BANK OF ENGLAND

Tail Winds from the East?

The Effect of Emerging Markets on UK import prices

John Lewis
Jumana Saleheen

Banco d'España Workshop on Emerging Markets
November 2016

Motivation

- Widespread claims that “cheap imports“ from low-wage producers have reduced inflationary pressure.

  “For a number of years, the United States and other industrialized nations benefited from disinflation in manufactured goods produced in EMEs. This shift in relative prices—a positive terms of trade gain—helped contain inflation.”

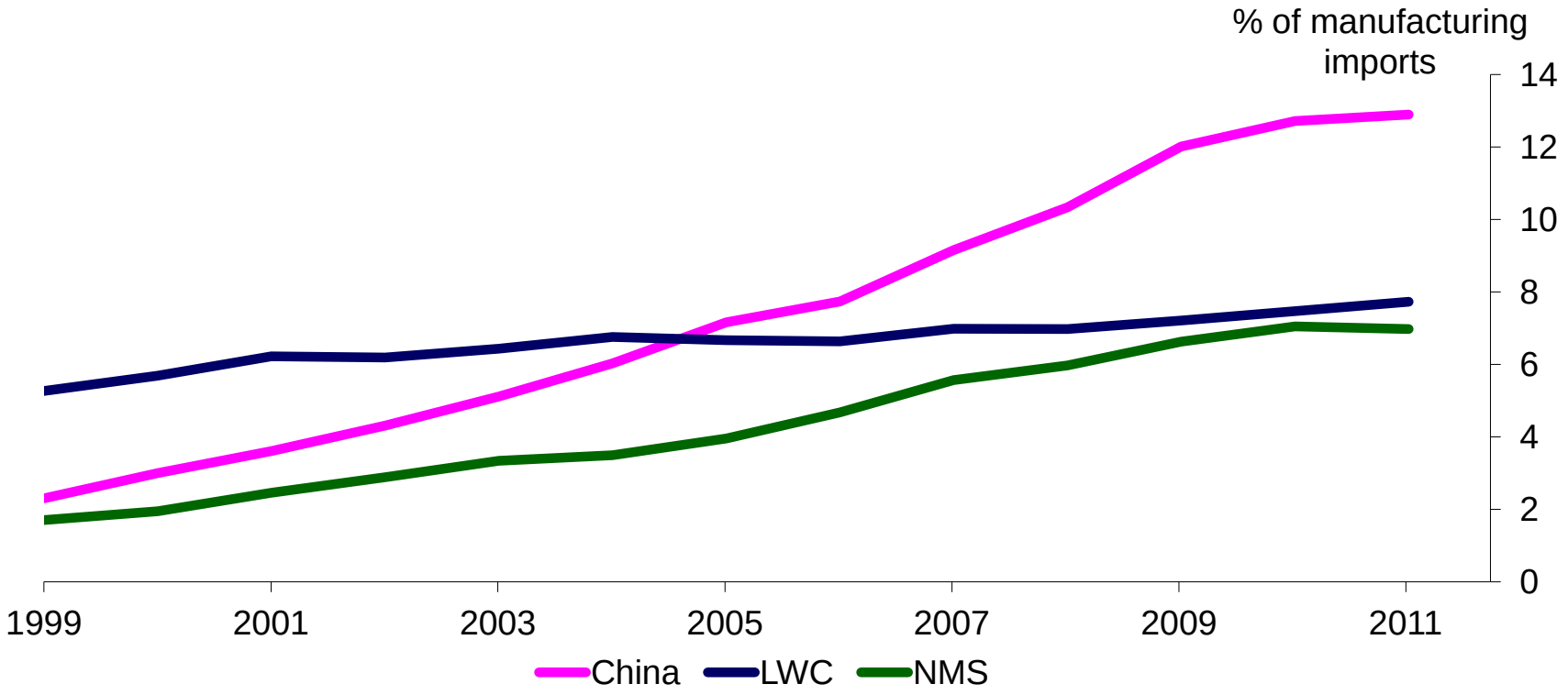
  - William Dudley, President New York Fed

- Did the growth of imports from emerging market economies help reduce import price inflation during the Great Moderation?

Overview of paper

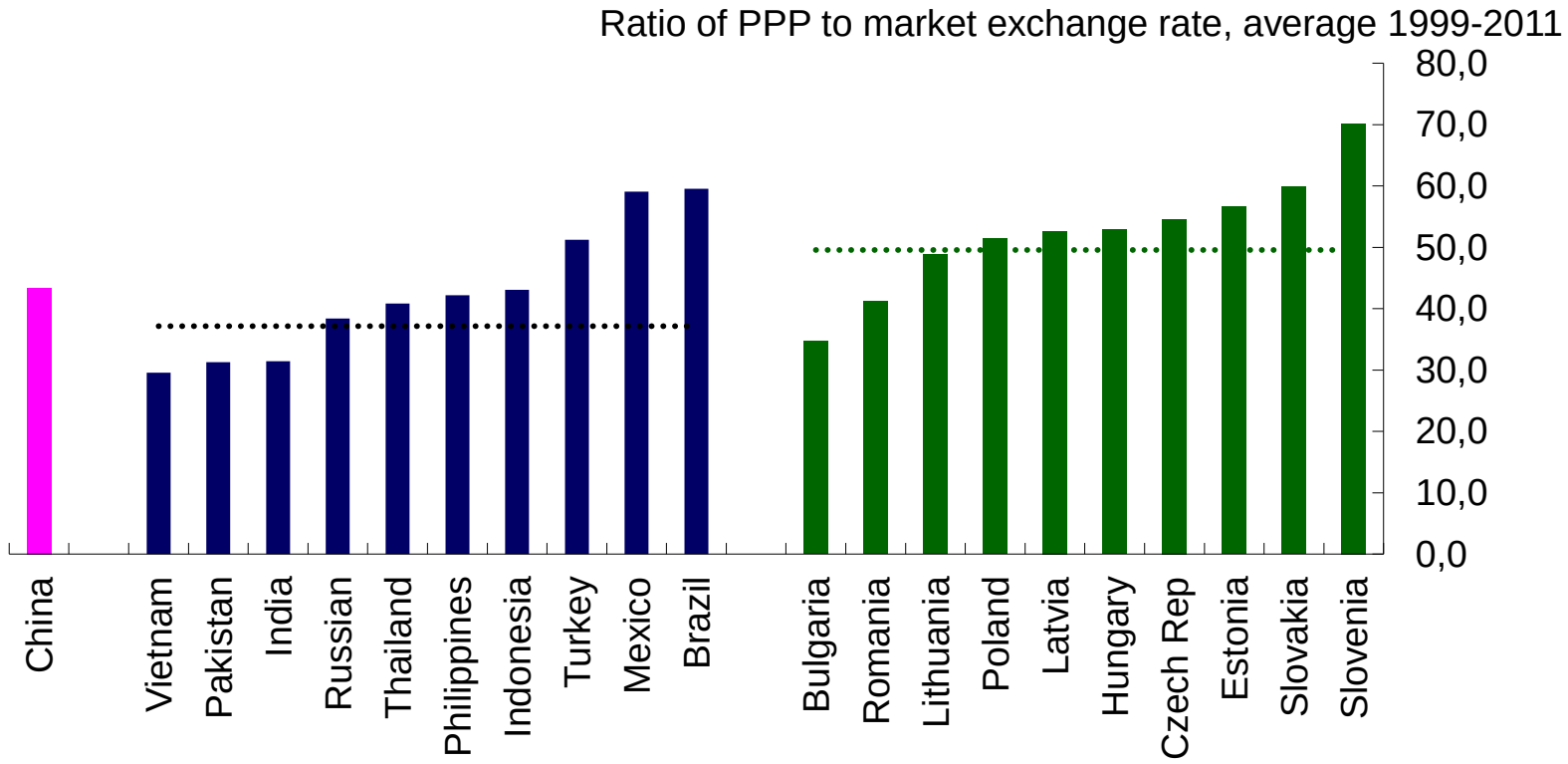
- We estimate the effect of low-cost EMEs on UK import prices over period 1999-2011
- Use panel data of import unit values for several thousand goods types taken from HMRC
- Estimate a panel data model using common correlated effects, sample split according to goods types
- Combine coefficients with observed growth in EME market share to back out effect of China and EMEs.
- Construct standard error bands using monte carlo techniques
- **Point estimates reveal that China lowered manufacturing import import price inflation by around 0.71pp per year, or 0.5pp on all import prices. Other EMEs exerted no significant effect.**

Imports from low cost producers: manufacturing



- China has shown a larger increase (≈10.5pp) than other LWCs (≈2.5pp) or NMS (≈5pp)

Cost advantage of selected EMEs



Possible Channels

+ Beneficial terms of trade shock lowers import prices:"**price level effect**"
  - **Direct effect** of more "cheap imports" from EMEs
  - **Indirect competition effect** on non-EMEs

  Shows up via the change in market share

+ Competition from cheap imports may also put downward pressure on domestic producers prices

– But rising costs in "low-wage" producers can be a "headwind": "**inflation effect**"
  - Greater exposure to countries with rising costs generates inflationary pressure

  Shows up via the lagged level of market share

Caution about effect of lower import prices on CPI inflation

i) Relative price shock may not feed through to overall prices

ii) "Tailwind" could be that domestic economy is run at a high rate of growth than could otherwise be possible

Dataset: Imports

- Import data taken from UK Customs (HMRC) *Tradeinfo* database, containing volumes and values of imports by trading partner and industry over the period 1999-2011
  - Restricted to 45 countries to keep dataset computationally manageable
    - EU, OECD, plus Brazil, China, Hong Kong, Indonesia, India, Mexico, Philippines, Pakistan, Russia, Singapore, Thailand, Turkey, Vietnam
    - Around 90% of UK imports
  - More than 3000 industries using Standard Industrial Trade Classification (SITC) at 5-digit level
  - Raw data contains nearly 2 million datapoints

Intermezzo: SITC System

- Each industry has 5-digit code:
  - e.g. "**Battery/AC powered alarm clocks": 88574**
  - First digit denotes broadest classification
  - Subsequent digits give finer levels of disaggregation

5-digit code	Industry Name	No. of inds
881xx	PHOTOGRAPHIC APPARATUS AND EQUIPMENT, N.E.S.	15
882xx	PHOTOGRAPHIC AND CINEMATOGRAPHIC SUPPLIES	6
883xx	CINEMATOGRAPHIC FILM, EXPOSED AND DEVELOPED, WHETHER OR NOT INCORPORATING SOUND	2
884xx	OPTICAL GOODS, N.E.S.	11
885xx	**WATCHES AND CLOCKS**	**26**
87xxx	PROFSSIONAL, SCIENTIFIC AND CONTROLLING INSTRUMENTS AND APPARATUS, N.E.S.	66
88xxx	**PHOTOGRAPHIC APPARATUS, EQUIPMENT & SUPPLIES & OPTICAL GOODS, N.E.S.; WATCHES AND CLOCKS**	**60**
89xxx	MISCELLANEOUS MANUFACTURED	151
88578	CLOCKS (WITH CLOCK MOVEMENTS), N.E.S., BATTERY OR AC POWERED	1
88579	CLOCKS (WITH CLOCK MOVEMENTS), N.E.S.	1

Basic Regression Setup

- In keeping with Kamin et al, we clean up the dataset:
  - Any unit value inflation of more than 900% or below -90% is dropped

- Standard panel form used in the literature:
  - Country and time fixed effects
  - Robust standard errors, clustered w.r.t. *i*

$$\pi_{it} = \alpha + \beta_1 S_{it-1}^{CHINA} + \beta_2 \Delta S_{it}^{CHINA} + \gamma_1 S_{it-1}^{NMS} + \gamma_2 \Delta S_{it}^{NMS} + \phi_1 S_{it-1}^{LWC} + \phi_2 \Delta S_{it}^{LWC} + \theta e_{it} + \boldsymbol{\psi}' \mathbf{X} + \mu_i + \lambda_t + \varepsilon_{it}$$

- X is a vector of within period averages of each explanatory variable, calculated for each *4*-digit industry, similar in spirit to Kapetanios et al (2011)

Unit values versus Prices

- Unit value records the average cost of “a kilo of alarm clocks”
  - Evidence that China produces lower quality varieties of the goods(Romalis and Borrida
  - Ignores quality differences: May misrecord lower quality varieties of a good as “cheaper” but identical
  - For some goods, quantity units (kilos, number of animals etc) may be a poor indicator of quality

- Robustness check, run same regressions using regular import price series
    - ONS publishes Import Price Indices at 2-digit level
      - XX Industries, XX manufacturing
    - Calculate China/NMS/LWC share variables, exchange rate measures at 2-digit level.

- If UV data systematically misrecords low quality as lower prices, then coefficient on China/NMS/LWC will be smaller when ONS data used.

Unit Values vs Prices

	[I]	[II]	[III]	[IV]
Dependent variable	Unit value (HMRC)	Import Prices (ONS)	Unit value (HMRC)	Import Prices (ONS)
Sector	All available	All available	All available manufacturing	All available manufacturing
Lagged China share	-0.065 *(0.043)*	0.056 *(0.105)*	-0.055 *(0.049)*	0.069 *(0.187)*
Diff China share	**-0.501***** *(0.091)*	-0.017 *(0.254)*	**-0.623***** *(0.094)*	**-0.666***** *(0.160)*
Lagged NMS share	-0.042 *(0.056)*	-0.072 *(0.144)*	0.050 *(0.065)*	**0.509***** *(0.151)*
Diff NMS share	**-0.170*** *(0.098)*	0.131 *(0.096*	-0.149 *(0.106)*	0.271 *(0.160)*
Lagged LWC share	0.000 *(0.049)*	-0.072 *(0.144)*	-0.024 *(0.054)*	-0.395 *(0.351)*
Diff LWC share	**-0.181***** *(0.056)*	**0.351***** *(0.509)*	**-0.287***** *(0.081)*	0.093 *(0.205)*
Exchange Rate	**-0.426***** *(0.114)*	0.318 *(0.509)*	**-0.697***** *(0.114)*	-0.576 *(0.563)*
N (no. of obs)	35347	390	21902	144
I (no. of industries)	3151	34	1947	12
R2 (overall)	0.027	0.063	0.023	0.062

Total Effect

- Given earlier results, we focus on effect of China; and restrict our sample to manufacturing industries.

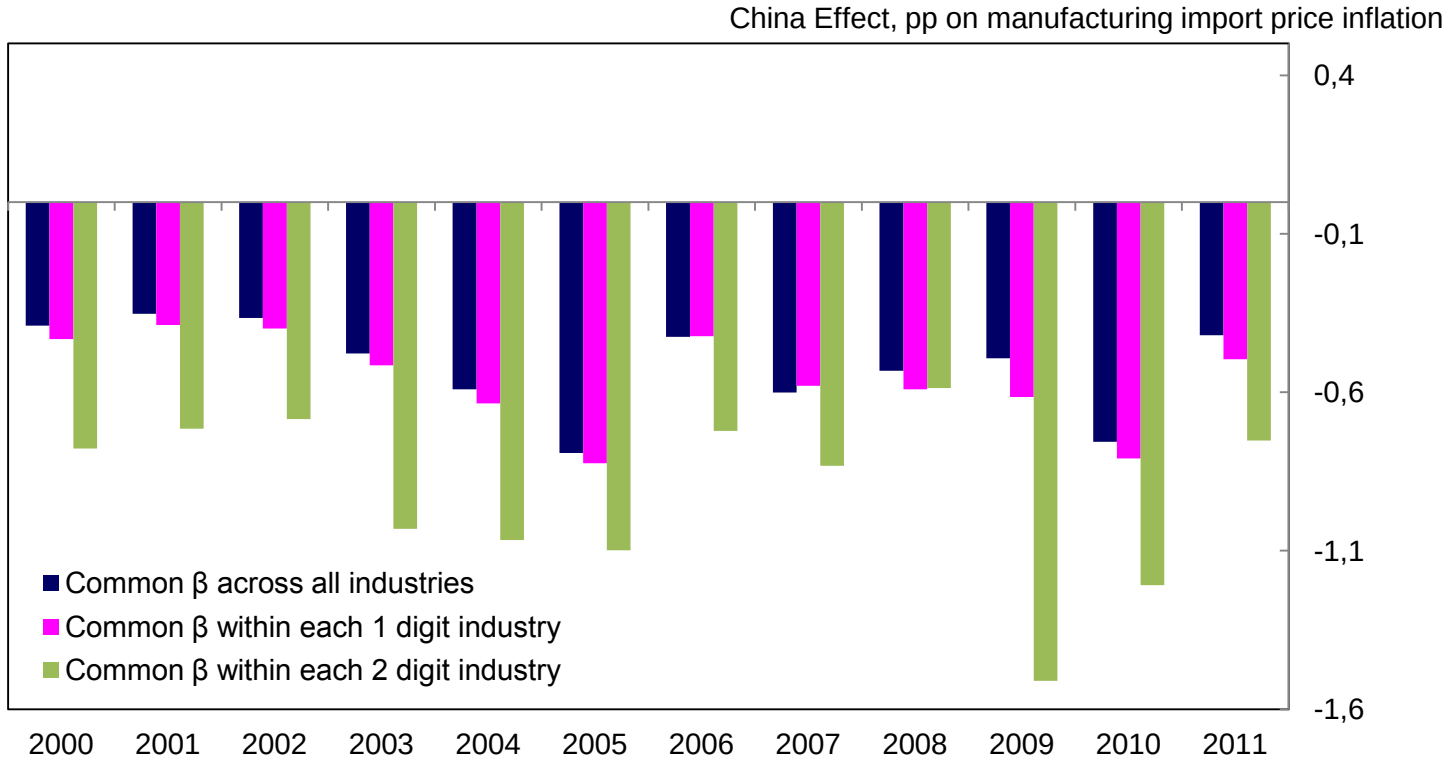
- Total effect of China across all manufacturing industries is:

$$Total_{it} = \sum_i w_{it} \beta_i \Delta S_{it}^{CHINA}$$

- Aggregation effects may be important if more than one of the following holds:
  - If β differs across industries
  - If the change in China's market share differs across industries
  - The relative weights of the industries differs across time

- Compute measure under different assumptions about β
  - Common across all industries
  - Common within 1-digit industry group (separate regressions for each 1d ind)
  - Common within 2-digit industry group (separate regressions for each 2d ind)

Effect of China at different levels of disaggregation (manufacturing)

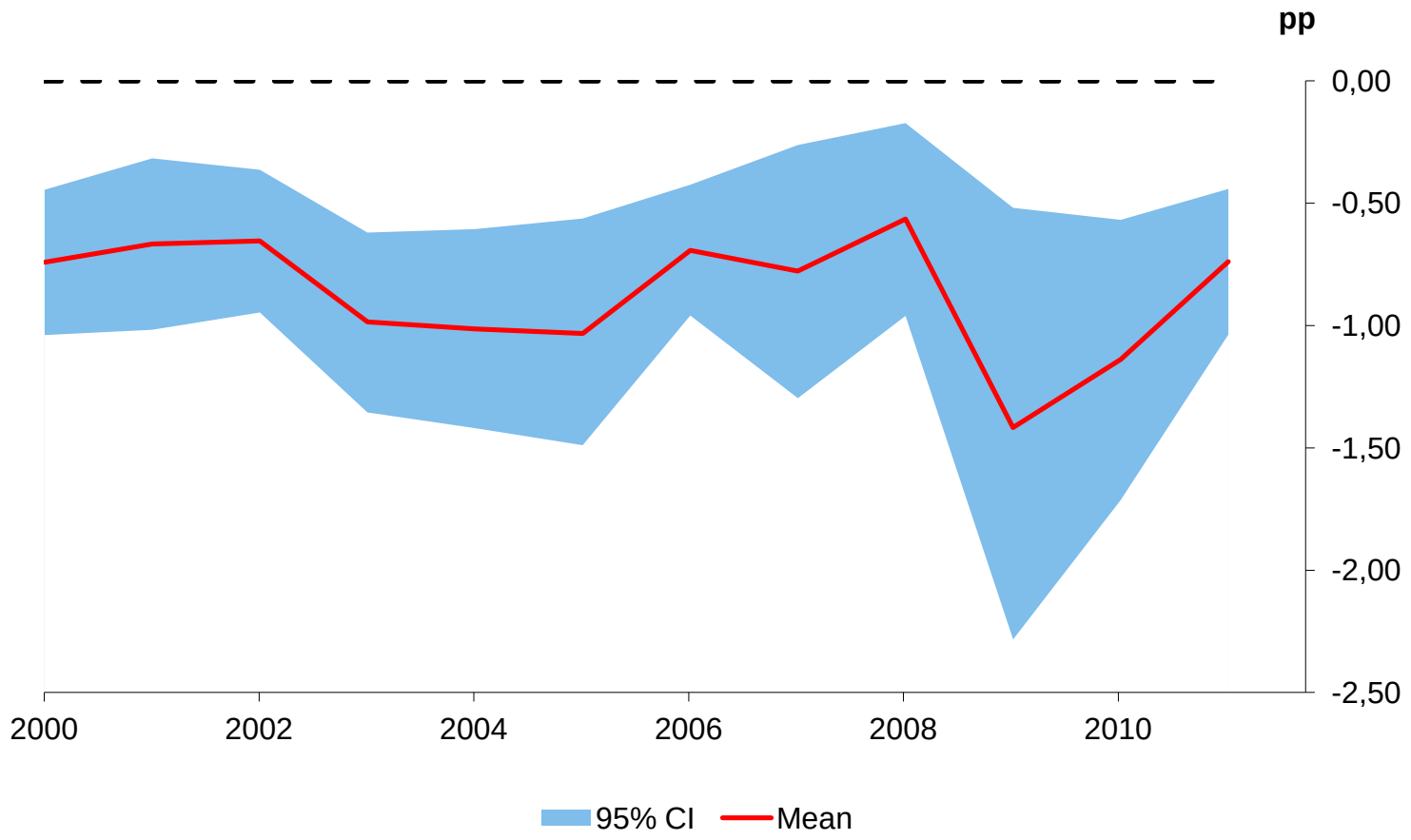


- Poolability test:
  - Common vs 1-digit: p-value 0.000; 1-digit vs 2-digit: p-value 0.000

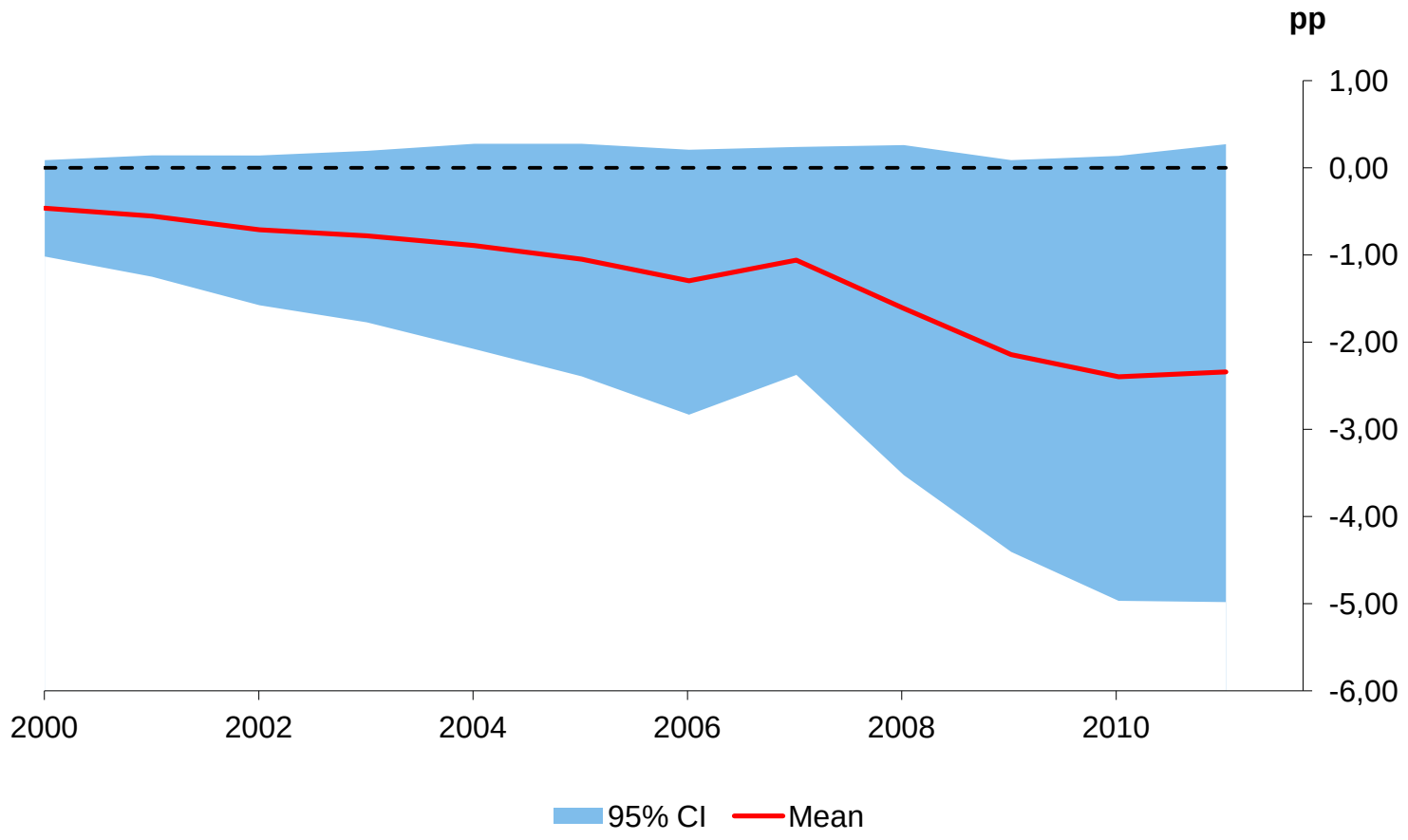
Bootstrapping a confidence interval for the price-level effect (China)

- Decompose data into fitted values and residuals
- 12 years=12 sets of residuals
- Generate a hypothetical sample of data by adding a randomly selected residual vector to fitted values for each year.
- Compute the “China effect” with this hypothetical data
- Do this 10,000 times; then discard top and bottom 2.5%
- **Robustness check:** Monte Carlo approach- take a draw for each β_j; compute China effect with this set of draws and actual data on China’s growth in market share. Do 10,000 times, discarding extreme 5%.

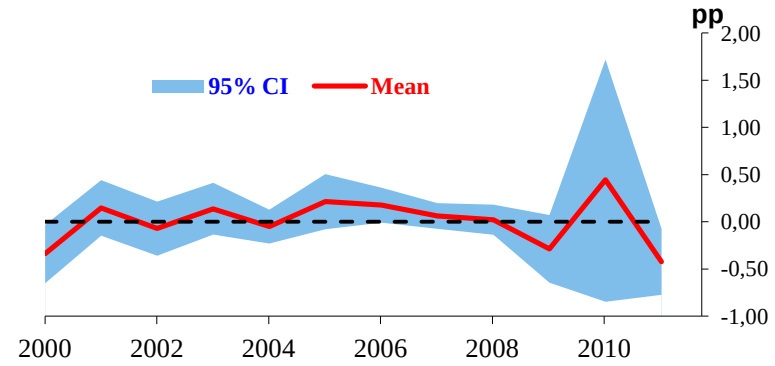
Bootstrapping a confidence interval for the price-level effect (China)



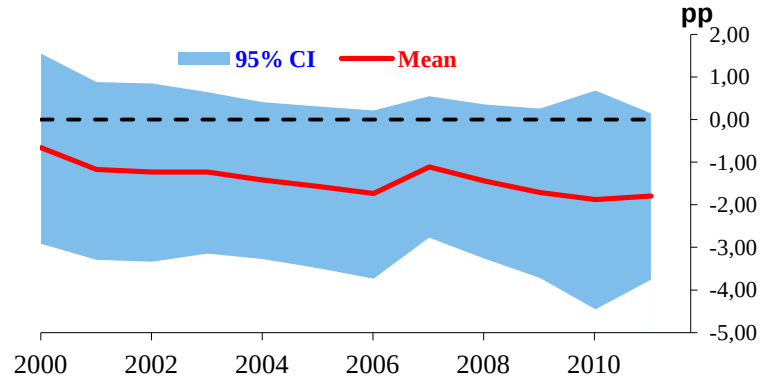
Bootstrapping the Inflation Effect (China)



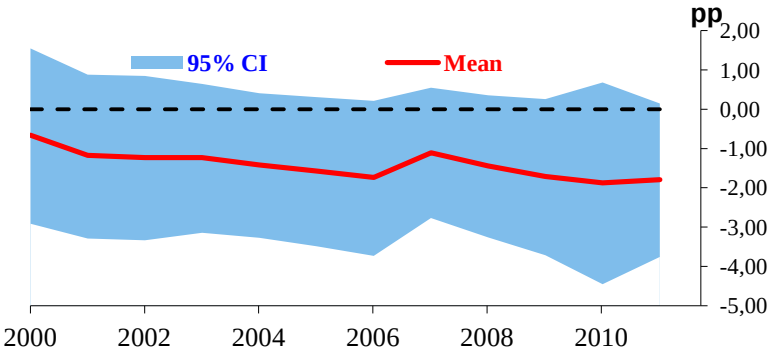
LWC: Price level effect



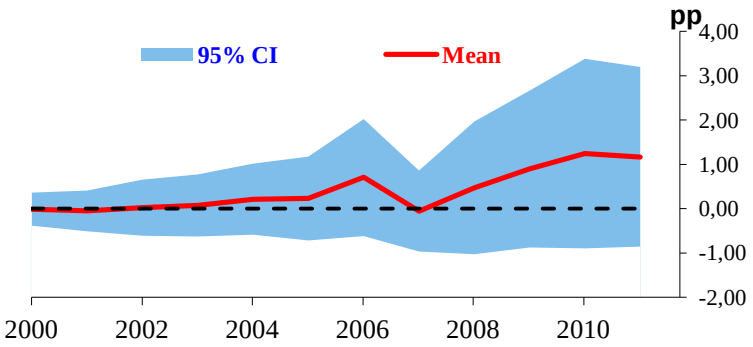
NMS: Price level effect



LWC: Inflation effect



NMS: Inflation Effect



Estimating the indirect effect

- Calculate measure of unit value inflation over *non-Chinese producers*, π^{EXC}

- Estimate regression:

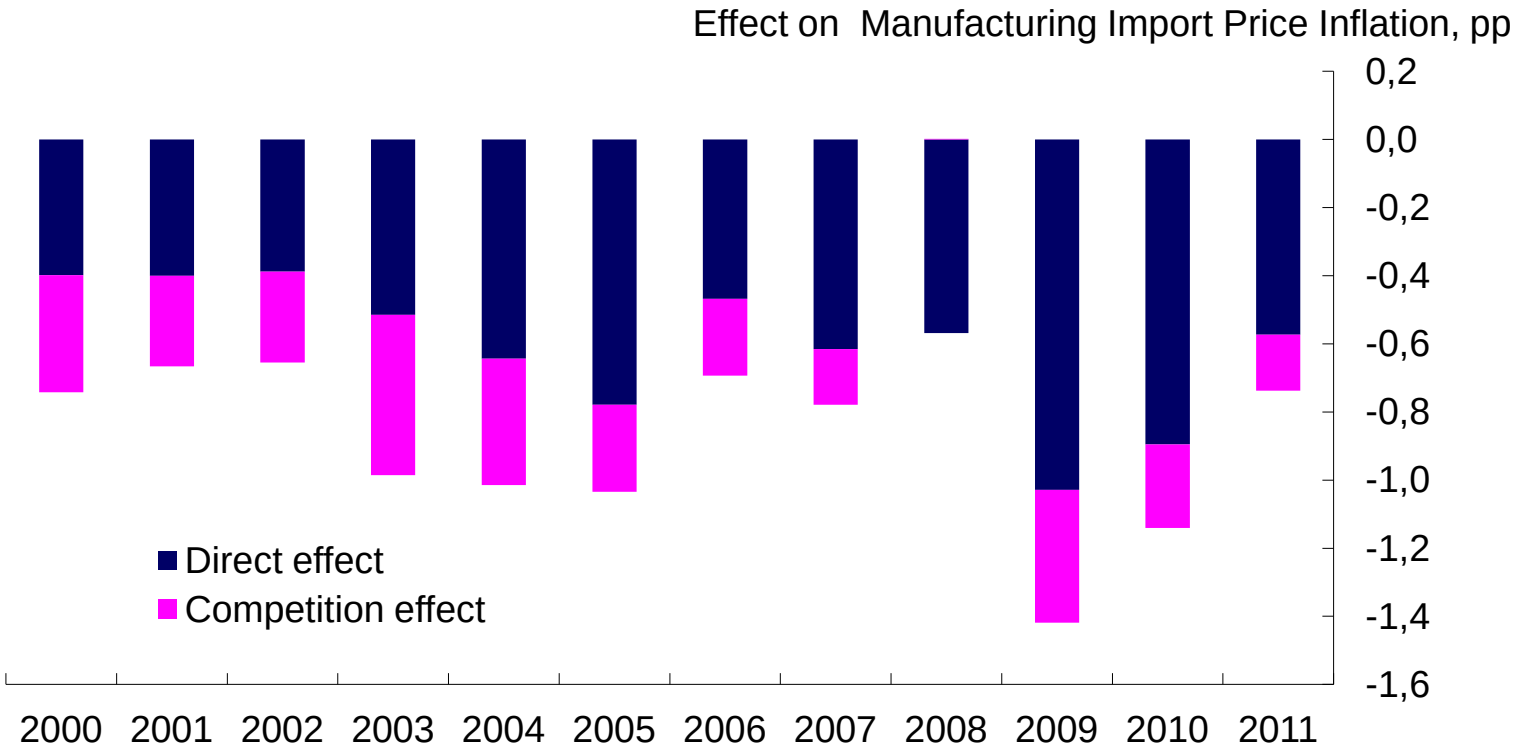
$$\pi_{it}^{EXC} = \alpha + \beta_1 S_{it-1}^{CHINA} + \beta_2 \Delta S_{it}^{CHINA} + \gamma_1 S_{it-1}^{NMS} + \gamma_2 \Delta S_{it}^{NMS} + \phi_1 S_{it-1}^{LWC} + \phi_2 \Delta S_{it}^{LWC} + \theta e_{it} + \boldsymbol{\psi}' \mathbf{X} + \mu_i + \lambda_t + \varepsilon_{it}$$

- Coefficient on the change in China's share gives the effect of Chinese entry on competitors prices

- As before, run regression at 2-digit industry level, so allow for coefficients to vary across product types

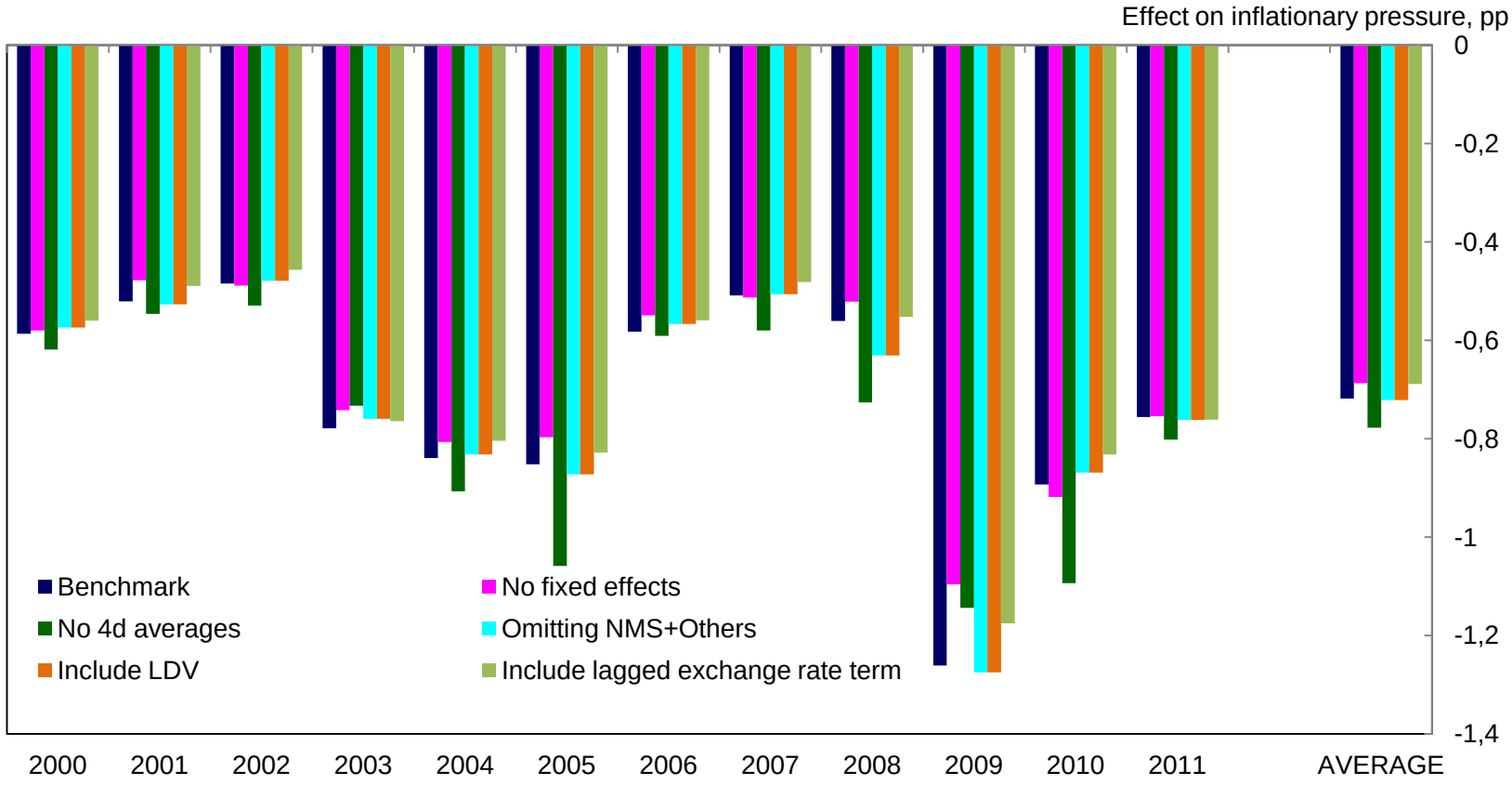
- Using coefficients, can then back out competition effect; direct effect given by total effect minus competition effect

China: Direct vs Indirect Effect (manuf, 2d coeffs)



•Around 2/3 of effect is the direct effect, around 1/3 is competition

Robustness checks



Conclusions

- Low cost imports from China have lowered inflationary pressure
  - Around 0.71pp per year for manufacturing sector // 0.5pp overall
- New member states have had some effect, Low wage countries little effect
- Our estimate is at or near the top of the range found by other work, but still relatively modest even if it translates to CPI inflation with no relative price offsets.
- No evidence that China effect has diminished over time
  - Splitting sample w.r.t. to time and Chinese market share yields similar results
- We don’t see higher inflation in low cost producers feeding through to import prices