

Introduction

- **Forward Guidance** recent CB announcements about future interest rates to stimulate the economy.
see Andrade et al. 15, Del Negro et al. 15, McKay et al. 15.
- **Inflation** redistributes wealth from creditors to debtors
see Fisher 33, Doepke-Schneider 06, and Adam-Zhu 15.
and this redistribution is typically expansionary on demand
see Tobin 82, Auclert 15, and Kaplan-Moll-Violante 15.
- But what about an announcement on **future inflation**?
Is it always **expansionary**?
- **This paper:** it depends on (i) **relative confidence** in CB of creditors/debtors & (ii) amount of **financial imbalances**
....and it can be **contractionary**.....

The Forward Misguidance effect

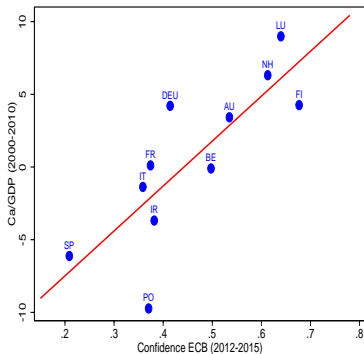
Three ingredients:

- forward guidance is a promise on delivering **future inflation**
- debtors/creditors **heterogeneity** in confidence on FG implementation
- positive **correlation** wealth-confidence

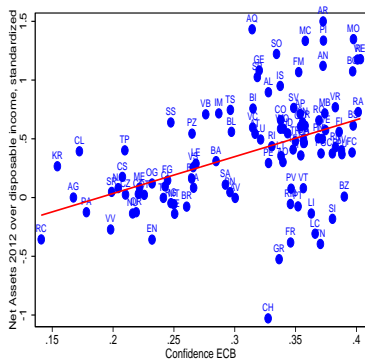
The Forward Misguidance effect:

- An inflationary announcement redistributes wealth from creditors to debtors **in expectations**.
- When creditors have more confidence than debtors **perceived** aggregate wealth falls
- This can **misguide** the economy into lower aggregate demand

Confidence in ECB and Asset Position



(a) Euro Area



(b) Italian Provinces

Confidence measure from Eurobarometer survey: *"...tell me if you tend to trust or tend not to trust ... The European Central Bank"*

Forward guidance in the current European crisis, 2012-2015

Forward Guidance, 4 July 2013, **our shock**; (see **evidence**)

"The Government Council expects the Key ECB interest rates to remain at present or lower levels for an extended period of time"

Remember: Two other important announcements

① **Whatever It Takes**, 26 July 2012

"Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough. "

② **Quantitative Easing** green light, 4 September 2014

"In addition, the Governing Council decided to start purchasing non-financial private sector assets."

A simple model

Simple NK closed economy with 2 household types in steady state:

- $\frac{1}{2}$ of creditors (c) with initial nominal assets W
- $\frac{1}{2}$ of debtors (d) with initial nominal liabilities W
- **Households:** $j \in \{c, d\}$,

$$\sum_{t=0}^{\infty} \beta^t \frac{\left(C_{j,t} - \psi_0 \frac{L_{j,t}^{1+\psi}}{1+\psi} \right)^{1-\sigma}}{1-\sigma}, \quad \sigma \geq 1$$

- **Consumption:** CES aggregator over mass 1 varieties
- **Firms:** linear prod. in labor & set price one period in advance
- **Labor market:** Walresian
- **Financial market:** trade 1 period nominal bond B , at rate i
- **Monetary policy:** $1 + i_t = \frac{1}{\beta} \left(\frac{\Pi_t}{\bar{\Pi}^*} \right)^\phi$ & $\bar{\Pi}^* = 1$

The Forward Guidance experiment

- Steady state at $t = 0$ ($p_0 = 1$) unforeseen (MIT) FG shock

$$\Pi_t^* = \begin{cases} \varepsilon > 1 & \text{if } t = 1 \\ 1 & \text{otherwise} \end{cases}$$

- Household type $j \in \{c, d\}$ has (degenerate) beliefs:

$$\Pi_{j,t}^{*,e} = \begin{cases} \varepsilon^{\tau_j} & \text{if } t = 1 \\ 1 & \text{otherwise} \end{cases} \quad \text{with } \tau_j \in [0, 1].$$

Notation:

- Average** Central Bank credibility: $\bar{\tau} \equiv \frac{\tau_d + \tau_c}{2}$
- Credibility **advantage** among creditors: $\rho \equiv \frac{\tau_c - \tau_d}{2\bar{\tau}} \in [-1, 1]$

$$\tau_c = \bar{\tau}(1 + \rho) \quad \& \quad \tau_d = \bar{\tau}(1 - \rho)$$

Question: how do $\bar{\tau}$ and ρ matter for effects of FG on C?

The overall effect on aggregate demand

The response of aggregate demand C to FG is given by:

$$\Delta C \propto \overbrace{\omega \tilde{\varepsilon}^{\frac{1+\rho}{\sigma}} + (1-\omega) \tilde{\varepsilon}^{\frac{1-\rho}{\sigma}}}^{\text{Substitution Effect} > 0} + \overbrace{\bar{i} W \kappa \left(\tilde{\varepsilon}^{(1+\rho)\left(\frac{1}{\sigma}-1\right)} - \tilde{\varepsilon}^{(1-\rho)\left(\frac{1}{\sigma}-1\right)} \right)}^{\text{Wealth Redistribution Effect} \leq 0}$$

where $\tilde{\varepsilon} \equiv \varepsilon^{\bar{\tau}}$, $\omega \in [0, 1]$, $\kappa > 0$.

Properties:

- 1 avg. credibility $\bar{\tau}$ scales the effect of FG
- 2 if $\rho < 0$ (debtor trusts more), Redistribution Effect > 0
- 3 if $\rho > 0$ (creditor trusts more), Redistribution Effect < 0
- 4 **Forward Misguidance:** $\Delta C < 0$, if $\rho > 0$ & $\bar{i}W$ or σ high

Empirical evidence from Italian provinces

Model predictions in response to FG shock:

- 1 Inflation expectations increase more in provinces with higher confidence (test of measure of confidence)
- 2 Demand increases with confidence in debtor province
- 3 Demand can decrease with confidence in creditor province
- 4 Demand increases more in debtor than creditor province with equal confidence level

Data description

Province level quarterly analysis over 2012-2014 period:

- Data on Inflation expectations from Banca d'Italia and Sole 24 Ore, 1999:IV-2015:I
- Trust in ECB from Euro-barometer (and Voters Turnout in February 2013 Elections)
- Prices on Core Inflation or General Inflation from ISTAT
 - use as a proxy for local demand
- Net financial positions from SHIW, 2010-2012

Note: Unique high frequency data on local inflation & expectation
See [summary statistics](#)

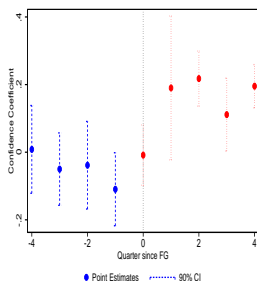
FG shock on local inflation expectations

$\hat{\pi}_{it}^j \equiv E_{it}[\pi_{it+j}] - \pi_{it}$: j -months ahead expected – realized inflation in prov. i

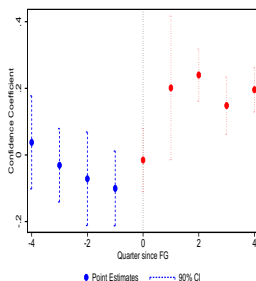
T_i : Standardized confidence in province i

Difference-in-Differences Estimation:

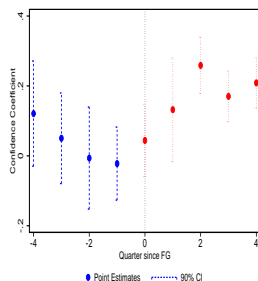
$$\hat{\pi}_{it}^j = \sum_{s=-6}^5 \tau_s \times T_i \times \mathbb{1}_{t-s=t_0} + \beta X_{it} + \varepsilon_{it} \quad \forall j = 6, 12, 24$$



(a) Inflation at 6 months



(b) Inflation at 12 months



(c) Inflation at 24 months

Notes Coefficient on T_i at different time $s = -4, -3, -2, -1, 0, 1, 2, 3$ since FG announcement.

FG shock on local realized inflation

π_{it} : core or (general) inflation in province i at t

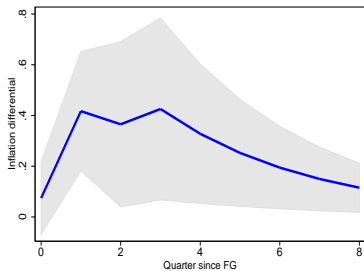
T_i^k : Stand. trust in a creditor, $k = c$, or debtor, $k = d$, province

D_i : debt position dummy of province i

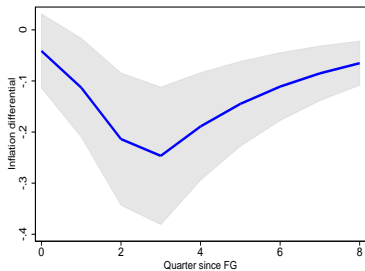
Difference-in-Differences Estimation:

$$\pi_{it} = \bar{\tau}^c T_i^c + \bar{\tau}^d T_i^d + \bar{\delta} D_i + \rho \pi_{it-1} + \sum_{s=0}^5 \left[\tau_s^c T_i^c + \tau_s^d T_i^d + \delta_s D_i \right] \times \mathbb{1}_{t-s=t_0} + \varepsilon_{it}$$

Figure: Differential inflation response to FG with 1 sd higher confidence

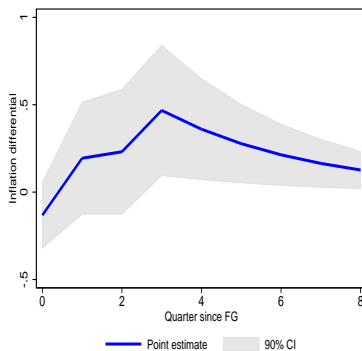
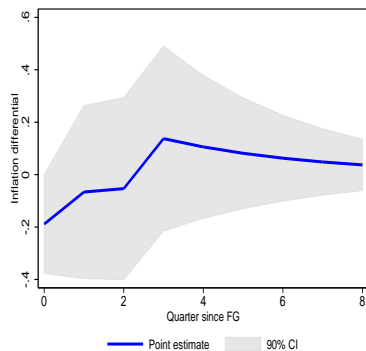


(a) Debtor province



(b) Creditor province

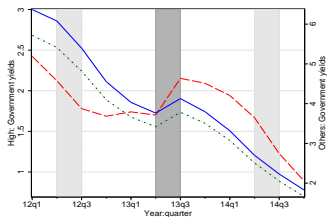
Figure: Differential inflation response to FG: debtor vs creditor

(a) High Confidence, $p(90)$ (b) Median Confidence, $p(50)$

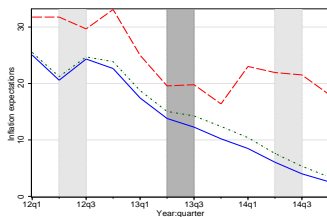
Extensions

- 1 Long term assets/liabilities & portfolio composition
- 2 Degree of price stickiness: allow current inflation to respond
- 3 Two regions with separate labor markets/production:
 - cross-regions differential (observable) responses (inflation)
- 4 Borrowing constraint & Rebalancing
- 5 More heterogeneity and life cycle, **Key!!!**

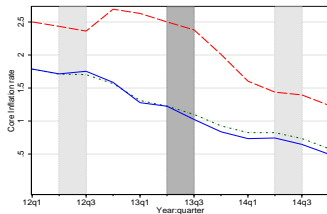
Forward Guidance shock: Expected inflation and consumption



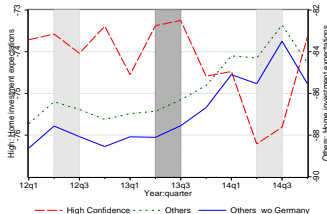
(a) Long term interest rates



(b) Expect. change in infl.



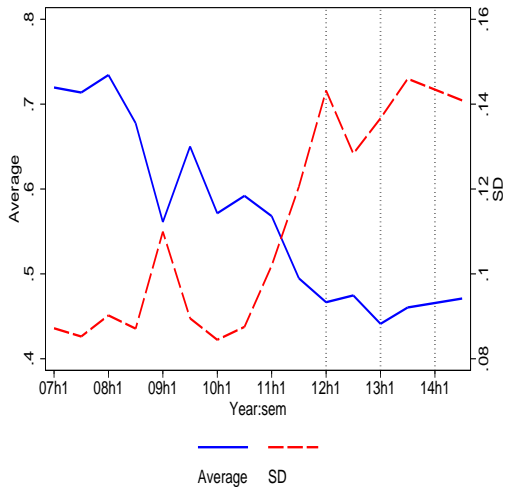
(c) Inflation



(d) Prob. of house invest.

back

Credibility of ECB and Debt position in EMU11



(a) Confidence in the ECB