

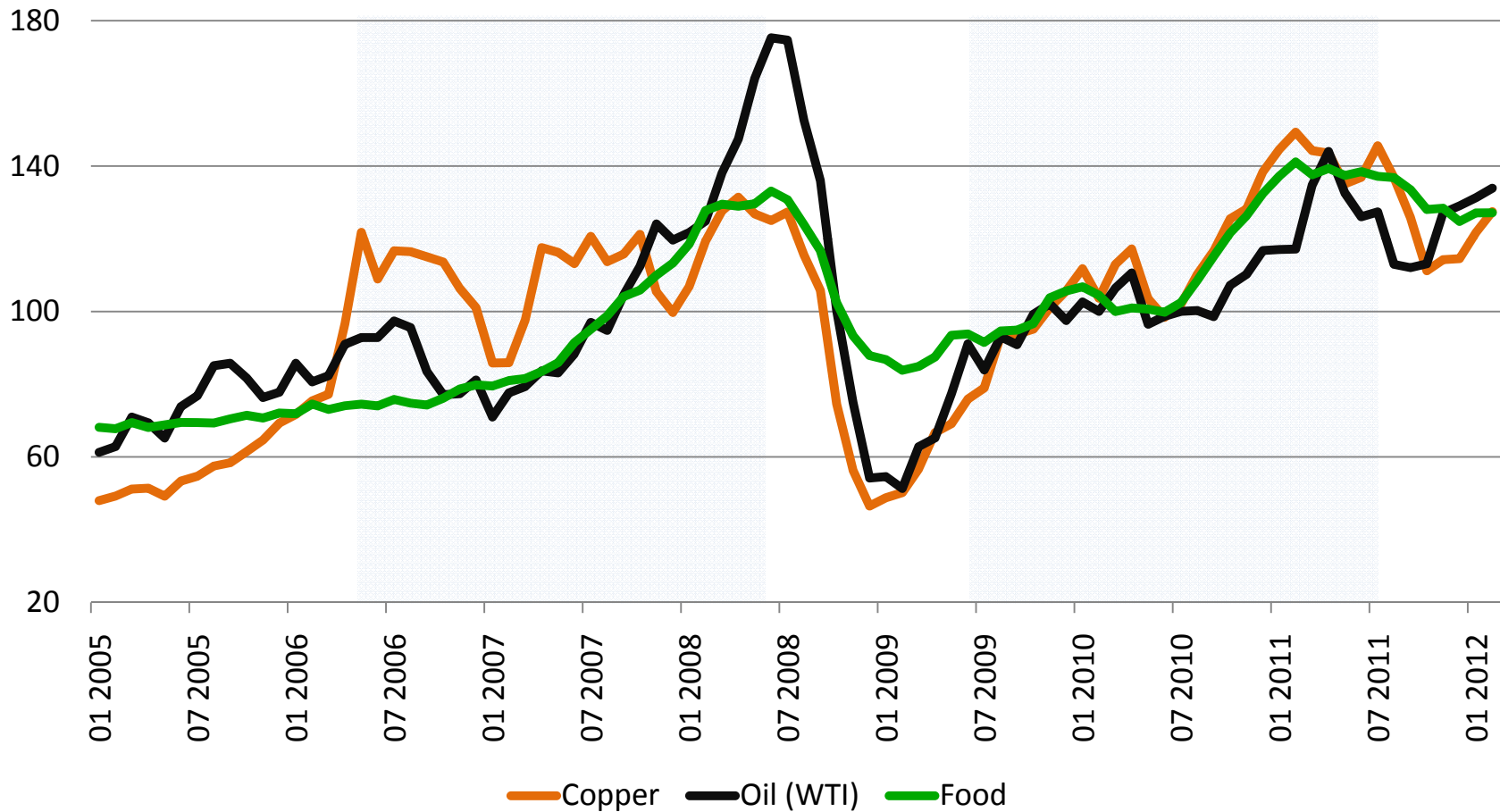
# **COMMODITY PRICES, MONETARY POLICY AND INFLATION**

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# Agenda

1. Introduction
2. Commodity prices and monetary policy
3. Empirical evidence
4. Concluding remarks

# Commodity price shocks (index 2005-2011=100)



# 1. Questions:

- What are the implications of CPS on monetary policy?
- Should monetary policy target core inflation (CI) or headline inflation (HI)?
- What is the role of CI on monetary policy?
- What can we learn from recent evidence?
- How strong is the transmission from energy and food inflation to core inflation (second round effects)?

# 1. Preliminaries:

1. Recent CPS has been the result of strong demand and no supply disruptions as in the past. Implications:
  - Demand source: inflation and output increase
  - Supply disruption: inflation raises and output declines.
  - Evidence: inflation raises and output still strong: role of monetary policy in reducing business cycle fluctuations (still great moderation?)
2. flexible inflation target regime: given target and medium-term horizon.
3. policy has learned a lot from academia, but not in the issue of what price index to target...until recently.

## 2. Commodity prices and monetary policy:

### *2.1 What price index should a central bank target?*

- Definition: core is headline excluding food and energy.
- Wide dispersion: Poland 60%, USA 83%. In Indonesia and Philippines 40% is food.
- Traditional prescription (Aoki 2001): target core (sticky price sector). But analysis has no lags, no frictions and therefore no feedback from “flexible” (non-core) prices to core.
- But food and energy products: (1) they are intermediate inputs, (2) they are an important component of consumption basket => feedback to wages, (3) are they really flexible prices? Huan and Zheng (2005), Okano (2007), Bodenstein et al. (2008), Campolimi (2008), Anand and Prasad (2010) and Catao and Chang (2010).

## 2. Commodity prices and monetary policy:

Central Bank of Korea (2006)

- *Core inflation has the merits of less short-term volatilities and greater reactionary effects to the adjustment of the policy rate compared to consumer price inflation, but it also has demerits in that it excludes non-grain agricultural products (weight 4%) and petroleum products (weight 7.7%), which are important for the cost of living, and hence it is thought by the general public to be little related to their daily lives... Furthermore, if the Bank were to continue to adopt core inflation while the government employed consumer price inflation as the price index in its plans for the fiscal activities, there would be the likelihood of confusion arising among the general public in judging price levels, which was also thought over. Even though the target index has been changed to headline inflation, core inflation will be monitored continuously as one of the principal reference indicators for the conduct of monetary policy.*

## 2. Commodity prices and monetary policy:

Fed, USA, January 2012

- *The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee judges that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate.*



## 2. Commodity prices and monetary policy:

Summary for advantages of headline inflation:

- Easy to communicate.
- There is a need of consistency with other price indices used for other policy purposes (Bank of Korea). This could also be the case of minimum and public sector wages
- Using core inflation may induce volatility in expected headline inflation, relevant for wage setting.
- The original idea for targeting core inflation: exclude highly volatile products, subject to shocks that have very short duration. It is not clearly the recent case of food and energy.
- The issue of targeting core inflation it usually arises when there are severe CPSs. Opportunism? Impact on credibility of the central bank to its anti-inflationary commitment

## 2. Commodity prices and monetary policy:

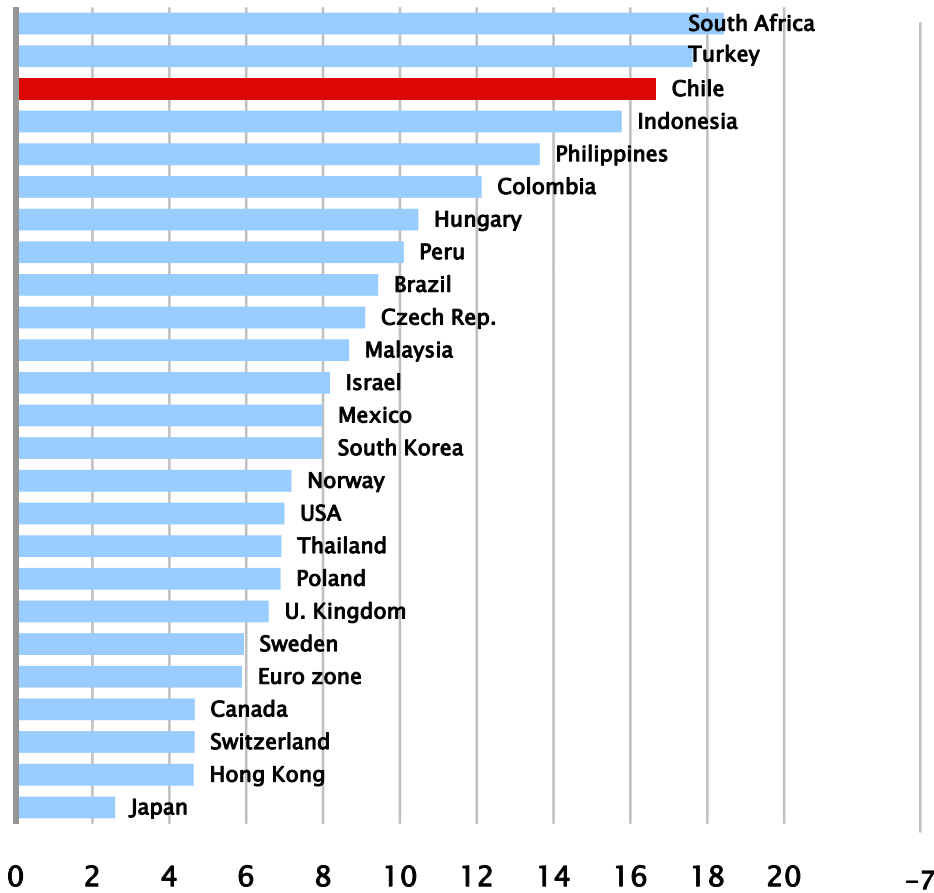
### *2.2 Should monetary policy react to CPS?*

Simple model where CPS affect:

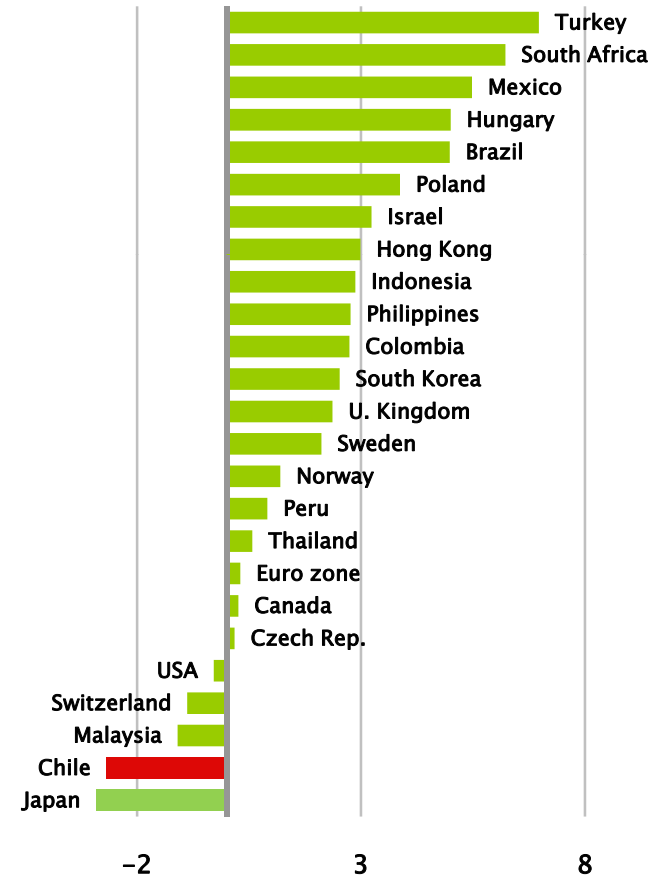
- Direct effects on inflation. Tighten MP
- Reduces full employment output. Tighten MP
- Negative (non-food or oil exporter) demand shock. Loosen MP
  
- Effects on expected inflation
  
- Transitory shocks should be absorbed within the time horizon of the IT
  
- Open economy effects: exchange rate changes depend on whether the country is net exporter or importer of commodities.
  
- Dynamic second round effects impact optimal reaction of MP.

# 3. Empirical Evidence.

## Accumulated CPI change



January 2007 – October 2008



October 2008 – December 2009

Sources: Statistics bureaus at each country and Bloomberg.

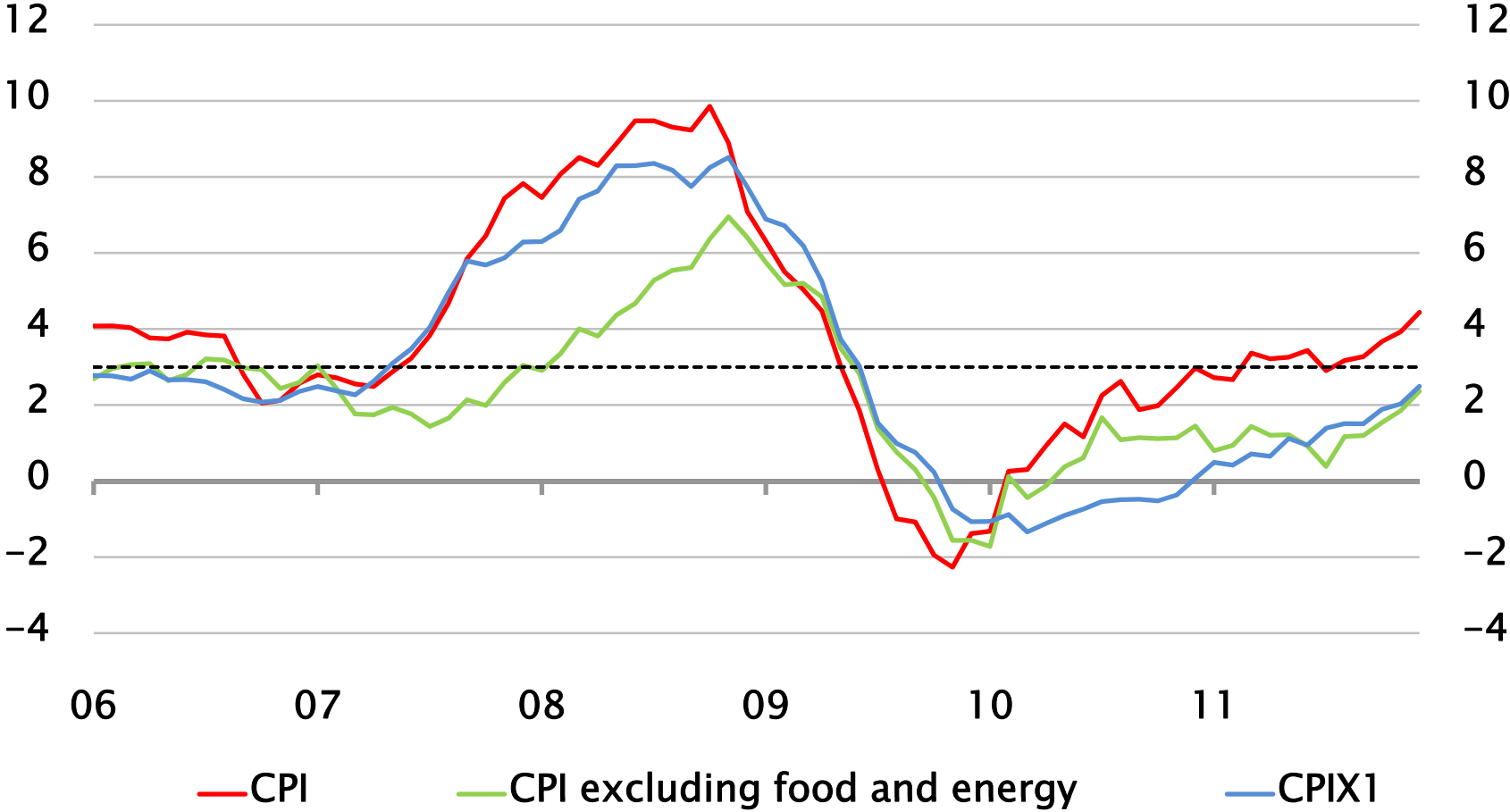
### 3. Empirical evidence: Pistelli and Riquelme (2010)

- *Structural variables*: domestic restrictions on market prices, domestic price level of food and gasoline, price elasticity of demand, imports of food and energy as share of expenditure on these items, dummy for inflation targets, and exchange rate regime.
- *Cyclical variables*: rate of inflation previous to the boom of commodities, change in the exchange rate during the period, and output gap.
- *Results*: structural factors are more relevant in explaining the cross-country differences in food and energy inflation, while cyclical factors are more important for core inflation (output gap and initial inflation). Exchange rate effects limited, especially in during the boom.
- *Chile*: food inflation higher because Chile is a very open economy without regulation in local markets. In the case of energy inflation Chile has a large residual, since some idiosyncratic factors also explained a large increase in domestic electricity prices. Finally, regarding core inflation, Chile had similar increases to the median of other countries. Total inflation was therefore higher.

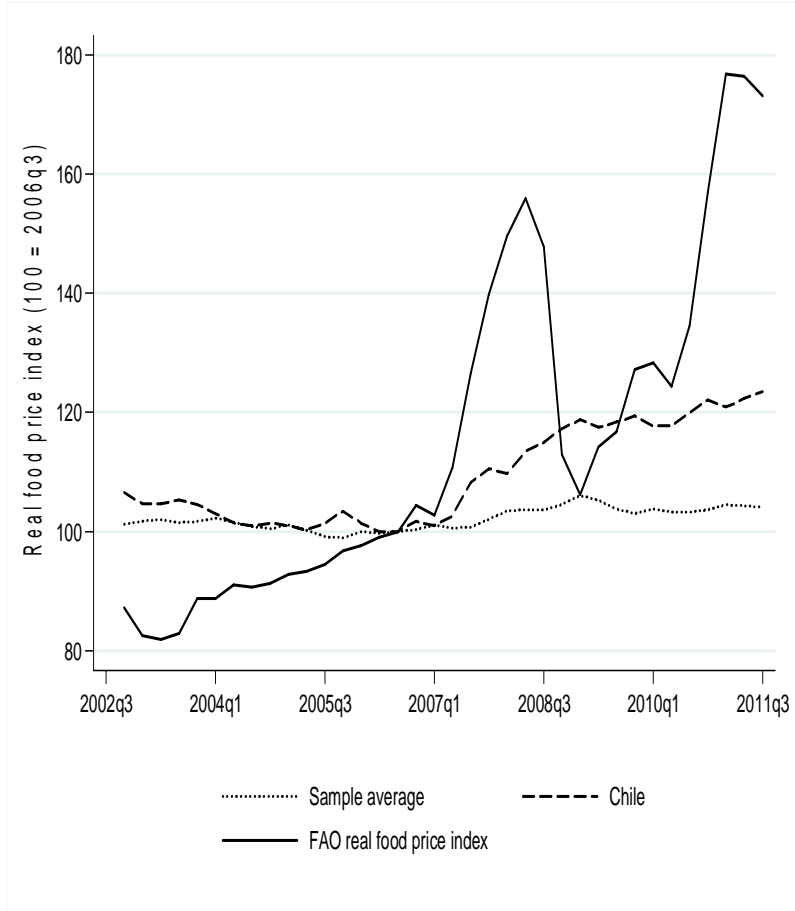
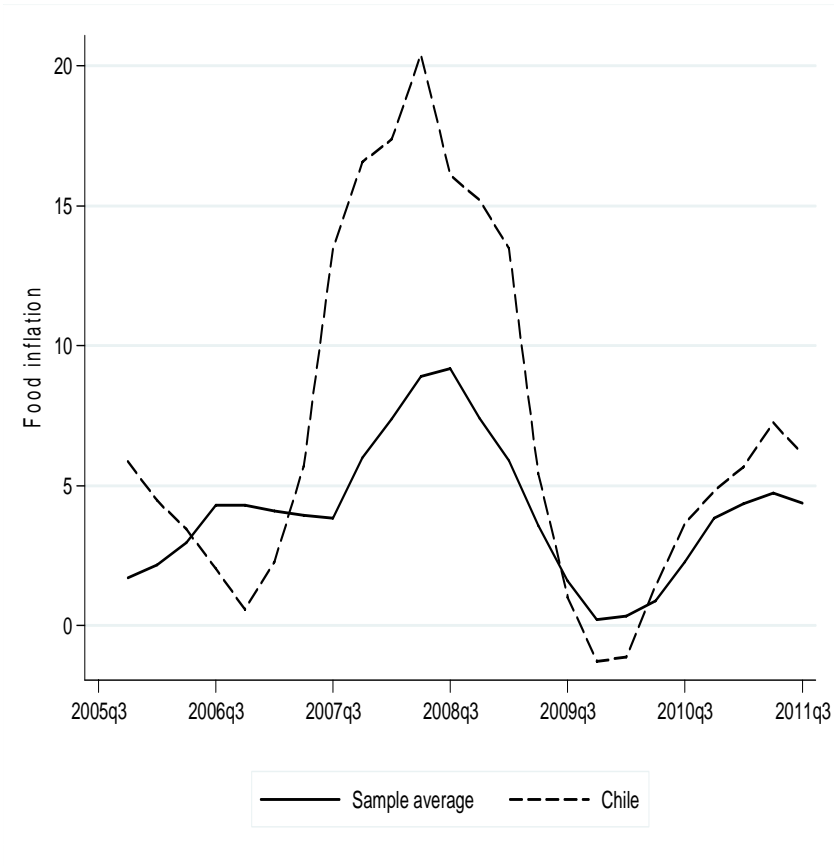
### 3. Empirical evidence: Pedersen (2011)

- Food inflation propagates much more than energy inflation
- This is confirmed by Ghezzi et al. (2011): 10 percent CPS shock, inflation raises 0.5% for oil and 2% for food, not due to share differences in shares in CPI (9 percent oil versus 15 percent food).
- Propagation is higher in emerging markets.
- Duration is about 6 quarters, and the shock kicks off in core after two quarters.

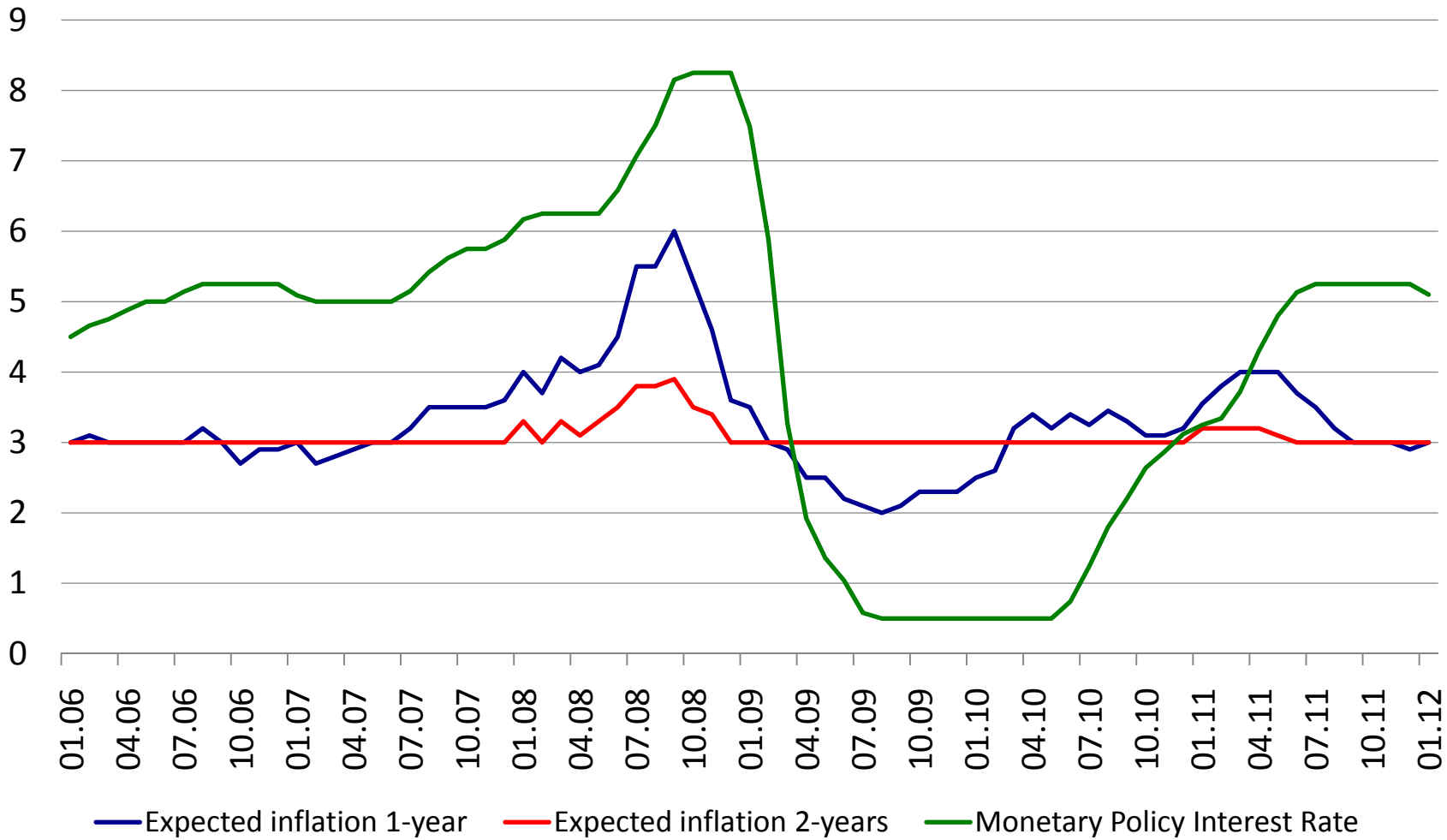
# The Chilean Experience



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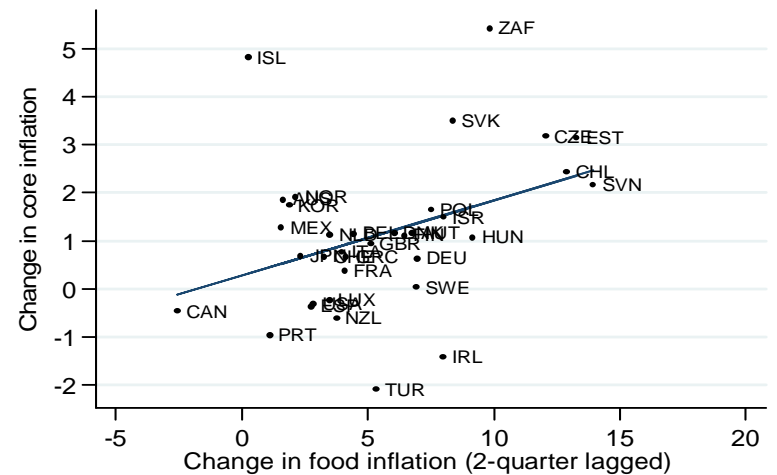
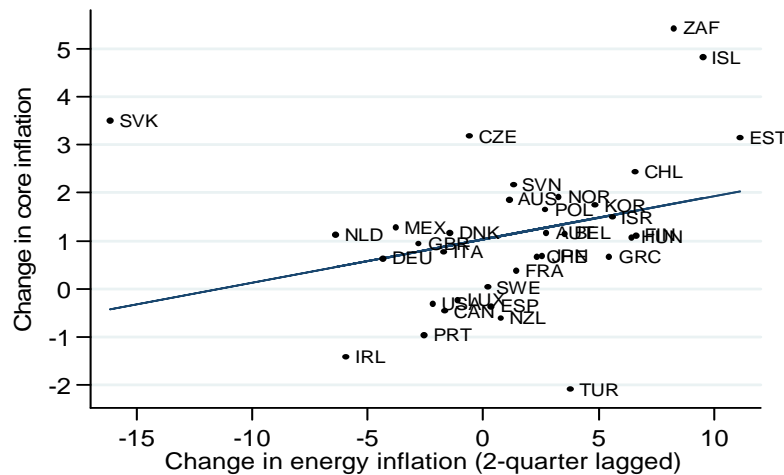
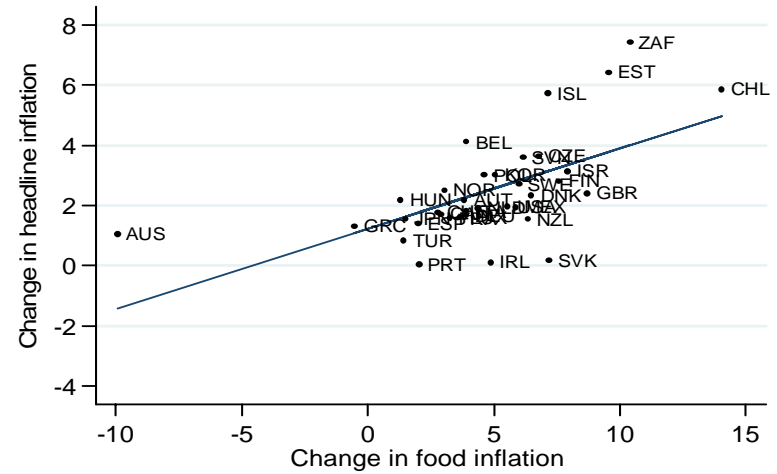
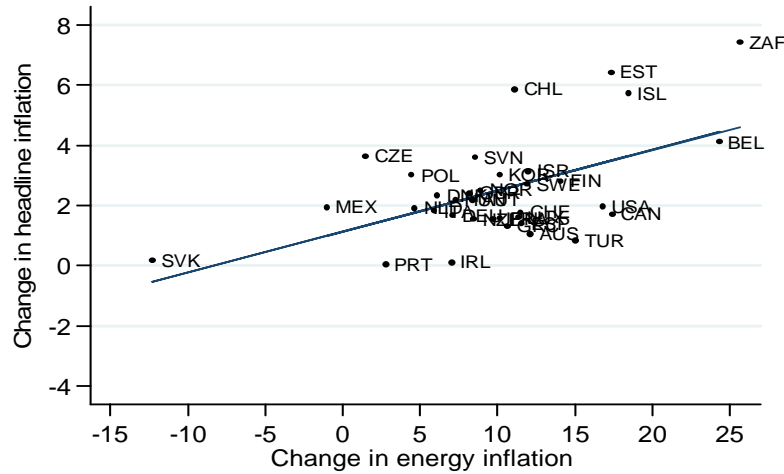
# The Chilean Experience



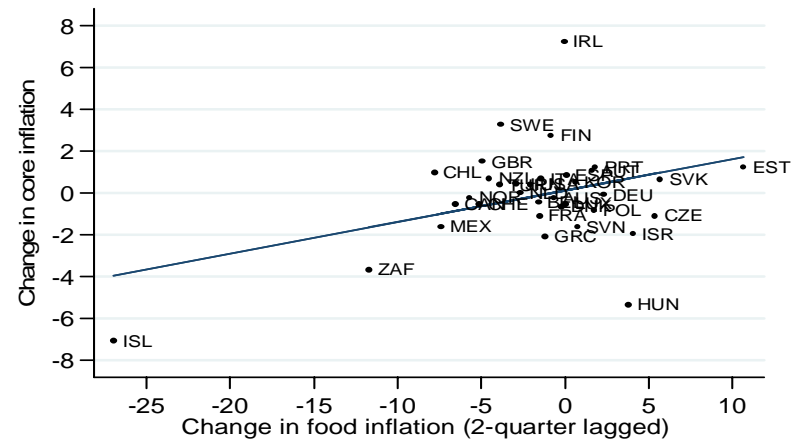
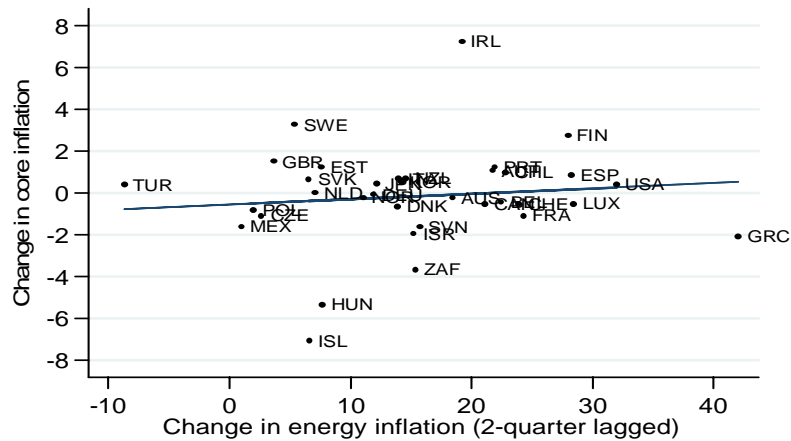
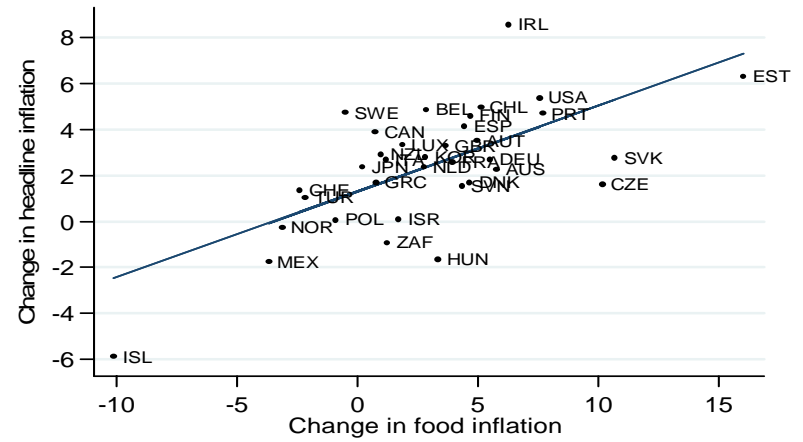
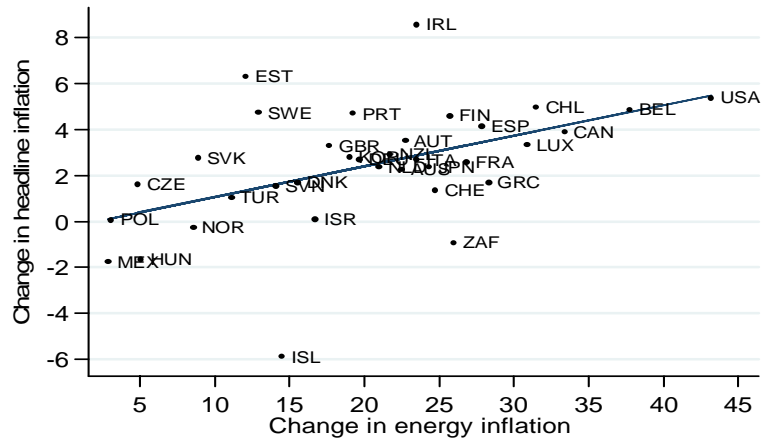


# 3. Determinants of inflation and second round effect

## Changes in Inflation (episode1): 2006.Q3-2008.Q3

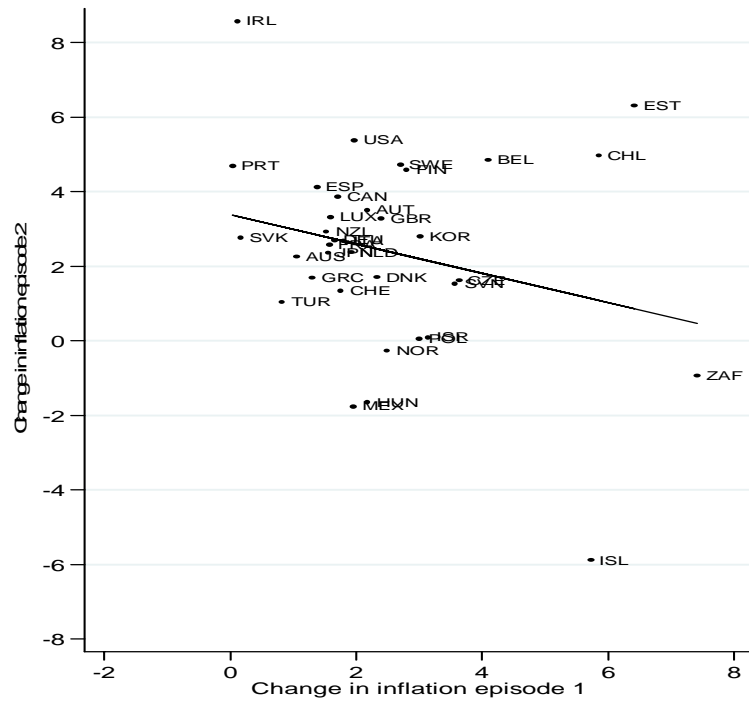


# Changes in Inflation (episode 2): 2009.Q3-2011.Q3

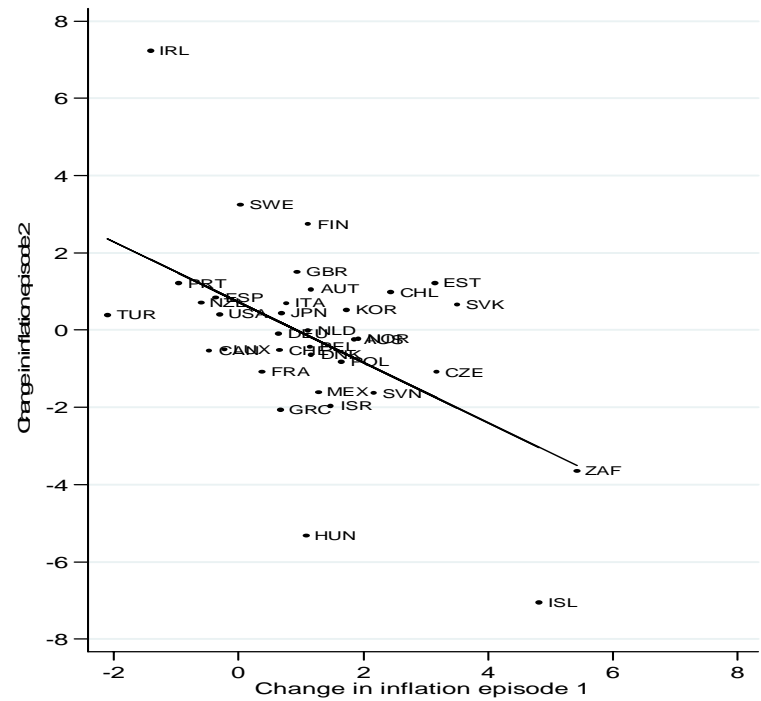


# Changes in inflation across episodes

## Headline

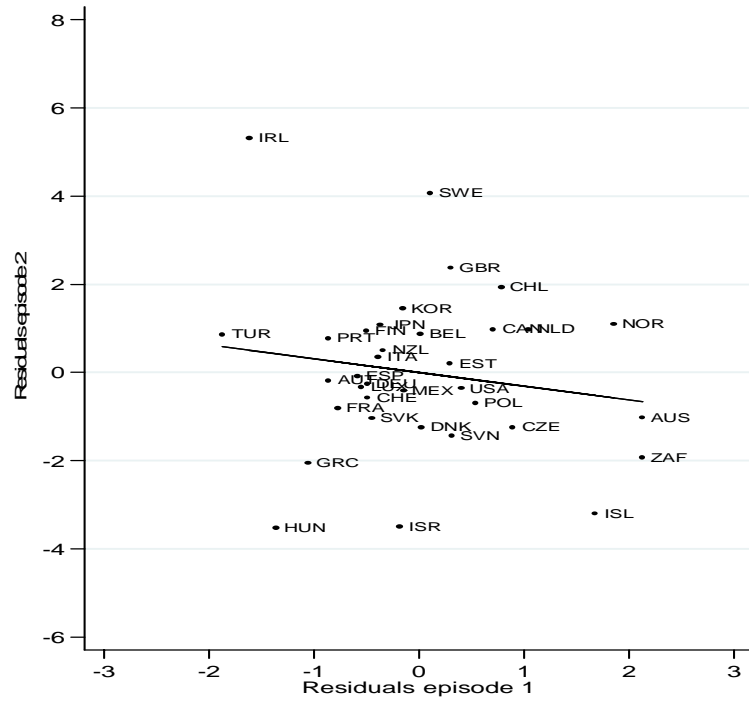


## Core

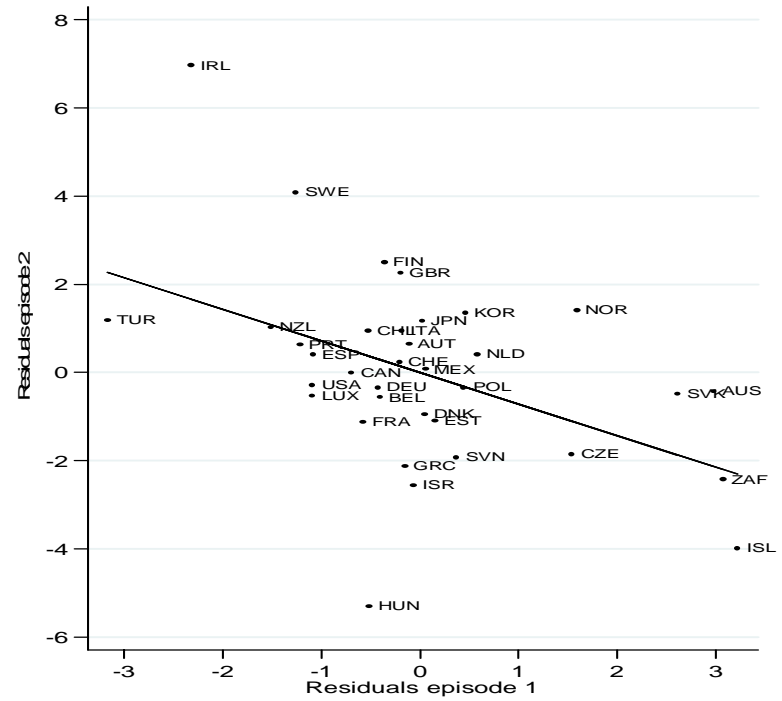


# Changes in inflation “residuals” across episodes

Headline

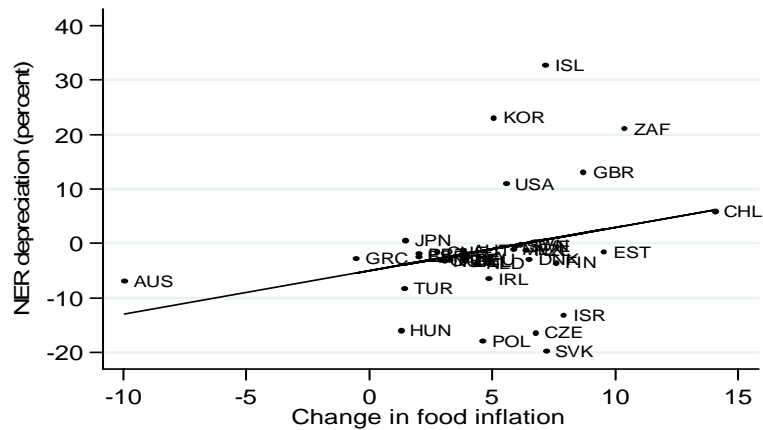
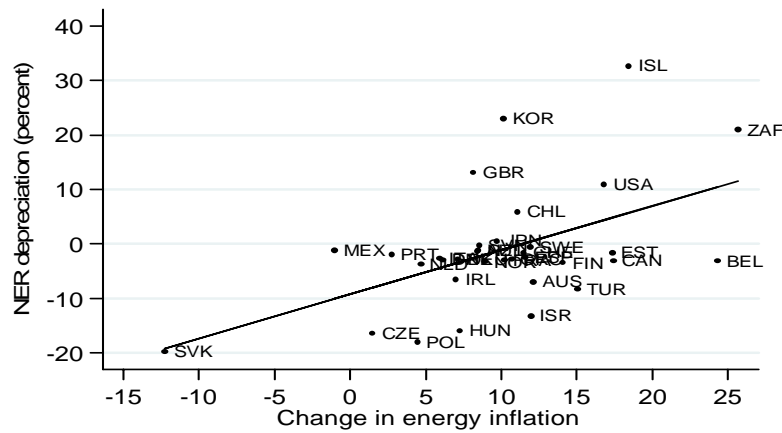


Core

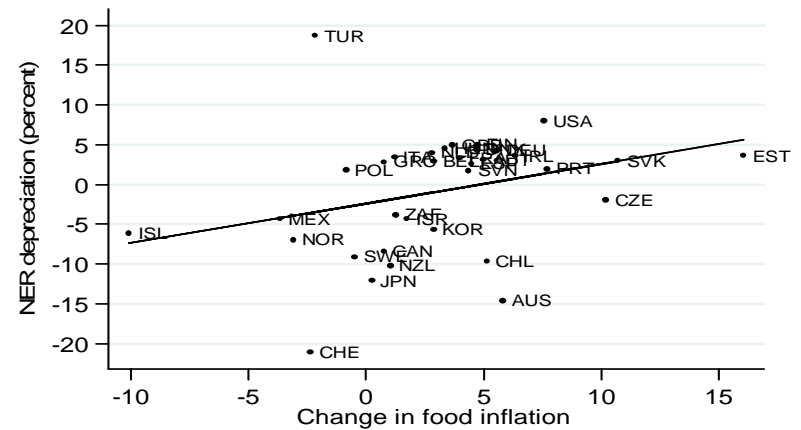
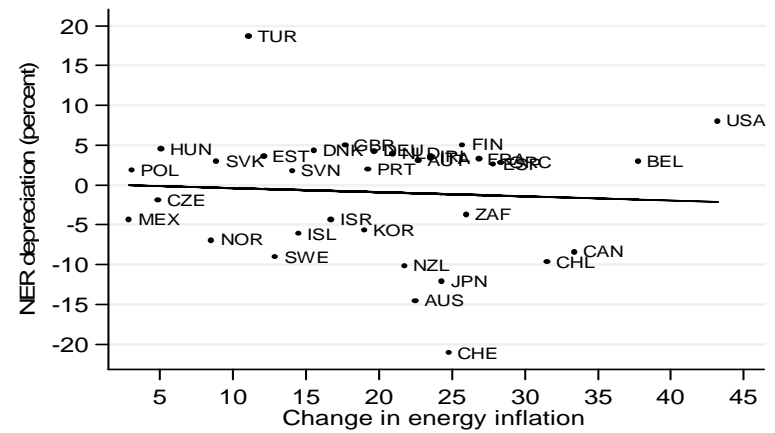


# Exchange rates and inflation

## Episode 1



## Episode 2



# Regression results on headline and core inflation

- A 10 percent increase in oil prices raises headline inflation by about 1 to 1.4 percentage point. A 10 percent increase in food inflation raises headline inflation by about 2.5 percentage points.
- During the first episode food inflation affects core inflation. At least half of the increase in headlines inflation would be due to propagation from food to core inflation. The output gap is only significant in episode 1.
- There is some evidence, somewhat puzzling, that economies with less restrictions to foreign trade had less inflation during episode 1.
- In addition, more variability of inflation before the episodes, as a crude measure of credibility-performance of monetary policy, resulted in higher inflation.

## 4. Some concluding remarks

- Target headline inflation, although core-inflation may provide the best forecast of near term (shorter than the policy horizon where inflation forecast should equal the target) inflationary pressures.
- The recent response of inflation to the CPS seems to be influenced by the response of inflation to the first commodity prices from 2006 to 2008.
- There is some asymmetry in the response of inflation to oil and food, beyond their direct effect on inflation. It seems that food has more relevant second round effects.
- The latter does not imply to ignore the effects of oil prices on inflation, because the success of reducing the impact of oil on the economy is precisely because of the reaction of monetary policy to oil price shocks.

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