Discussion:
Macroeconomic Effects of Disruptions in Global Food Commodity Markets: Evidence for the United States

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Brookings
September 16, 2016
Outline

1 Summary of Paper

2 Puzzle on Food Expenditures

3 Suggestions
Motivation

- Paper looks at macro-economic effects of global food production shocks
  - Four staple commodities: maize, wheat, rice, and soybeans
    - 75% of calories we consume
    - Of those, 23% produced in the US
  - Clever idea behind exogenous food production shocks
    - Look at crop calendar: endogenous choices during quarter of planting
    - Unanticipated weather shocks in quarter of harvest
    - Only crops / countries where harvest quarter is after planting quarter

Demand for food is very inelastic
Small production shocks result in large swings of commodity prices
Production shocks ± 5%
Prices easily double / cut in half
Share of US expenditures on food is 17% over sample period
Slight decline over time
Possible for multiplier effect of price shocks
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Global Production - Four Staples (FAO Data)

[Graph showing the production of four staples (maize, wheat, rice, soybeans) from 1961 to 2014.]
Findings

- Two estimation strategies
  - Vector Autoregression (VAR)
  - Careful study of 13 unexpected shocks
    - Failed crop production / unexpectedly large production

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- Large effects on overall economy
  - Large multiplier: personal consumption decreases significantly
  - Spillover on durables / investment

Many careful sensitivity checks:
- Weather might directly influence sectors beyond agriculture
- Only include production shocks outside the US
- Still: is weather correlated (US shocks with rest of World)
  - E.g., El Nino changes global weather patterns
  - Correlation statistically insignificant and small in magnitude
- Endogenous response in harvest quarter
  - Authors argue that it is difficult
    - E.g., fertilizer use does not help much anymore
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Cost of Food

- US spends 17% on food
  - Most of these are processing and distribution
  - Basic caloric cost for 2000 calories/day diet < 100 dollars per year
    - More if significant share comes from meat
  - Even if prices triple, is it a big deal?

Consumer Expenditure Survey
Diary file: weekly expenditures (downloaded 1996-2015)

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Macro Effects of Food Shocks
Cost of Food

![Graph showing the price of 2000 calories per day in US dollars (2015 basis) from 1915 to 2015 for Maize, Wheat, Rice, and Soybeans.](image)

- Maize
- Wheat
- Rice
- Soybeans

Year axis ranges from 1915 to 2015.
US spends 17% on food

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Consumer Expenditure Survey

- Diary file: weekly expenditures (downloaded 1996-2015)
- Do expenditures track prices?
Monthly Price of Eggs vs Egg Expenditures

Months between January 1996 and December 2015

- Nominal Urban Egg Price
- CES Egg Expenditures
Annual Price of Milk vs Monthly Milk Expenditures

Index (Average = 100)

Months between January 1996 and December 2015

- Nominal Milk Price
- CES Milk Expenditures
Quarterly vs Monthly Commodity Prices - Nominal Prices

USDA Food Prices:  
- Maize  
- Wheat  
- Rice  
- Soybeans

Data in Paper:  
- Cereal  
- Food
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Suggestion 1: Evidence Outside US

- Four basic commodities are globally traded (single market)
  - Global production shocks are added up
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Paper focuses on US
- Same approach (shocks) could be used for other countries
- Would expect that effect is even larger in less developed countries
  - Share of food expenditures is higher
- Quarterly GDP data should be available
If change in commodity prices has small effect of food expenditures

- What is mechanism of spill-over on durables / other expenditures?
- Is it really food prices or is it just weather in a linked economy?
Suggestion 2: Mechanism - Weather?

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- Papers on weather shocks and global GDP
  - Weather impacts both agricultural and other sectors
    - Dell, Jones and Olken (AEJ-Macro 2012)
    - Burke, Hsiang and Miguel (Nature 2015)
  - Feedback of foreign non-agricultural sectors on US?
  - Story of a globally linked economy
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- Papers on weather shocks and global conflicts
  - Hsiang, Burke and Miguel (Science 2013)
    - Weather shocks impact stability around world
    - Global conflict has spill-overs on US?