A NOTE ON THE TRANSMISSION OF SHOCKS TO INTERNATIONAL FOOD AND ENERGY COMMODITY PRICES ON FOOD INFLATION IN LATIN AMERICA

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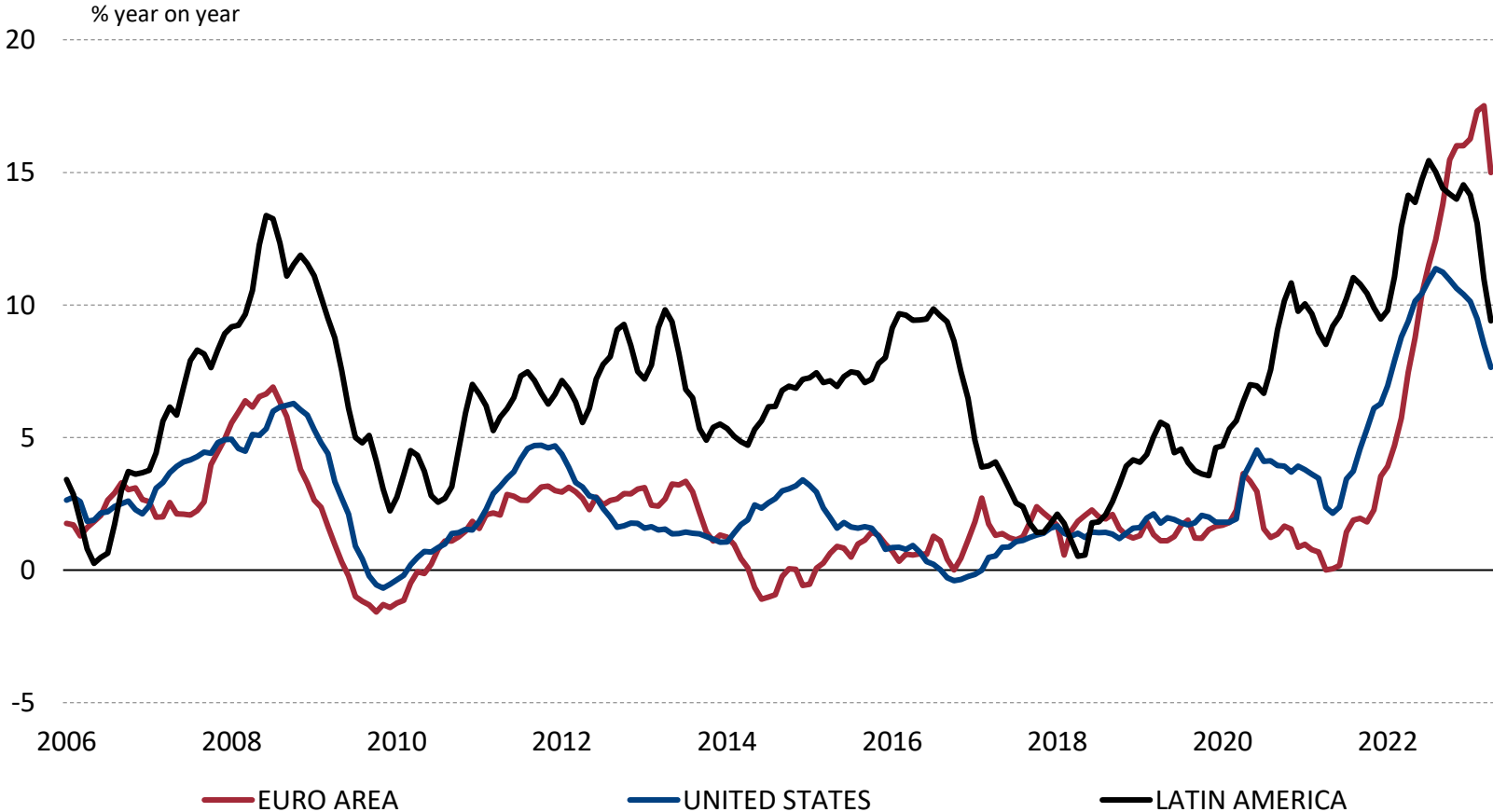International Economics and Euro Area Department

DG Economics and Statistics
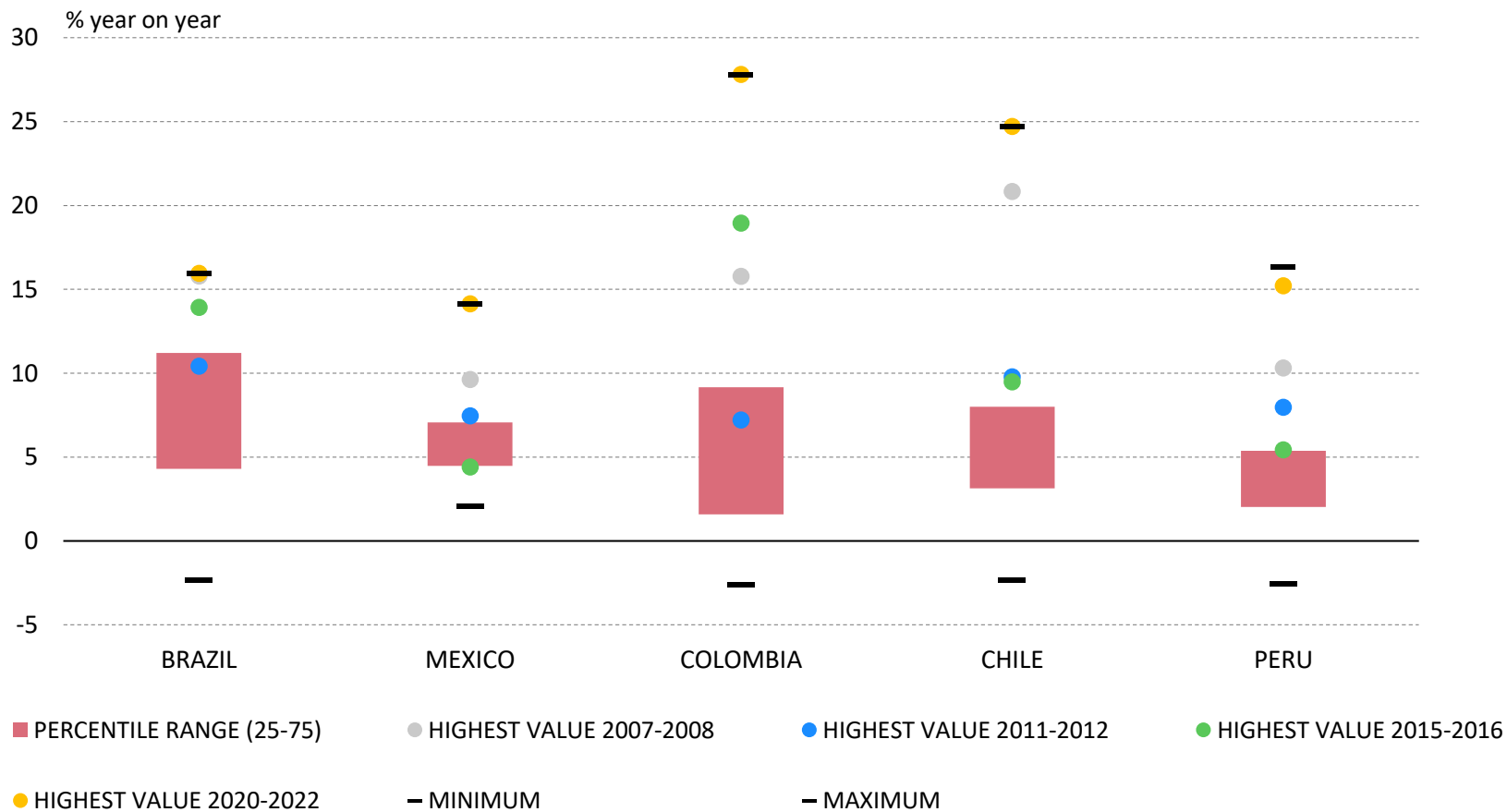
Emerging Markets Workshop
 28 November 2023

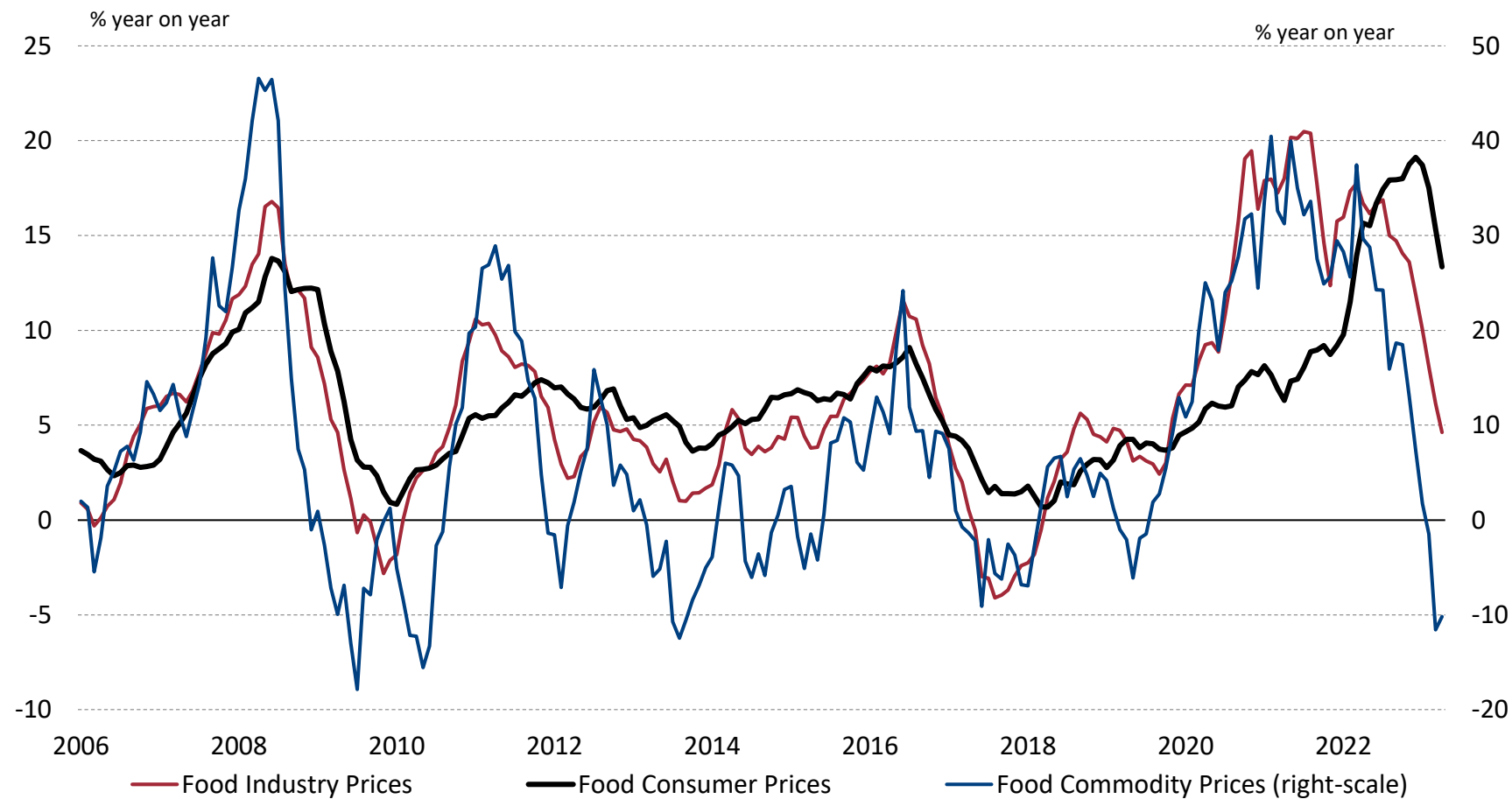## FOOD PRICE INFLATION: INTERNATIONAL COMPARISON

% year on year

— EURO AREA   — UNITED STATES   — LATIN AMERICA

Sources: National Statistics. Last observation: April 2023.

FOOD INFLATION PEAKS

% year on year

Legend:
- PERCENTILE RANGE (25-75)
- HIGHEST VALUE 2007-2008
- HIGHEST VALUE 2011-2012
- HIGHEST VALUE 2015-2016
- HIGHEST VALUE 2020-2022
- MINIMUM
- MAXIMUM

Countries: BRAZIL, MEXICO, COLOMBIA, CHILE, PERU

Sources: World Bank and National Statistics. Last observation: April 2023.

FOOD PRICE VALUE CHAIN IN LATIN AMERICA

% year on year

% year on year

— Food Industry Prices ——Food Consumer Prices ——Food Commodity Prices (right-scale)

Sources: World Bank and National Statistics. Last observation: April 2023.

- There are several papers that analyse the pass-through of food commodity prices to food inflation: Ferrucci et al (2012), Ianchovichina et al (2014) and Rigobon (2010), among others.

- Other papers analyse the pass-through from energy prices to food inflation: Peersman (2022), de Winne and Peersman (2016) and Roeger and Leibtag (2011). among others.

- Yang (2015) finds that low-income countries have a food commodity pass-through twice larger than high-income countries.

- Rigobon (2010) shows that emerging markets suffer a significant pass-through from oil prices to food consumer prices, while the effect on advanced economies food inflation is small or null

- Our paper tries to study both types of shocks on food inflation in Latin America

COMMODITY PRICES	FOOD COMMODITY AND ENERGY PRICES COME FROM WORLD BANK. WE CONVERT THEM TO LOCAL CURRENCY
FOOD PPI AND CPI	COLLECTED FROM NATIONAL SOURCES
COUNTRIES	BRAZIL, CHILE, COLOMBIA, MEXICO AND PERU
LATAM AGGREGATES	WE AGGREGATE EACH COUNTRY PRICES BY TWO WAYS: SIMPLE AVERAGE AND GDP-WEIGHTED
SAMPLE SIZE	JANUARY 2006 TO APRIL 2023

- **The pass-through from international food commodity prices and oil is analyzed through a VARX model**

- **Commodity price pass-through from a value chain perspective**: **y**= (Int com food; PPI food; HICP food), **p**=(Int oil)

$$y_t = c + \sum_{i=1}^{I} A_i y_{t-i} + \sum_{i=0}^{J} \beta_i p_{t-i} + \epsilon_t$$

- **We have added current and 6 lags for oil prices, whereas I=1 was selected through Hannan-Quinn criteria**

- **The system is identified recursively by applying Cholesky decomposition**

- **The model takes into account the value chain: food commodity prices are ordered first, then the producer food prices and, last, the food consumer prices.**

- **The model is estimated in log-changes, reflecting monthly price changes**

- One question that arises is that pass-through from both commodities to food consumer prices may be asymmetric

- In order to account for posible non-linearities, we transform our previous model on the basis of Kilian and Vigfusson (2011):

$$y_t = c + \sum_{i=1}^{I} A_i y_{t-i} + A_0 y_t + \sum_{i=0}^{J} \beta_i p_{t-i} + \sum_{i=0}^{K} B_i x^*_{t-i} + \sum_{i=0}^{L} C_i p^*_{t-i} + \epsilon_t$$

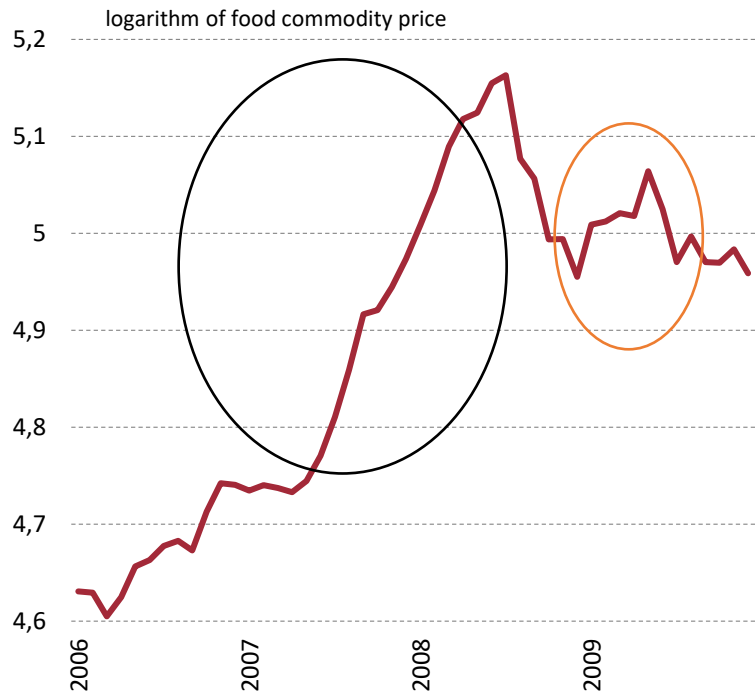- Non-linearities are captured through Net-12, as defined by Hamilton (1996)

$$x^*_t = max(0, log(comm_t) - max((log(comm_{t-1}), log(comm_{t-2}), ..., log(comm_{t-12}))))$$

$$p^*_t = max(0, log(fuel_t) - max((log(fuel_{t-1}), log(fuel_{t-2}), ..., log(fuel_{t-12})))$$

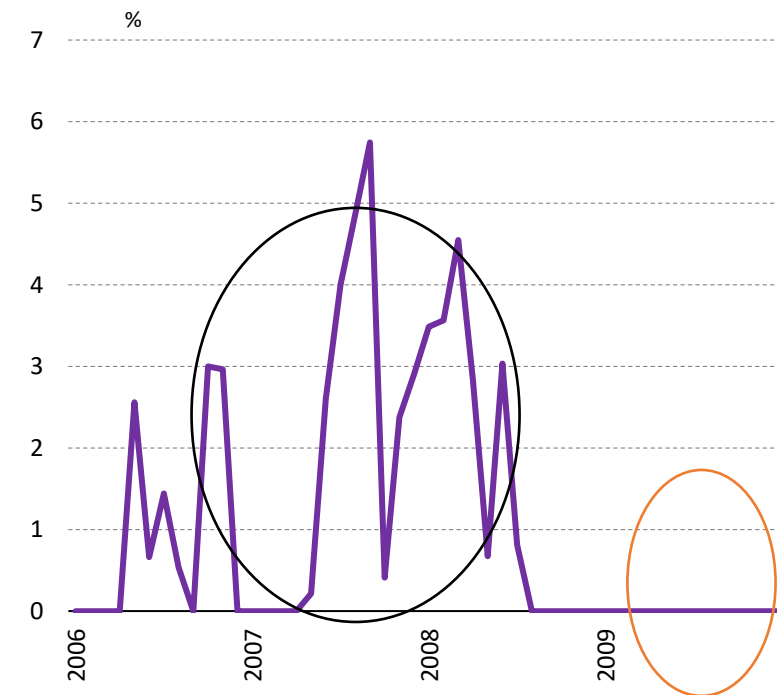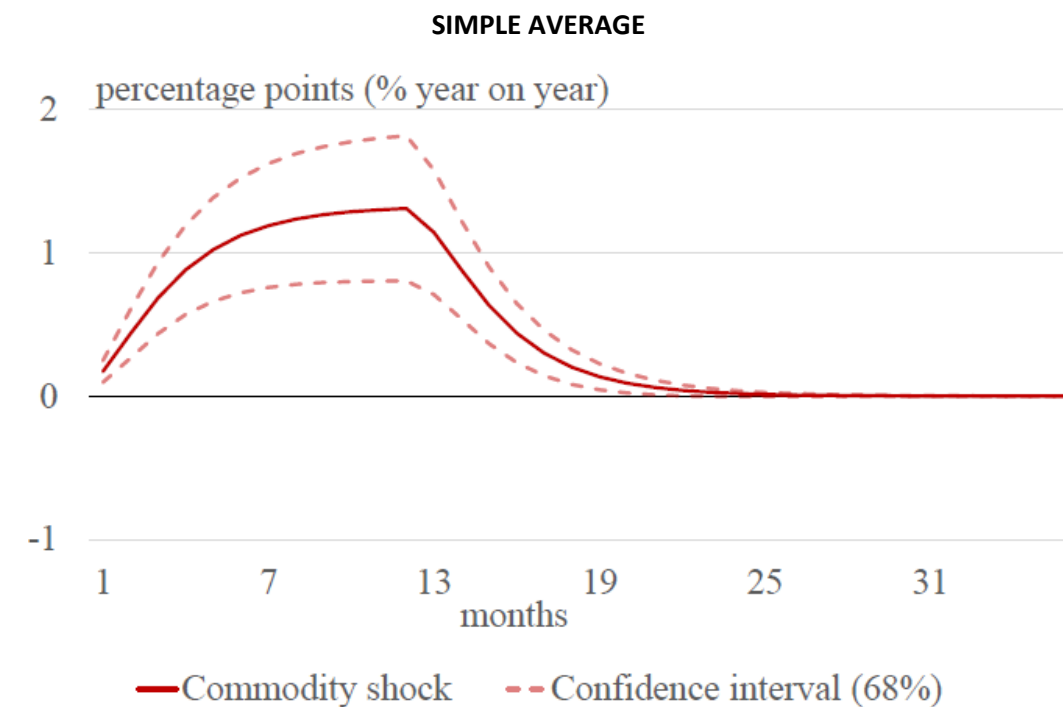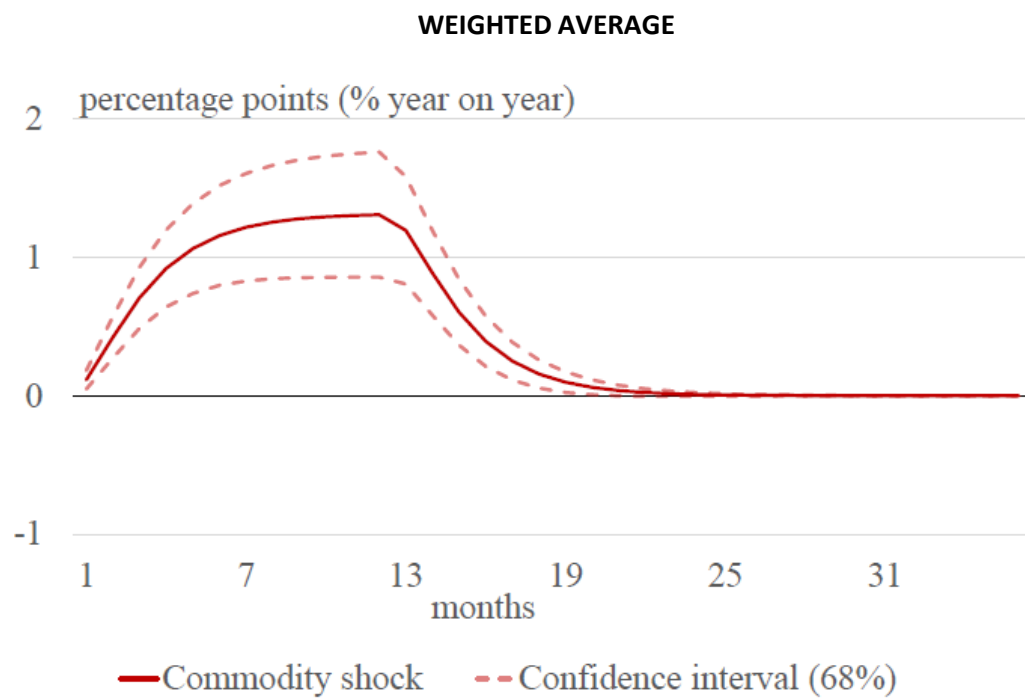- The model is recursive so it can be estimated through OLS.

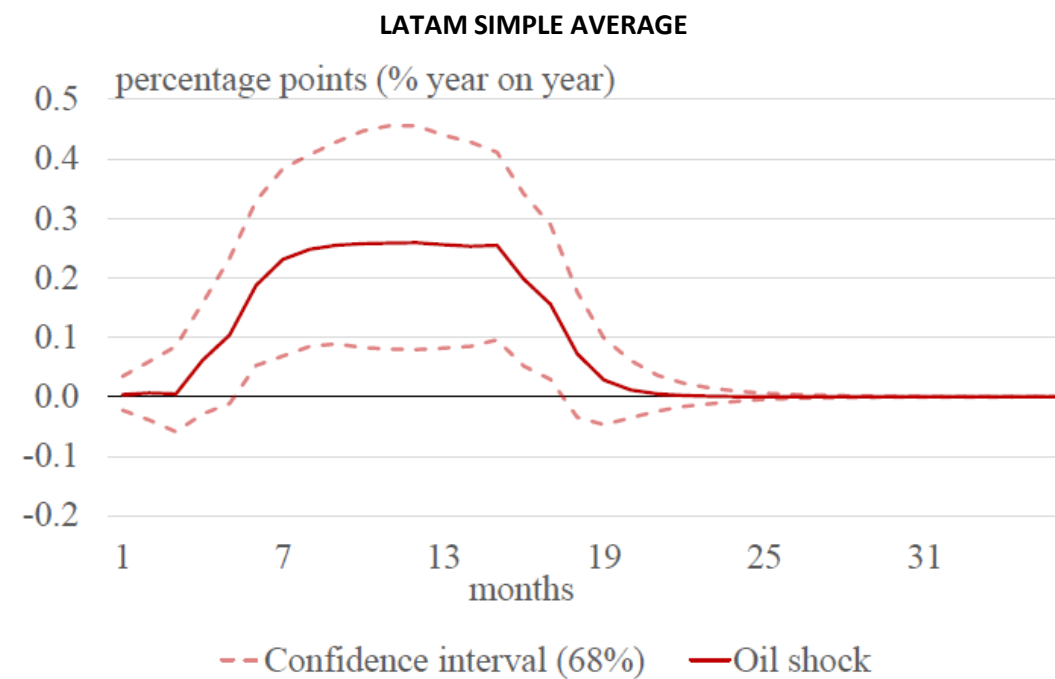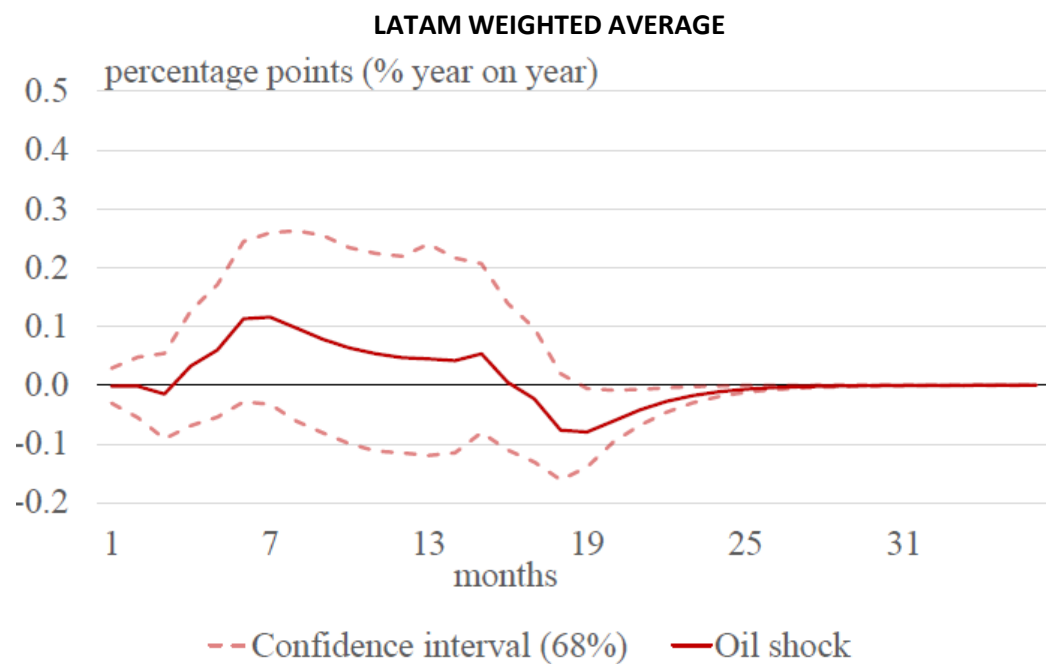**LEVEL OF FOOD COMMODITY PRICE**

MONTHLY GROWTH OF FOOD COMMODITY PRICE

NET 12

WEIGHTED AVERAGE

SIMPLE AVERAGE

Note: Linear model

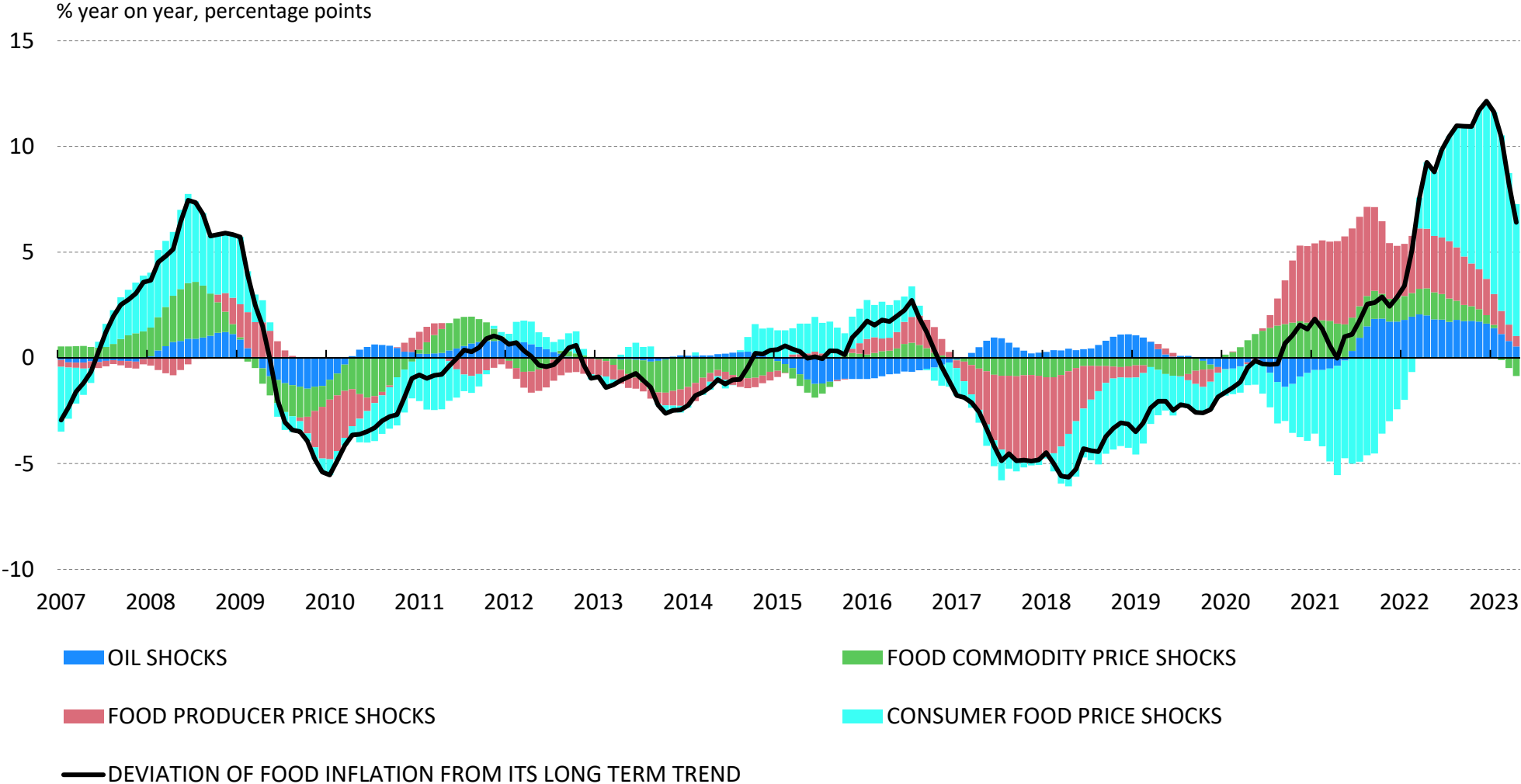BANCO DE ESPAÑA
Eurosistema

LATAM WEIGHTED AVERAGE
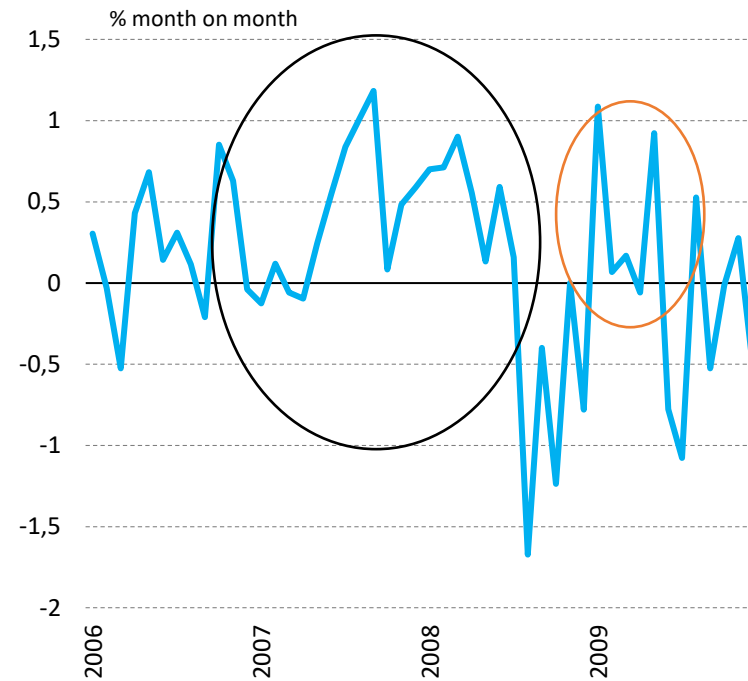
LATAM SIMPLE AVERAGE

Note: Linear model

HISTORICAL DECOMPOSITION, SIMPLE AVERAGE
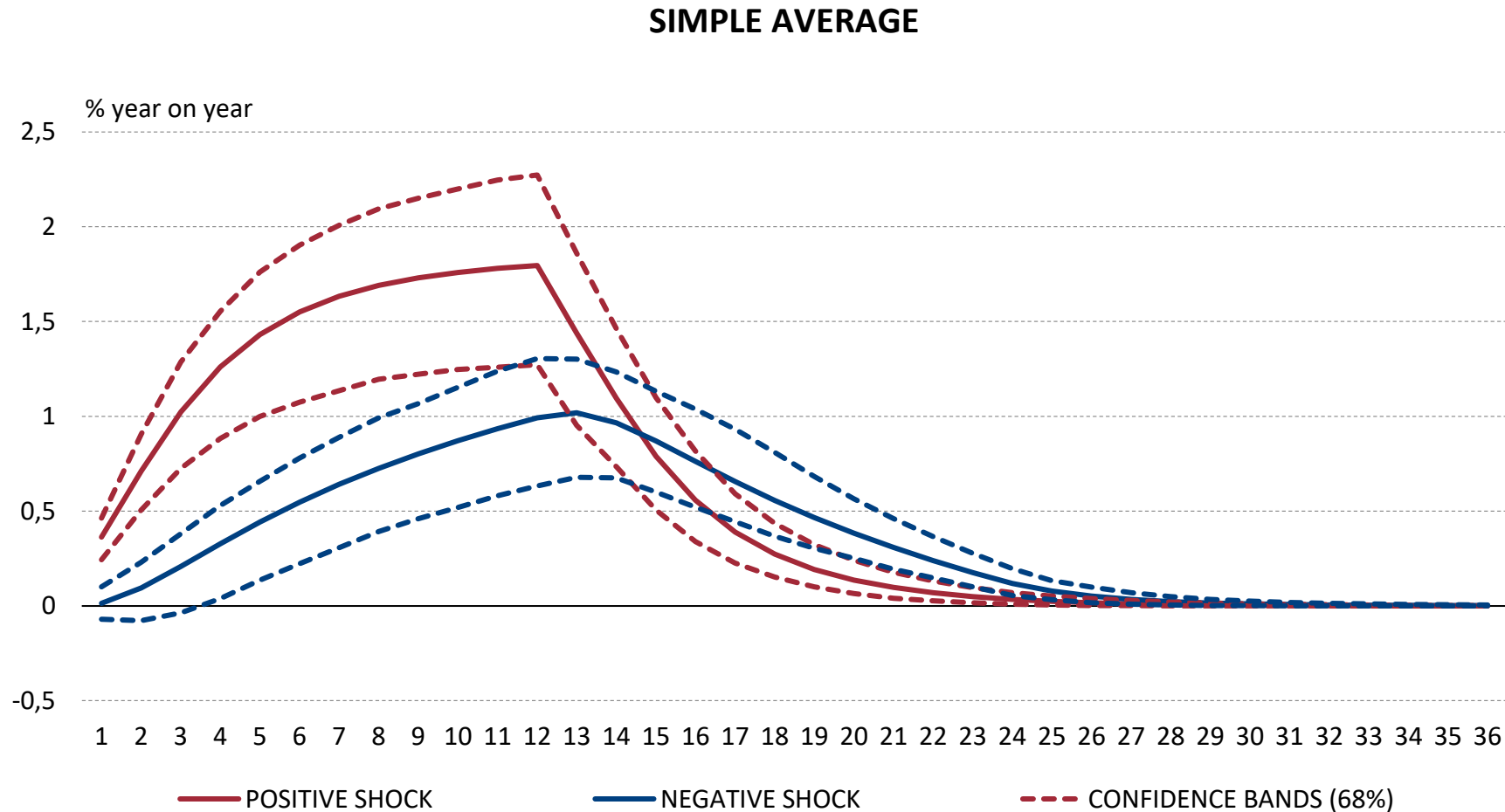
% year on year, percentage points

OIL SHOCKS

FOOD COMMODITY PRICE SHOCKS

FOOD PRODUCER PRICE SHOCKS

CONSUMER FOOD PRICE SHOCKS

DEVIATION OF FOOD INFLATION FROM ITS LONG TERM TREND
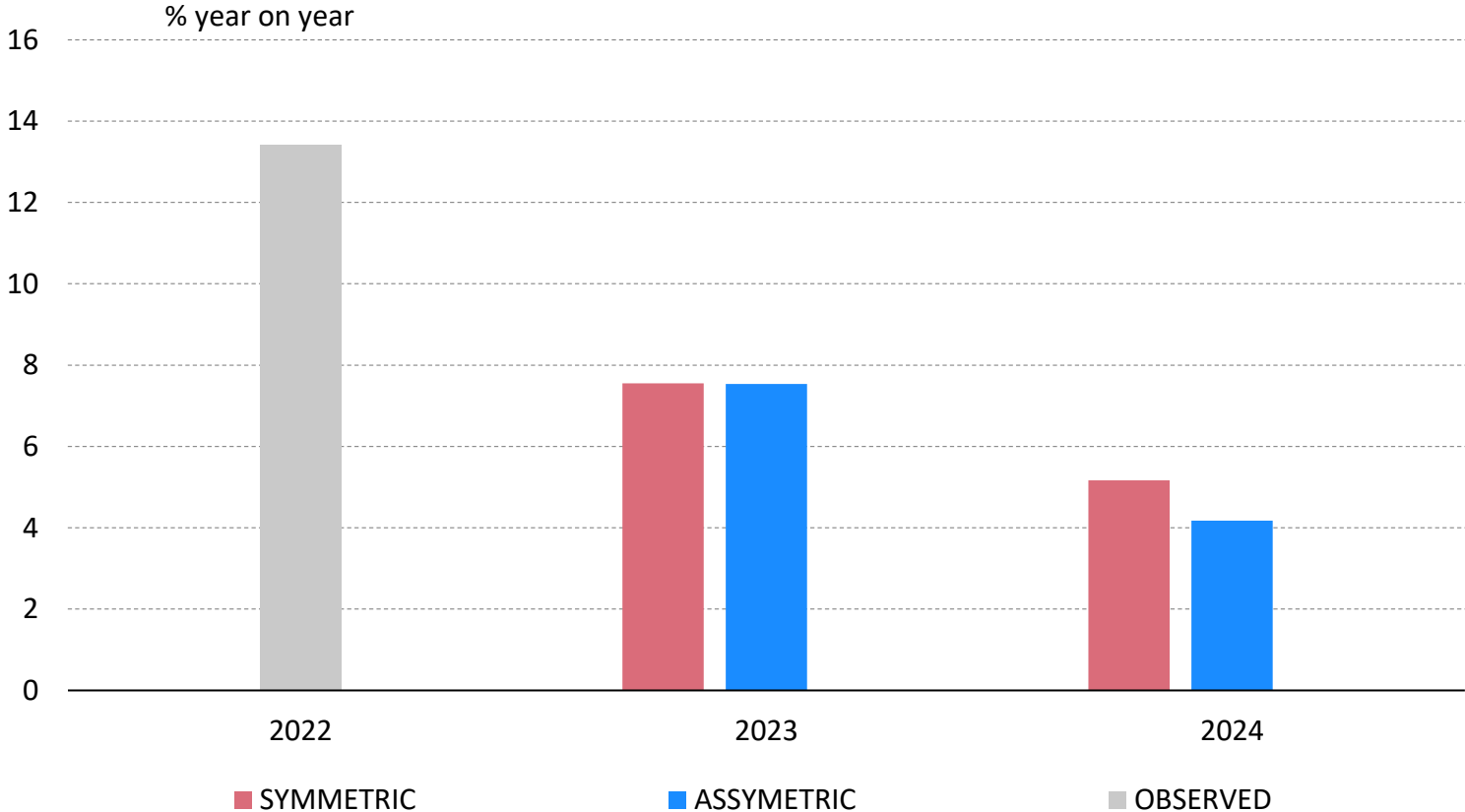
SIMPLE AVERAGE

Note: Asymmetric model. Negative shocks are inverted

SIMPLE AVERAGE
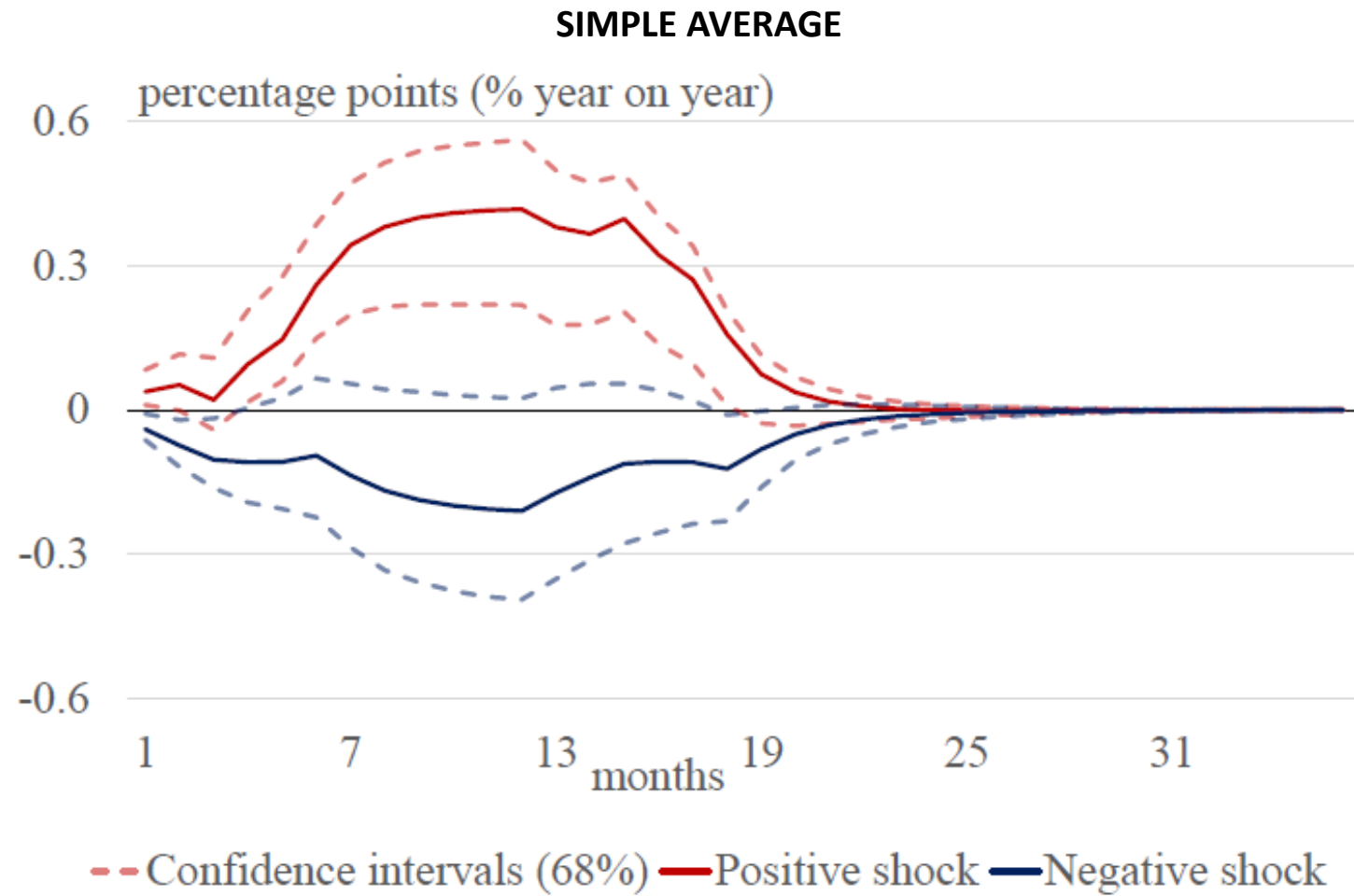
Note: Asymmetric model. Negative shocks are inverted

LATAM WEIGHTED AVERAGE: PROJECTIONS OF FOOD INFLATION CONDITIONED ON FUTURES FROM NOV-2023

■ SYMMETRIC   ■ ASSYMETRIC   ■ OBSERVED

BANCO DE **ESPAÑA**
Eurosistema

- **Food inflation in Latin America is higher than in other parts of the world. This, along the relatively high weight of this component in the area, make the topic relevant**

- **There is a pass-through from both international food commodity prices and energy prices on food inflation**

- **Also, we find evidence of an asymmetric transmission of food commodity prices to food inflation**

- **Our models predict that food inflation in Latin America will be higher than 4% in 2024**

THANK YOU FOR YOUR ATTENTION