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Why It Pays to Synchronize Structural Reforms in the Euro Area Across Markets and Countries

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Simulations with the IMF's Global Economy Model, calibrated to the European Union, suggest that there are sizable long-term gains in output and employment from boosting competition in product and labor markets. Coordinating reforms across these markets in a given country is found to be beneficial: it reduces transition costs in the short run and generates synergies in the long run. However, to prevent a temporary fall in euro area consumption, synchronization across countries is needed if they are to benefit from a monetary policy reaction.
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Europe has been struggling to raise trend-growth as a result of the lack of flexibility in its product and labor markets. The remedy to brighten the prospects for higher growth—structural reforms—has been well established. Diminishing regulations and barriers to competition in product markets would force firms to reduce the markup they charge customers and lead to lower prices for consumers, raising real wages and lowering resistance to labor market reforms (Blanchard and Giavazzi, 2003).

The focus of this study, setting it apart from previous applications of the IMF's Global Economy Model (GEM), is on the transition dynamics and the potential gains from synchronizing structural reforms across markets and

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across countries within a monetary union, the euro area. Traded good market reforms alone have immediate positive effects on output, wages, and welfare, while stand-alone labor market reforms lead to output gains and reduce real wages. Stand-alone reforms in the nontraded sector, where rigidities are the highest, would push consumption and output significantly below baseline in the near term. Synchronizing the timing of product and labor market reforms mitigates downward pressures on real wages, but may not suffice to avoid a transitory decline of output, and especially of consumption below baseline. Coordinating reforms among euro area economies brings into play monetary policy, which will ease as reforms reduce inflation in the entire euro area. Monetary accommodation is sufficient to prevent a temporary fall in consumption. Long-run (steady-state) effects are consistent with earlier studies (Bayoumi, Laxton, and Pesenti, 2004).

In the version of GEM used here, the world is confined to the 2005-European Union (EU) and split into four blocs: a reforming economy (France or Belgium, respectively); the rest of the euro area (RE); a group of three non-euro-area EU members (Denmark, Sweden, and the United Kingdom); and a group of 10 new member states (NMS). Trade (in percent of GDP) covers intra-EU flows only. Therefore, the four blocs appear less open than they are in reality, and the spillover effects are limited to those that benefit EU members.

Behavioral parameters were taken from the relevant literature, some of which are invariant across countries, but others were modified using country-specific information. Differences across blocs and countries, which are geographically and culturally very close, were kept to the minimum necessary. Hence, all key elasticities of substitution, the discount factor, and habit persistence have been set at the same value. Based on a recent metaregression (Evers, de Mooij, and van Vuuren, 2005), the elasticity of labor supply with respect to wages is set at 0.33. This elasticity is key for the response of the model to labor market reforms. All agents have perfect foresight. EU economies are characterized by relatively strong real rigidities, relatively high adjustment costs in the investment equations, and strong habit persistence in consumption and labor supply, combined with a high intertemporal elasticity of substitution. Real rigidities and adjustment costs in price and wage equations are calibrated to reproduce realistic sacrifice ratios. Together, nominal and real rigidities generate typical VAR-type responses to shocks.

Monetary policy authorities are assumed to target 2 percent inflation three quarters ahead, while smoothing fluctuations in the interest rate, which is used as a policy instrument. The European Central Bank (ECB) sets monetary policy on the basis of area-wide indicators. Nominal interest rates in France and Belgium are determined by the ECB, which takes into account these countries' inflation rates, weighted by their respective shares in area-wide GDP. With the euro as its currency, changes in relative prices between traded and nontraded goods, or the real effective exchange rate, take the form of inflation differentials and result in important cross-country variations in the real interest rate after shocks.

Fiscal policy is essentially passive; a fiscal rule ensures debt sustainability in the long run, with labor tax rates adjusting such that, after a shock, public debt returns to a target level. However, fiscal policy is not neutral; if structural reforms improve the tax base, the tax rate on labor declines with positive feedback effects on labor supply.

I. Markups in Labor and Product Markets

Markups reflect imperfect competition in product and labor markets. The elasticity of substitution between diverse products determines the firm's market power, which sets prices subject to the risk of losing marking shares so as to maximize profits: ignoring adjustment costs, $p_t = \theta/(\theta-1)mc_t$, where θ is the elasticity of substitution. The setup for diverse labor inputs is similar. Competition-enhancing structural reforms will be simulated through a reduction in the markups in labor, traded, and nontraded product markets. The simplicity of modeling markups makes the analysis tractable, but comes at the expense of having to be agnostic about specific reasons for imperfect competition.

Empirical estimates show significant markups in product and labor markets for most countries, though estimates vary in size. Recent joint estimates of product market markups and workers' bargaining power indicate much higher product market markups than traditional estimates, which omitted the part of the firm's rent captured by workers.[1] The model was calibrated with product markups from such joint estimates (Table 1). As estimates of markups are not available for all countries in the EU and all markets, the following additional assumptions were made. The euro area was approximated by Germany and Italy (and France or Belgium, respectively), but the RE area bloc was calibrated with estimates for the United Kingdom. For product market markups in the NMS, their relative position on the Organization for Economic Cooperation and Development measure of the degree of product market restrictedness was used to guide their calibration (Conway, Janod, and Nicoletti, 2005). Services markups were defined relative to goods markups on the basis of direct rather than joint estimates because union power is difficult to measure in the service sector. Lacking empirical estimates on the NMS, it was assumed that wage markups lie in the middle between the euro area and the RE bloc.

II. Scenarios

The definition of the four blocs provides a natural design for the simulation exercise. The group of Denmark, Sweden, and the United Kingdom (RE) is on average further advanced in labor and product market reforms than the

[1]See Oliveira Martins and Scarpetta (1999); and Jean and Nicoletti (2002) for product markets; Saint-Paul (2004); Crépon, Desplatz, and Mairesse (2002); Dobbelaere (2004); and Konings, Van Cayseele, and Warzynski (2001) for joint labor-product market estimates; and Dumont, Rayp, and Willemé (2006) for estimates of union bargaining power.

Table 1. Markups in Labor and Product Markets

	Labor	Tradables	Nontradables
Belgium	1.29	1.19	1.39
France	1.35	1.21	1.41
Euro area	1.35	1.21	1.40
Denmark, Sweden, United Kingdom	1.13	1.14	1.24
New member states	1.23	1.29	1.45

other parts of the European Union. Hence, simulations quantifying the effect of increasing competition in product and labor markets to the average level of this bloc are a meaningful benchmark. Because some markup may be justified as an incentive for innovation and as the result of efficiency-wage type contracts, zero markups are not necessarily ideal. The determination of optimal levels of markups, however, is beyond the scope of this paper.

Reform in each of the markets—labor, goods (or traded products), and services (or nontraded products)—is simulated separately. Because GEM does not contain explicit interactions between markups in various markets, the steady-state effects as well as the transition dynamics of the reforms are largely additive. Even so, because of nonlinearities, when a given market is more efficient, reforms in another market have a slightly greater impact. Reforms are also considered, whether they are implemented in stand-alone fashion by France or Belgium, or synchronized with the rest of the euro area. These sets of simulations permit an assessment of the merits of synchronizing reforms across markets and across countries.

Reforms are implemented through a gradual reduction in markups in labor and product markets to the level of the RE bloc. Markups in labor and goods markets are reduced over a period of 5 years, but in the services sector, deregulation is assumed to progress slower, taking 10 years. In the model, agents have perfect foresight, thus eliminating any uncertainty about the nature and path of these reforms.

III. Long-Run Effects of Structural Reforms

The simulated overall gains from more competition in labor and product markets are substantial in terms of GDP, employment, and consumption. Once the adjustment to reform in all markets is complete, real GDP would be 17.9 percent above the baseline in France and about 11.9 percent in Belgium. The difference between these two outcomes is due to the different starting point, with France somewhat further away from the benchmark, particularly in the labor market. The capital stock would rise very substantially and hours worked would also rise, but by less. The increase in consumption is smaller than the gain in GDP, because resources need to be diverted to investment to maintain a higher capital stock (Table 2).

Table 2. Synchronized Euro Area-Wide Structural Reform: Long-Run Impact
(Deviations from baseline in percent)

	Real GDP	Consumption	Hours Worked	Real Wage	Capital Stock	Welfare CV[1]
France[2]						
Labor market	7.4	7.4	7.5	-0.2	7.4	2.5
Services	7.0	4.9	5.6	10.2	9.3	5.0
Goods	2.6	2.2	1.8	3.3	6.8	1.1
All markets	17.9	15.0	15.4	13.8	25.0	8.4
Of which: Spillover from euro area	1.8	1.9	0.4	1.3	2.3	1.5
Belgium[2]						
Labor market	4.9	4.9	5.1	-0.2	4.8	1.1
Services	5.0	3.5	3.9	8.6	7.0	2.8
Goods	1.5	1.3	1.0	2.2	4.2	0.4
All markets	11.9	10.1	10.3	10.9	16.9	4.1
Of which: Spillover from euro area	1.6	1.6	0.4	1.1	1.6	1.4

[1]CV = Compensating variation; 3 percent annual discount rate.
[2]Markups were reduced in France by 22 percentage points in labor markets, 17 percentage points in nontradables, and 7 percentage points in tradables. Reductions in Belgium were 16, 15, and 5 percentage points, and in the euro area were 22, 16, and 7 percentage points.

Complementarities between labor market reform and goods and services market reforms are important. When implemented in isolation, labor market reform raises output and consumption by broadly the same amount, but hours worked go up more than proportionally and the capital stock less than proportionally. Moreover, real wages remain permanently below baseline because goods and services prices do not decline in proportion with wages, as firms increase rents and limit the expansion of output. On the other hand, product market reforms raise the capital stock sharply, triggering higher real wages as labor becomes relatively scarce. Consequently, output rises by more than hours worked.

Although the long-run increase in output as a result of joint reforms does not go beyond the combined long-run impact of reforms in each country separately, welfare gains from joint reforms are important.[2] Reforms elsewhere ultimately reverse the terms-of-trade loss that a country suffers when attempting to sell additional output abroad. Consequently, joint

[2]Welfare gains are measured in present-value consumption units that would be needed to achieve the post-reform utility level, holding hours worked at baseline (compensating variation). Transitory declines in consumption matter for the present value (3 percent annual discount rate). However, with the focus on the long run, welfare effects of volatility in consumption as such are ignored (see Leigh, 2008).

reform leads to higher consumption and lower hours worked and thus more welfare than stand-alone reforms. For a smaller country, the welfare gains are more modest as the initial terms-of-trade loss is smaller.

International spillover and feedback effects of reform are limited. Reform across the euro area and France yields additional output for France of about 1.8 percent over stand-alone reforms in France (16.1 percent). In the case of Belgium, it yields a 1.6 percent increase over stand-alone reforms (10.3 percent). Practically all additional GDP gains are direct spillovers from reforms abroad. The limited size of spillovers in the long run stems from the fact that the reforms drive up supply and income in the reforming country proportionally, ultimately leading to a similar demand response. Changes in terms of trade, which would alter this outcome, are relatively small.

The simulation results are sensitive to alternative values of key parameters, though without altering the qualitative conclusions. The less labor supply reacts to changes in the wage, the lower the impact of reforms, predictably more so for labor market reforms than for product market reforms. A lower share of liquidity-constrained consumption raises the beneficial impact of labor market reforms as more of the rewards to work, and thus consumption, can be intertemporally allocated. Finally, if trade elasticities are lower (domestic and foreign traded goods are poorer substitutes), the impact of reform diminishes substantially, with a larger effect in the smaller, more open country.[3]

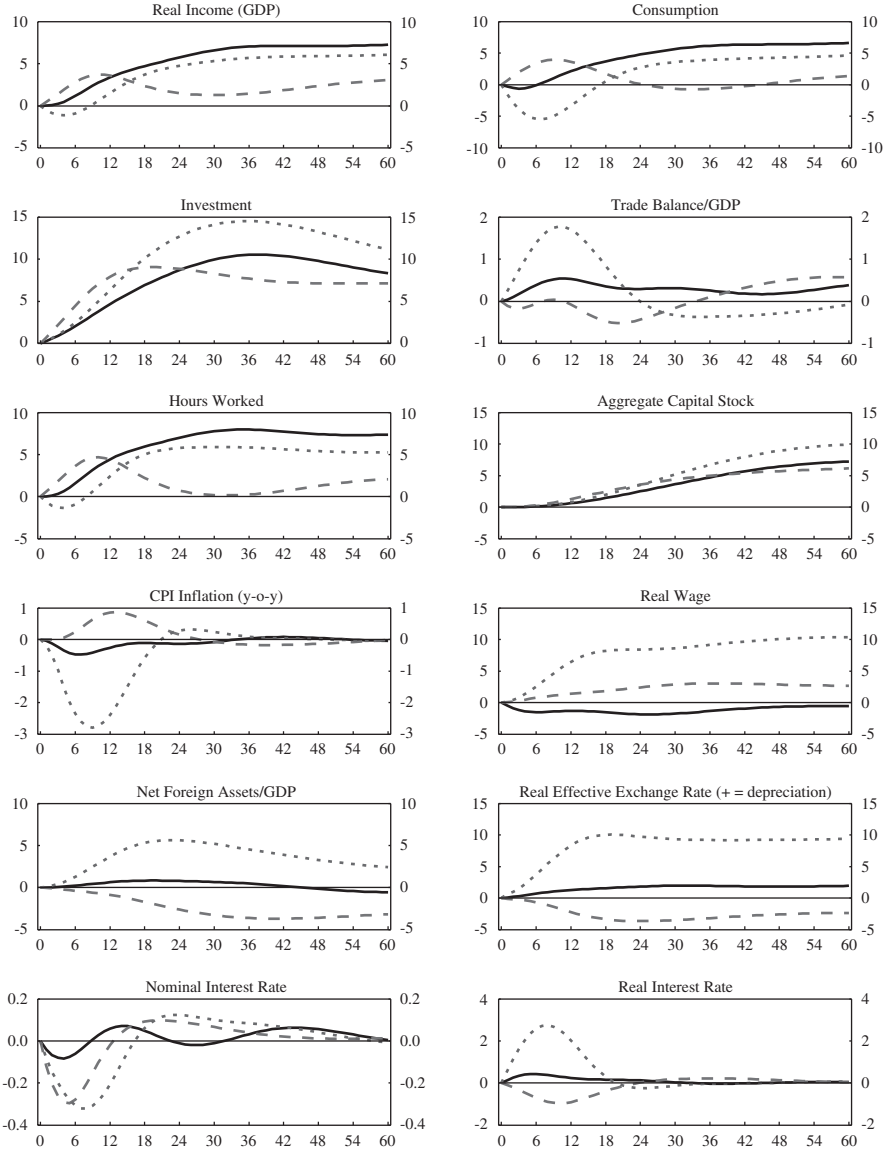
IV. Transition Dynamics

The dynamic adjustment paths of real variables differ significantly between reforms (Figure 1). In response to labor market reforms, output and employment rise gradually, but consumption falls below baseline for about two years. The real wage declines, the real exchange rate depreciates, and inflation is below baseline for some time. Reforms in the traded goods sector immediately lift all real variables and push inflation and real wages above baseline, and the real effective exchange rate appreciates. Conversely, reforms in the services sector have an initial negative effect on output, consumption, and employment, though inflation falls significantly, allowing real wages to rise. In all cases of reform, investment rises above baseline immediately in anticipation of the positive output effects of the reform. In the case of labor market reforms, the rise in investment is moderate initially because the relative price of labor to capital falls, but the investment response is very strong after service market reforms, as the real price of labor moves in the opposite direction.

All reforms lower equilibrium prices and raise equilibrium output. Due to adjustment costs, however, prices and quantities adjust slowly, and inflation falls temporarily below baseline. With reforms in the traded goods sector, these effects are relatively small and short lived, because these goods are

[3]For a sensitivity analysis, see Everaert and Schule (2006).

Figure 1. Structural Reform in France (Labor, Services, and Goods Markets)
(Deviation from control, in percent)



Note: Solid lines = labor; dashed lines = goods; dotted lines = services; x axis in quarters.

easily sold abroad. With labor market reforms, the real wage falls, further dampening consumer demand and creating slack, though rising employment almost offsets the negative effect from the decline in wages. With service sector reforms, equilibrium prices fall the most, largely because initial markups have been larger than in other markets, and there is limited

flexibility to shift resources between the tradables and nontradables sectors. Synchronizing reforms across markets in a given country averts a decline in real wages and reduces transition costs in terms of foregone consumption.

Inflation plays a key role in short-term aggregate dynamics. As nominal interest rates are determined by euro area aggregates, the behavior of prices strongly affects real interest rates in the reforming countries. The decline in euro area inflation, as a result of reforms covering all markets in either France or Belgium, is relatively small. In the case of stand-alone reforms in France, the monetary policy rule produces a maximum decline in the nominal interest rate by only 0.3 percent below baseline, but inflation falls by up to 2.7 percent. In the case of Belgium the effect on the euro-area-wide nominal interest rate is negligible. As a result, real interest rates in France or Belgium rise almost proportionally with the decline in national inflation after the reforms, motivating forward-looking consumers to postpone consumption. In the case of service sector reforms, the increase in real interest rates is very pronounced and the main cause of the temporary decline in consumption and output. Once the price-level adjustment is complete, inflation and the real interest rate return to baseline, consumption rises, and investment accelerates.

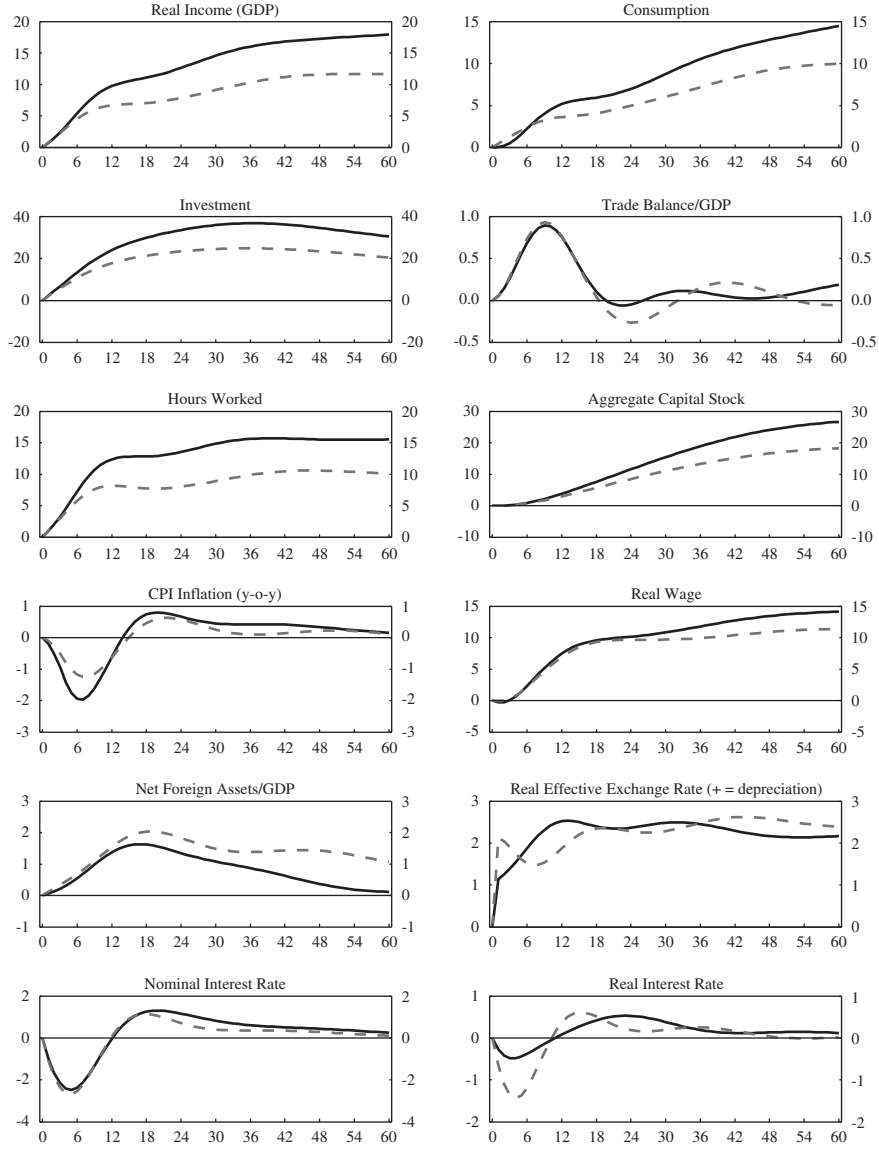
With domestic inflation differing from inflation in trade partner countries, the real exchange rate adjusts. Increasing competition in the traded goods sectors makes domestic firms internationally more competitive as well. Because they are partly price-takers, they can afford to pay somewhat higher wages, which quickly leads to an expansion of demand, a real appreciation, and a current account temporarily below baseline.[4] For the other reforms, domestic prices fall, the real exchange rate depreciates (nontradables become cheaper relative to tradables), and net exports rise. However, the improvement in the trade balance is insufficient to fully compensate for the temporary shortfall of domestic demand relative to supply. Once the price-level adjustment is complete, the trade surplus evaporates.

V. Coordination of Reforms in the Euro Area

Although monetary policy is neutral in the long run, the adjustment path depends strongly on the stance of monetary policy during the transition. When markups are reduced only in the reforming country, area-wide nominal interest rates fall very little, as monetary policy reacts only to euro-area-wide indicators. Similarly, the euro depreciates very little in nominal terms. As a result, monetary conditions in the reforming country tighten, exerting additional deflationary pressure. The depreciation of the real effective exchange rate, needed to balance supply and demand, must come about through temporary lower inflation, further depressing prices, and raising the real interest rate. In the presence of nominal rigidities,

[4]Alternatively, more competition in the tradables sector lowers tradables prices vis-à-vis nontradables prices and therefore represents a real appreciation of the home currency.

Figure 2. Structural Reform in All Markets (Euro-Area-Wide)
(Deviation from control, in percent)



Note: Solid lines = France; dashed lines = Belgium; x axis in quarters.

insufficient monetary accommodation slows the response of investment and consumption.

Coordination of the timing of structural reforms in the euro area results in faster adjustment and prevents a temporary fall in consumption (Figure 2). When markups are reduced in the entire euro area, nominal interest rates fall

sufficiently to mitigate transitory deflation. In the first year, the nominal interest rate declines by 2 percentage points, leaving the real interest rate little changed. This makes a large difference to demand: with stand-alone reforms, consumption in France would be 2.7 percent below baseline in the first year and investment 3 percent above. With synchronized reforms, consumption would be 5 percent above baseline and investment, almost 8 percent.

In reality, other factors not considered in the model are likely to influence transition dynamics and the monetary policy reaction. Reforms might raise uncertainty about income and employment, delaying agents' positive response to the long-run benefits of reform. Uncertainty typically leads to caution, including on the side of monetary policymakers. As a result, monetary policies may not be fully accommodative, even in the case of synchronized euro-area-wide reform.

VI. Conclusion

In the European Union, reform in the nontraded (services) sector is likely to yield the largest gains because the degree of competition in this sector is comparatively the lowest. Labor market reforms come a close second, but reforms in the traded (goods) sector produce fewer, though still significant, benefits because markups are already lower in this sector. Benefits are more evenly distributed when market forces are strengthened in all markets simultaneously. In particular, combining product and labor market reforms can avoid the decline in real wages associated with the latter. Reforms are also mutually reinforcing across markets.

Steady-state spillovers of coordinated reforms in the euro area are limited because the resulting increase in supply leads to an equivalent increase in demand in the long run. However, synchronization of reforms would prevent a temporary fall in consumption. In the short run, stand-alone reforms cause inflation to fall and real interest rates to increase in the reforming country, slowing the investment response and deferring consumption. Area-wide reforms in a monetary union would allow monetary policy to ease sufficiently to bring forward final demand and prevent a transitory decline in GDP and consumption.

These model-based results are subject to a number of caveats, though the qualitative conclusions are robust. The magnitude of the reform benefits is sensitive to key parameters. In addition, interactions between labor and product market reforms are only implicitly reflected in the model, and productivity remains exogenous, which likely results in an underestimation of the benefits of reform. Furthermore, full policy credibility, perfect foresight, and complete knowledge of the structure of the economy are strong assumptions. In reality, reforms may not be credible initially, and there is uncertainty about how the economy will react. Monetary authorities may exert caution rather than mechanically follow a simple rule, which would limit monetary accommodation and prevent the full elimination of transition costs.

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