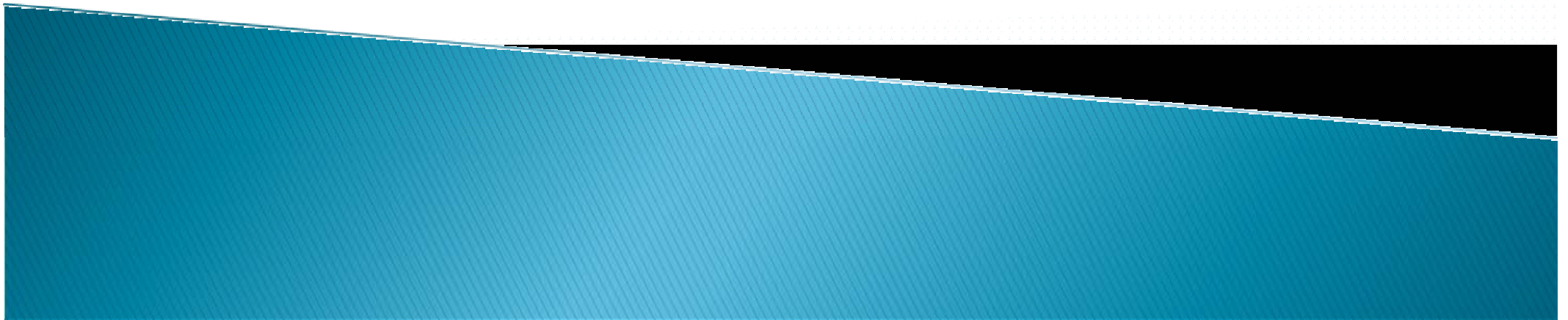


Commodity Pass-Through

Roberto Rigobon

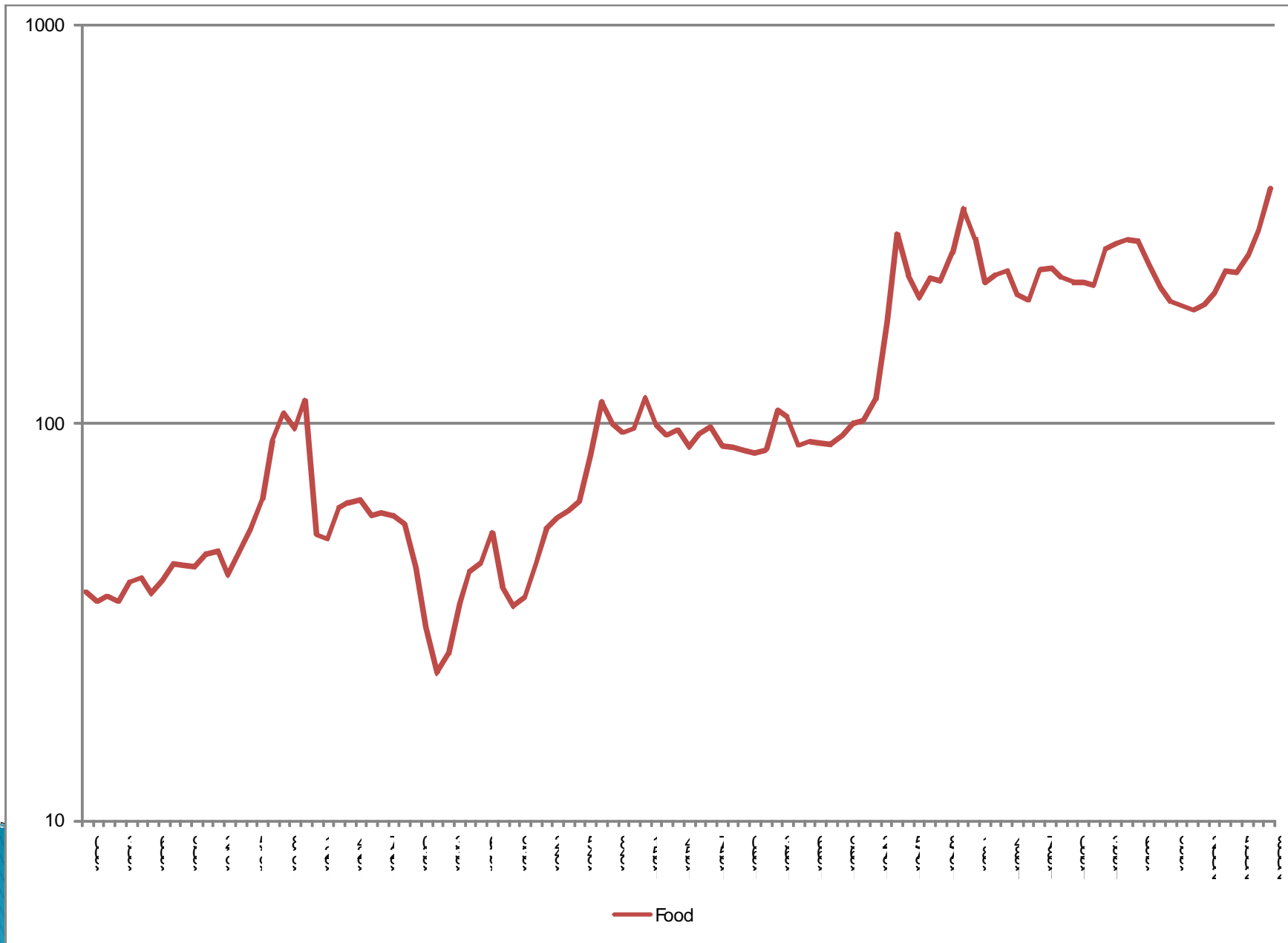
MIT



Objective

- ▶ Large commodity price increases in the last decade, specially in food prices.
 - Domestic food prices increased significantly
 - Not only inflation is rising, but distributional impact of inflation might be socially disruptive
- ▶ Policy questions
 - What is the pass-through of international commodity prices into retail prices? Long versus short run?
 - Is there more inflation in the pipeline?
 - What is the appropriate inflation target?

Commodity Prices

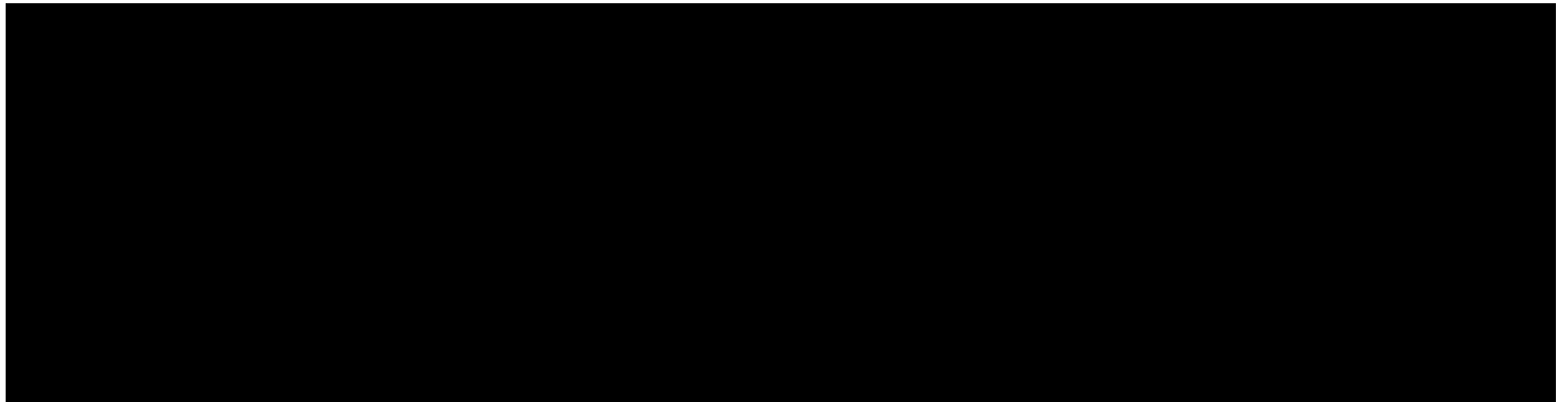


Commodity Prices



Contemporaneous correlations

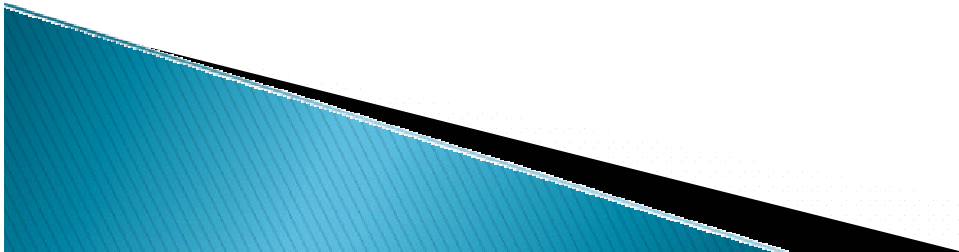
- ▶ Commodities are contemporaneous correlated in the sample.



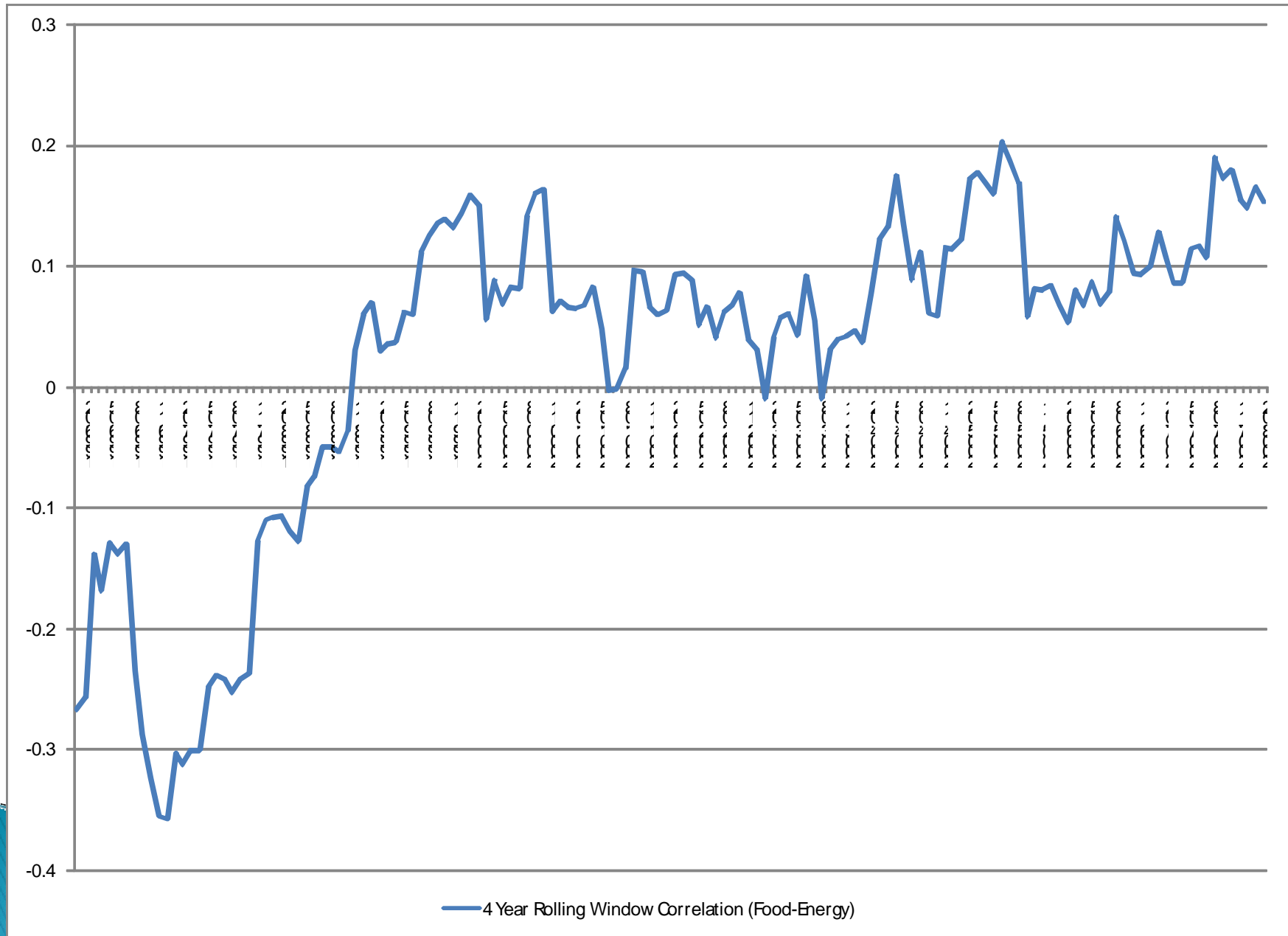
- ▶ Interestingly, oil is unconditionally negatively correlated with cereals.

Contemporaneous correlations

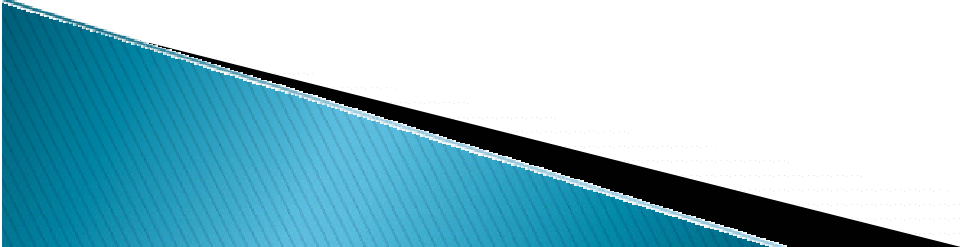
- ▶ Why correlations are negative in the past?
 - My intuition is that in the past oil shocks are mostly supply disruptions, hence, a price increase in oil drives world demand down.
- ▶ Correlation the last 5 years?
 - In the past 4 – 6 years the correlation has become positive and close to 15 percent.
 - Today, the shock is mostly an increase in world demand – hence the correlation has turned positive.



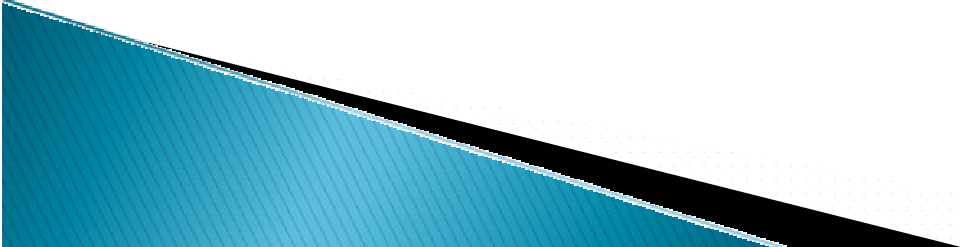
Conditional Correlation



This presentation

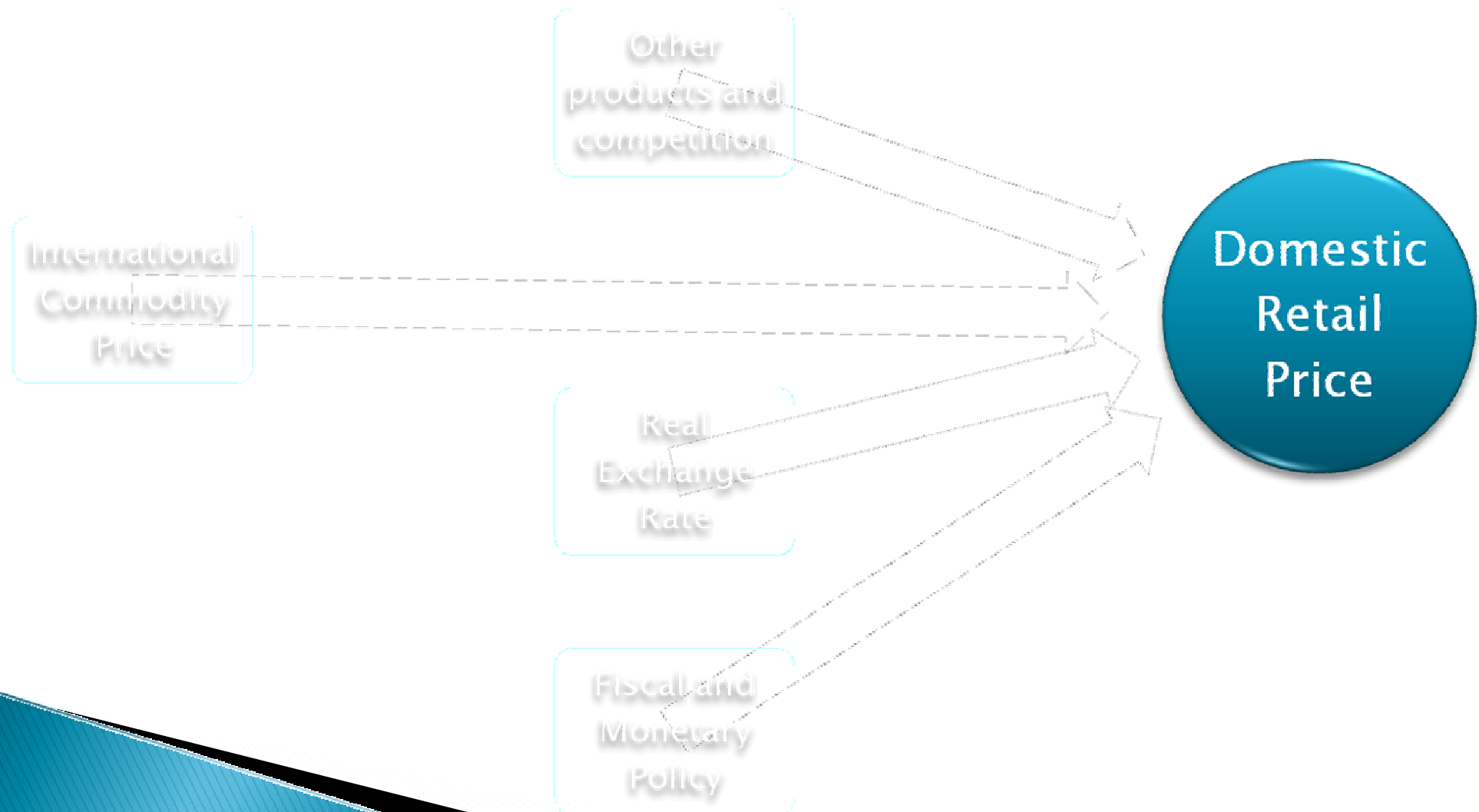
- ▶ We evaluate pass through to retail prices.
 - ▶ We use CPI micro data for the last 10+ years and construct “disaggregated” indexes to evaluate short and long run pass-through based on the commodity use.
 - ▶ Very preliminary...
- 

Data

- ▶ Micro Data from Chile, Colombia and Peru
 - ▶ 10+ years of monthly observations.
 - Most of the series start in 1990.
 - We do not test for change in regime when inflation drops in the later part of the 90's.
 - ▶ Roughly 2k items per country.
 - ▶ We perform the analysis separately.
 - ▶ Commodity prices: wheat, rice, maize, and oil.
- 

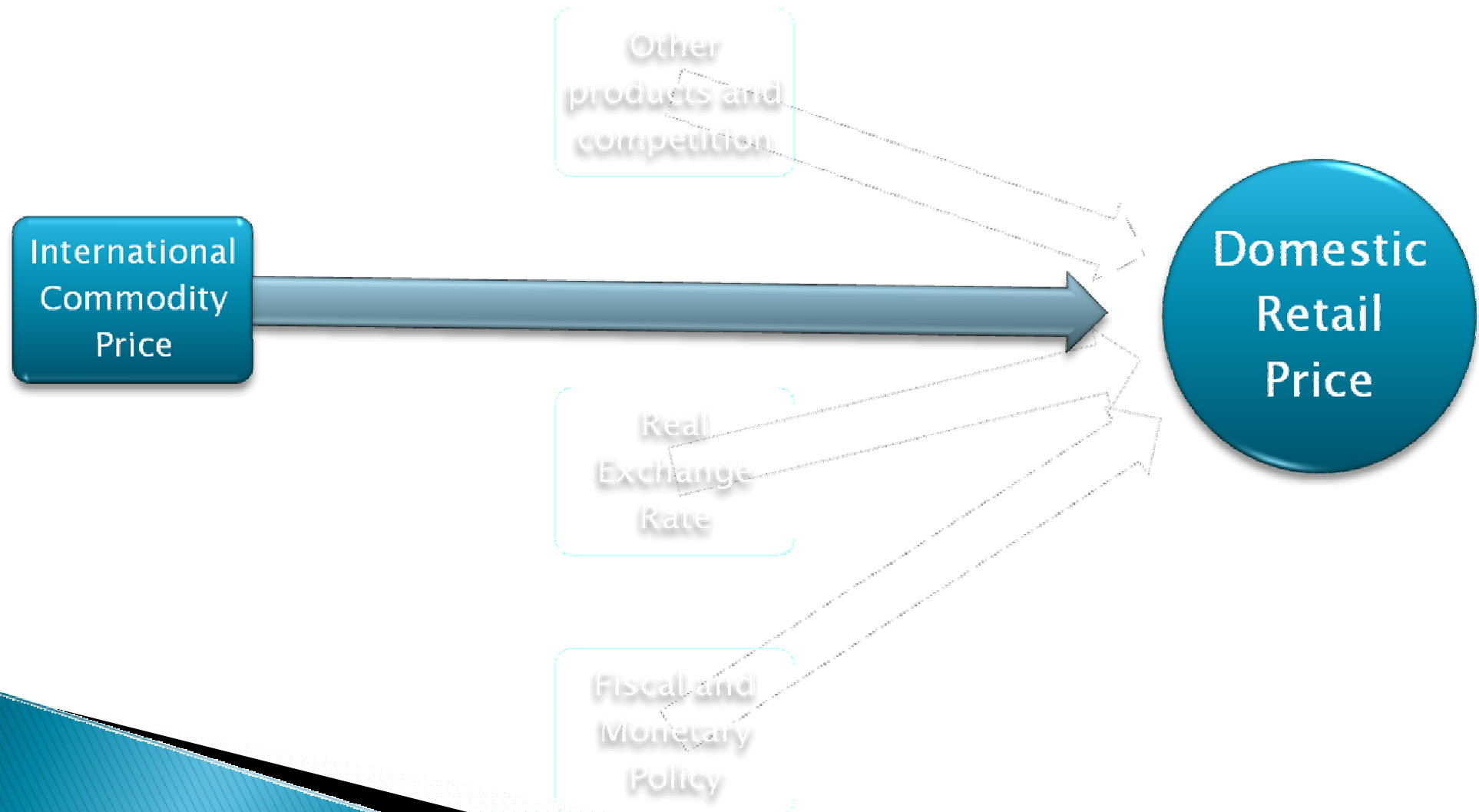
Channels

- ▶ Transmission mechanisms of international commodity prices into domestic retail prices



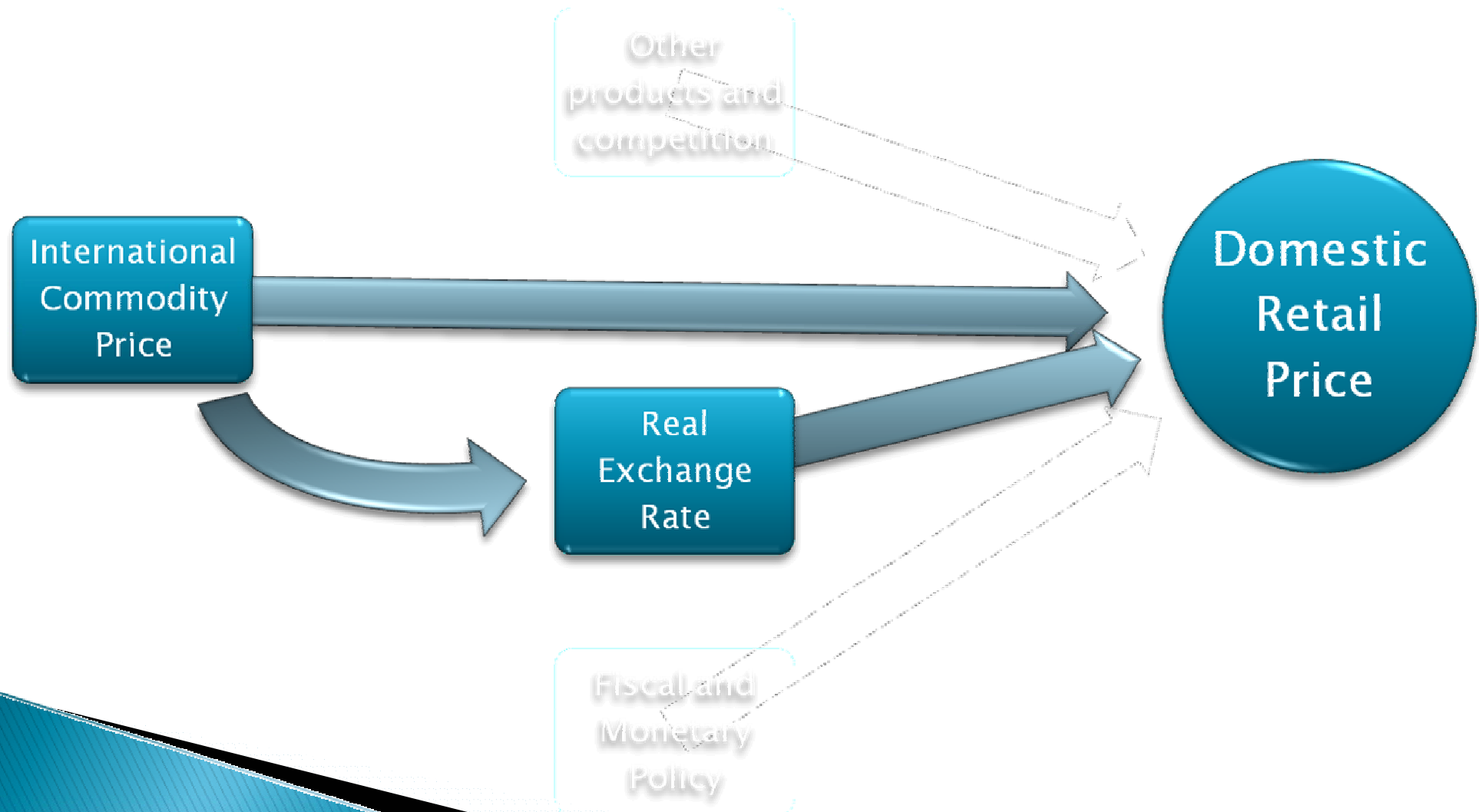
Channels

- ▶ Transmission mechanisms of international commodity prices into domestic retail prices



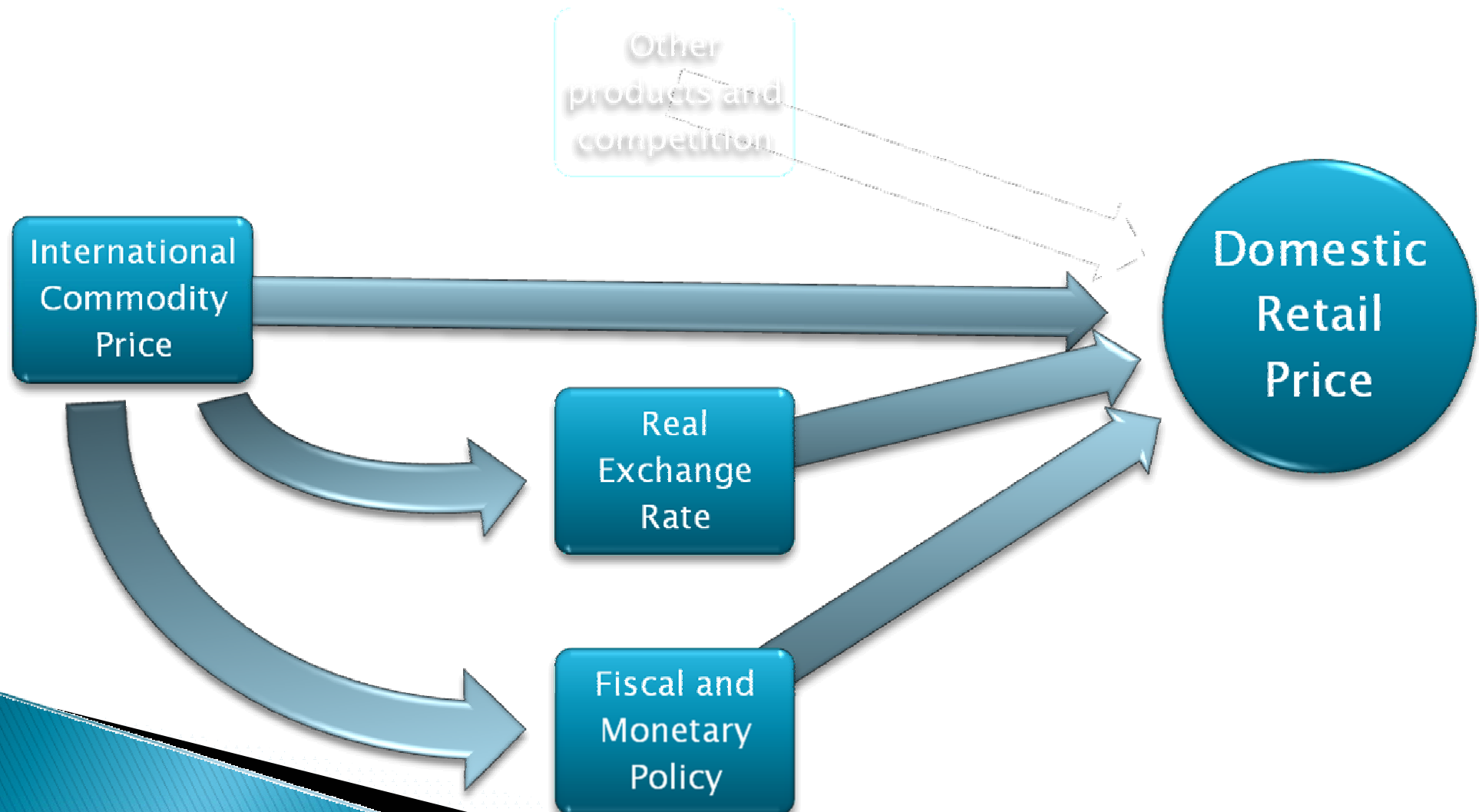
Channels

- ▶ Transmission mechanisms of international commodity prices into domestic retail prices



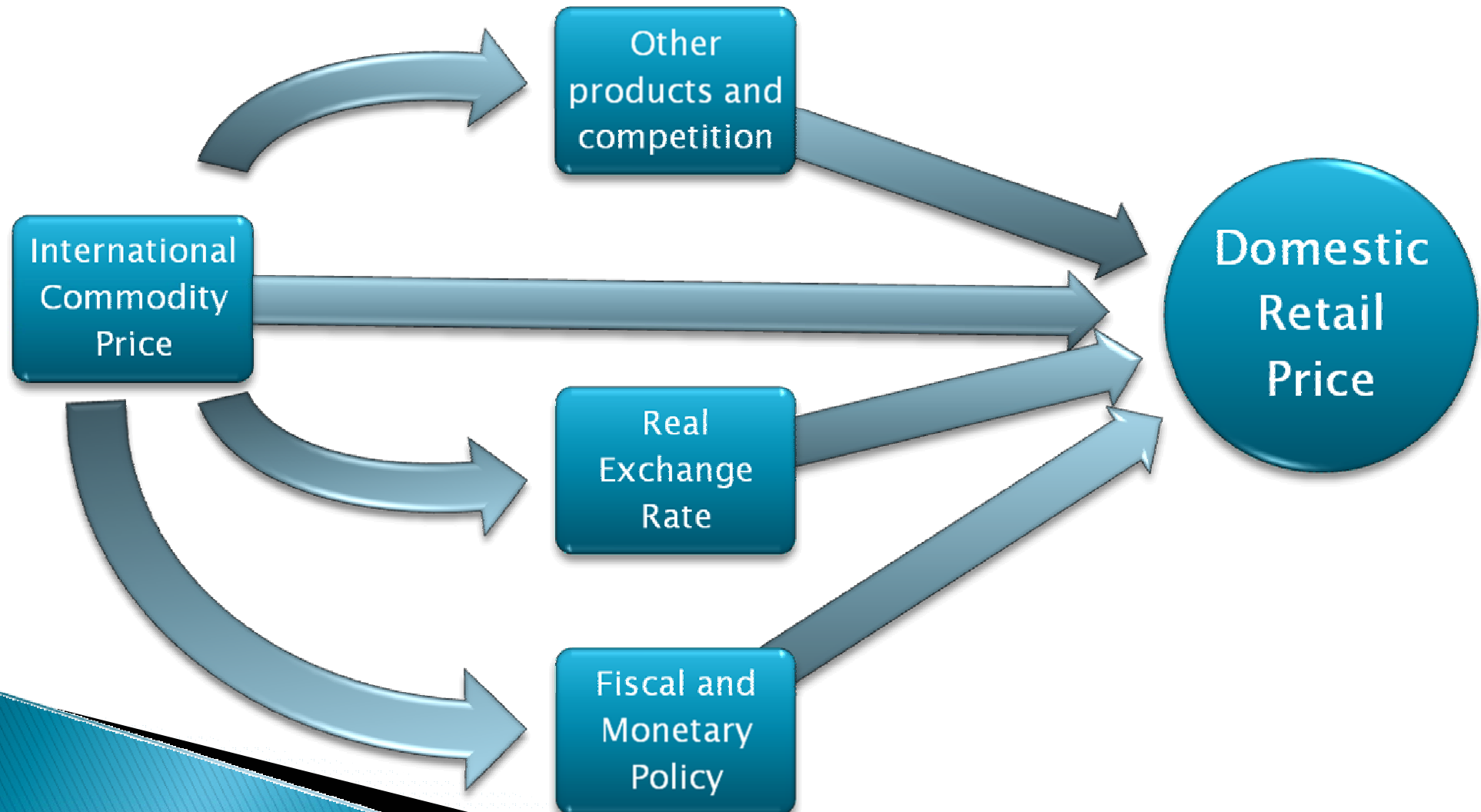
Channels

- ▶ Transmission mechanisms of international commodity prices into domestic retail prices



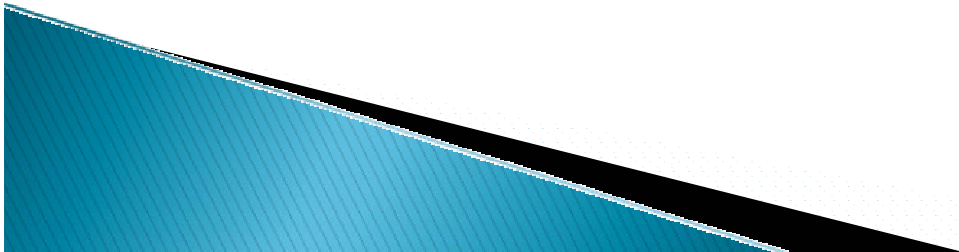
Channels

- ▶ Transmission mechanisms of international commodity prices into domestic retail prices



Empirical strategy

- ▶ Using the micro data we construct indexes with different levels of aggregation, and aggregating according to the content of the commodity of interest.
 - Evaluate long run pass through using the “building up” approach.
 - Highlight similarities and differences across countries.
 - Correct for seasonality in the data (very important)



Empirical strategy

▶ Wheat

- Price indexes:
 - Bread
 - Bread + cookies
 - Bread + cookies + pasta
 - Basic
 - All food
 - ...
 - ...
 - ...
 - All CPI

▶ Rice

- Price indexes:
 - Rice
 - Rice + cereals
 - Rice + cereals + cookies
 - Basic
 - All food
 - ...
 - ...
 - ...
 - All CPI

Empirical strategy

- ▶ Estimation of reduced form

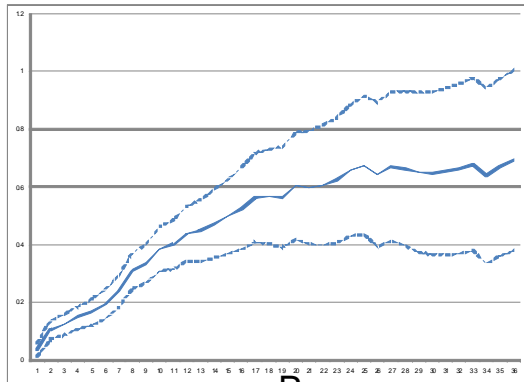
$$\Delta P_t = \alpha + \sum_{l=0}^L \beta_l \Delta C_{t-l} + \varepsilon_t$$

Price index:
constructed

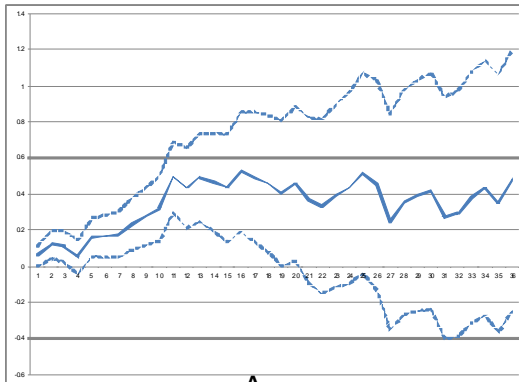
Commodity price

- Concentrate on the impulse response.

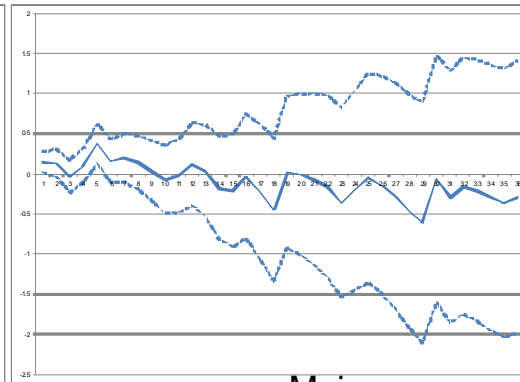
Chile: Wheat



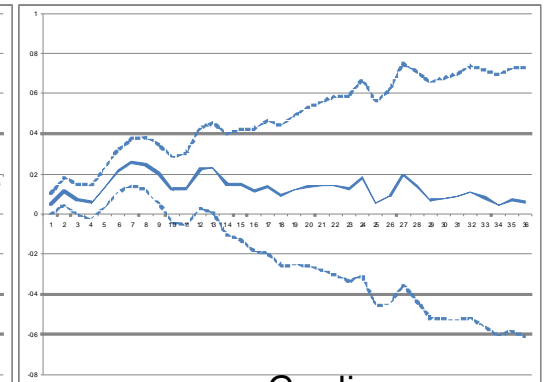
Pan



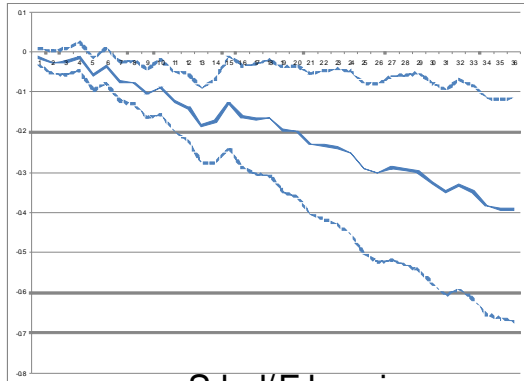
Arroz



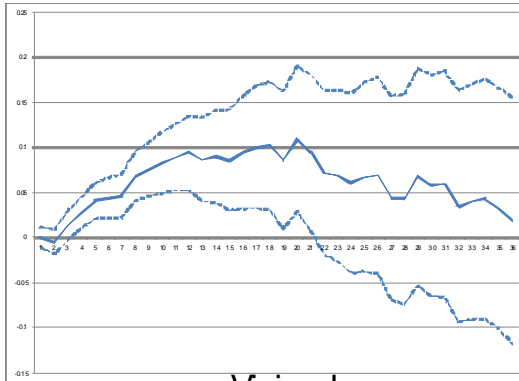
Maiz



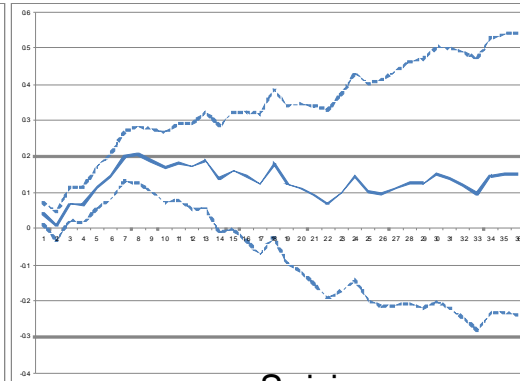
Gasolina



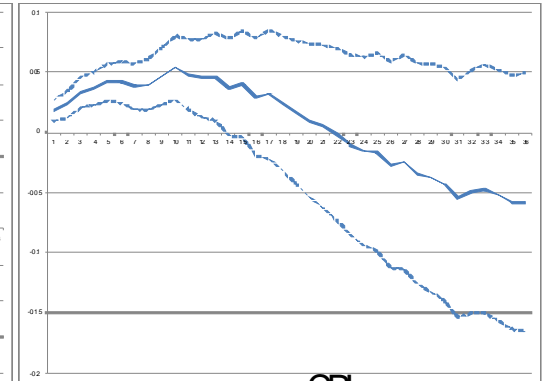
Salud/Educacion



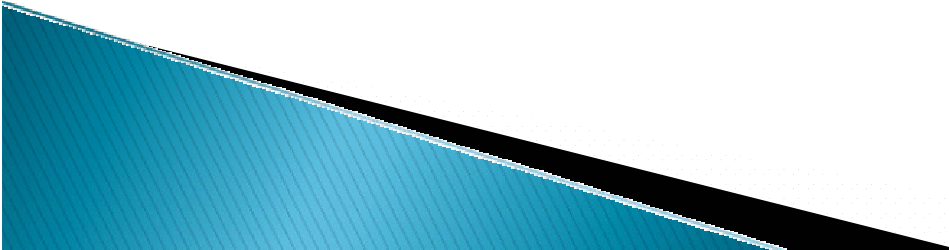
Vivienda



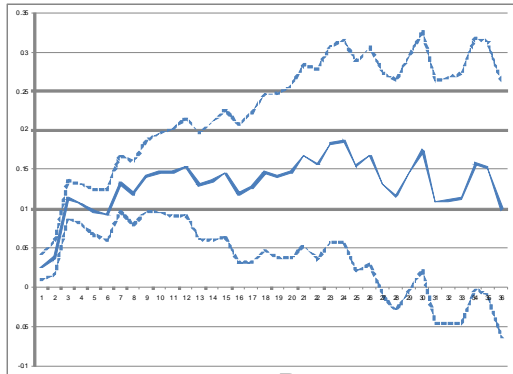
Serivicos



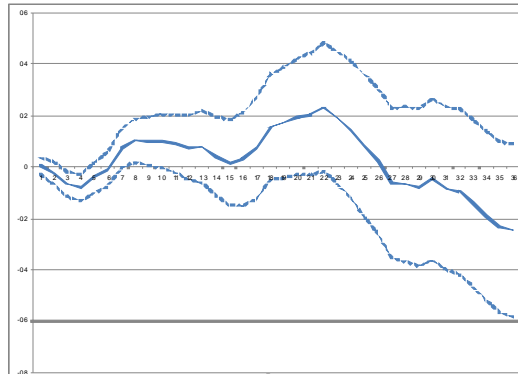
CPI



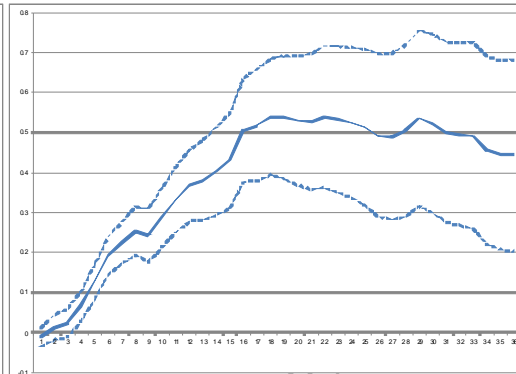
Colombia: Wheat



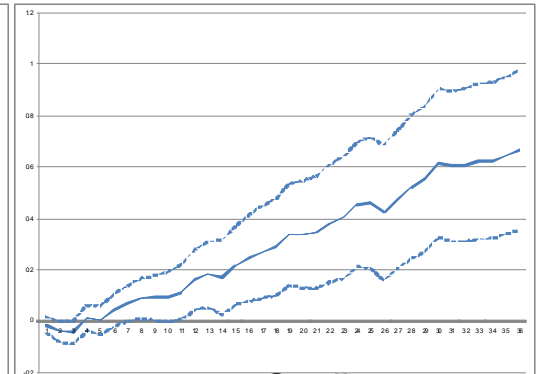
Pan



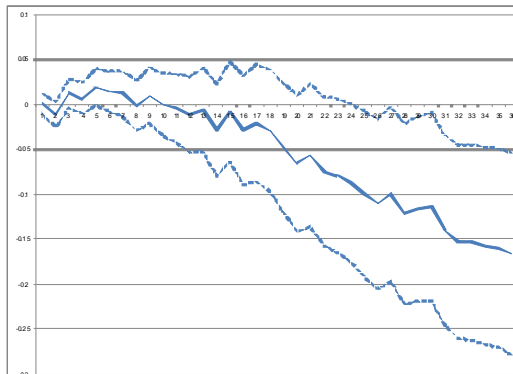
Arroz



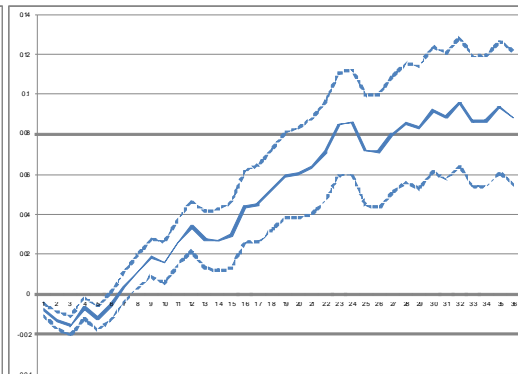
Maiz



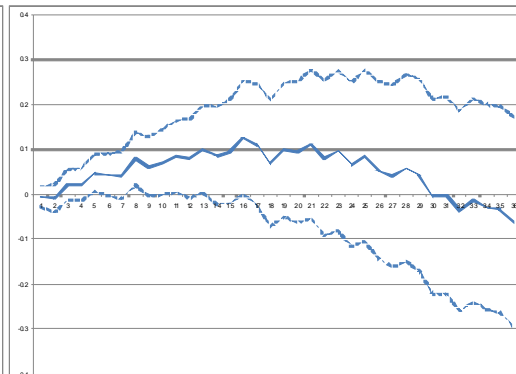
Gasolina



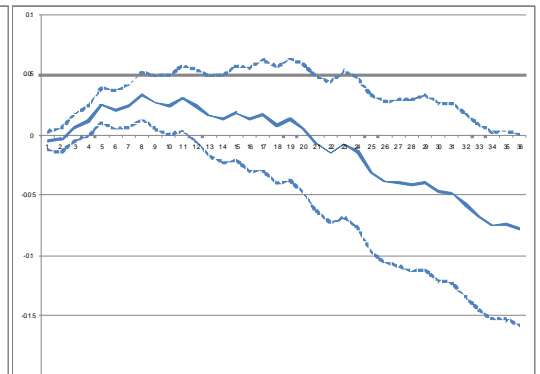
Salud/Educacion



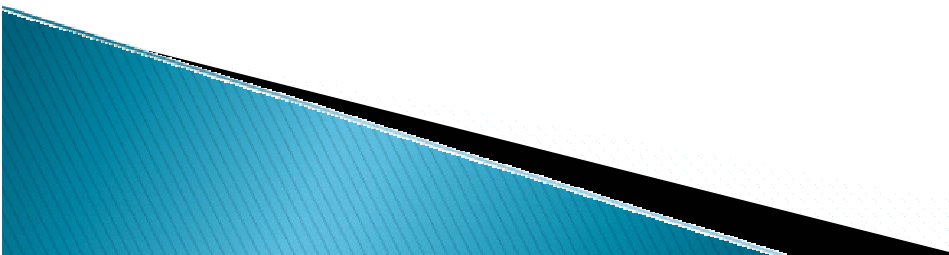
Vivienda



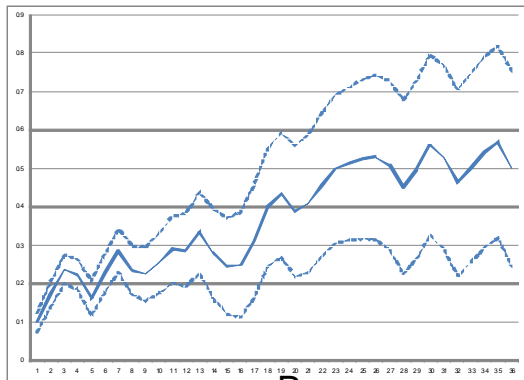
Serivicos



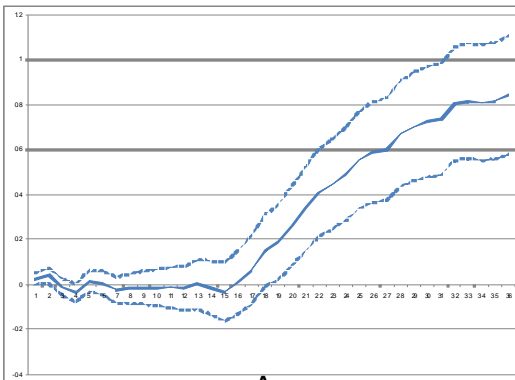
CPI



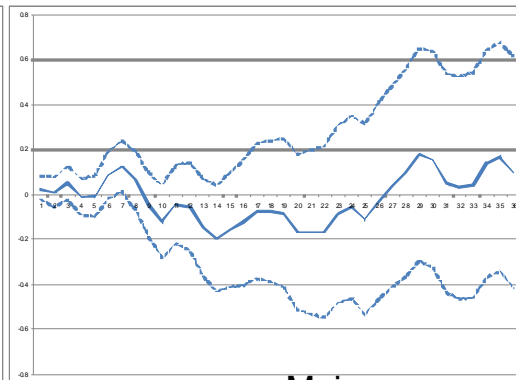
Peru: Wheat



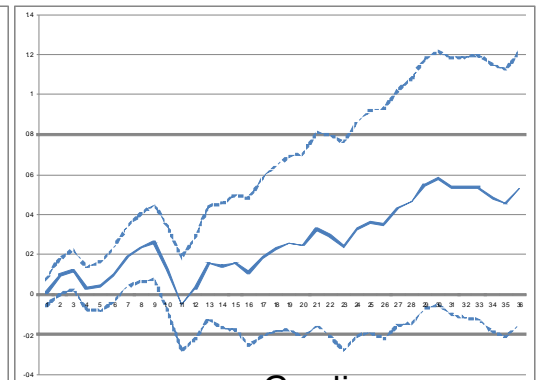
Pan



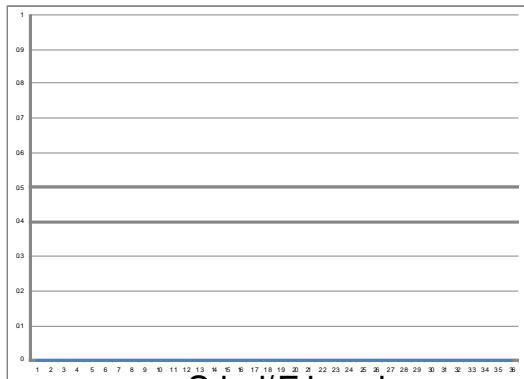
Arroz



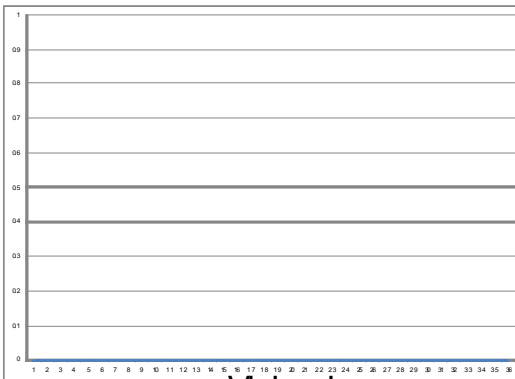
Maiz



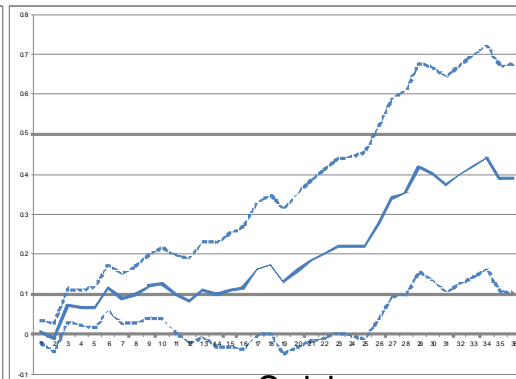
Gasolina



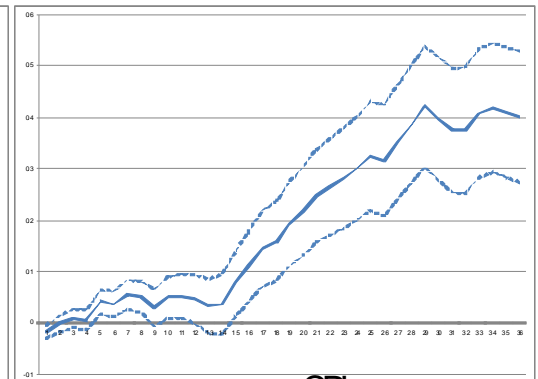
Salud/Educacion



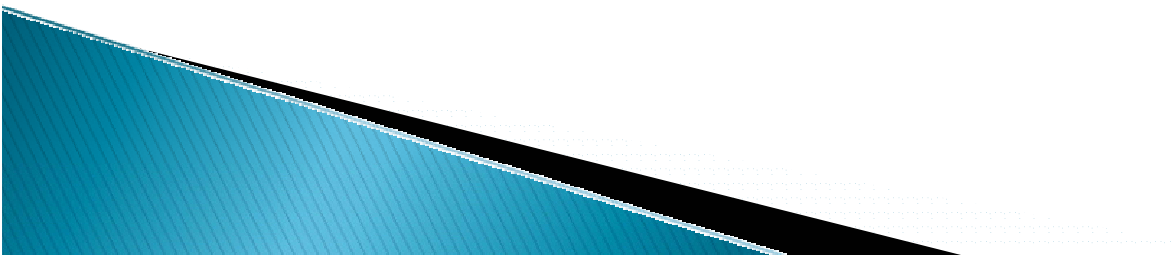
Vivienda



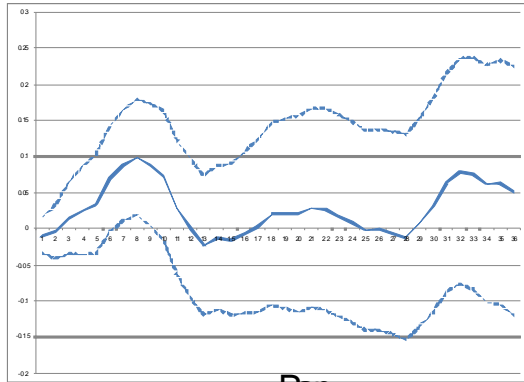
Serivicos



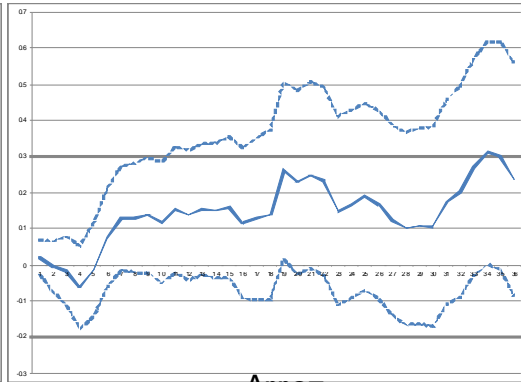
CPI



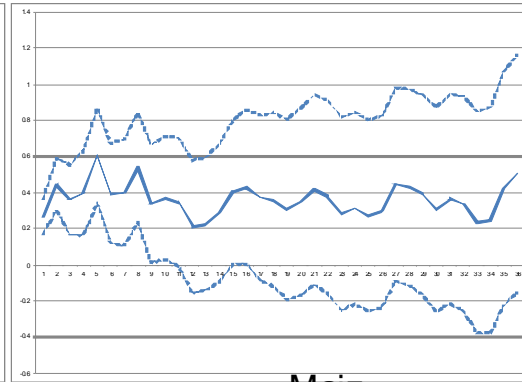
Chile: Oil



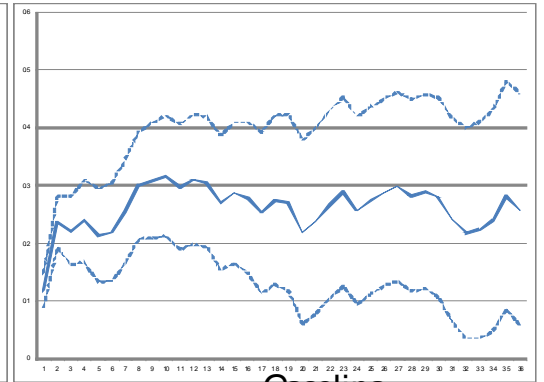
Pan



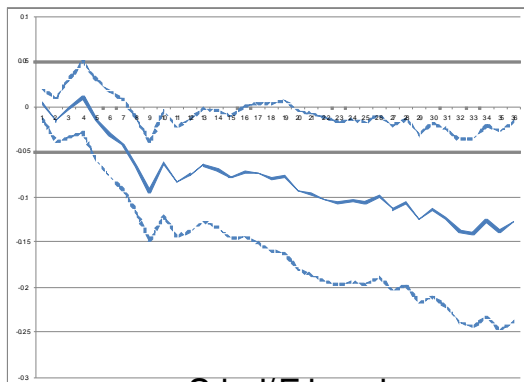
Arroz



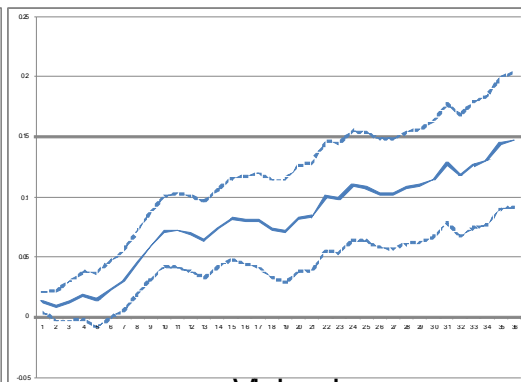
Maiz



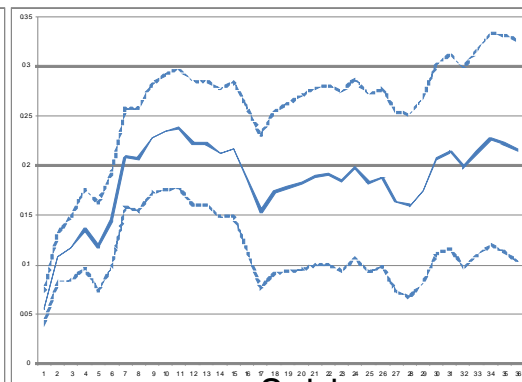
Gasolina



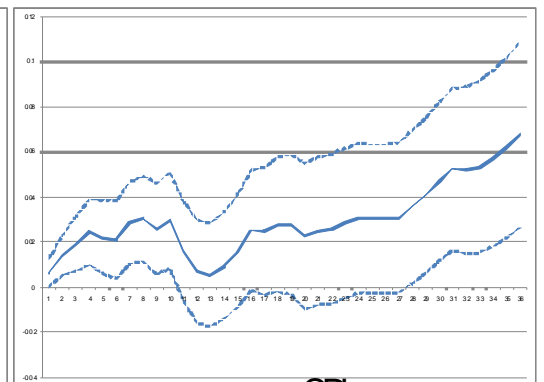
Salud/Educacion



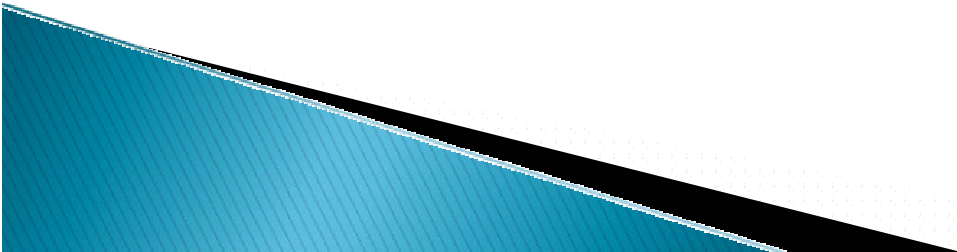
Vivienda



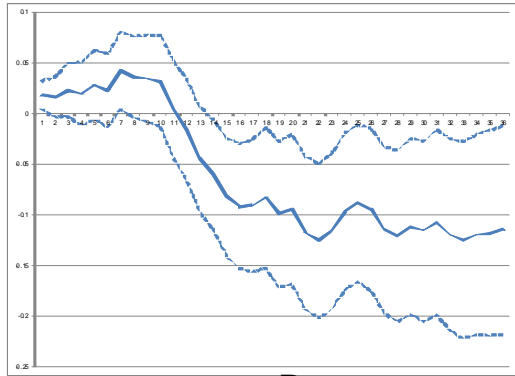
Serivicos



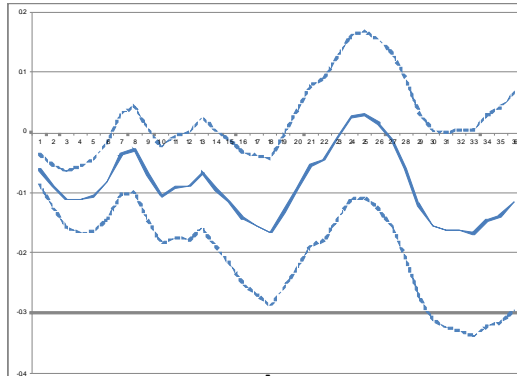
CPI



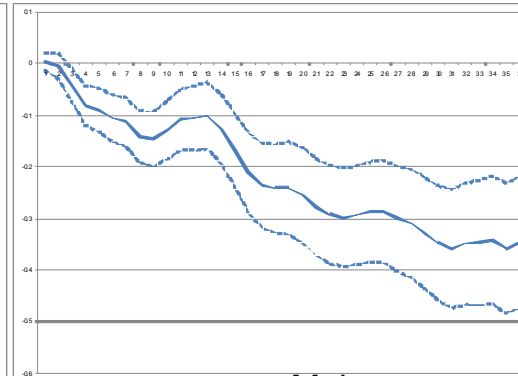
Colombia: Oil



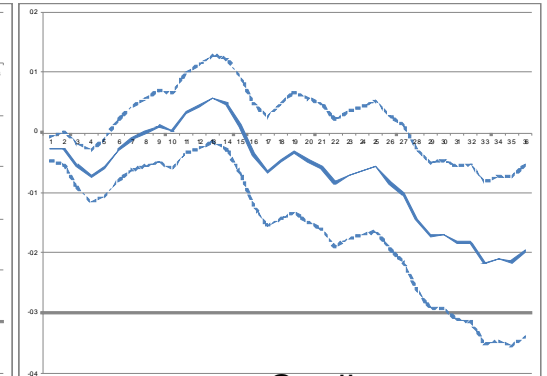
Pan



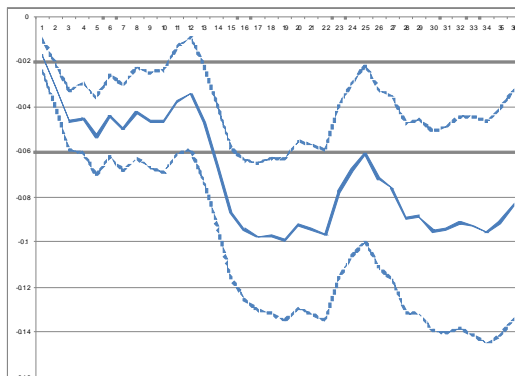
Arroz



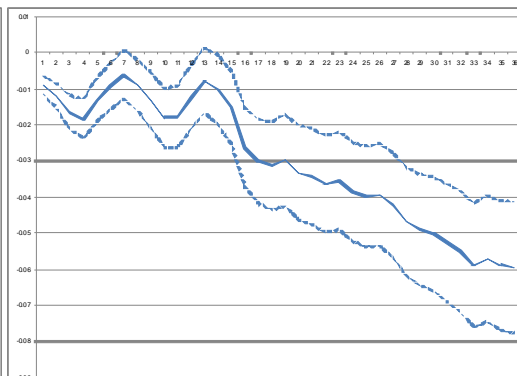
Maiz



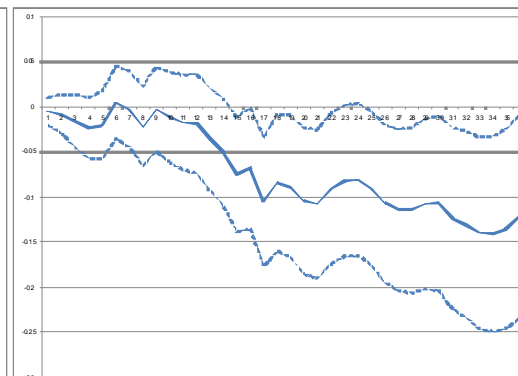
Gasolina



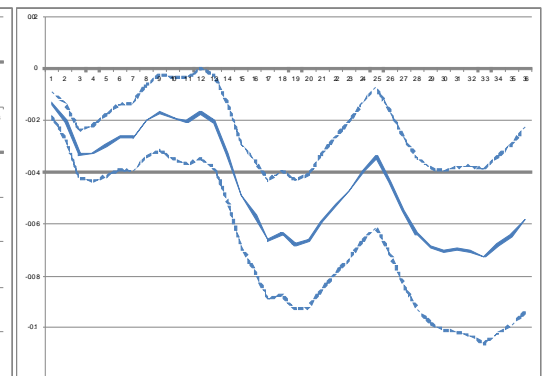
Salud/Educacion



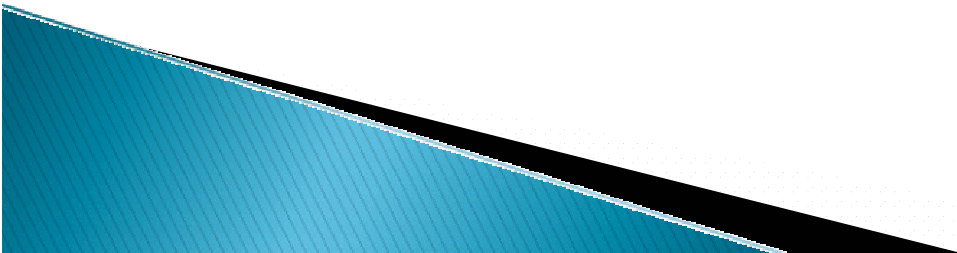
Vivienda



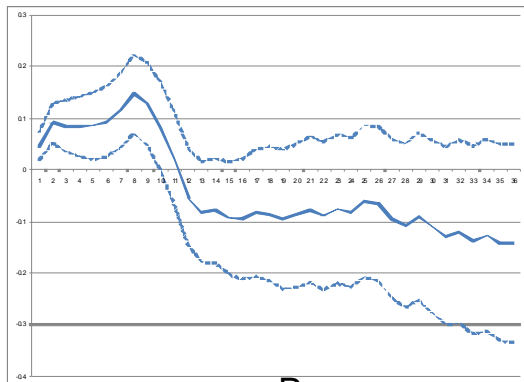
Serivicos



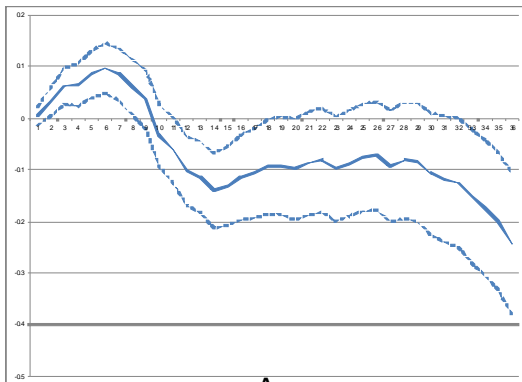
CPI



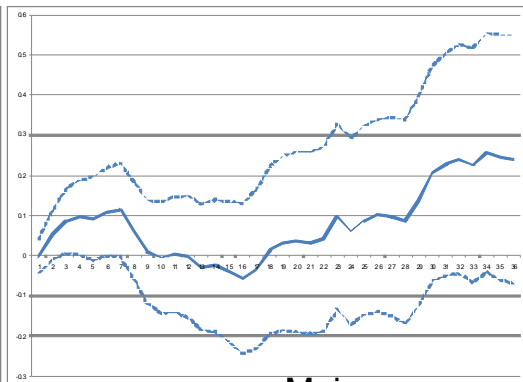
Peru: Oil



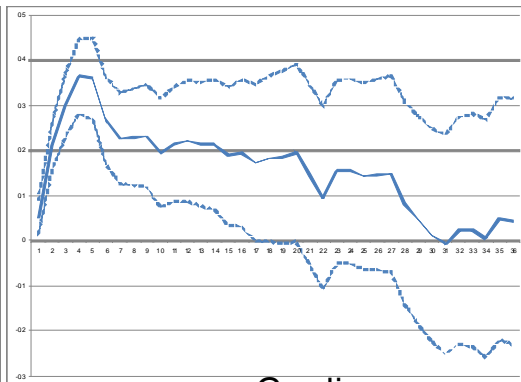
Pan



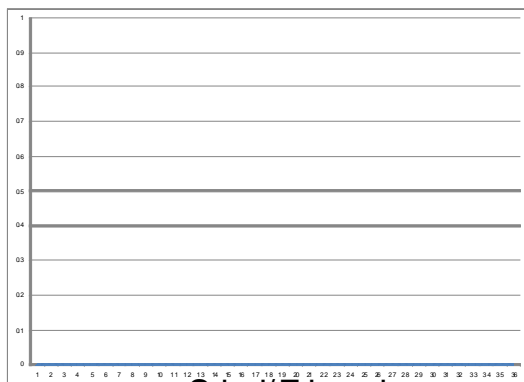
Arroz



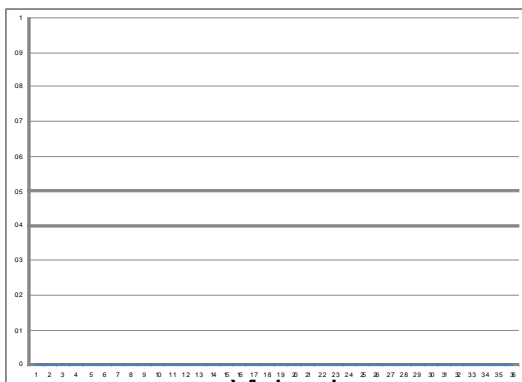
Maiz



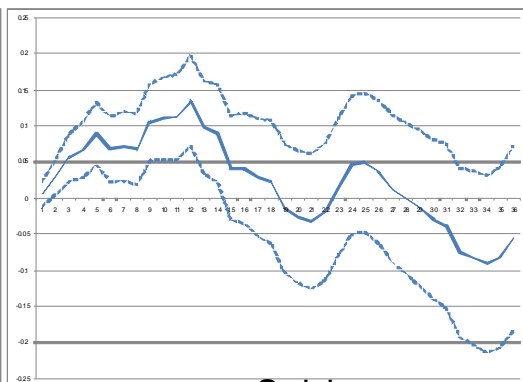
Gasolina



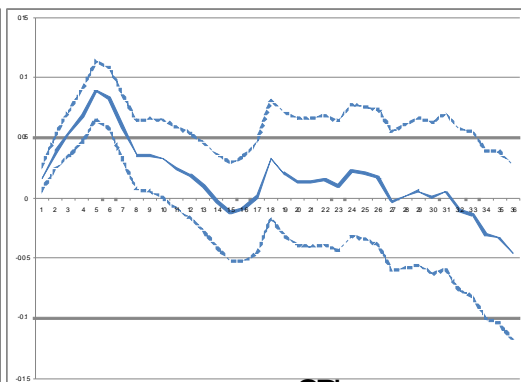
Salud/Educacion



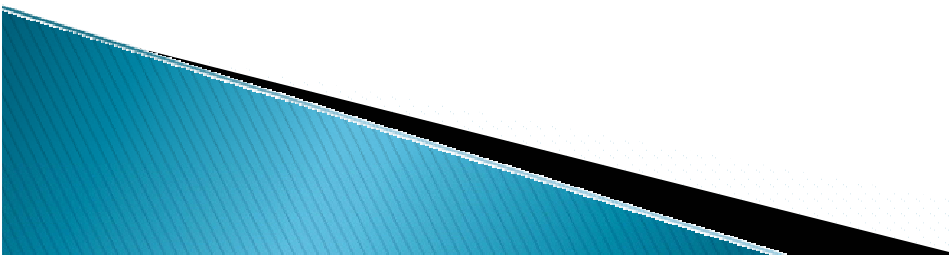
Vivienda



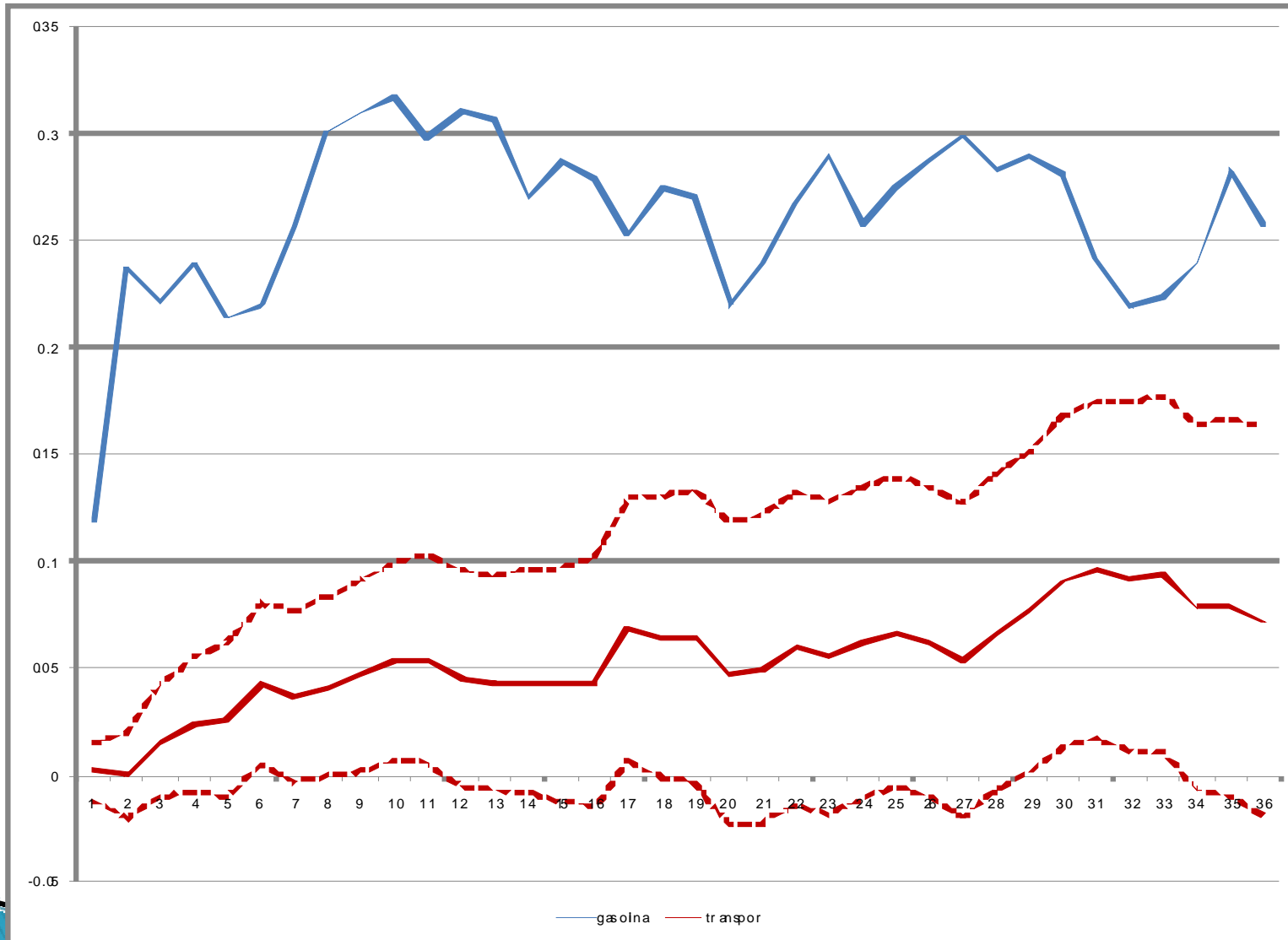
Serivicos



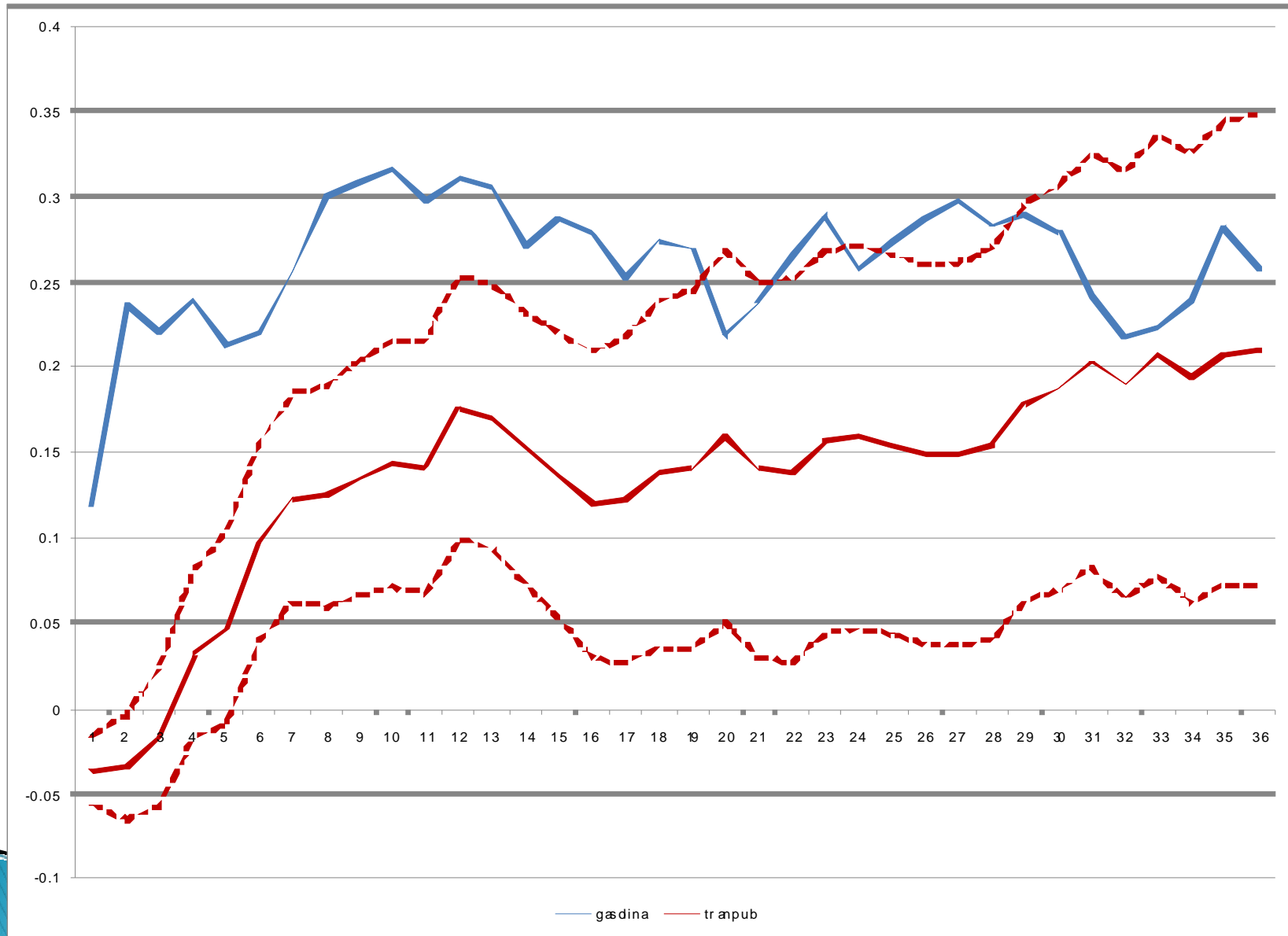
CPI



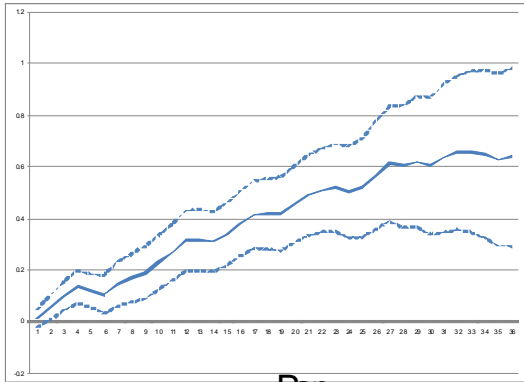
Chile: Oil: Transportation



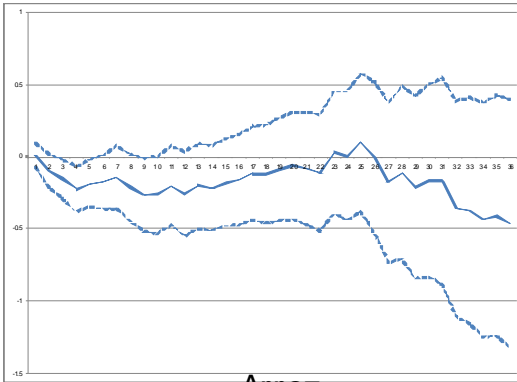
Chile: Oil: Transportation



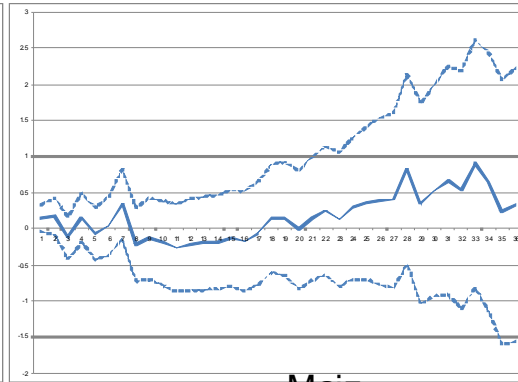
Chile: Maize



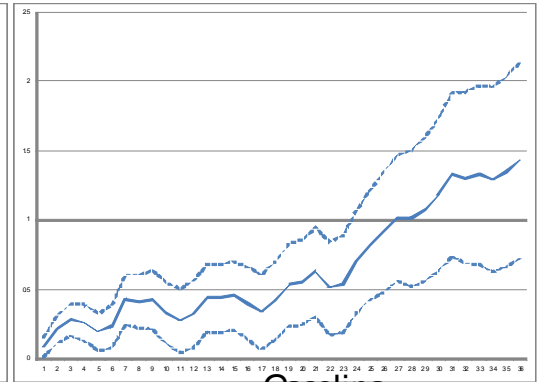
Pan



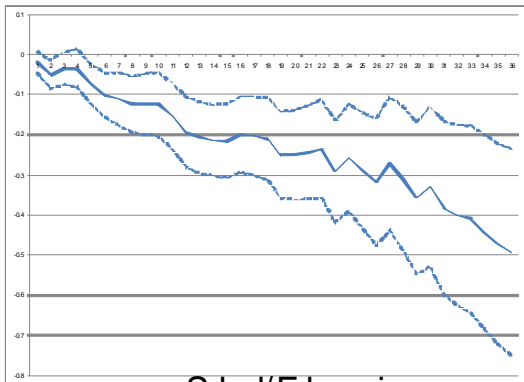
Arroz



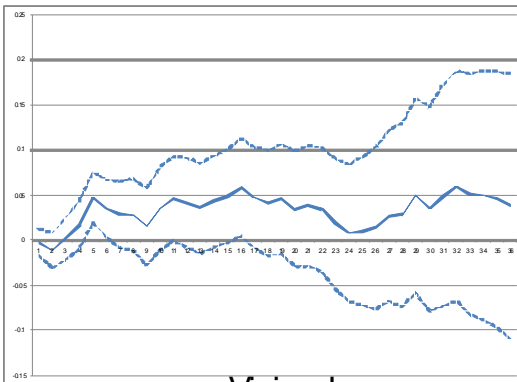
Maiz



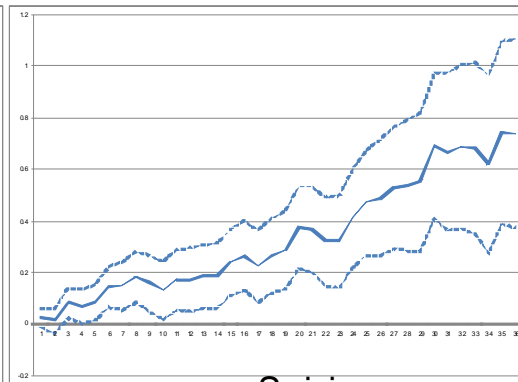
Gasolina



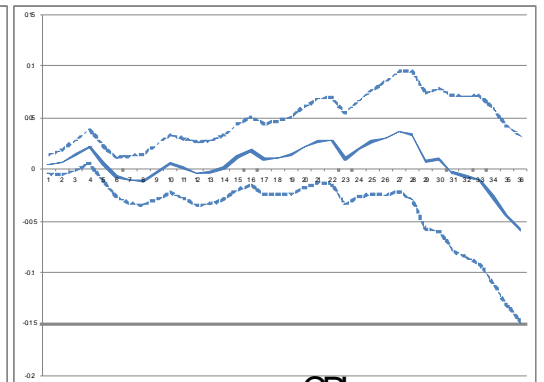
Salud/Educacion



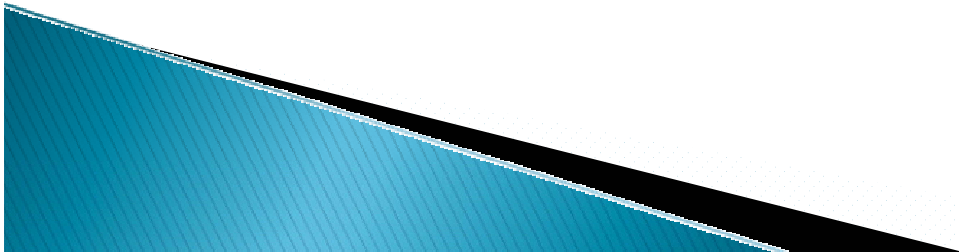
Vivienda



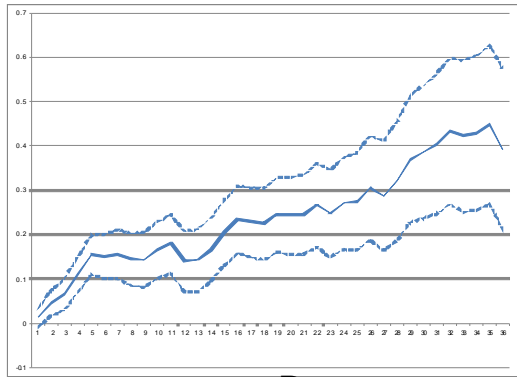
Serivicos



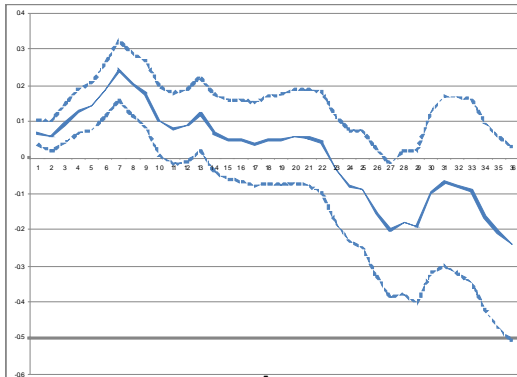
CPI



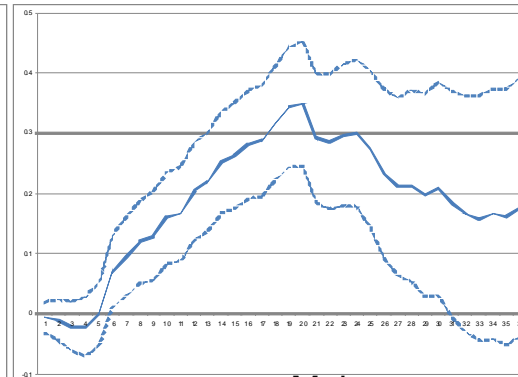
Colombia: Maize



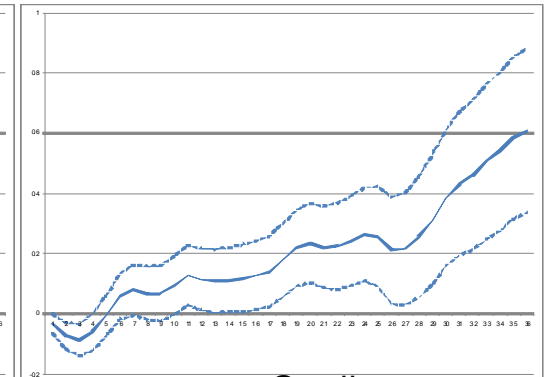
Pan



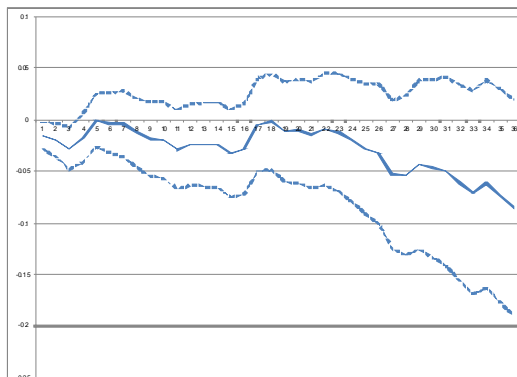
Arroz



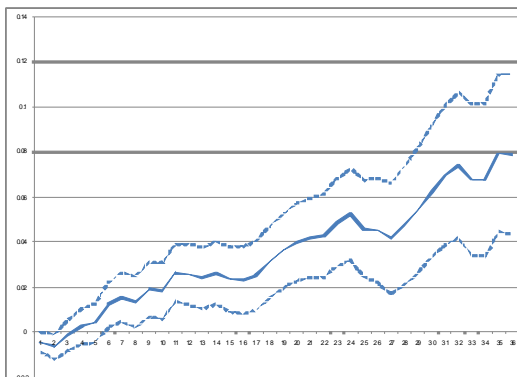
Maiz



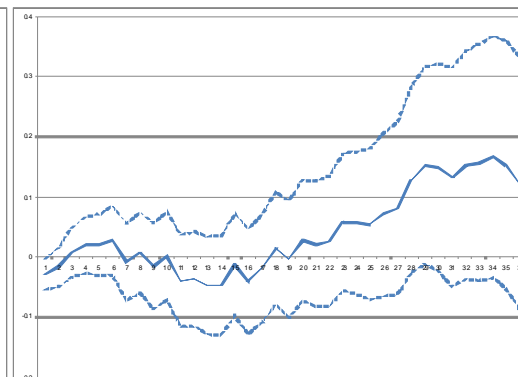
Gasolina



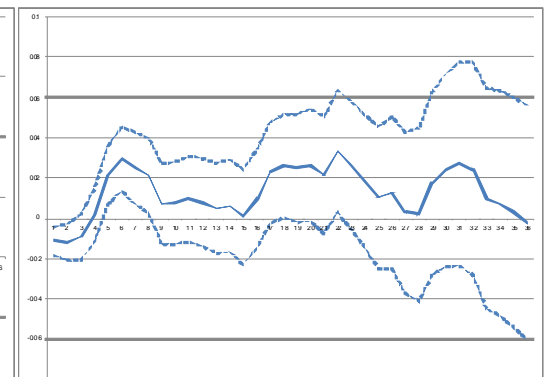
Salud/Educacion



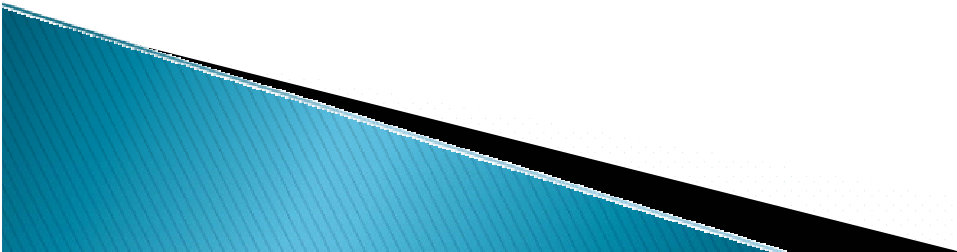
Vivienda



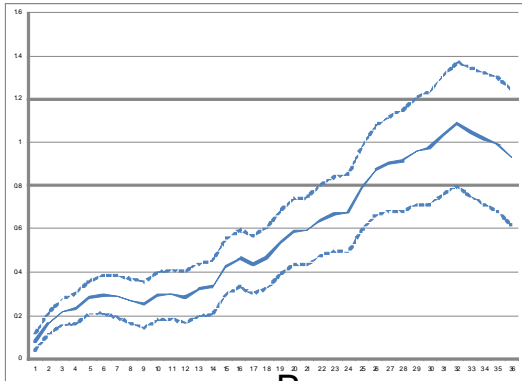
Serivicos



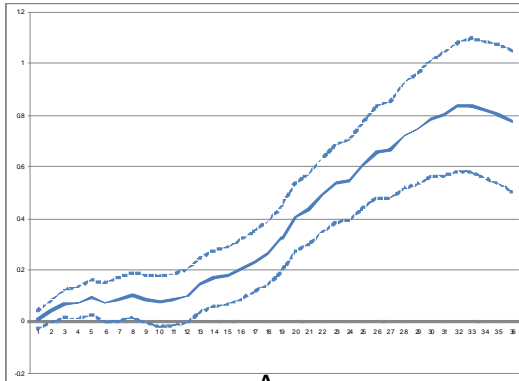
CPI



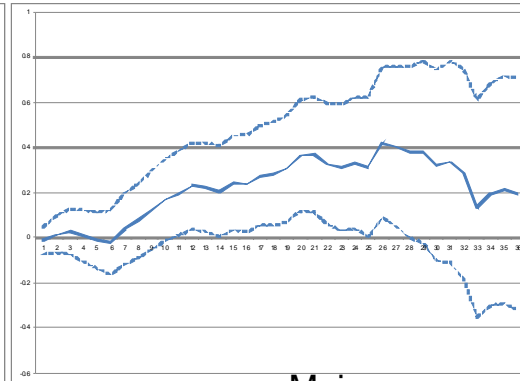
Peru: Maize



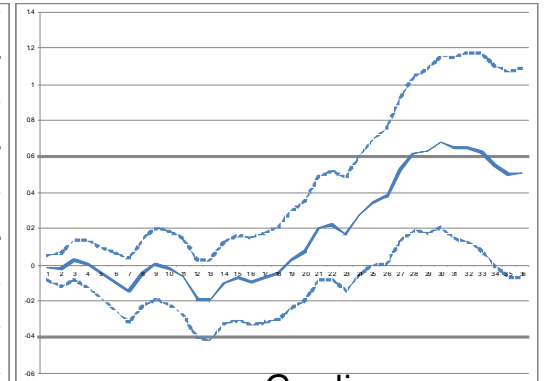
Pan



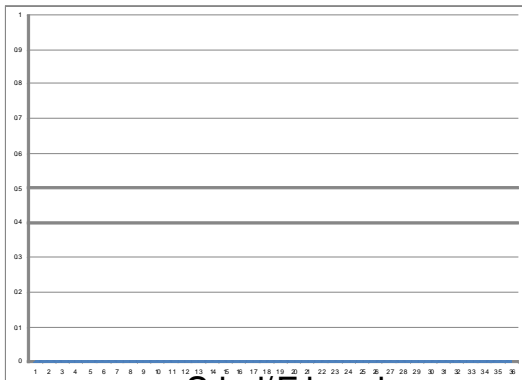
Arroz



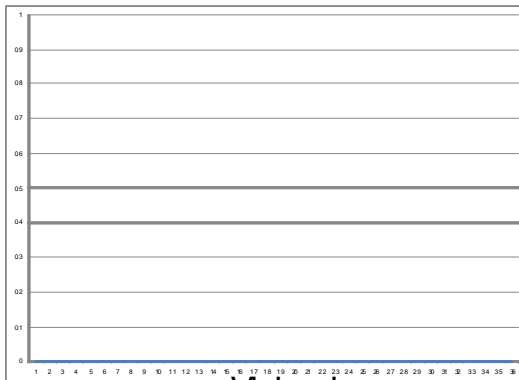
Maiz



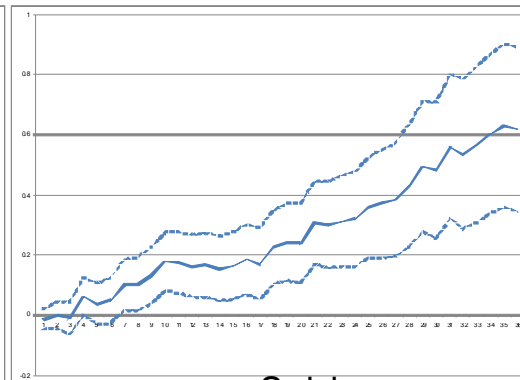
Gasolina



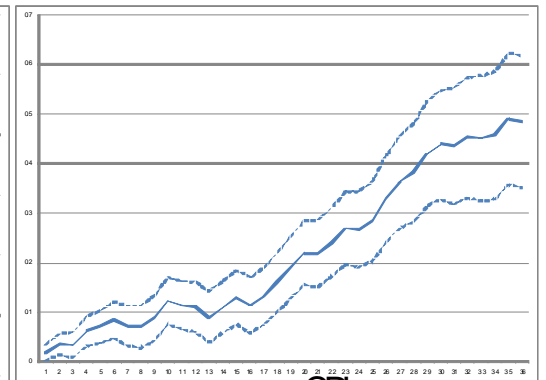
Salud/Educacion



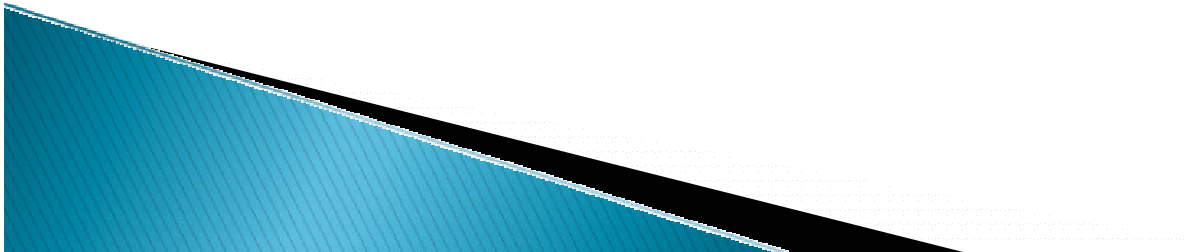
Vivienda



Serivicos

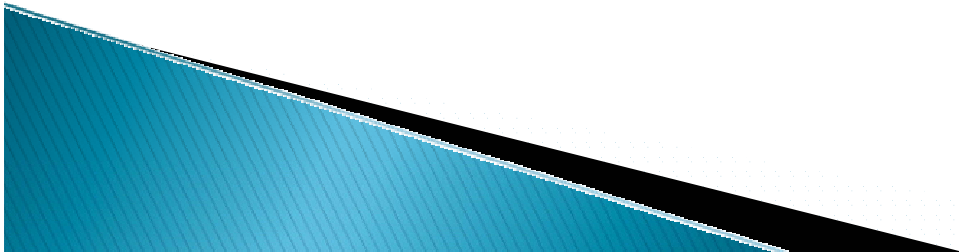


CPI

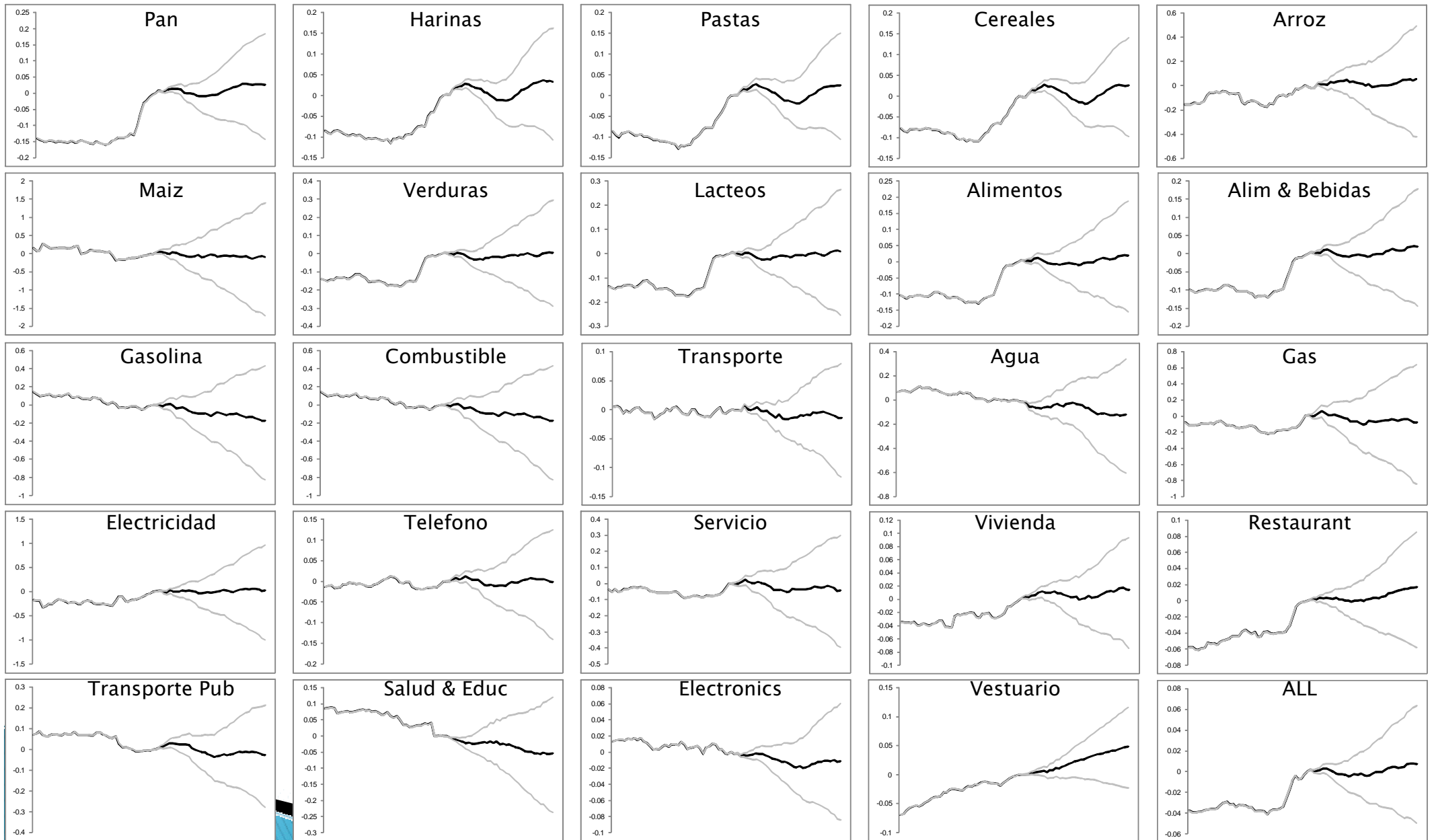


Repressed Inflation

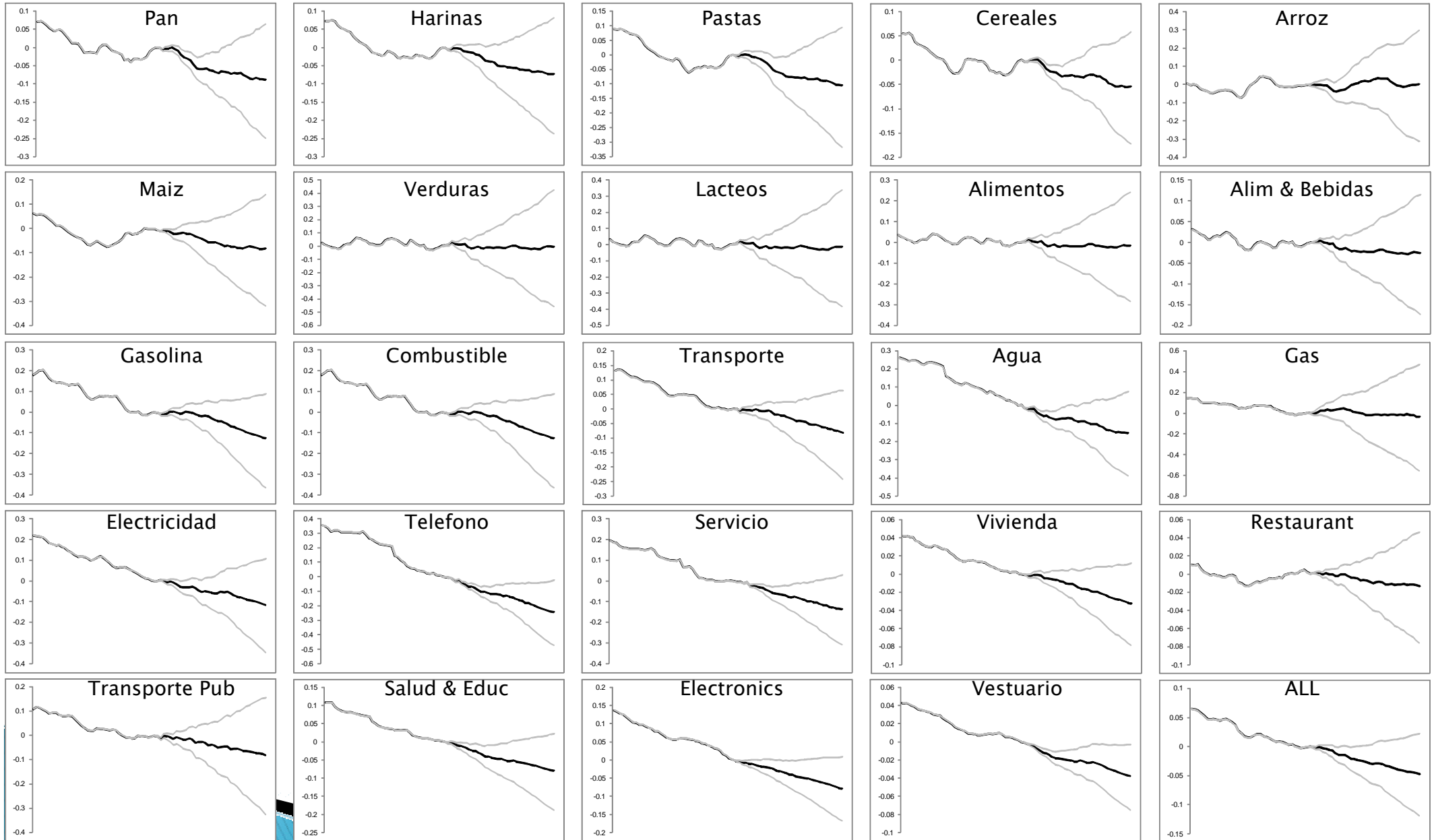
- ▶ Estimate stochastic process of commodity prices
 - Simple AR(L) model with trend
 - Use as long series as we can
 - Monte–Carlo simulation
 - Estimate pass through per index



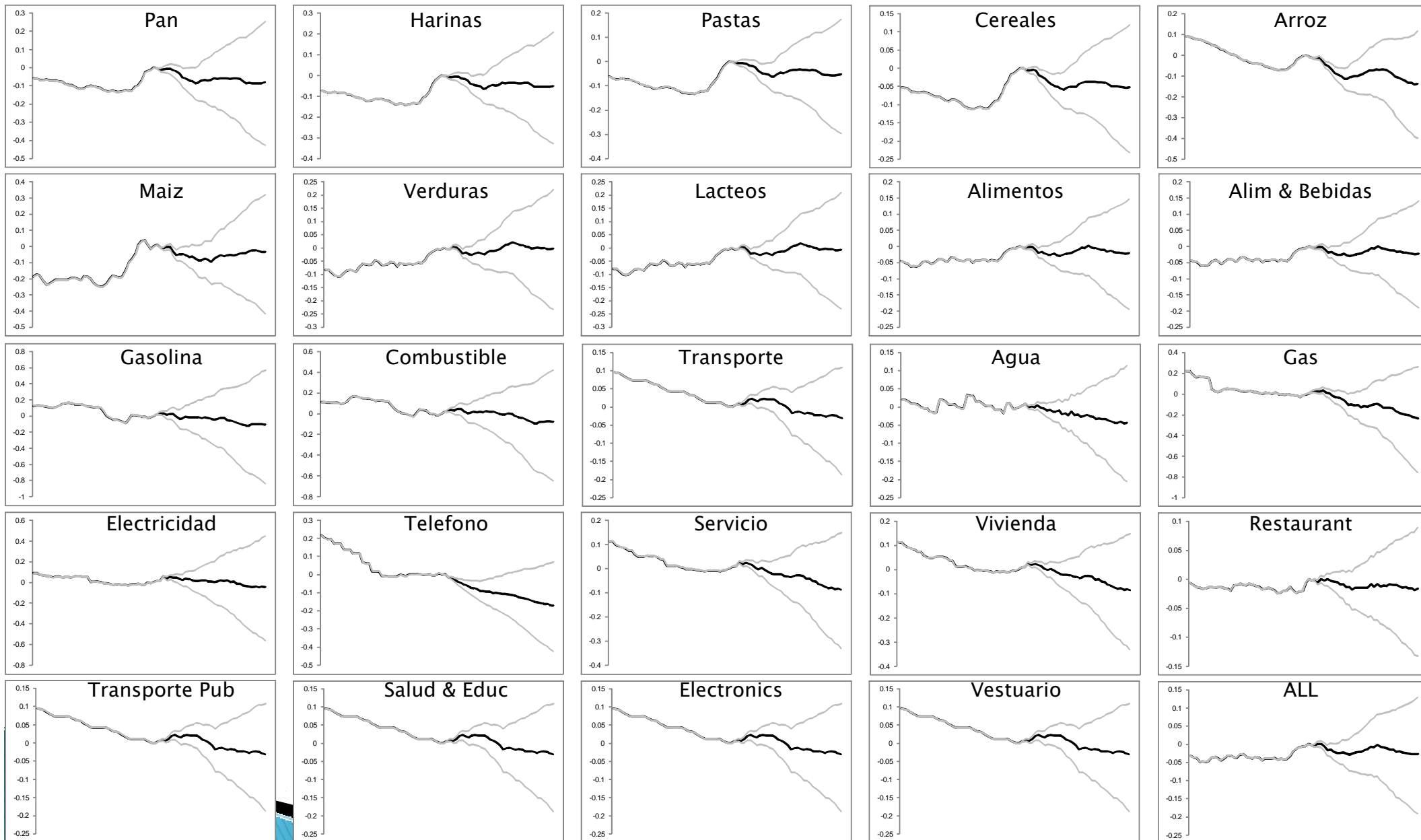
Chile: Oil: Inflation in Pipeline



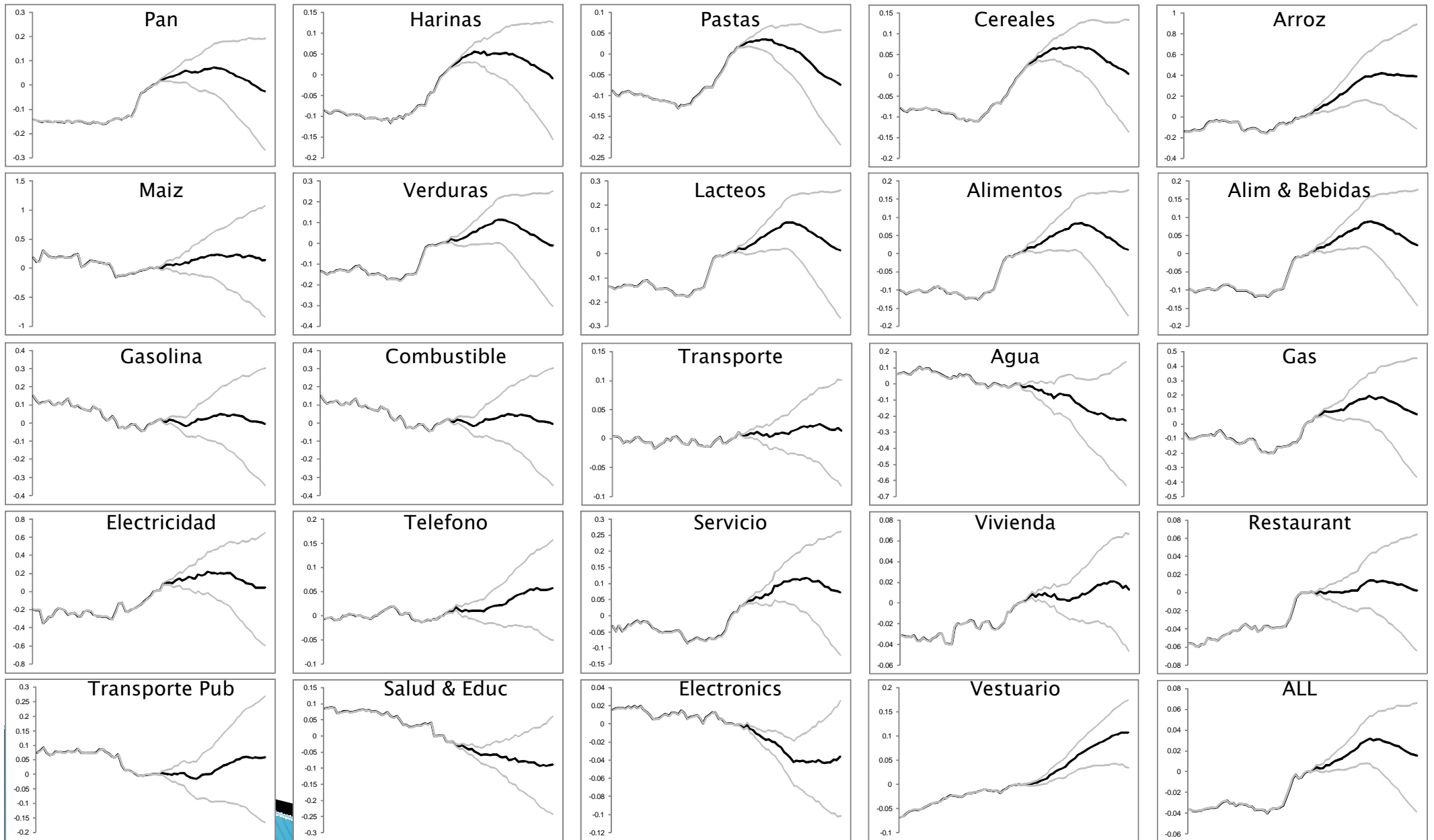
Colombia: Oil: Inflation in Pipeline



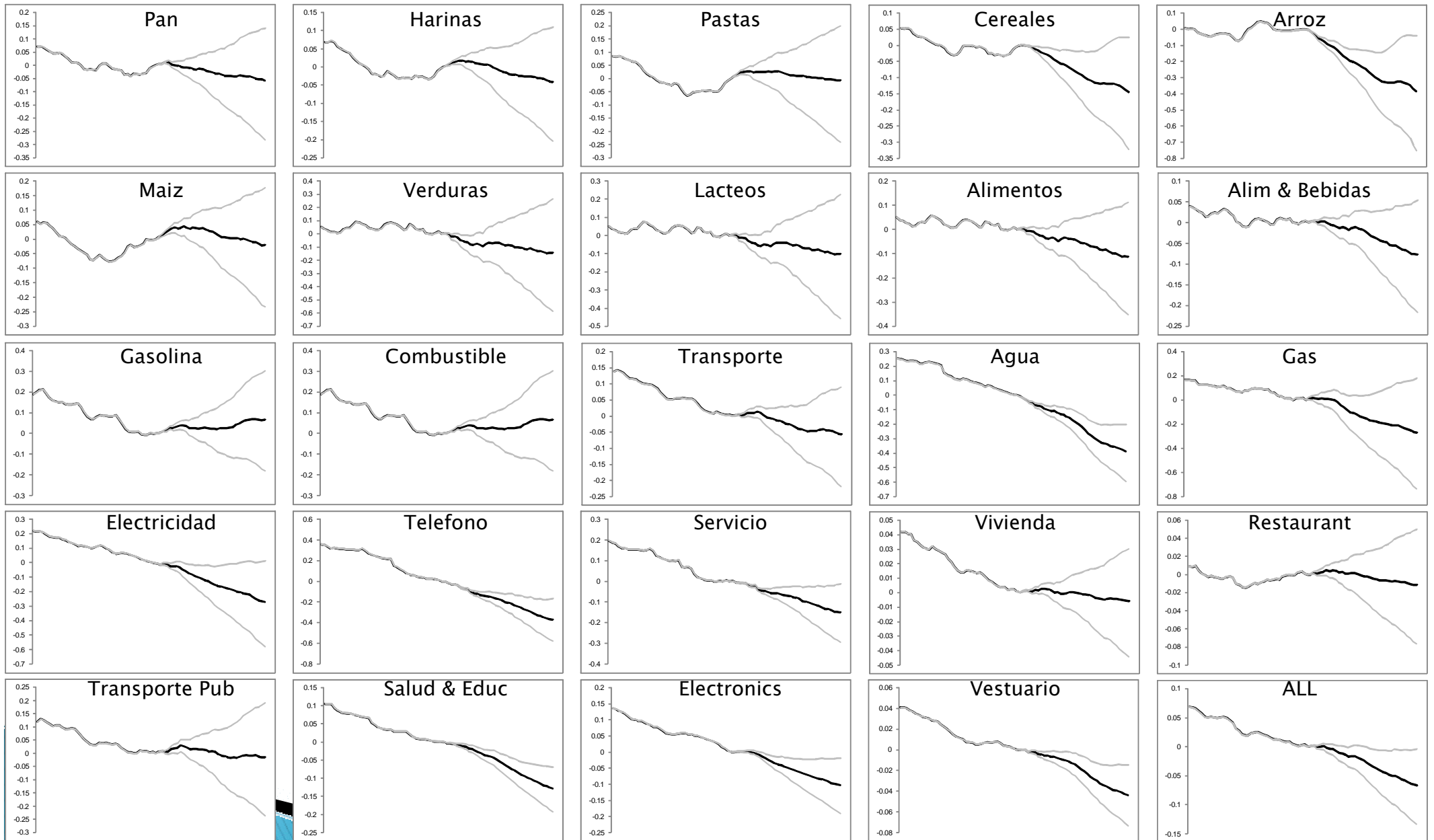
Peru: Oil: Inflation in Pipeline



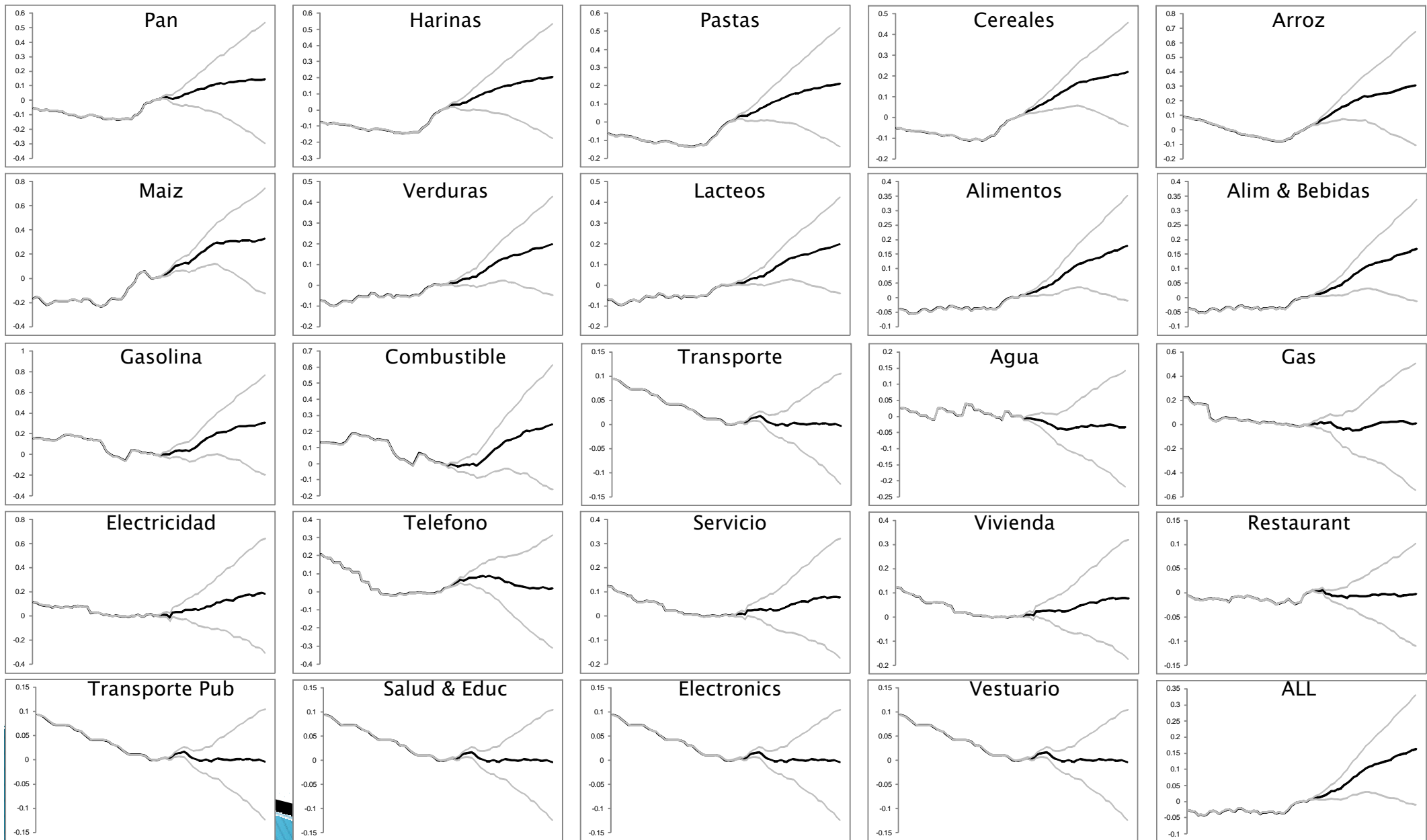
Chile: Food: Inflation in Pipeline



Colombia: Food: Inflation in Pipeline



Peru: Food: Inflation in Pipeline



Repressed Inflation

▶ Oil

- For all three countries inflation from oil prices seem to have been already incorporated.
- Almost for all indexes prices are relatively flat.

▶ Food

- Chile and Peru seem to have some inflation in the pipeline.
- Colombia seem to have already incorporated most of the price increases.

Things To Do!

▶ Get more countries!

◦ So far I have:

- Chile, Colombia, Peru (fully cleaned – I have to harmonized indexes now).
- Mexico, Costa Rica, El Salvador, Guatemala, Honduras, Panama, Nicaragua, and Republica Dominicana.
- Partial data for: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, United Kingdom, Greece, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia, Turkey.

▶ Study the distributional impact of inflation of different baskets.



Preliminary Messages

▶ Pass-through

- Responses to international food prices is
 - Similar pass-through
 - But different timing
 - Chile ~ 12 months
 - Peru and Colombia ~ 24–30 months
 - Maybe openness and internal competition explain the differences.
 - Inflation in the system is significant
 - What we are observing today is the outcome of changes in relative prices two years ago. Food prices have continue rising further since then.
- Responses to oil
 - Similar and similar timing
 - Spike of inflation 9–12 months.

▶ Inflation

- Chile and Peru might continue to have inflation due to food prices.
- Oil seem to have been incorporated

Commodity Pass-Through

Roberto Rigobon

MIT

