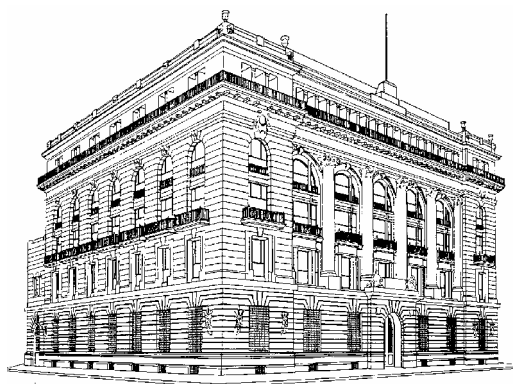# Commodities, Inflation and Monetary Policy

BANCO DE MEXICO

The Global Rise in Food Prices and the US Slowdown:
Issues and Challenges in Monetary Policy

Manuel Ramos-Francia
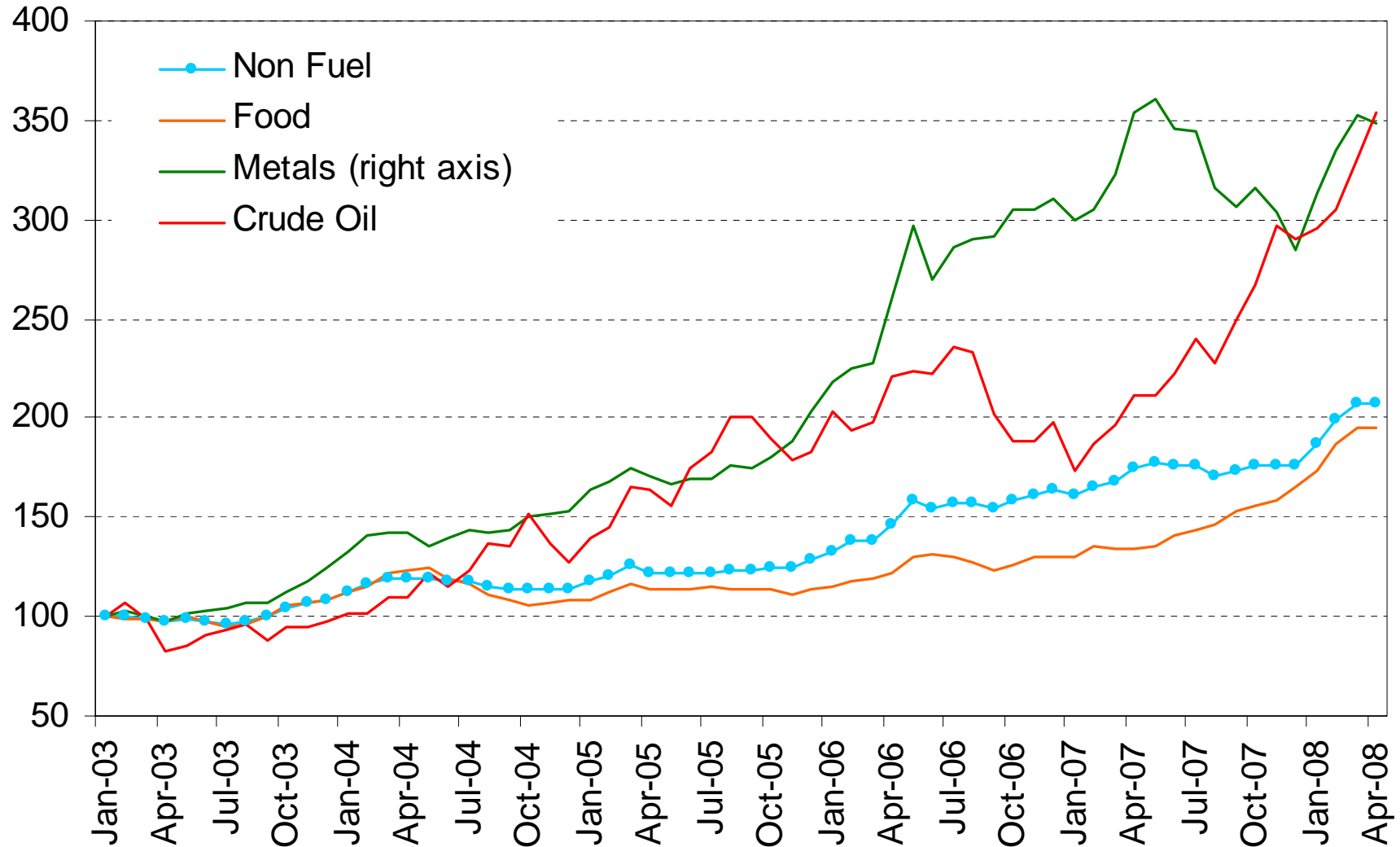
Head of Economic Research

June 16, 2008

Outline

1. Real Food and Oil Price Changes

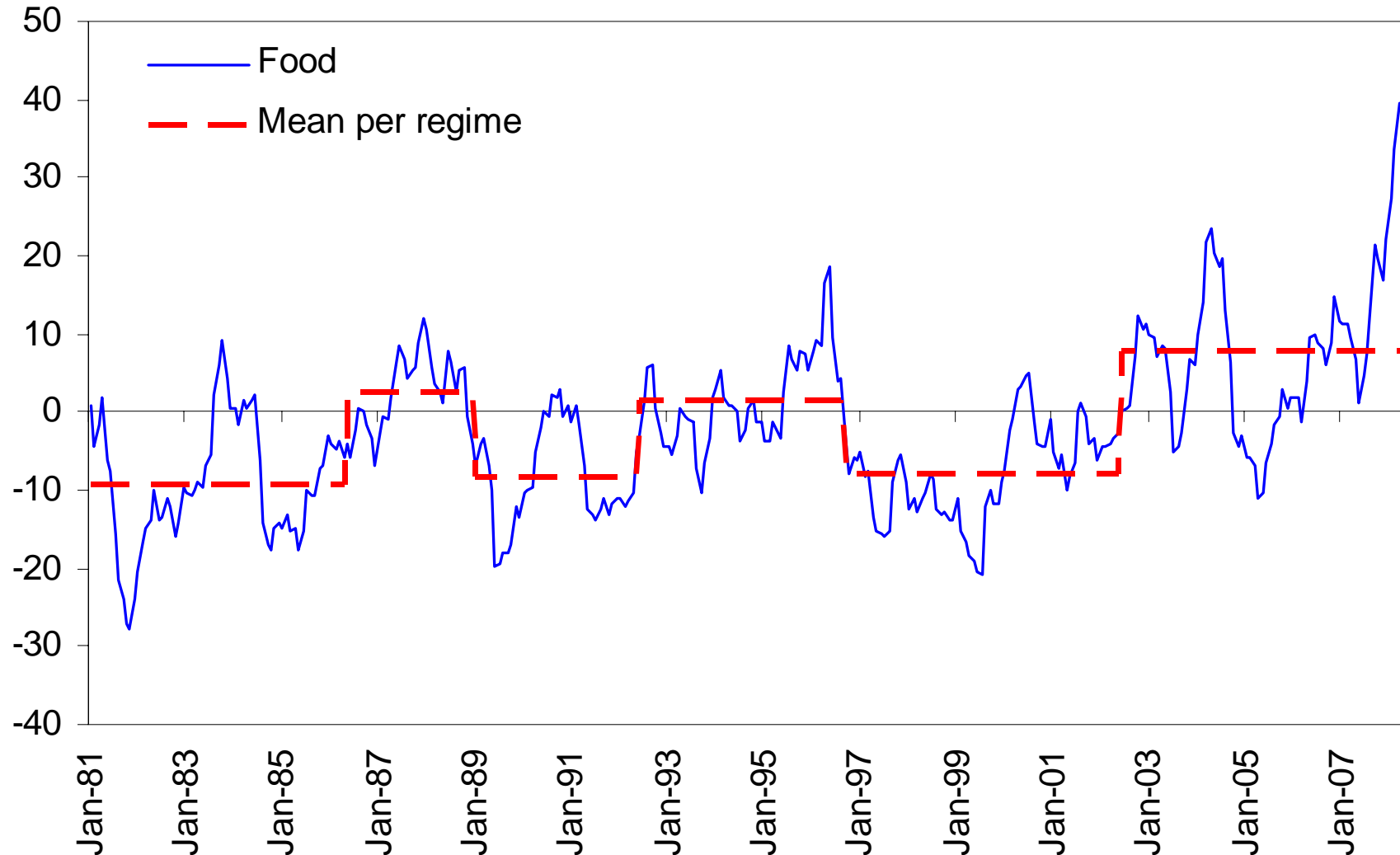## Commodity Price Indexes
(Index Jan 2003 = 100)

Source: IMF.

1. Real Food and Oil Price Changes

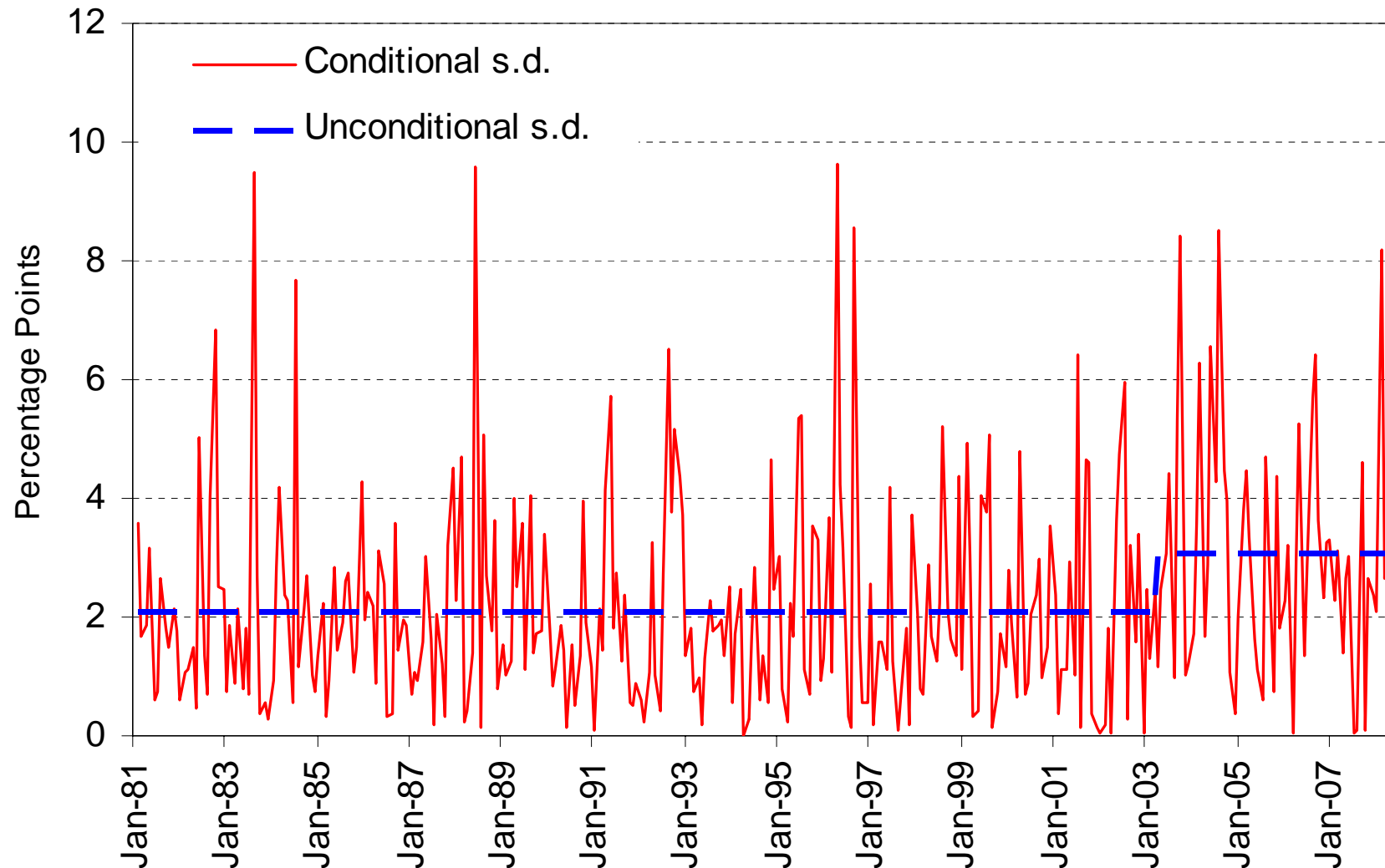## Real Food Price Changes
(Annual % Change of Real Price)

Source: IMF. Calculations by Banco de México.

Volatility of Real Food Price Changes
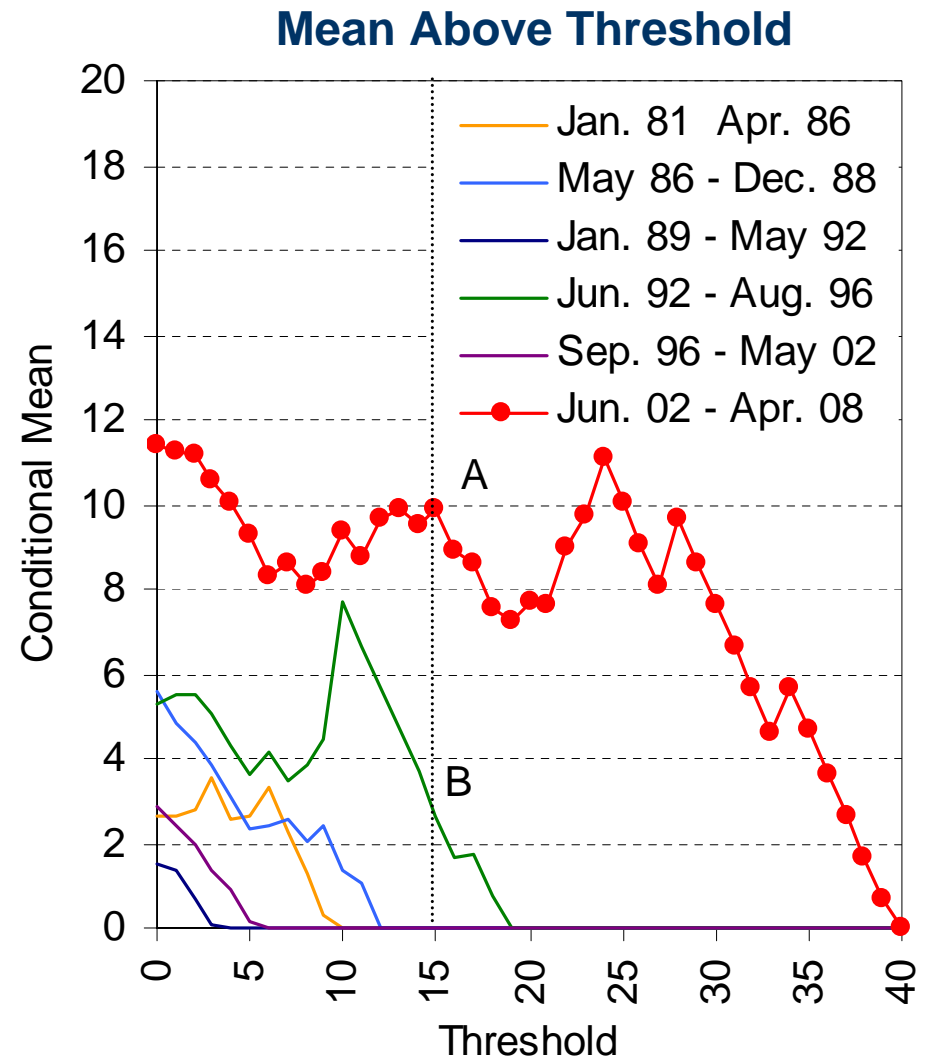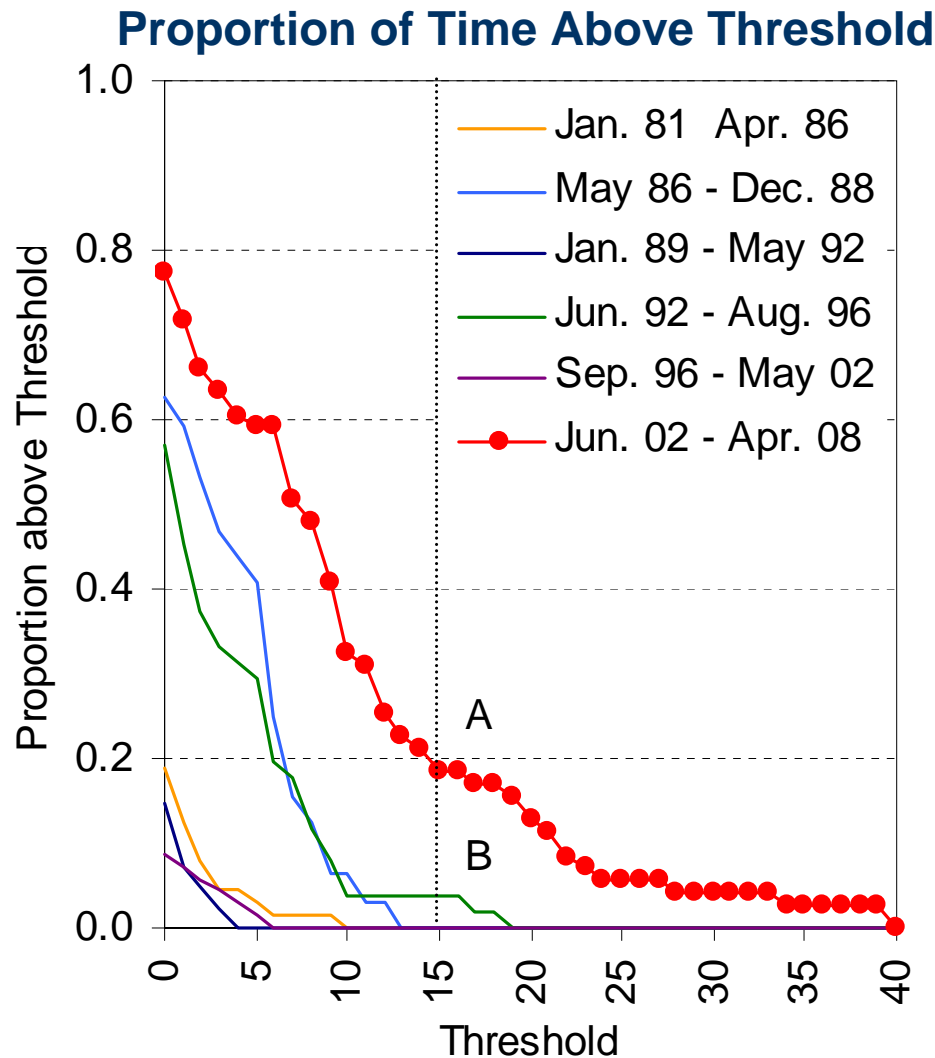### (Standard Deviation of the Annual % Change)

Source: IMF. Calculations by Banco de México.

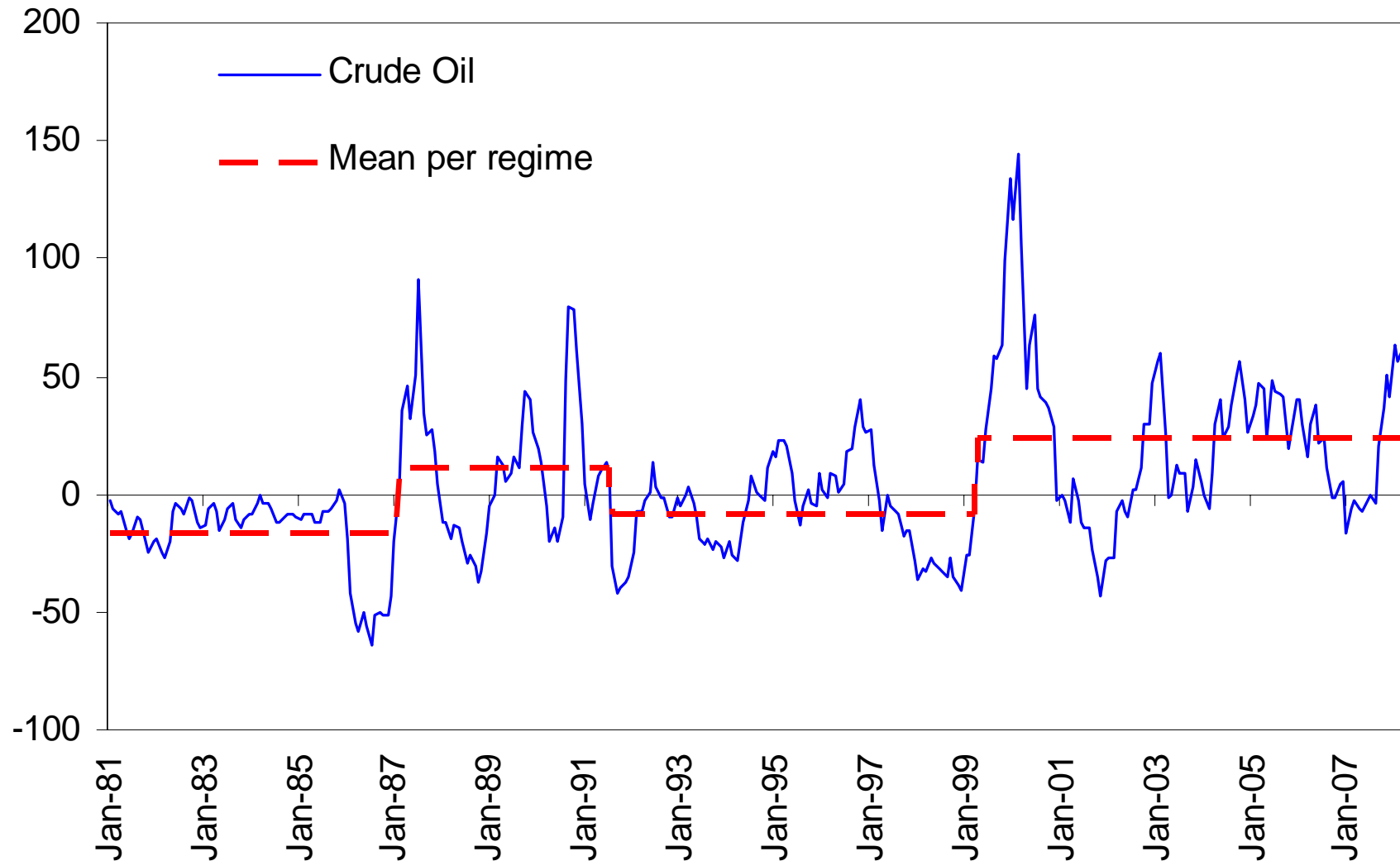# 1. Real Food and Oil Price Changes

Real Food Price Changes

Source: IMF. Calculations by Banco de México.

Real Crude Oil Price Changes
(Annual % Change of Real Price)

Source: IMF. Calculations by Banco de México.

1. Real Food and Oil Price Changes

Food
(Annual % Change of Real Price)

Regimes	Mean	s.d.	Max.	Duration (months)	Period	
I	-9.37	8.13	9.30	64	Jan-81	Apr-86
II	2.48	4.90	12.03	32	May-86	Dec-88
III	-8.22	6.41	3.04	41	Jan-89	May-92
IV	1.47	5.77	18.77	51	Jun-92	Aug-96
V	-7.97	5.93	5.14	69	Sep-96	May-02
VI	7.75	10.62	39.68	71	Jun-02	Apr-08

Crude Oil
(Annual % Change of Real Price)

Regimes	Mean	s.d.	Max.	Duration (months)	Period	
I	-16.47	16.29	2.18	73	Jan-81	Jan-87
II	11.12	29.36	91.11	54	Feb-87	Jul-91
III	-8.19	19.03	40.53	92	Aug-91	Mar-99
IV	24.17	33.38	144.75	109	Apr-99	Apr-08

Outline

2. Implications for Monetary Policy

■ As is well-known (e.g. Clarida, Gali and Gertler (1999)), when obtaining the optimal monetary policy response to any shock, it is standard practice to use a linear-quadratic framework.

✓ *Certainty equivalence holds.*

➡ ***In this case, the optimal feedback rule for the monetary policy instrument will be a <u>linear, time-invariant</u> function of all the variables and shocks.***

2. Implications for Monetary Policy

■ However, we are not currently in this type of framework:

- ✓ *For many central banks, high inflation may be more costly than low inflation.*

- ✓ *The shocks we are currently facing, as shown, follow a complex stochastic process, with regime shifts, time varying variances and extreme values.*

- ✓ *In addition, there is uncertainty about the duration of the "high inflation regimes" in commodity prices.*

- ✓ *The economy seems to behave differently in recessions than in booms (e.g., Hamilton (1989)).*

■ ***Thus, optimal response of monetary policy is likely to be*** <u>***non-linear and time-varying***</u>***, and will tend to focus on risk management.***
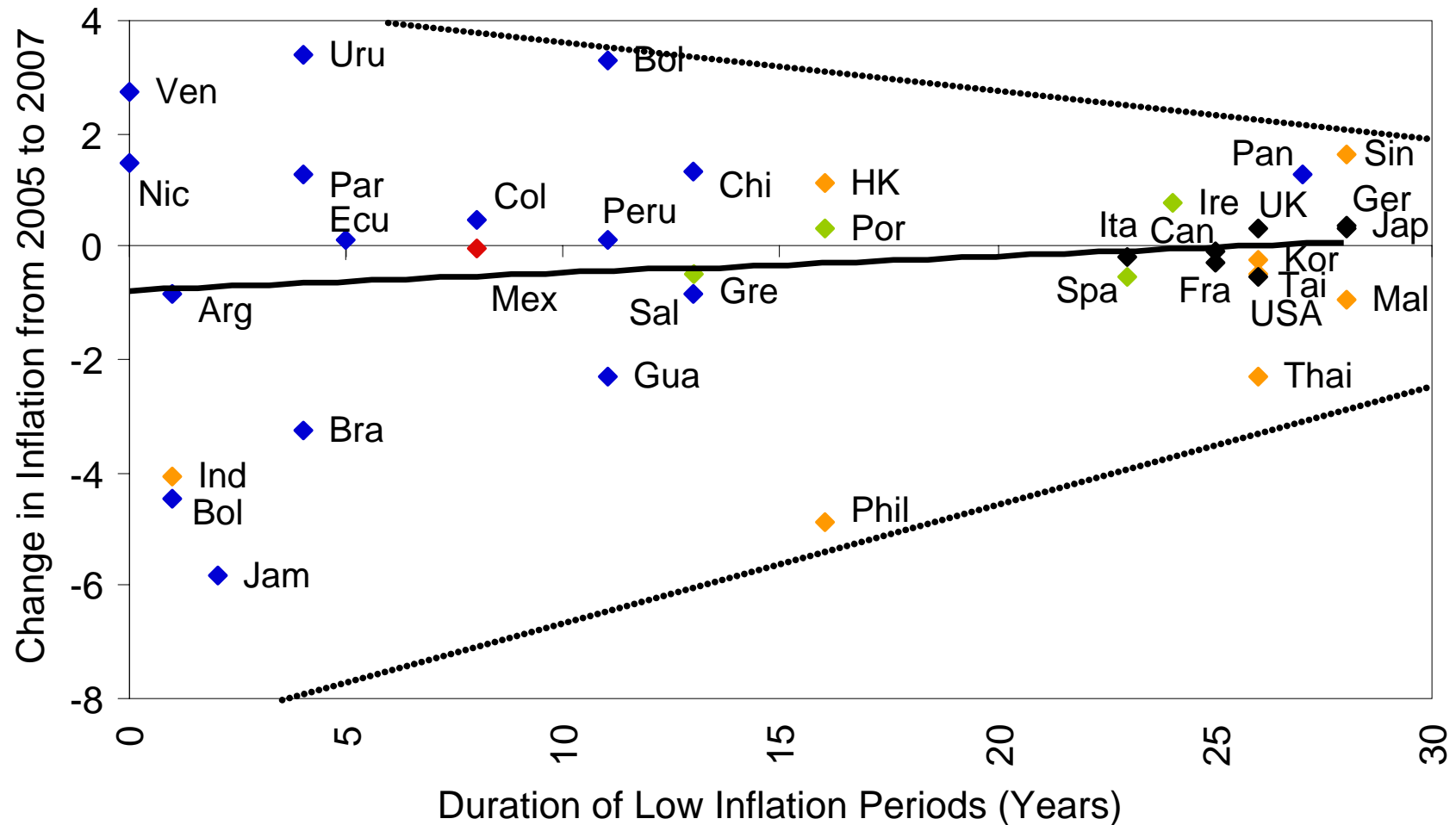
2. Implications for Monetary Policy

■ The optimal monetary policy response to increasing inflation depends on each country's particular circumstances:

❶ *The inflationary history of the country and, in particular, the extent to which a low inflation equilibrium has been sustained.*

❷ *The degree of persistence that each economy's inflation process exhibits to price shocks.*

❸ *The weight that food and energy goods have on the CPI.*

❹ *The phase of the cycle the country is undergoing.*

❺ *The impact of the current environment on the country's terms of trade.*

2005 – 2007 Inflation Change and Low Inflation Regime

Source: WEO, IMF. Calculations by Banco de México.

2005 – 2007 Inflation Change and Inflation Persistence

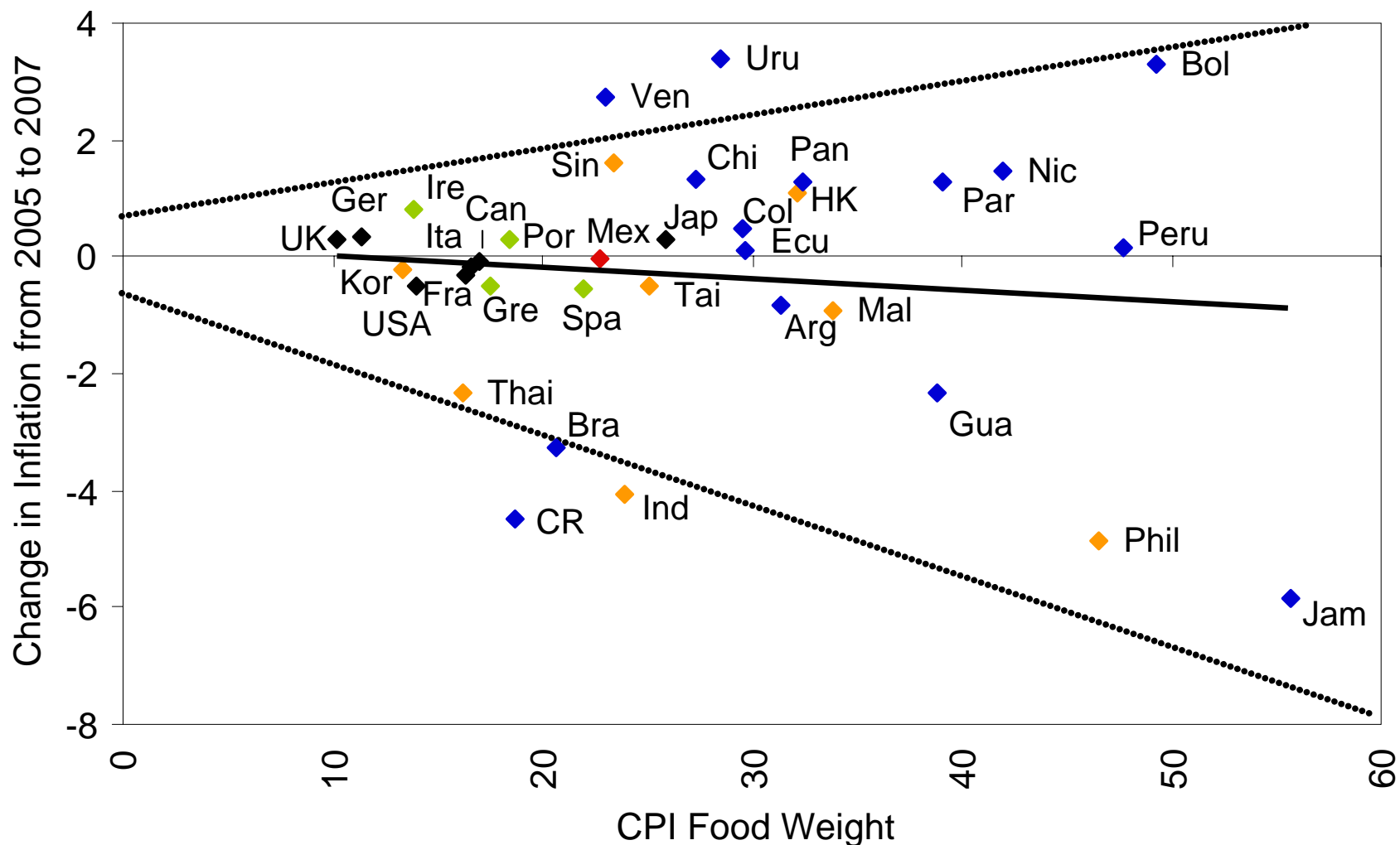*Source: WEO, IMF. Calculations by Banco de México.*

2005 – 2007 Inflation Change and CPI Food Weights

Source: WEO, IMF. Calculations by Banco de México.

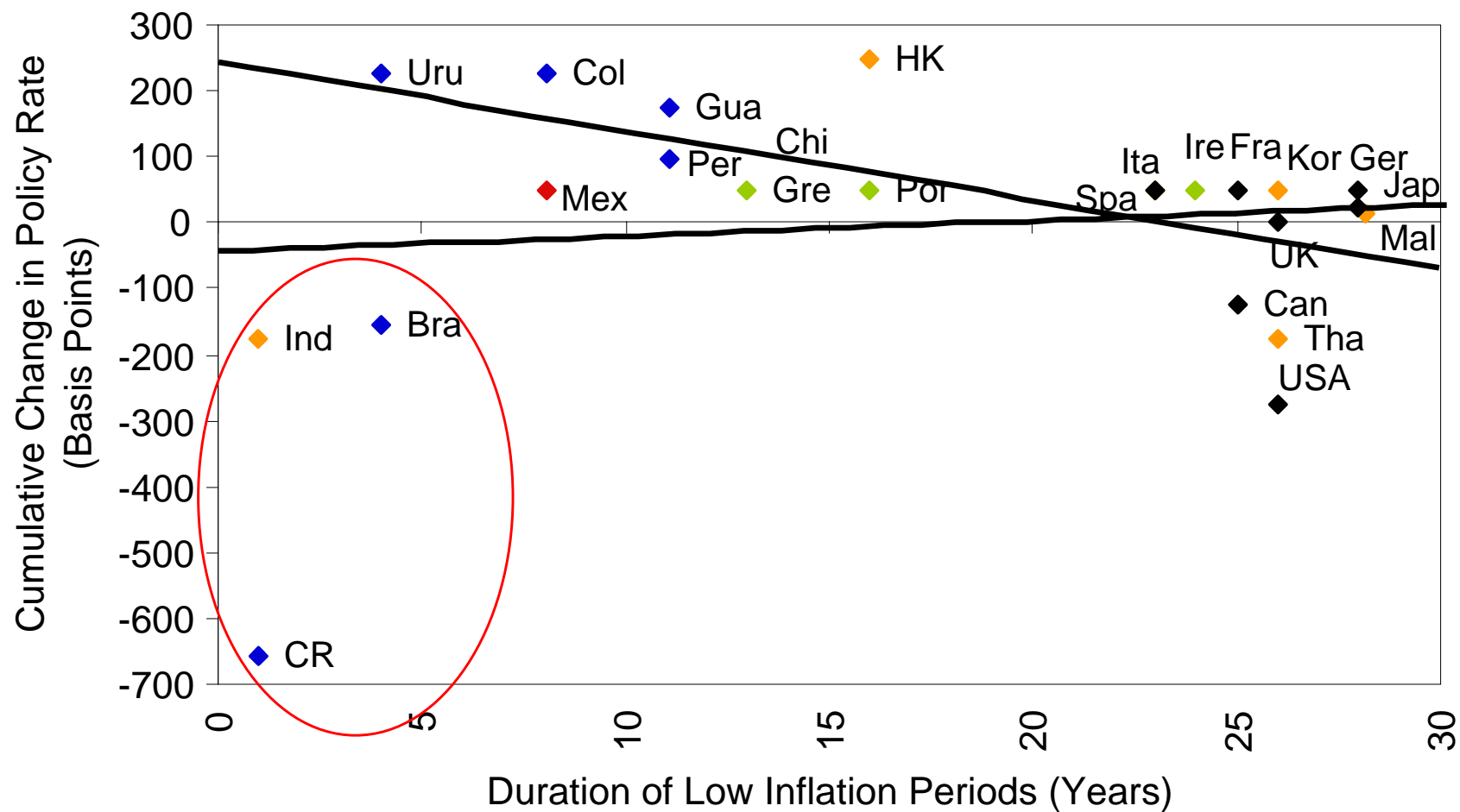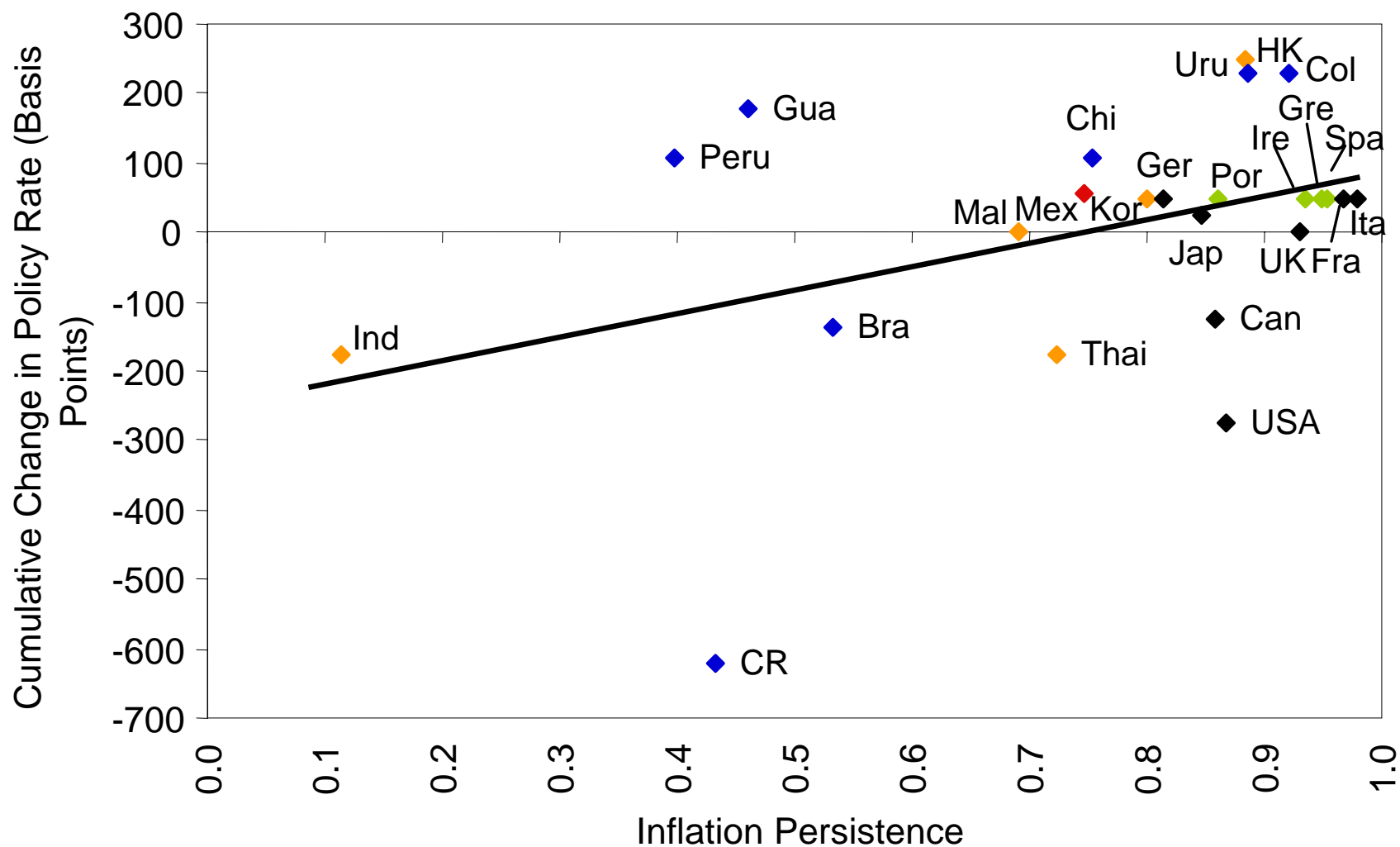## Cumulative Change in Policy Target Rates and Low Inflation Regime
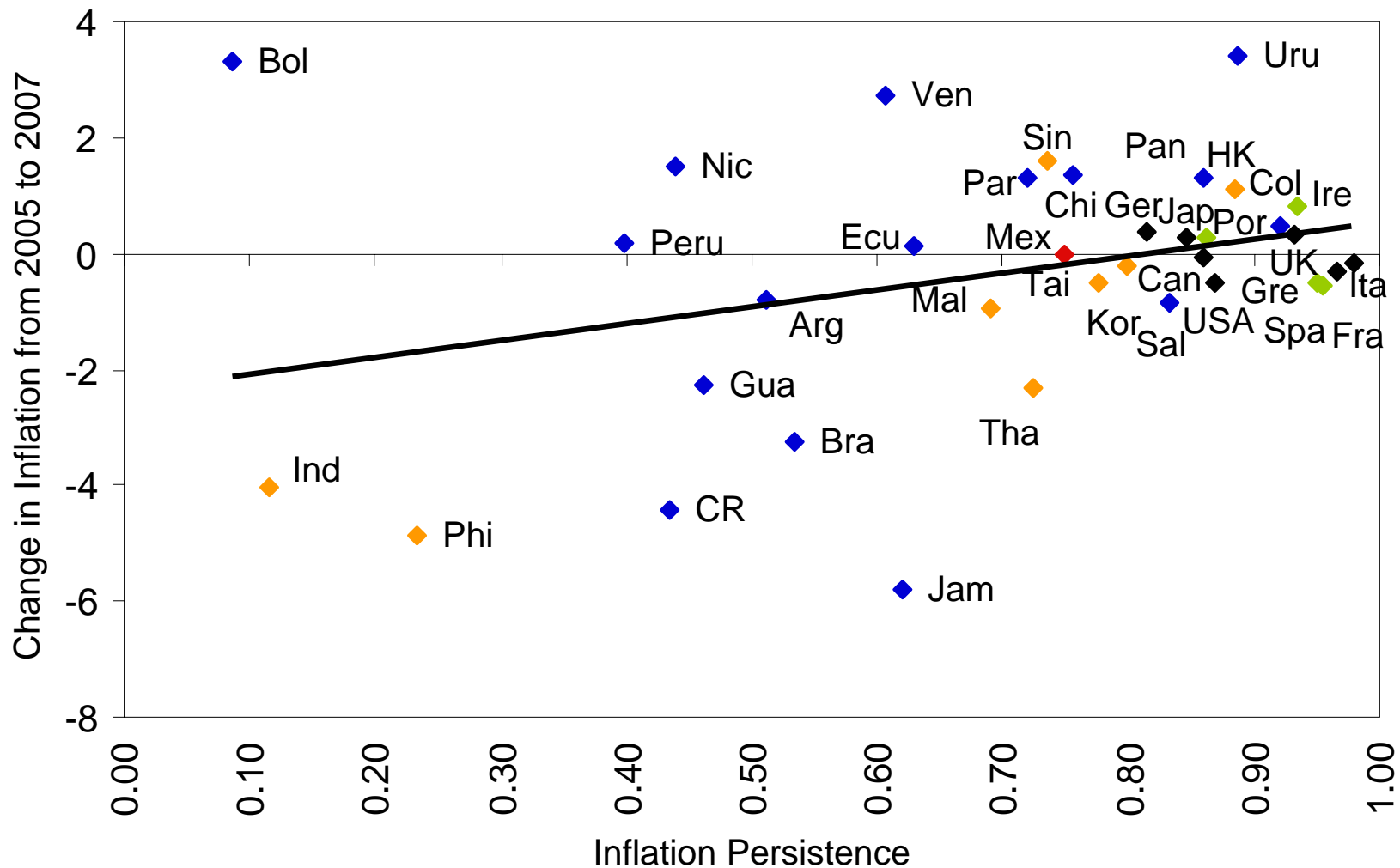
Source: WEO, IMF. Calculations by Banco de México.

2. Implications for Monetary Policy

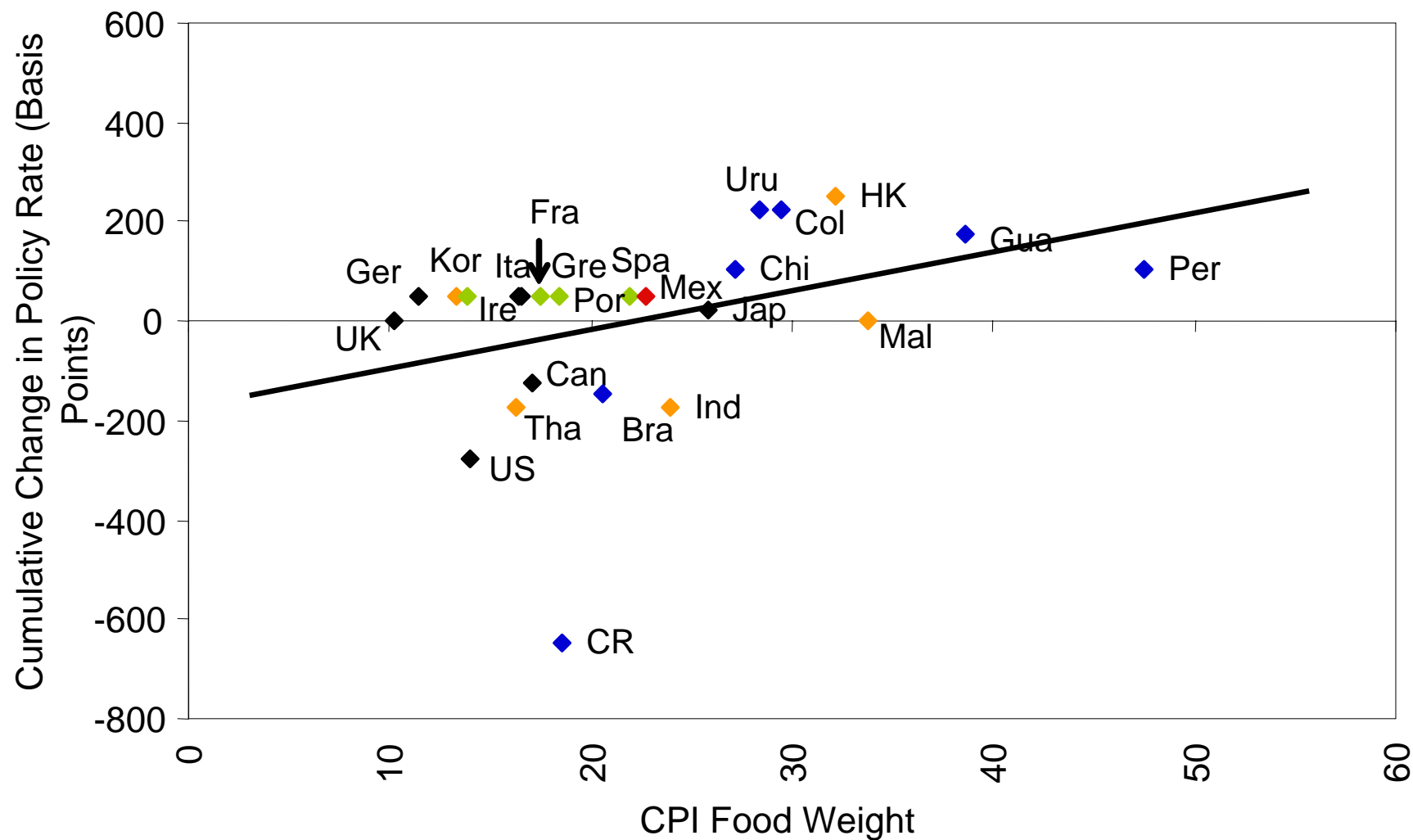**Cumulative Change in Policy Target Rates and Inflation Persistence**

Source: WEO, IMF. Calculations by Banco de México.

Cumulative Change in Policy Target Rates and CPI Food Weights

Source: WEO, IMF. Calculations by Banco de México.

■ Should increasing inflation from the current shocks to energy and food prices imply a restrictive bias in monetary policy?

   ✓ *Could be in countries where inflation is persistent, a low inflation equilibrium has not been sustained for a long time and where food and energy have a large weight in consumers' spending.*

   ✓ *This would reflect the high costs that a breakdown of expectations-based nominal anchors that sustain a low-inflation equilibrium may have on economic performance.*

■ Indeed, some countries may face a combination of the above mentioned features that may lead them to maintain a restrictive bias in their monetary policy, even when they may be currently facing the low phase of their business cycle.
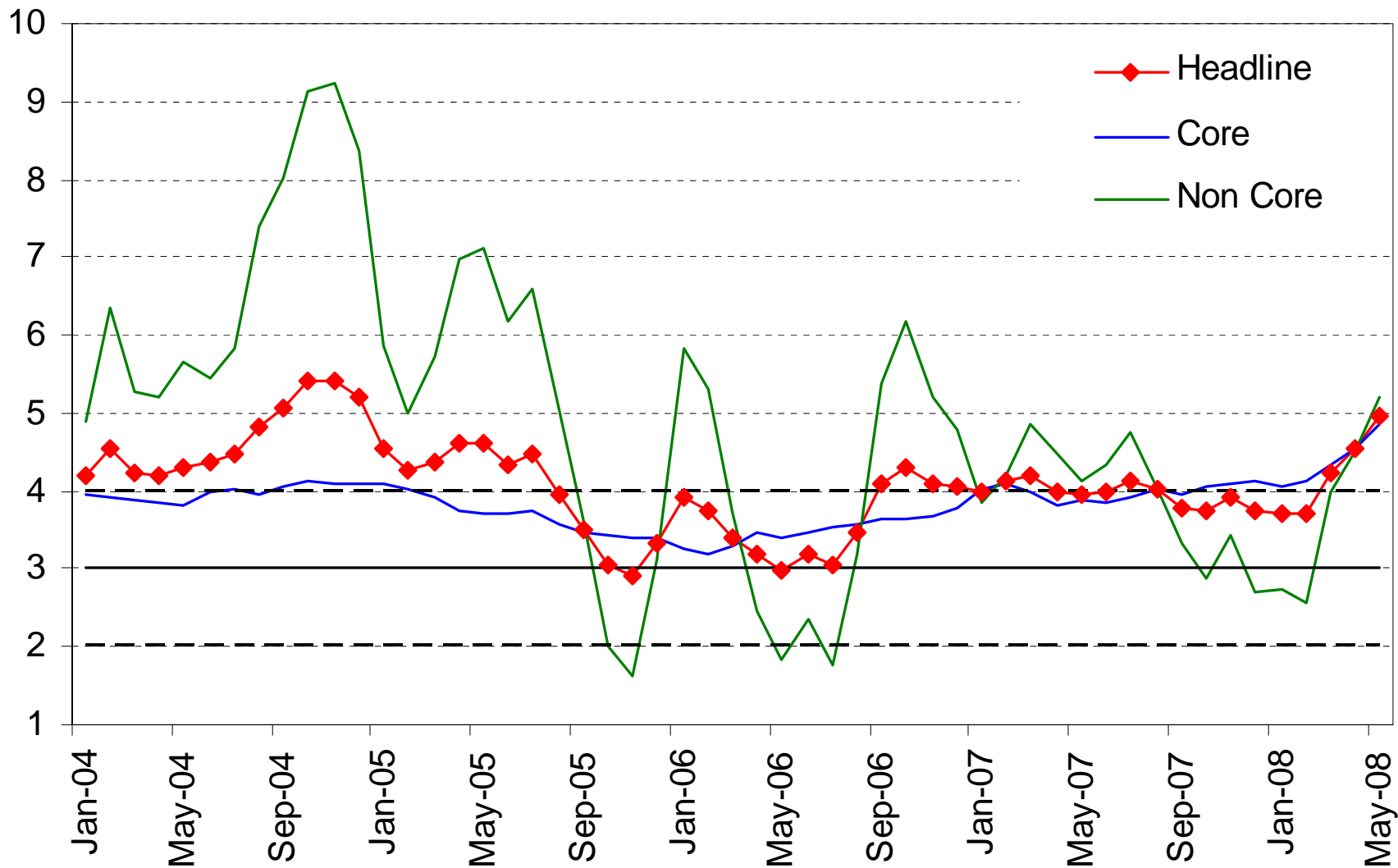
Outline

1. Real Food and Oil Price Changes

2. Implications for Monetary Policy

3. Monetary Policy in Mexico

4. Final Remarks

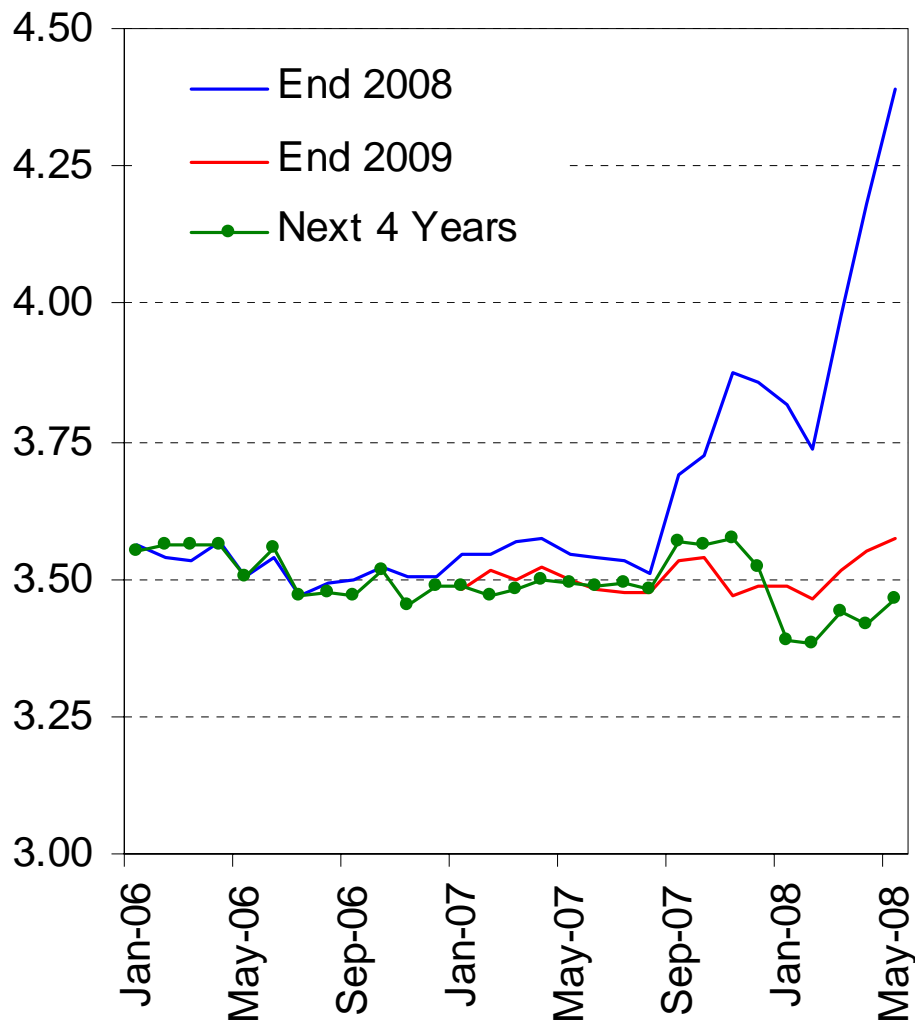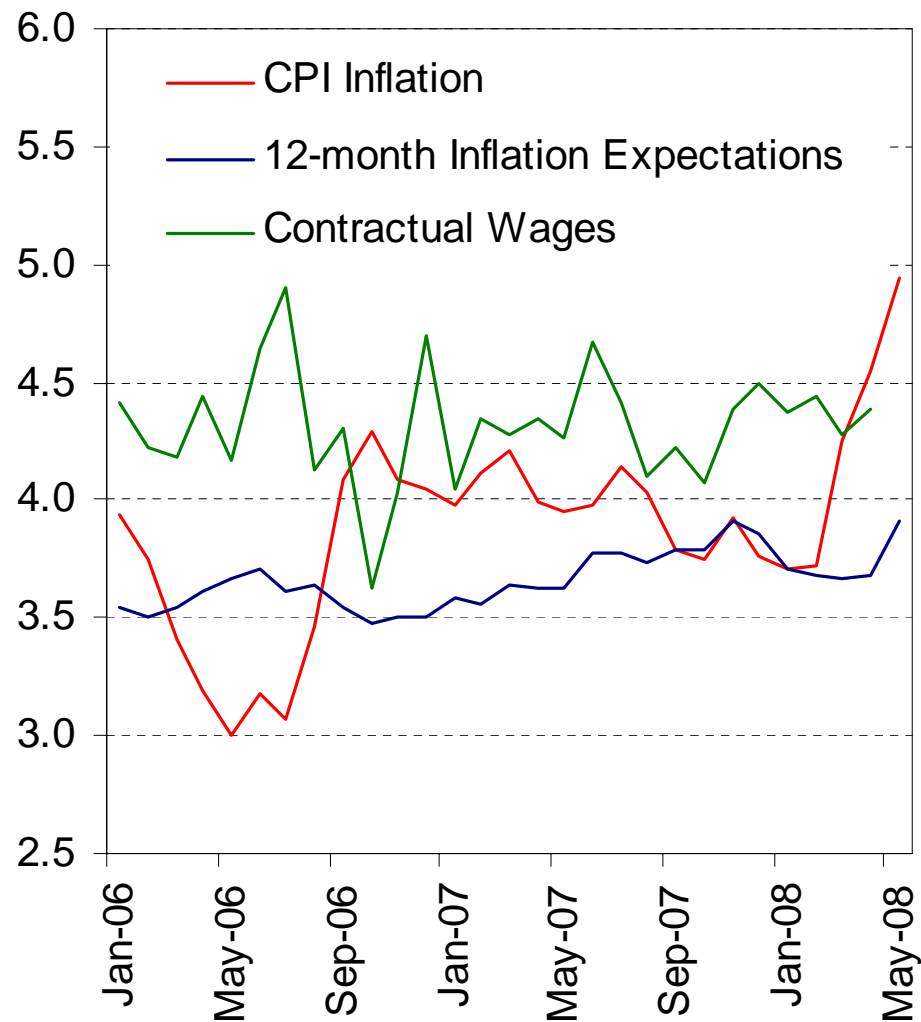## CPI Inflation and Components
(Annual % Change)

Source: Banco de México.

3. Monetary Policy in Mexico

CPI Inflation Expectations for End 2008, 2009 and Average for the Next 4 Years
(Annual %)

Legend:
- End 2008
- End 2009
- Next 4 Years

Source: "Encuesta sobre las Expectativas de los Especialistas en Economía del Sector Privado" of Banco de México.

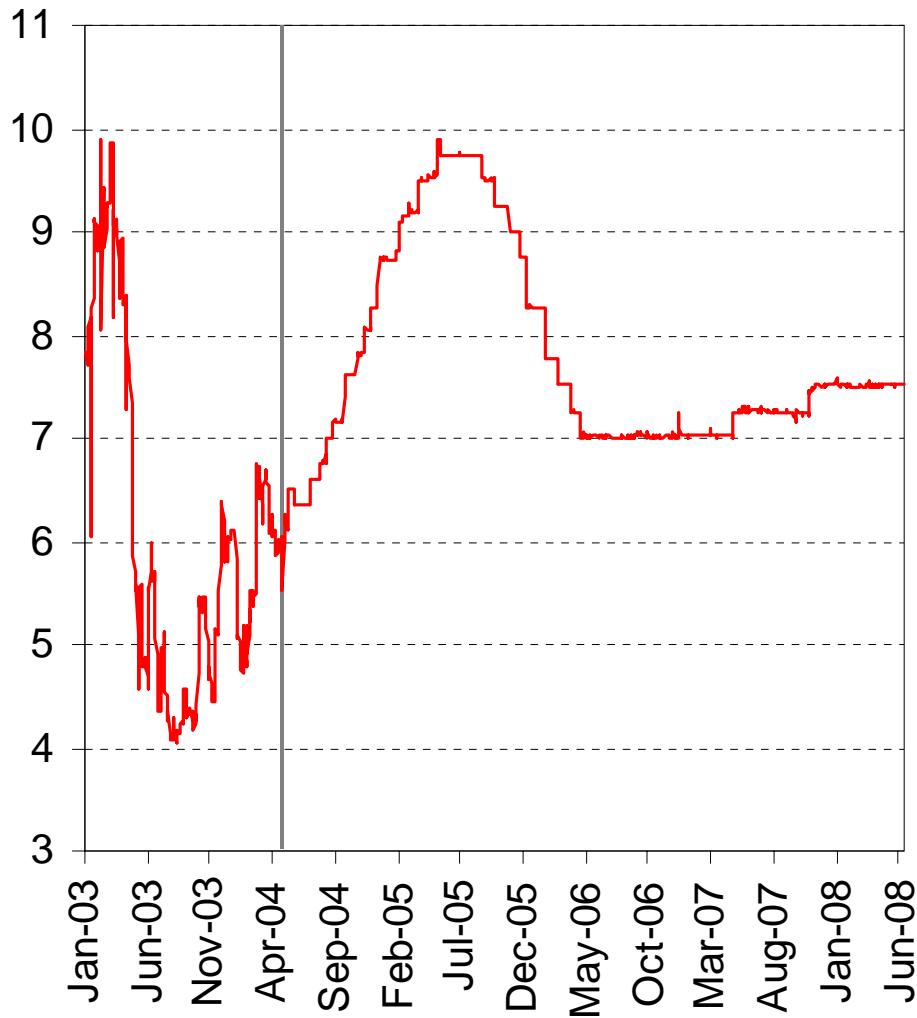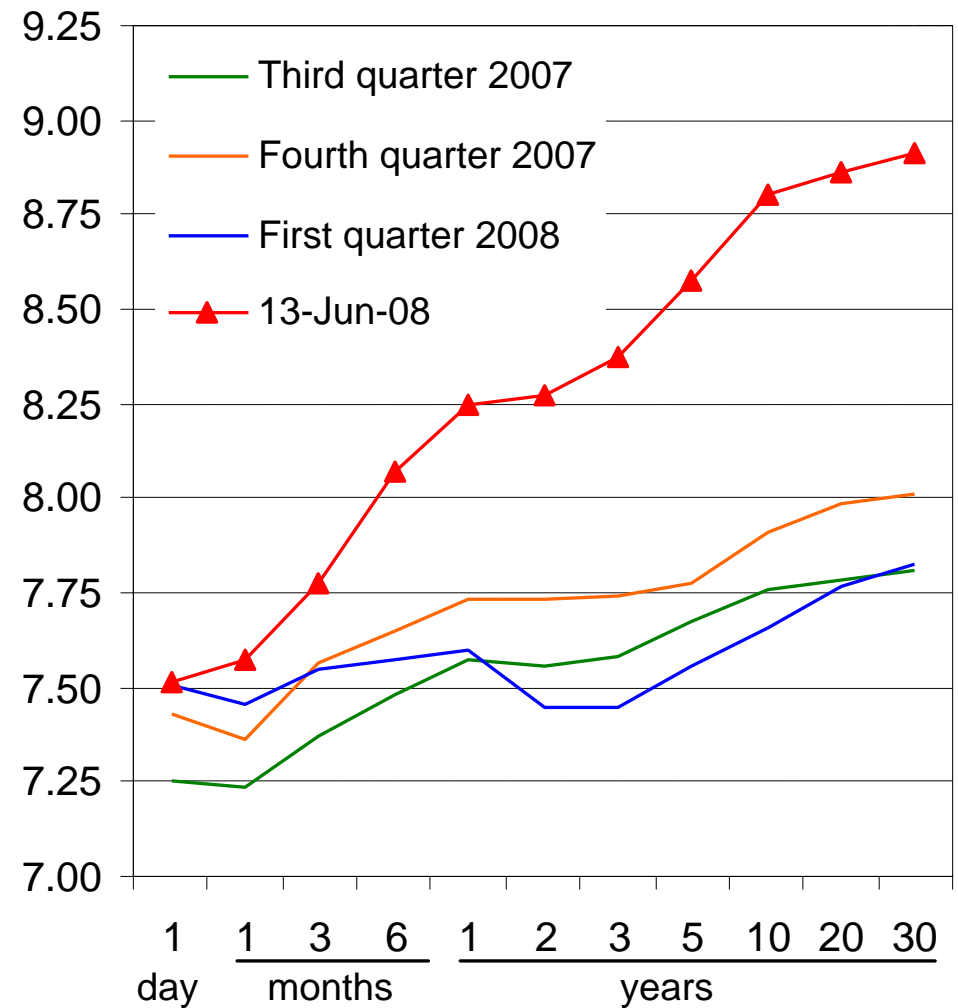## CPI Inflation, Inflation Expectations and Contractual Wages
(Annual %)

Legend:
- CPI Inflation
- 12-month Inflation Expectations
- Contractual Wages

Source: Banco de Mexico.

3. Monetary Policy in Mexico

Overnight Inter-bank Interest Rate
(%)

Source: Banco de México.

Yield Curve in Mexico
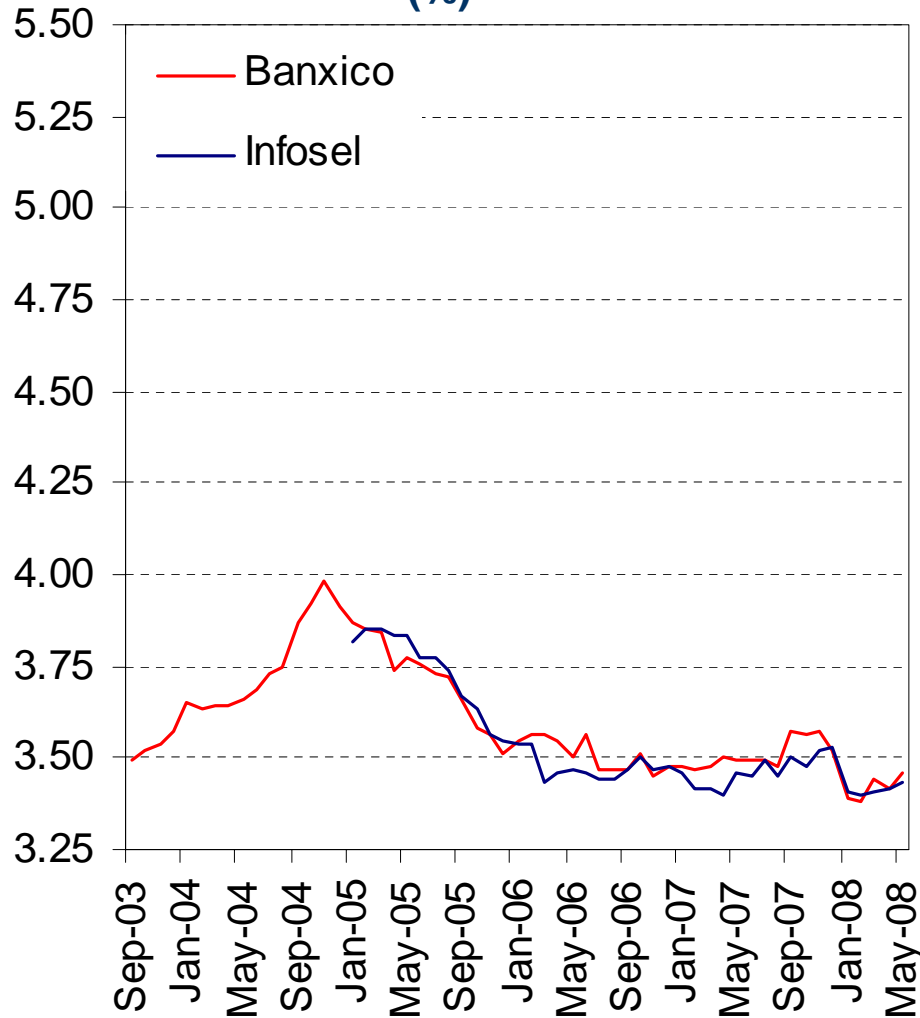**(%)**

- Third quarter 2007
- Fourth quarter 2007
- First quarter 2008
- 13-Jun-08

Source: Banco de México and PIP.

3. Monetary Policy in Mexico

CPI Inflation Expectations for the Next 4 Years
(%)

Legend: Banxico (red), Infosel (blue)

Source: "Encuesta sobre las Expectativas de los Especialistas en Economía del Sector Privado" of Banco de México and Infosel.

Compensation for Inflation and Inflationary Risk on Long Term Bonds [1]
(%)
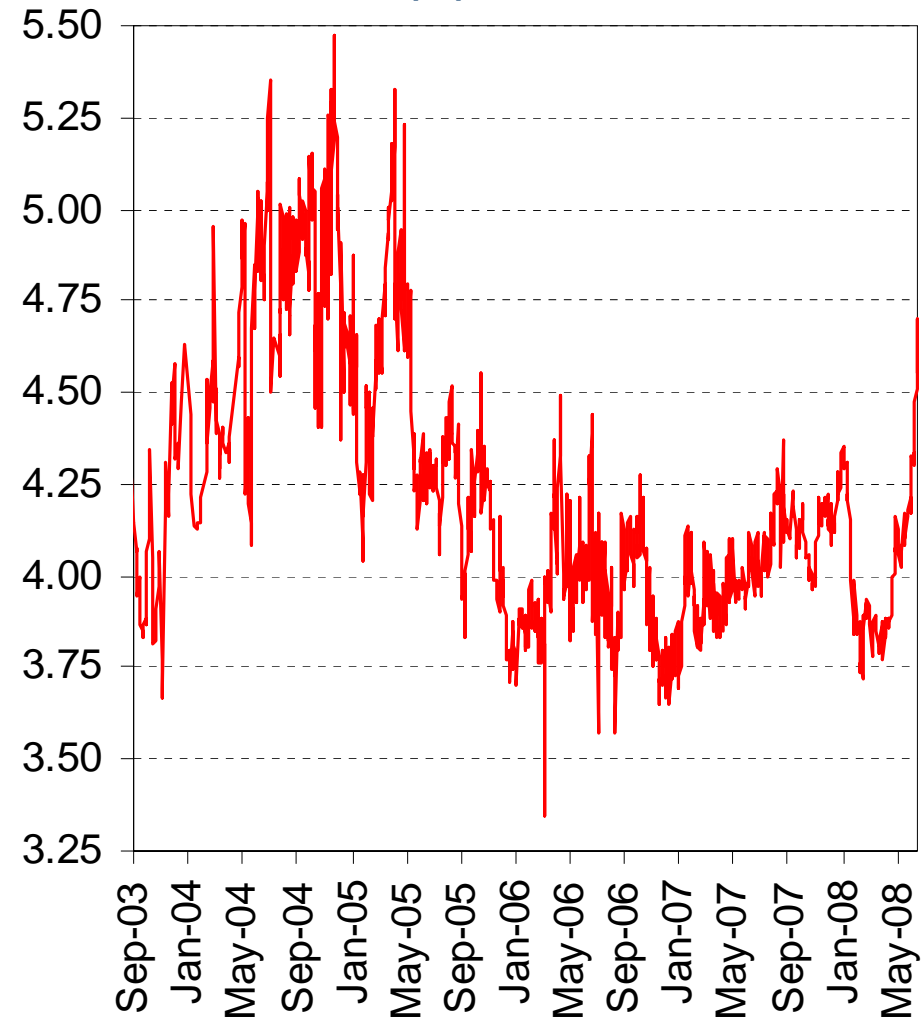
1/ Computed using nominal and inflation-indexed bonds.
Source: Bloomberg.

3. Monetary Policy in Mexico

- Research by Cortés and Ramos-Francia (2008) shows that shocks that are perceived to have a persistent effect on inflation (i.e. a persistent cost-push shock) cause a steepening upward shift in the yield curve.

- The effect on medium and long-term yields results from an *increase in expected future short rates and in risk premia*.

**Contemporaneous Response of Zero-Coupon Yield Curve
to a Cost Push Shock
(%)**
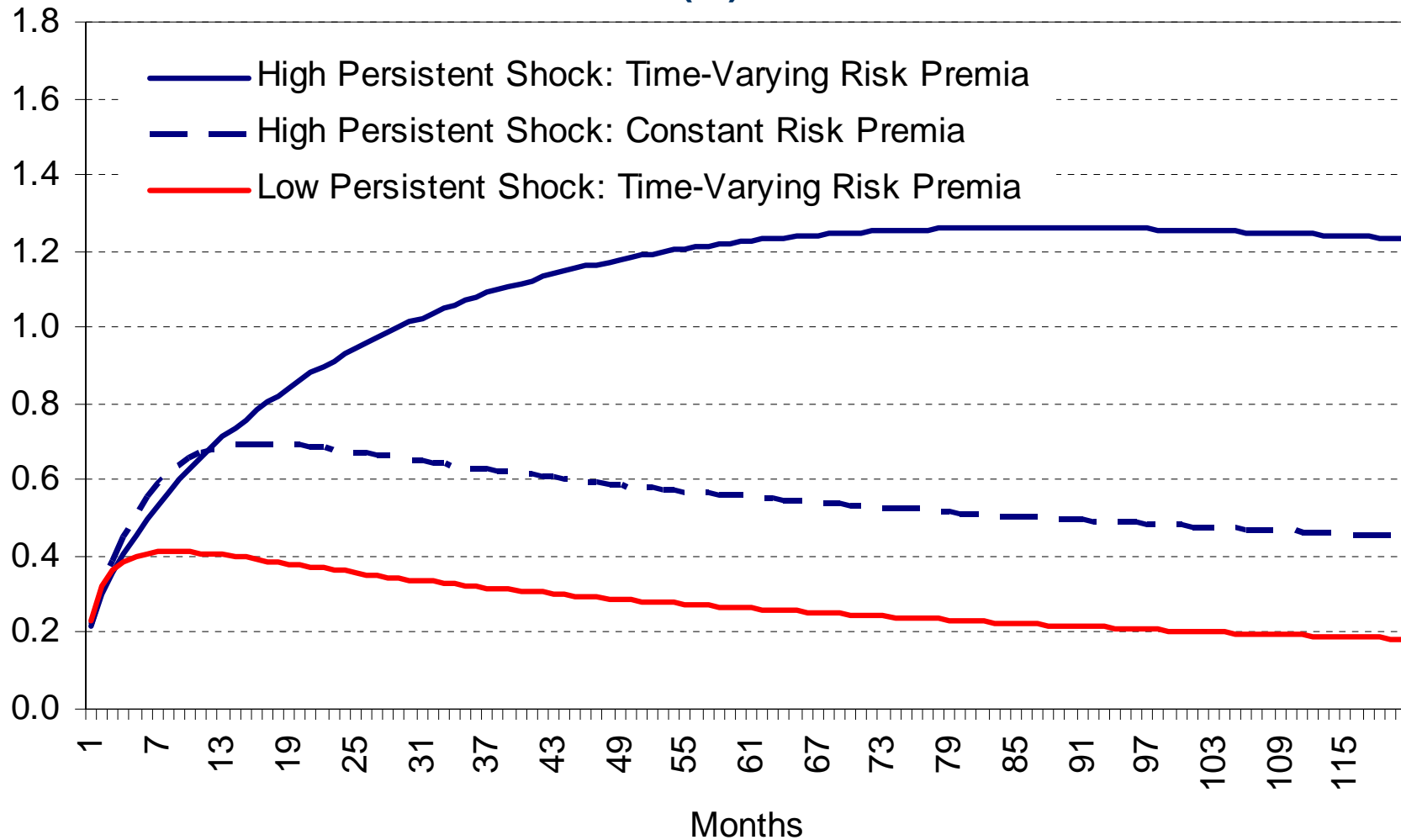
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4. Final Remarks

4. Final Remarks

❶ Some indicators suggest that this new high price environment may still remain for a long period of time.

➡ Thus, the risk of this environment having longer term inflationary consequences, by affecting inflation expectations and overall price setting mechanisms, is high.

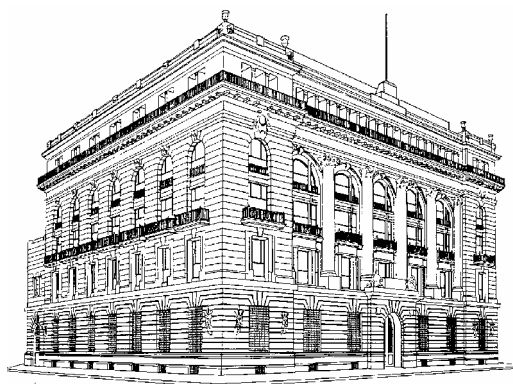❷ The issues raised above focus on the implications of this high inflation regime for monetary policy.

4. Final Remarks

❸ We have to ask to what extent we need to consider a broader view of the policy response that we should undertake, given this environment. In particular we need to ask:

    ✓ *Which other policy instruments are available to face the current environment?*

    ✓ *What is the optimal mix of policy responses to this environment, in order to minimize negative effects on welfare?*

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