi-country model of the euro area with search and matching framework that differs across Ricardian and hand-to-mouth households. In this setting, we investigate the implications of cross-country heterogeneity in labour market institutions for the conduct of monetary policy in a monetary union. We compute responses to an expansionary demand shock and to an inflationary supply shock under a standard Taylor rule, asymmetric unemployment targeting, and average inflation targeting. For each rule we distinguish between cases with zero weight on the unemployment gap and a negative response to rising unemployment. Across all rules, responding to unemployment leads to lower losses of employment and higher inflation. Responding to unemployment reduces cross-country differences within the monetary union and the differences in consumption levels of Ricardian and hand-to-mouth households.

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Single monetary policy, but different labour market structures

A particular feature of the euro area is that monetary policy is conducted based on area-wide considerations, while labour market institutions differ between countries in the union. These differences in labour market institutions between countries of the monetary union can give rise to heterogeneous responses to shocks across countries within the union, even when the shocks hit all monetary union regions symmetrically. Moreover, different households within an economy can be affected to a different degree by a shock. These considerations play some role in monetary policy frameworks, as can be seen from the fact that the ECB in its last Strategy Review considered the interaction of monetary policy and labour markets (Brand et al., 2021).

In Gomes et al., 2023, we provide an analytical framework that addresses both cross-country and within-country labour market heterogeneity in a monetary union. In particular, we develop a new version of the Euro Area within the GLobal Economy model (the EAGLE model), a large-scale open-economy structural model that is augmented with an enhanced labour market, modelled using search-and-matching frictions. Each country is modelled as a two-agent New Keynesian model (a so-called TANK model) with Ricardian ("rich", or unconstrained) and non-Ricardian ("poor", or hand-to-mouth, HtM) households. Each type of agent faces a labour market with its own characteristics regarding job finding and separation rates, bargaining power, and nominal wage rigidity. The latter is modelled so that it allows distinguishing wage stickiness for new hires and for existing employees. Importantly, labour markets for the Ricardian and HtM households differ both within countries and across countries. Because non-Ricardian households are constrained in terms of consumption smoothing, and their consumption depends mainly on their labour income, the labour market situation for these households matters substantially for their consumption.

In this framework, we investigate the performance of a set of monetary policy rules after stylised demand and supply shocks that affect the economy. The benchmark Taylor rule we use follows Taylor and Williams (2010) and includes a reaction to inflation, the deviation of inflation from the target and a reaction to the unemployment. Within the framework of such rule, we study the performance of three different versions of such rule in terms of the degree to which the central bank responds to unemployment. We look at a benchmark Taylor rule that includes a response to inflation and unemployment (IT rule), a Taylor rule that includes an asymmetric response to unemployment (ASUT rule), and average inflation targeting rule (AIT rule). For all these three rules, we distinguish between cases where the central bank does not respond to unemployment and the cases where it does.

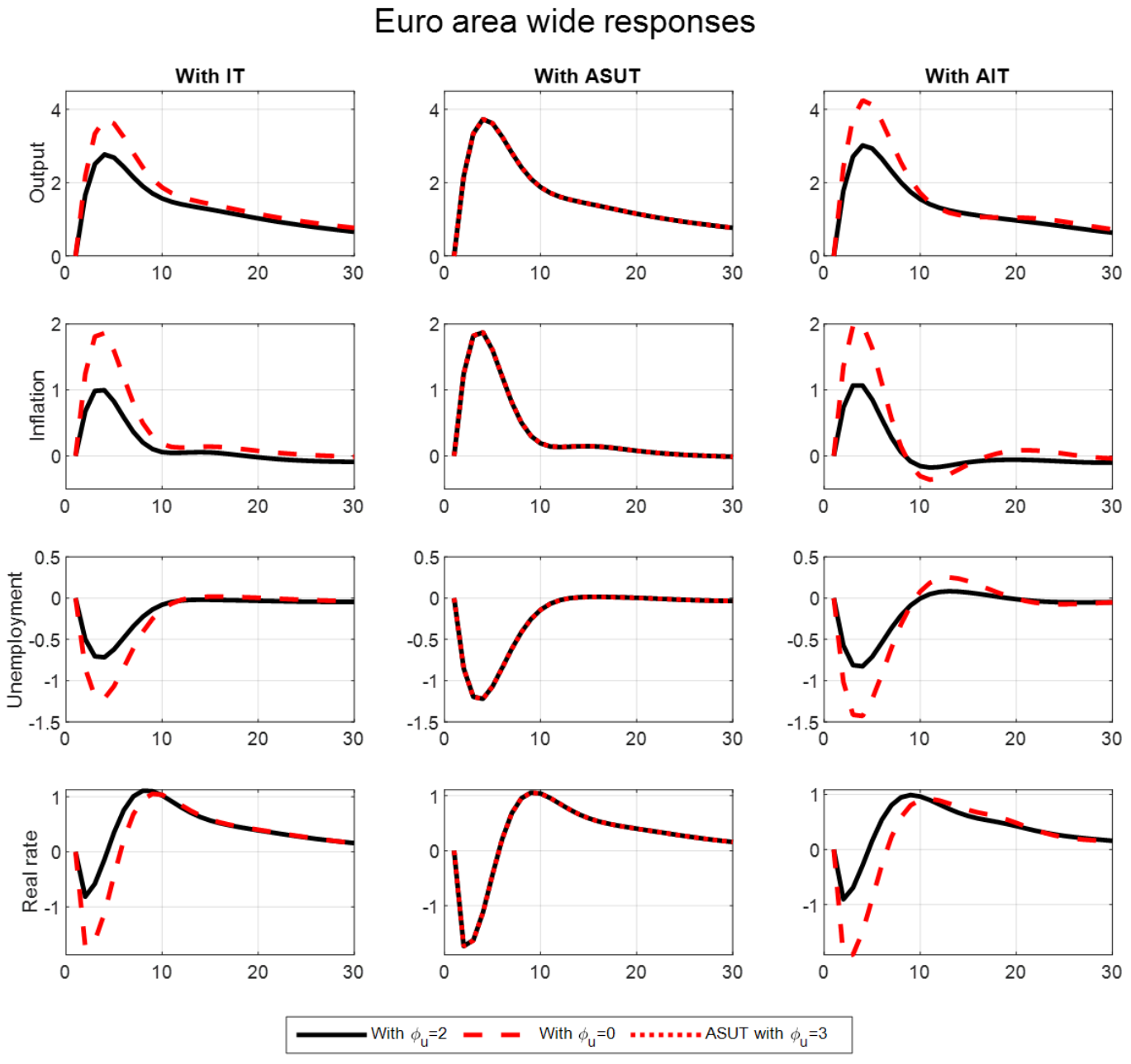
We are particularly interested in the performance of these rules with regard to two measures of heterogeneity: (1) heterogeneity of responses to shocks between countries in the monetary union, and (2) heterogeneity of responses to shocks of different agents within a country in the monetary union.

We first compute responses to a common expansionary and inflationary demand shock, which increases inflation and reduces unemployment, and therefore does not create a direct trade-off between inflation and unemployment stabilisation. We next compute the responses to a contractionary and inflationary supply shock, which increases both inflation and unemployment and therefore implies a trade-off for a central bank between inflation and unemployment stabilisation.

Expansionary demand shock

For the expansionary demand shock, we consider a combination of a preference shock and an investment technology shock, symmetrically in both euro area regions. Shock sizes are standardised to achieve a 1 p.p. maximum increase in inflation (annualised) under the benchmark IT rule with a positive weight on unemployment, and this size of shocks is kept fixed across simulations with different monetary policy rules. Figure 1 shows the euro-area-wide variables for the three interest rate rules, one in each column and for different weights placed on unemployment. The full black line shows the case when the central bank responds to the unemployment rate and the dashed red line shows the case where the central bank does not respond to unemployment. For the ASUT rule the case where the weight on unemployment is zero always corresponds to the strict inflation targeting rule, i.e., to dashed red lines in the leftmost column of the figure.

Figure 1: Expansionary demand shock from the euro area perspective



Three observations stand out. First, not reacting to unemployment tends to exacerbate fluctuations in all variables (except the nominal interest rate), under all rules. This is expected, because placing some weight on unemployment implies that the central bank tightening in an economic expansion should be stronger if unemployment decreases while inflation increases. When monetary authority responds to unemployment, it counteracts the decline in unemployment, the expansion of economic activity is smaller and the increase in inflation is also milder. Note that in the case of the ASUT, given that the shock implies a decrease in unemployment, the rule's response to the unemployment rate is not triggered, so the rule boils down to a pure IT rule (i.e., a rule that only responds to inflation developments). This implies that a stronger response to unemployment (which we show with dotted red line) coincides with the less aggressive reaction to unemployment and both coincide with strict inflation targeting. In the case of a negative (i.e., deflationary) demand shock the opposite happens (see the appendix of Gomes et al., 2023).

Second, fluctuations tend to be more pronounced under the AIT rule, even when the rule does include a response to unemployment. The reason is that the AIT rule is relatively slow to react, so interest rates rise more slowly in response to an economic expansion, which delays the dampening of demand. This can be seen in a slower and weaker increase in nominal rates and a stronger decrease in real interest rates under the AIT compared to other rules. Including the response to unemployment in the AIT rule helps dampening the fluctuations, because unemployment has a non-zero weight in the rule and an unemployment decrease implies that under the AIT the central bank can respond less sluggishly.

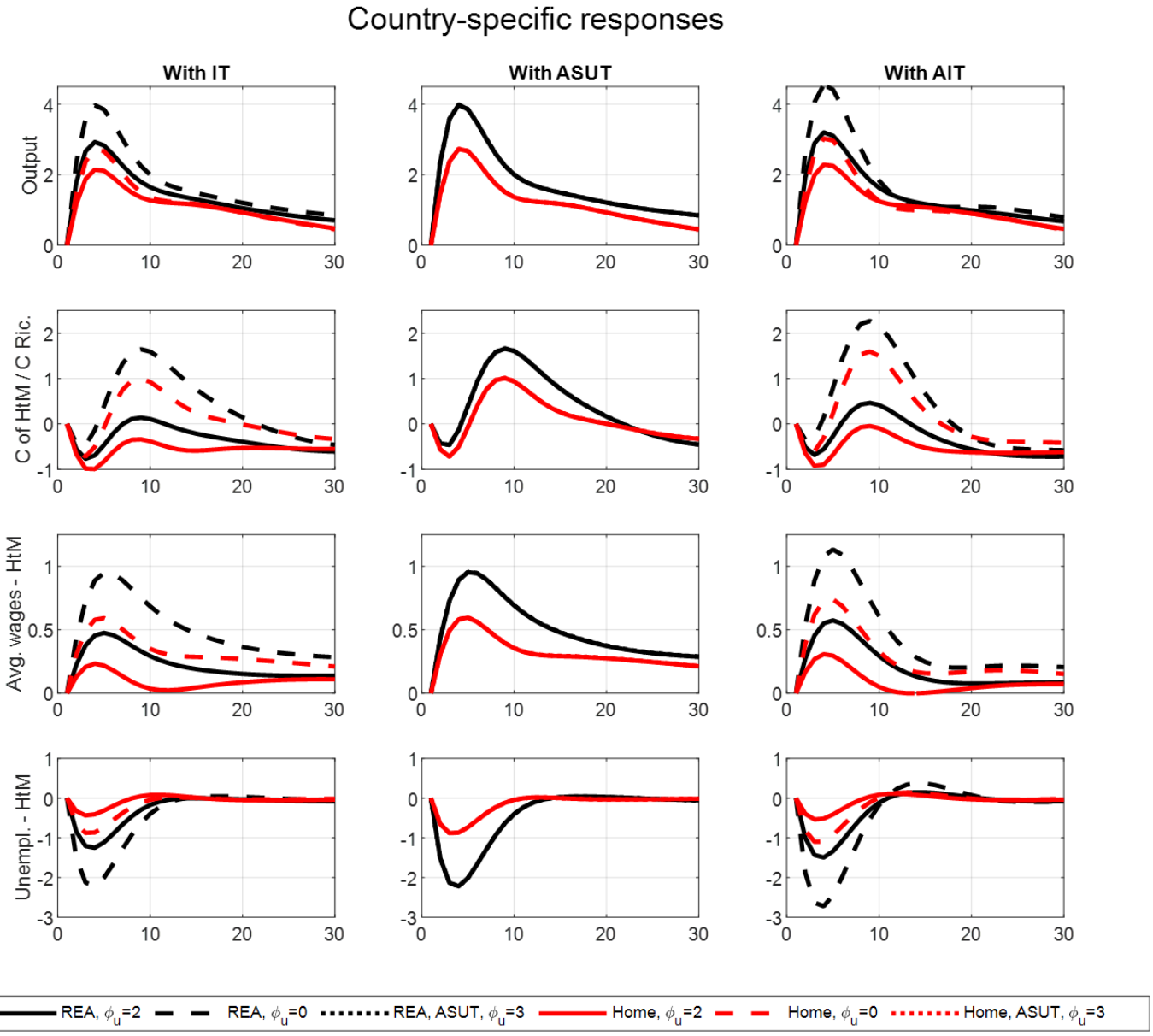
Figure 2 shows country-specific outcomes in the euro area for the three monetary policy rules. The Home country is shown with red lines and the rest of the euro area with black lines. There are considerable differences between the two regions regardless of the monetary policy rule. This reflects in part the differences in the labour markets, but also differences in the structure of the economy, such as the differences is the export orientation of the two euro-area blocs.

Differences in labour market structure also lead to some divergence between countries. For instance, while Home's output increases by about two thirds as much as the rest of the euro area (REA) output, unemployment drops by half as much as in the REA. The reason for this more sluggish response of unemployment is that wages in Home increase by about half as much as in the REA, but more persistently, which dampens hiring. In Home and in the REA, most of the dampening of hiring is among the HtM households. This holds throughout the rules and regardless of whether the central bank attaches some weight to unemployment or not.

Interestingly, if the central bank does not react to unemployment after an expansionary shock, this implies that consumption level of the HtM households in both EA regions increases by more than the consumption level of Ricardian households and therefore leads to a reduction in consumption inequality. In the case of an expansionary demand shock, this line of thinking implies that central banks seeking to reduce inequality in consumption should allow for somewhat higher inflation by not tightening in response to a strong labour market. This is akin to the asymmetric unemployment targeting rule, which would ignore unemployment whenever it decreased below its steady-state value (or respond less to its decrease), as displayed in the middle panel of the figure, where the full and dotted lines coincide. While such considerations are strictly speaking not in the mandate of the ECB, they do for instance echo the statement of the FED Chairman Powell (2020) regarding the strategy review of the FED: “Our revised statement reflects our appreciation of a strong labour market, particularly for many in low- and moderate-income communities...”

Another important takeaway from the cross-country comparison is that the divergence between two intra-EA regions tends to be the strongest when fluctuations are large in absolute terms, which happens when monetary policy does not respond to unemployment. Similarly, the divergence in consumption levels of households within each country also tends to be higher when the central bank does not respond to unemployment (that is, the inequality in consumption in the REA is reduced more strongly than in Home when central bank does not react to unemployment).

Figure 2: Expansionary demand shock from the cross-country and within-country perspective



Contractionary supply shock

We now investigate the performance of monetary policy rules under the shock scenario that induces a trade-off between stabilizing inflation and unemployment. To achieve this, we simulate an asymmetric and equal increase in markups in tradable and non-tradable sectors in both blocs of the euro area. As before, the size of the shock is calibrated to achieve a 1 p.p. maximum increase in the euro-area-wide inflation under the benchmark rule and the size of the shock is kept the same across policy rules.

Figure 3 shows the euro area-wide outcomes. The supply shock generates an increase in inflation and a negative impact on economic activity. As in the previous case, the fluctuations in (un)employment, aggregate demand and its components are stronger if the central bank pays no attention to unemployment, while in this case inflation shows a much milder increase. Compared to the other two rules, AIT tends to attenuate or even neutralise the negative real impact of the shock in the first few quarters when the central bank reacts to unemployment, mainly because this rule stipulates a slower increase in the nominal rate, which results in a stronger drop in the real interest rate and hence an increase in Ricardian households' consumption in the short run. Because these households represent 75% of all households, they have a strong influence on aggregate consumption.

Unlike for the expansionary demand shock, the supply shock generates an increase in unemployment and therefore triggers a monetary policy response under the ASUT rule, which in its more aggressive version achieves a lower peak increase in unemployment than AIT that responds to unemployment, but at the cost of higher inflation.

Figure 3: Contractionary supply shock from the euro area perspective

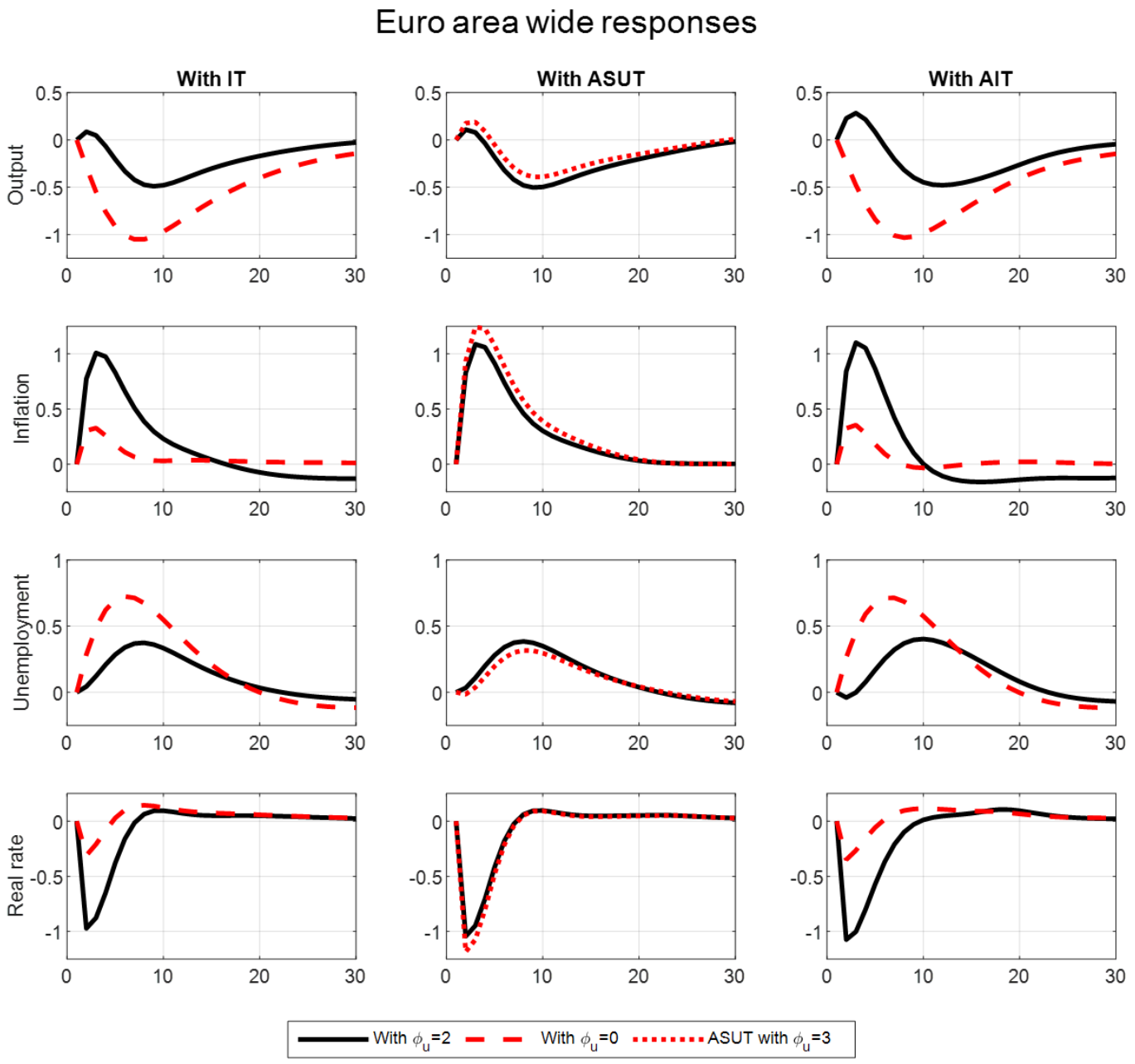
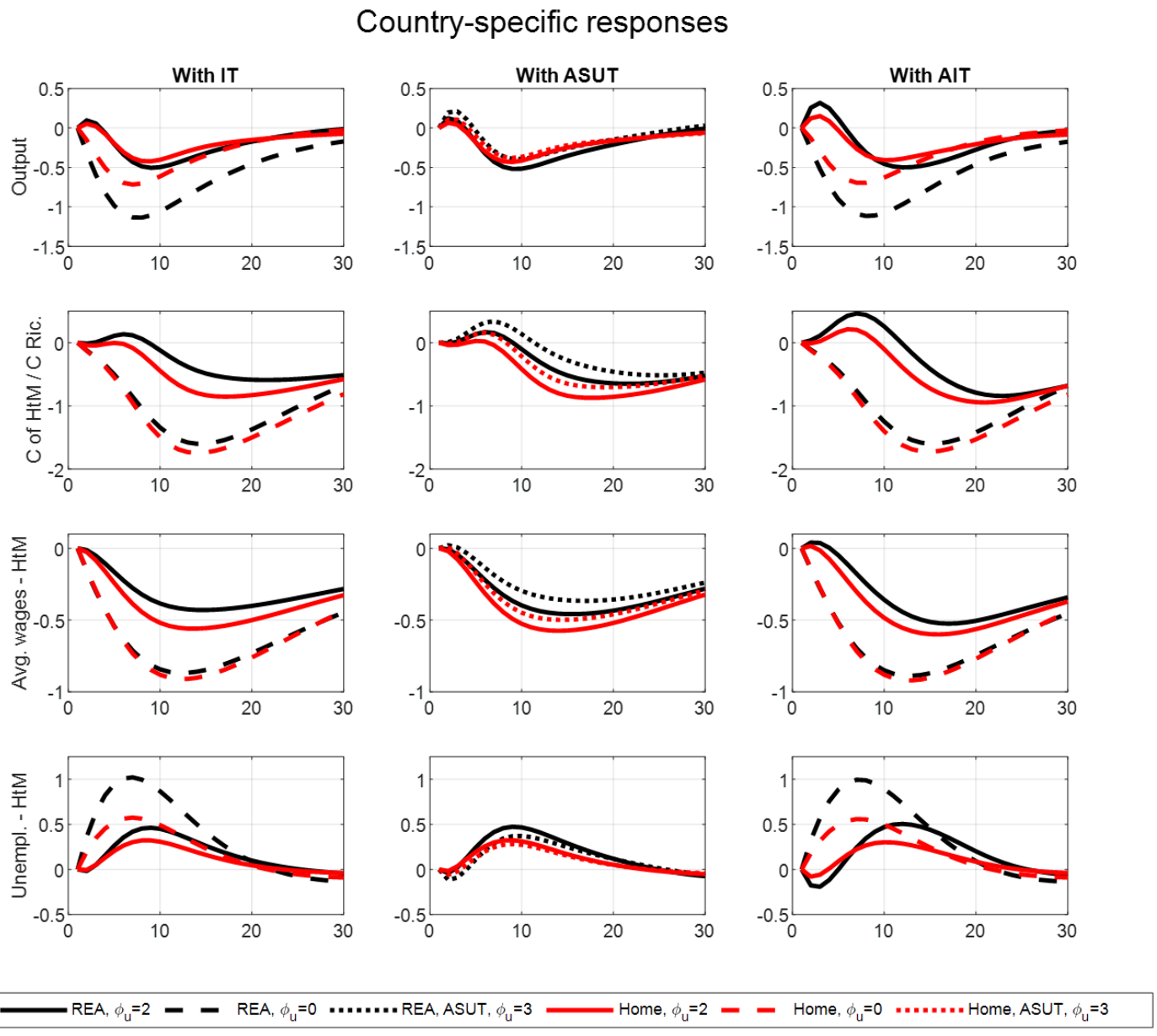


Figure 4 shows the responses across countries of the euro area. Home is shown in black and the REA in red lines. Compared to the expansionary demand shock, the responses of both EA blocs to the shock are less divergent. The main reason for this is that production functions of Home and the REA do not differ as much as their structures of aggregate demand. We again observe a much stronger divergence between Home and the REA when monetary policy only responds to inflation (impulse responses shown with dashed lines tend to be more apart than impulse responses shown with full lines, with the exception of wages of HtM households). This holds across all three types of rules (IT, ASUT, AIT).

When the central bank reacts to unemployment, this implies a lower real rate, which stimulates consumption of Ricardian households in the short run and mitigates or prevents the short-term decrease in output. Across the rules, but especially for ASUT and AIT, this temporary increase in aggregate demand increases job finding probability of HtM households, which for a short period of time protects their employment, income, and consumption. In this case we also observe that the divergence between Ricardian and HtM households' consumption is limited. This is in stark contrast with the case where central bank only responds to inflation and where employment, wages, and job finding probabilities fall across the board already on impact. In this case, we also see a strong increase in inequality in terms of consumption in both EA blocs, as HtM households' consumption decreases my much more than consumption of Ricardian households.

Figure 4: Contractionary supply shock from the cross-country and within-country perspective



Key findings

We find that when monetary policy responds to unemployment developments, then this results in stronger unemployment decrease after expansionary demand shocks and lower unemployment increase after a contractionary supply shock. While this does lead to a faster and stronger increase in inflation, it also results in a fast return of inflation to lower levels after the supply shock. Responding to unemployment tends to lower inequality between and within countries of the euro area. If monetary policy ignores unemployment and responds only to inflation, this leads to larger fluctuations of output and (un)employment. Moreover, these fluctuations increase divergence between the euro area economies as well as within-economy divergence among households. The effect on between-household consumption differences is, however, different for expansionary and contractionary shocks. When the central bank does not respond to unemployment, the difference between consumption of different types of households goes in favour of the HtM households after an expansionary demand shock, while after an inflationary supply shock this difference goes in favour of Ricardian households.

References

Brand, C., Coenen, G., Lydon, R., Obstbaum, M., Sondermann, D., 2001. Employment and the conduct of monetary policy in the euro area. Occasional Paper 275. European Central Bank.

Gomes, S., Jacquinot, P., Lozej, M., 2023. A single monetary policy for heterogeneous labour markets: the case of the euro area. Working Paper 2769. European Central Bank.

Powell, J., 2020. New economic challenges and the FED's monetary policy review. Speech at "Navigating the Decade Ahead: Implications for Monetary Policy," Federal Reserve Bank of Kansas City, Jackson Hole.

Taylor, J.B., Williams, J.C., 2010. Simple and robust rules for monetary policy, in: Friedman, B.M., Woodford, M. (Eds.), Handbook of Monetary Economics. Elsevier, volume 3, chapter 15, pp. 829-859.

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