

# The Macroeconomic and Policy Implications of Structural Reforms

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## “Structural Reforms, Inflation and Monetary Policy”

“Research suggests that reforms that increase employment flexibility, such as reducing employment protection, are more likely to depress demand during downturns. I would however reject the conclusion that this means all structural reforms should be postponed.

The reason is that the short-term impact of structural reforms does not just depend on when they are implemented, but how—namely, the credibility of reforms, the type of reforms and *their interaction with other policy measures*. [...]

*I would argue that our current monetary stance in fact makes accelerating structural reforms desirable, because it brings forward their positive demand effects.”*

Mario Draghi, “Structural Reforms, Inflation and Monetary Policy,” Sintra, May 22, 2015.

Emphasis added.

## “What Do We Need to Know about the International Monetary System?”

“I would like to know how the macroeconomic model that I more or less believe can be reconciled with the trade models that I also more or less believe. [...] What we need to know is how to evaluate the microeconomics of international monetary systems. Until we can do that, we are making policy advice by the seat of our pants.”

Paul R. Krugman (1995), “What Do We Need to Know about the International Monetary System?” in Peter B. Kenen, ed., *Understanding Interdependence*, Princeton U Press.

## Structural Reforms and Macroeconomic Policy

- Structural reforms designed to make product and labor markets more flexible have been a central theme of this conference—and of policy discussions at the highest level.
- The references that were made to this topic yesterday took mostly a microeconomic perspective, with hints, for instance, to reallocation effects of such government interventions into the structure of markets.
- To build on the terminology of some of yesterday's conversations, the purpose of my presentation is to bring micro to macro and give you some perspective on the macroeconomic effects of structural reforms in a framework that incorporates micro-level dynamics.

## Structural Reforms and Macroeconomic Policy, Continued

- In doing so, I will focus also on the interaction between reforms and the monetary policymaking environment highlighted by President Draghi in Sintra, and I will connect to the reference that Giancarlo Corsetti made yesterday to the role of stabilization policy in managing the dynamics generated by reforms.
- I will build on a research program that I have been developing with Matteo Cacciatore and Giuseppe Fiori, and recently also with Giovanni Aiello, Filippo di Mauro, Paolo Mengano, and others.
- I will argue that, from a methodological standpoint, it is crucial for models to incorporate micro-level market dynamics for them to yield conclusions in line with the narrative of policymakers and avoid potentially misleading results.

## The Off-the-Shelf New Keynesian Approach

- In a recent *JME* article that has received considerable attention, Eggertsson, Ferrero, and Raffo (2014—EFR) adopt a basic New Keynesian model with sticky prices and wages to study the effects of market reforms.
- In their exercise, product and labor market reforms are modeled very simply as exogenous cuts to price and wage markups.
- This has a positive supply-side effect on output, but it also “automatically” pushes the economy in the direction of deflation.
- Markup cuts imply an immediate, similarly “automatic,” depreciation of the terms of trade, which induces an improvement in the trade balance.
- EFR warn that the deflationary effect of reforms can exacerbate the problem of the zero lower bound (ZLB) on interest rates in monetary policymaking, with unfavorable demand-side consequences.

## Reduced-Form Structural Reforms

- The EFR approach to modeling market reforms in dynamic, stochastic, general equilibrium (DSGE) frameworks has been adopted by a variety of other papers.
- It is to the concerns raised by EFR and others who use their approach that President Draghi was responding in Sintra.
- There is much merit in the exercise that EFR performed as one of the starting points for discussion of the dynamic macroeconomics of structural reforms in models for suitable for macro policy analysis.

## Reduced-Form Structural Reforms, Continued

- However, their modeling of structural reforms is a reduced-form one:
  - The off-the-shelf New Keynesian model does not include any of the product and labor market dynamics that the narrative of policymakers, including President Draghi, has been focusing on.
- There is no producer entry barrier that product market reform is lowering, because there are no producer entry dynamics.
- There is no extensive margin of employment with hiring and firing decisions by firms nor the impact that reforms such as reducing unemployment benefits and worker bargaining power would have on the labor market.
- It turns out that incorporating such ingredients affects key conclusions drastically, and it brings them much closer to the narrative of the “calls for reforms” that have been front and center in policy debates since the onset of the euro area crisis.



## Structural, Structural Reform Modeling

- Matteo Cacciatore, Giuseppe Fiori, and I have been studying the macroeconomic effects of product and labor market reforms in models that incorporate the market dynamics policymakers have in mind.
- The framework builds on the work I did with Marc Melitz in our 2005 *QJE* paper and the work that Marc and I did with Florin Bilbiie (2012, *JPE*).
- The model is augmented with labor market frictions as in Matteo's 2014 *JIE* paper, and Matteo and Giuseppe's (2010) analysis of the macroeconomic effects of market reforms in a flex-price, flex-wage model—CF below.

## Structural, Structural Reform Modeling, Continued

- The basic ingredients of the model include:
  - Endogenous producer entry subject to sunk costs.
    - Part of these costs is of technological nature; part is assumed to be the result of inefficient market regulation.
    - Product market reform reduces barriers to producer entry.
  - Labor markets are characterized by search-and-matching frictions as in the standard Diamond-Mortensen-Pissarides framework.
    - Firms incur costs of vacancy posting, workers receive unemployment benefits, equilibrium wages are determined by (Nash) bargaining between workers and firms.
    - Labor market reform reduces unemployment benefits and worker bargaining power.
      - We abstract from firing costs to simplify the model.
      - See Matteo's *JIE* 2014 paper and Jim Tybout's *AER* 2015 paper with Kerem Coşar and Nezih Guner for state-of-the-art, dynamic trade models with firing costs (but no nominal rigidity).
  - Prices and wages are sticky, which introduces a role for monetary policy, including in managing the transition dynamics triggered by the reform shocks.

## ”Market Deregulation and Optimal Monetary Policy in a Monetary Union”

- In Cacciatore, Fiori, and Ghironi (2013), we use a two-country, monetary union version of the model to study how the structure of markets and market reforms affect the optimal conduct of monetary policy by the union’s central bank.
- In addition to the basic ingredients above, the model also features translog preferences for consumption goods, as in CF.
- This implies that product market reforms have a pro-competitive effect on flexible-price markups as increased entry results in higher substitutability across products.

## Optimal Policy with High Market Regulation

- Optimal policy with high market regulation implies departures from price stability in the long run (a positive inflation target) and over the business cycle (deviations of inflation from target in response to business cycle shocks).
- Optimal policy is more active in response to business cycle fluctuations than historical ECB behavior.
- Optimal policy (in this scenario and below) is about narrowing wedges that exist relative to the efficient allocation:
  - The policymaker trades off costs created by inflation against the benefits of addressing suboptimal outcomes in labor and product markets.

## Optimal Policy in Response to Reforms

- It is optimal to expand monetary policy during the transition dynamics generated by reforms (more than dictated by historical ECB behavior).
- This allows to front-load the beneficial effects of reforms (as President Draghi suggested).
- The demand-side effects of reforms (for instance, expansion in investment in firm/product creation) ensure that reforms have inflationary effects and do not create ZLB problems.

## Optimal Policy in the Post-Reform Environment

- The costs of a narrow focus on price stability are lower once the long-run effects of reforms have materialized.
- Reforms imply that job creation is closer to the efficient outcome in the new steady state and over the business cycle around this new steady state.
- Hence, there is less need for monetary activism.

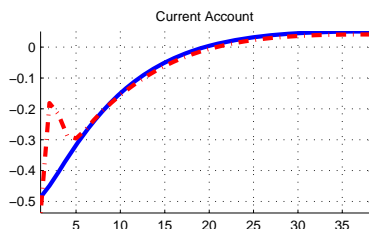
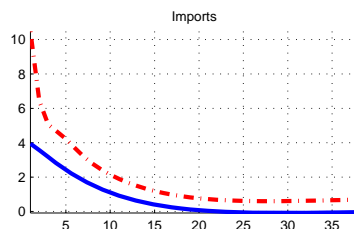
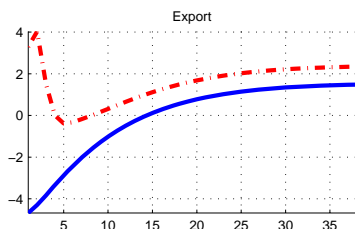
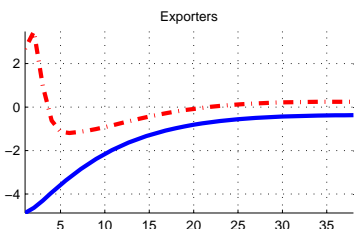
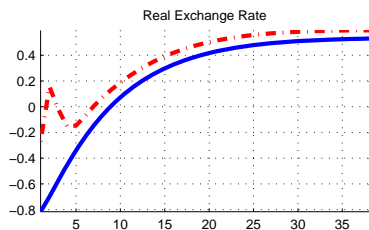
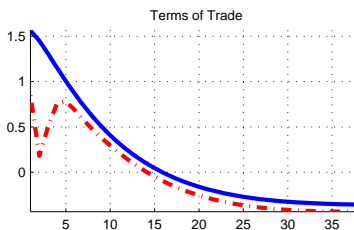
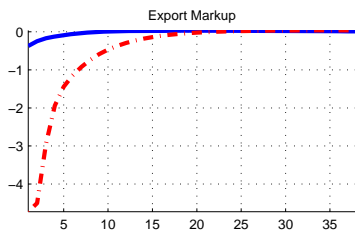
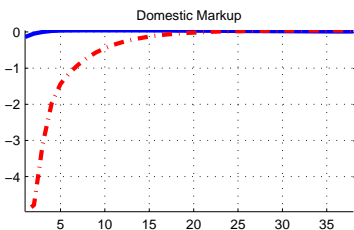
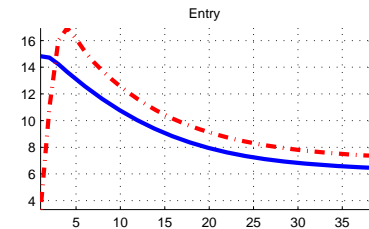
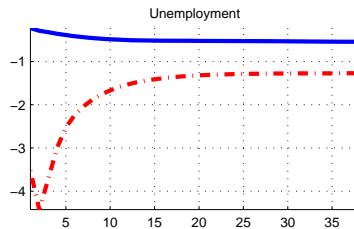
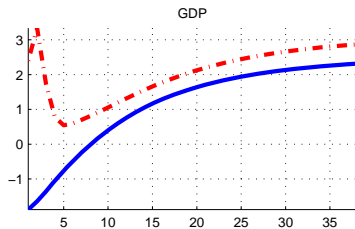
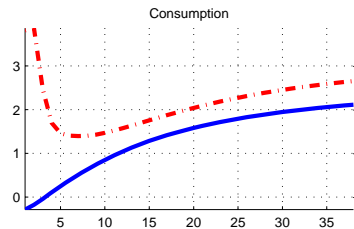
## The International Effects and Dimension of Reforms

- In contrast to the reduced-form approach of EFR and others, reform in the Home country (holding Foreign market regulation constant) causes current account deficit and terms of trade appreciation during the early part of the transition.
  - It is optimal to borrow to finance increased business creation, and the latter puts upward pressure on labor costs.
- It is desirable to synchronize reforms across countries to avoid creating an additional tradeoff for the single monetary policy by creating a differential in the desirability of inflation across countries.

## “The Domestic and International Effects of Euro Area Market Reforms”

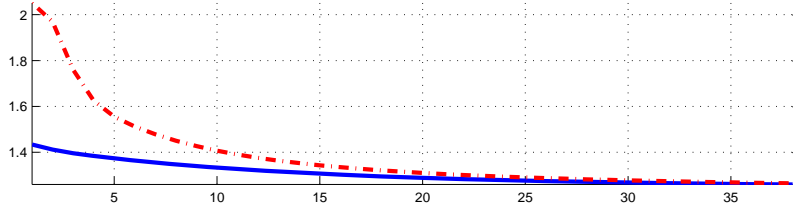
- In Cacciatore, Fiori, and Ghironi (2015),
  - we go back to the basic C.E.S. Dixit-Stiglitz preferences of my *QJE* paper with Marc Melitz,
  - we introduce Melitz-type heterogeneity across producers and endogenous determination of the set of traded products,
  - and we focus on a two-country model with flexible exchange rates.
- We think of one country as the euro area, the other as the U.S., and we investigate the domestic and international effects of euro area market reforms, comparing outcomes under optimal (cooperative) policy to those under historical Fed and ECB behavior.
- I am showing you impulse responses from this paper below, as they allow me to address several themes of this conference, including the impact of reforms on measures of firm-level productivity and employment.
  - The model implies that product and labor market reforms result in higher average firm productivity, consistent with yesterday’s presentation by Kalina Manova.





Product Market Reform, Macro Variables and Producer Entry, CFG2 Model

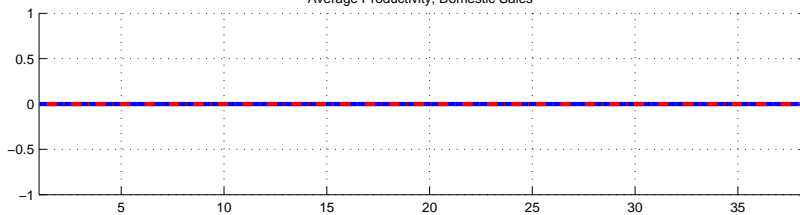
Average Productivity



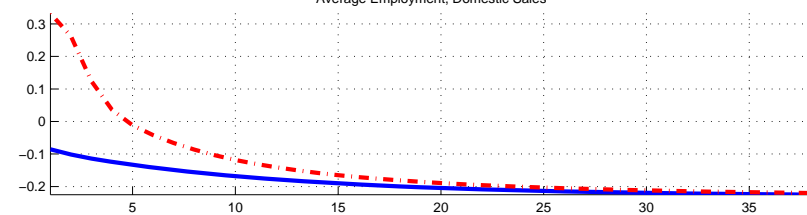
Average Employment



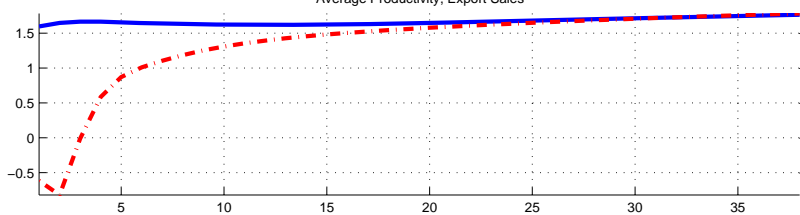
Average Productivity, Domestic Sales



Average Employment, Domestic Sales



Average Productivity, Export Sales

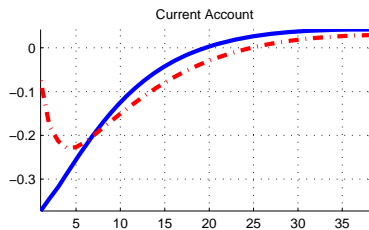
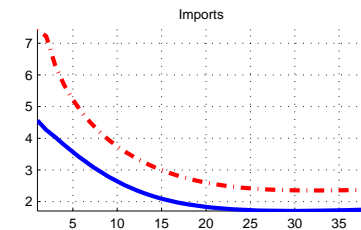
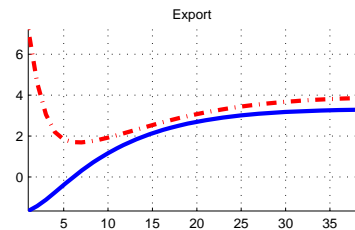
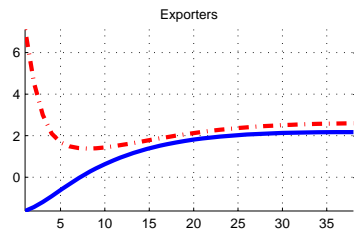
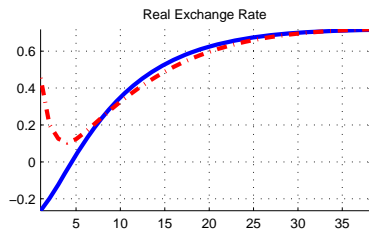
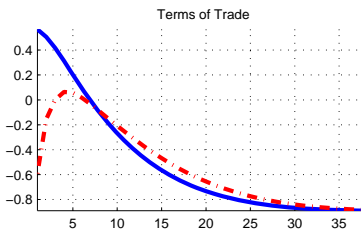
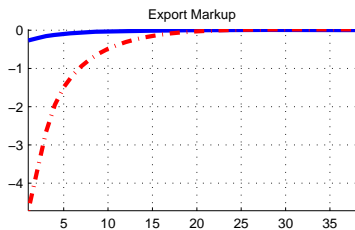
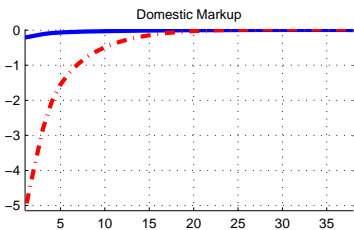
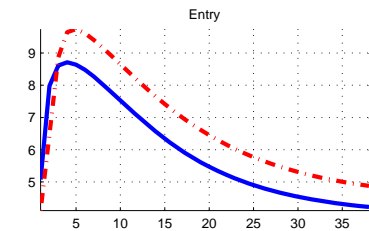
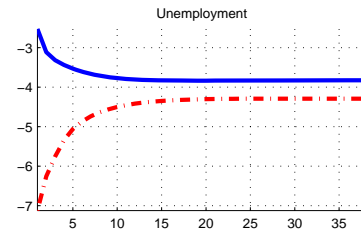
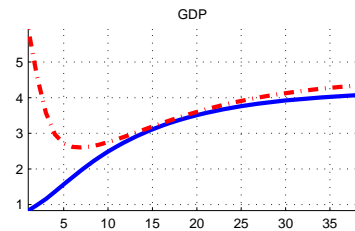
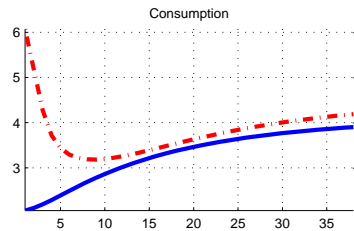


Average Employment, Export Sales

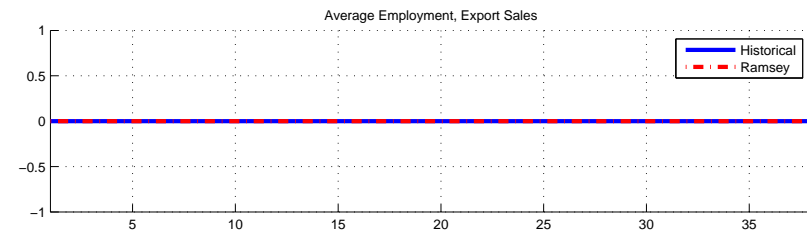
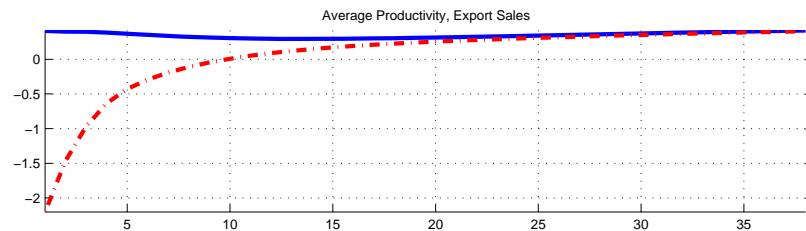
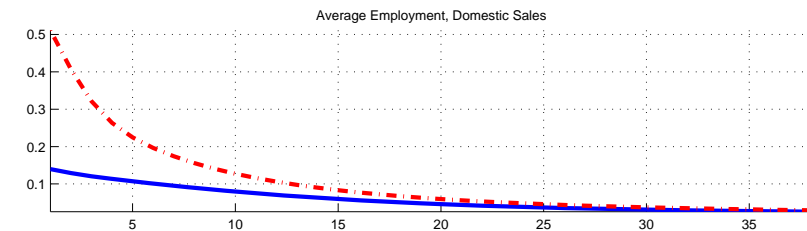
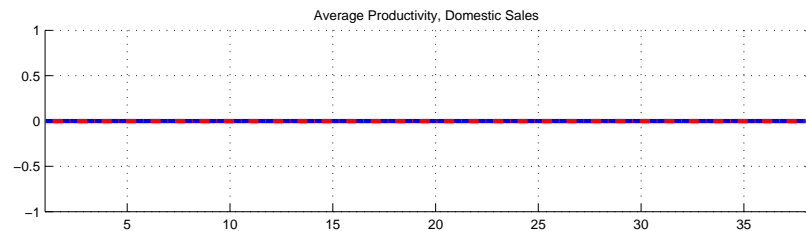
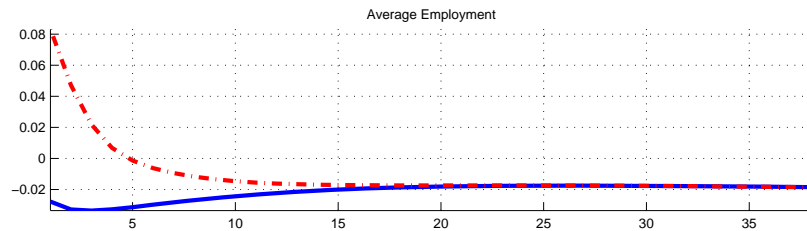
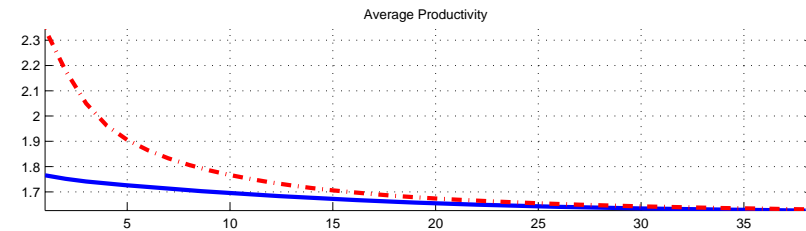


— Historical  
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Product Market Reform, Firm-Level Productivity and Employment Effects, CFG2 Model

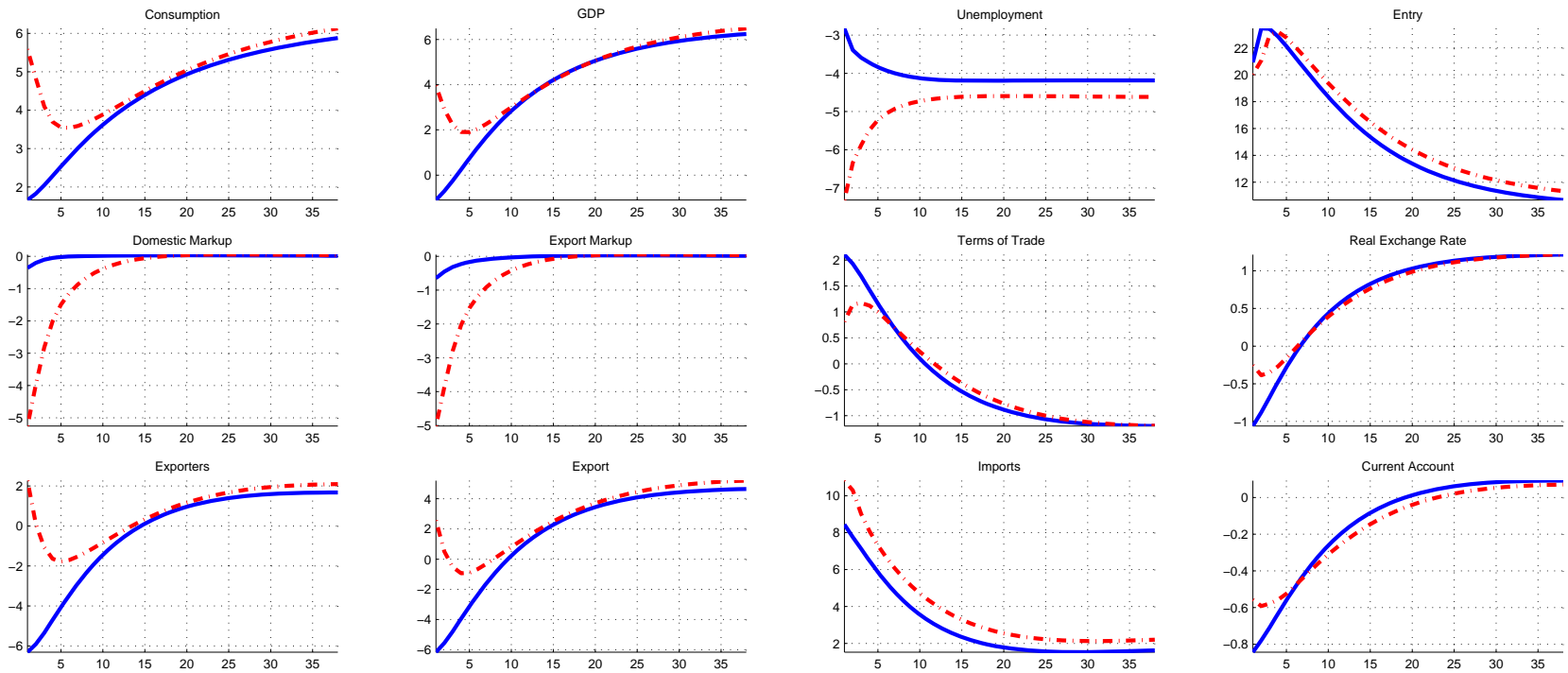


Labor Market Reform, Macro Variables and Producer Entry, CFG2 Model



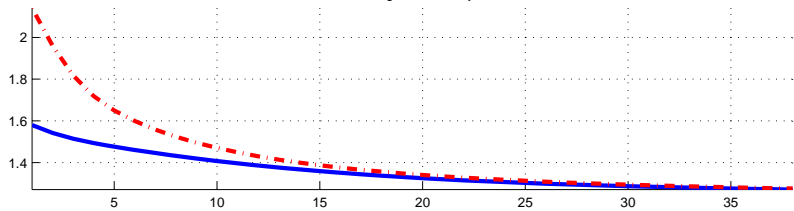
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Labor Market Reform, Firm-Level Productivity and Employment Effects, CFG2 Model

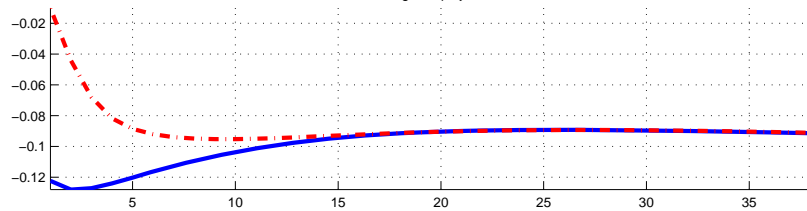


Product and Labor Market Reform, Macro Variables and Producer Entry, CFG2 Model

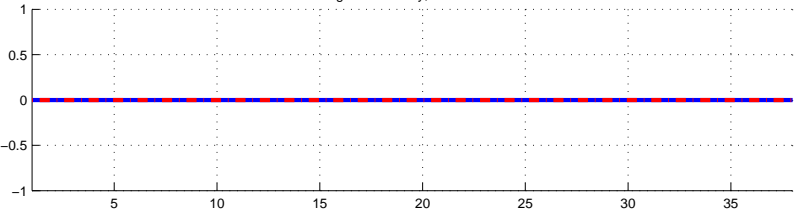
Average Productivity



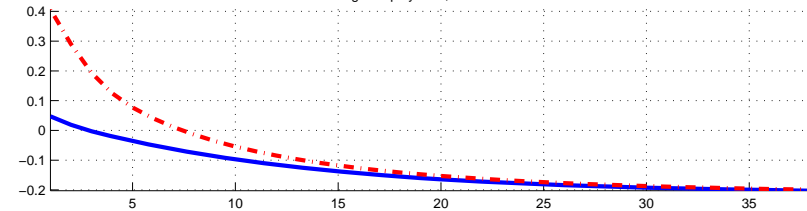
Average Employment



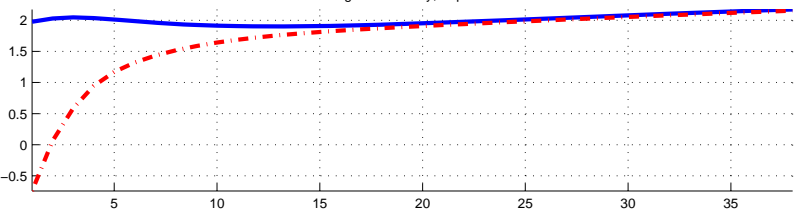
Average Productivity, Domestic Sales



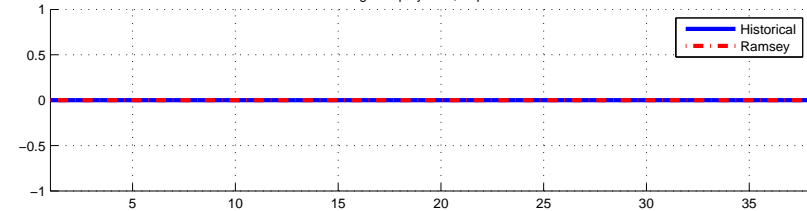
Average Employment, Domestic Sales



Average Productivity, Export Sales



Average Employment, Export Sales



— Historical  
- · - Ramsey

Product and Labor Market Reform, Firm-Level Productivity and Employment Effects, CFG2 Model

## “Trade, Unemployment, and Monetary Policy”

- In a different paper, which actually first developed this version of the model, Matteo and I focus on the consequences of a different type of reform (trade integration) for optimal monetary policy.
- The model replicates the fact that trade integration results in higher productivity (something that again came up in yesterday’s conversations).
- This makes job matches more valuable to firms, boosts job creation, and implies a lower optimal inflation target.
- For another analysis of monetary policy in a model with endogenous market entry, see Bergin and Corsetti (2013), who highlight the importance of cross-sectoral reallocation of production for policy incentives.
- They reconcile the traditional argument that it is desirable for policy to boost competitiveness of the manufacturing sector with the existence of a terms of trade externality that would otherwise push policy toward contraction.

# A Lot Remains to Be Done

## **Empirical Analysis and Further Model Development**

- We need empirical, time series evidence on the effects of reforms to assess the results of the models and guide the next modeling steps.
- This is what Matteo, Giuseppe, and I are working on with Giovanni Aiello, Filippo di Mauro, and Paolo Mengano using also the CompNet data.
- The results are mostly in line with the framework I described.
- Difference in results about terms of trade and current account suggest the importance of modeling product market reform as deregulation of entry into non-tradable services (rather than final output), which is the empirical measure of reform that is available.
- Matteo, Giuseppe, and I have been doing this with Romain Duval at the IMF.



## A Lot Remains to Be Done, Continued

### **Optimal Reforms and Strategic Interactions across Policies**

- Reforms are not optimized in our exercises (and those of others in these area).
- The reform exercise consists of adjusting product and labor market characteristics from calibrated euro area levels to U.S. levels.
- However, there is no presumption that U.S. levels should be optimal for the euro area (or the U.S., for that matter).
- Work I have been doing with Sanjay Chugh on optimal fiscal policy (including product creation subsidies) in the Bilbiie-Ghironi-Melitz model provides insights into the optimal design of product market reforms in a DSGE macro environment.
- Studying optimal reforms of product and labor markets, building on this work, is a crucial next step in this research program; but this will also raise the (fascinating) question of strategic interactions between product and labor market regulators and the central bank.

## Conclusions

- Understanding the macroeconomic effects of product and labor market reforms (and reforms of other markets, such as the financial market) is crucial to provide reliable advice from research to policymakers in the current economic environment.
- This requires taking micro seriously (or more seriously than we have been doing) in our macro models.
- The tools that have been developed in the literature make it possible to go beyond the basic New Keynesian framework that does not incorporate micro-level product and labor market dynamics.
- It is important to incorporate these dynamics for research to fit the policy narrative and indeed to deliver reliable advice.