

The Macroeconomic and Productivity Effects of Structural Reforms

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"Structural and cyclical policies – including monetary policy – are heavily interdependent. Structural reforms increase both potential output and the resilience of the economy to shocks. This makes structural reforms relevant for any central bank, but especially in a monetary union."
(Mario Draghi, Sintra, May 22, 2015)

We study the effects of structural reforms in product and labor markets in EU

- For space reason we present only results on product market reform

Using CompNet data, we compare empirical results to the predictions of the model developed in: Cacciatore and Fiori, 2010 (CF) and Cacciatore, Fiori, and Ghironi, 2013 (CFG1), 2015 (CFG2)

In addition to effects on domestic macro aggregates, we focus on the consequences of reforms for:

- External balances and international relative prices
- Firm profitability
- Aggregate and firm-level productivity

Empirical Methodology

- Given the vector y_{it} of endogenous variables of interest, we estimate the reduced-form, co-integrated panel VAR(2):

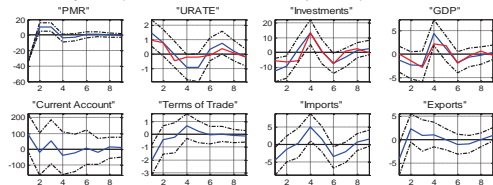
$$\Delta y_{it} = A_i \Delta y_{t-1} + B_i \Delta y_{t-2} + \Delta g_t + u_{it}, \quad i = 1, \dots, n \text{ and } t = 1, \dots, T,$$

- Δ denotes first difference, g_t is a vector of firm fixed effects, and u_{it} is the vector of reduced-form shocks.
- Estimation in first-differences captures the consequences of permanent shocks to the levels of market regulation
- Annual data come from the **CompNet Sample** with 16 EU countries over a period of 12 years
- The data are detrended by HP filter
- Variables are ordered recursively for identification
- Macro variables are deflated by HICP

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External Balances and Competitiveness

- Next, we augment the VAR by including **current account** (in levels), **terms of trade**, **imports**, and **exports** (in red: baseline VAR responses):

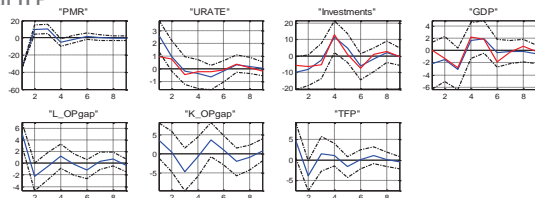


- Immediate improvement in **current account** and lower **terms of trade** (depreciation)
 - Apparent conflict with CFG1&2 results, but different empirical measure of PMR can explain
- Initial decrease of both **imports** and **exports**, followed by recovery
 - Imports display a larger initial decrease and slower recovery, explaining improvement in the **current account**
- Contraction in employment, income (GDP), and investment result in immediate decreases of both exports and imports
- Exports recover more quickly as firms adjust to more competitive terms of trade

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Aggregate and Firm-Level Productivity

- Finally, we examine the effect of PMR on **productivity** and the **allocation** of resources by augmenting the baseline VAR with the inclusion of the **labor** and **capital Olley-Pakes gaps** (covariance between firm size and productivity) and the **median TFP**



- Reallocation effect** (increase in both L-OPgap and K-OPgap):
 - Exit of least productive firms due to tougher competition leads to reallocation of resources: Surviving firms are the most productive ones, and they absorb capital and labor as their market share increases
- Increase in productivity**:
 - Exit of least productive firms from the domestic market and exit of least productive exporters from the export market imply an increase in average firm-level productivity, and, therefore, an increase in aggregate productivity (CFG2)

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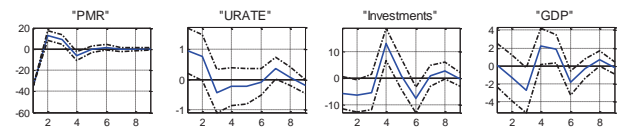
Theoretical Background

- DSGE model with endogenous producer entry and search-and-matching labor market frictions
- Sunk entry costs incorporate bureaucratic barriers to business creation
- Product market reform (PMR) results in increased investment in firm and product creation
- GDP falls initially** as consumption and **capital investment decrease** to devote more resources to business creation, and because competition puts pressure on incumbent firms to downsize
- In CF, the latter effect induces firms to shed less productive workers immediately, while positive effects on employment take some time to materialize as the **number of firms increases** gradually
- Inflation and, over time, the larger number of producers result in **lower markups** (the second effect only in CF and CFG1), and eventually in a recovery of GDP and employment
- Higher business creation is associated with an **initial current account deficit**, and upward pressure on labor demand induces also a **terms of trade appreciation** (CFG1&2)
- Reforms result in a **more efficient use of resources** (in terms of aggregate **productivity**), as they cause average firm productivity and average exporter productivity to rise (CFG2)

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Baseline VAR

- The baseline VAR includes only three variables in addition to the measure of market regulation, namely: **unemployment, investment, and GDP**
- Impulse responses to PMR (growth rates):



PMR has **contractionary effects** on employment, investment in physical capital, and GDP in the short run, followed by recovery in the medium run

These results replicate the findings of CF's empirical exercise, and they are consistent with the theoretical intuitions above

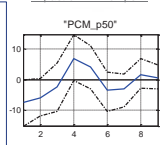
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Firm Profitability

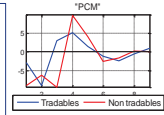
To investigate whether PMR yields a pro-competitive effect, we return to the baseline VAR, but we now augment it by including the **price-cost margin**: $pcm = (p-c)/p$

- Median (p50) of the whole sample**
- PMR yields an immediate **pro-competitive** effect in the form of lower pcm
- This is consistent with effect of PMR on markups in the sticky-price models of CFG1&2
- It is also in line with the competitive effect of lower entry barriers through an increase in the number of producers, which erodes firm market power (CF and CFG1)

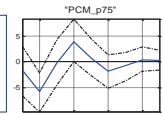
Impact of PMR on pcm:



- Median in tradable vs. non-tradable sectors**
- The pro-competitive effect of PMR is stronger in the **non-tradable sector**
- Tradable producers already face competition from foreign exporters
- Hence, the competition effect of an increase in the number of producers is larger in the non-tradable sector



- First and third quartile (p25 and p75) of the whole sample**
- The pro-competitive effect of PMR is strong **only** on the firms with relatively **higher market power**
- Firms with low market power already set prices very close to marginal cost and cannot afford even lower margins



Conclusions

- Structural reform of product markets has a contractionary impact on the economy in the short term despite being expansionary in the medium term
- The current account improves and the terms of trade depreciate, but both imports and exports fall because of the initial contractionary effect, and they recover after the first few years
- Product market deregulation has a pro-competitive effect by lowering markups and market power. This effect is stronger in the non-tradable sector and on firms with high market power
- Lowering barrier to producer entry results in a better allocation of resources and an improvement of productivity
- Most results are consistent with the models in Cacciatore and Fiori (2010) and Cacciatore, Fiori, and Ghironi (2013, 2015)
 - Apparent departure: External balances and terms of trade, explained by difference between empirical PMR and model
- No evidence of a short-term contractionary effect after labor market reform

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