The 2013 BOK IMF ER Conference
Asia: Challenges to Stability and Growth

Import Price Misalignment after the Crisis: A New Keynesian Perspective

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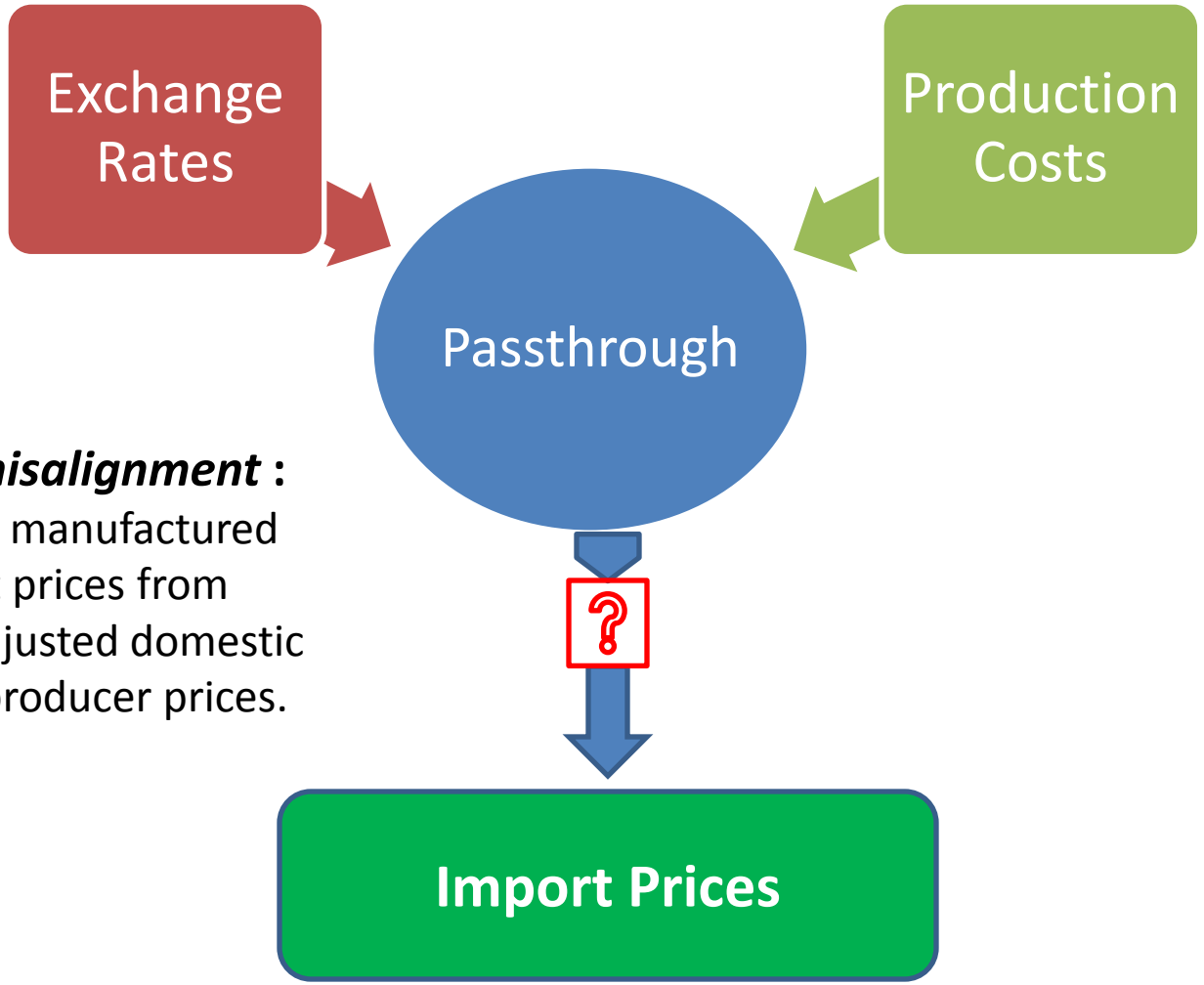
Woon Gyu Choi, Bank of Korea

David Cook, HKUST

Motivations

- Will exchange rate adjustments be sufficient for rebalancing U.S. external deficits? Maybe not, because of **low exchange-rate passthrough** to import prices.
- How are U.S. import prices related to the production cost of its trading partners, especially Asian countries? If there are any **misalignments**, how to explain them?
- An essential source of persistent trade imbalances might be associated with **import-price stickiness**.
- Then how to **identify the role of price stickiness** abstracting from that of monetary policy?
- Are region-, country-, or industry-specific factors responsible for misalignments?

Passthrough to Import Prices



Import price misalignment **:** the deviation of manufactured goods import prices from exchange-rate-adjusted domestic manufacturing producer prices.

Import Price Misalignment

Import Price Index (All Goods But Petroleum)

Exchange Rate Adjusted, Trade Weighted Index of Trading Partner Domestic Manufacturing PPI's

- Following Marquez and Thomas (2006)

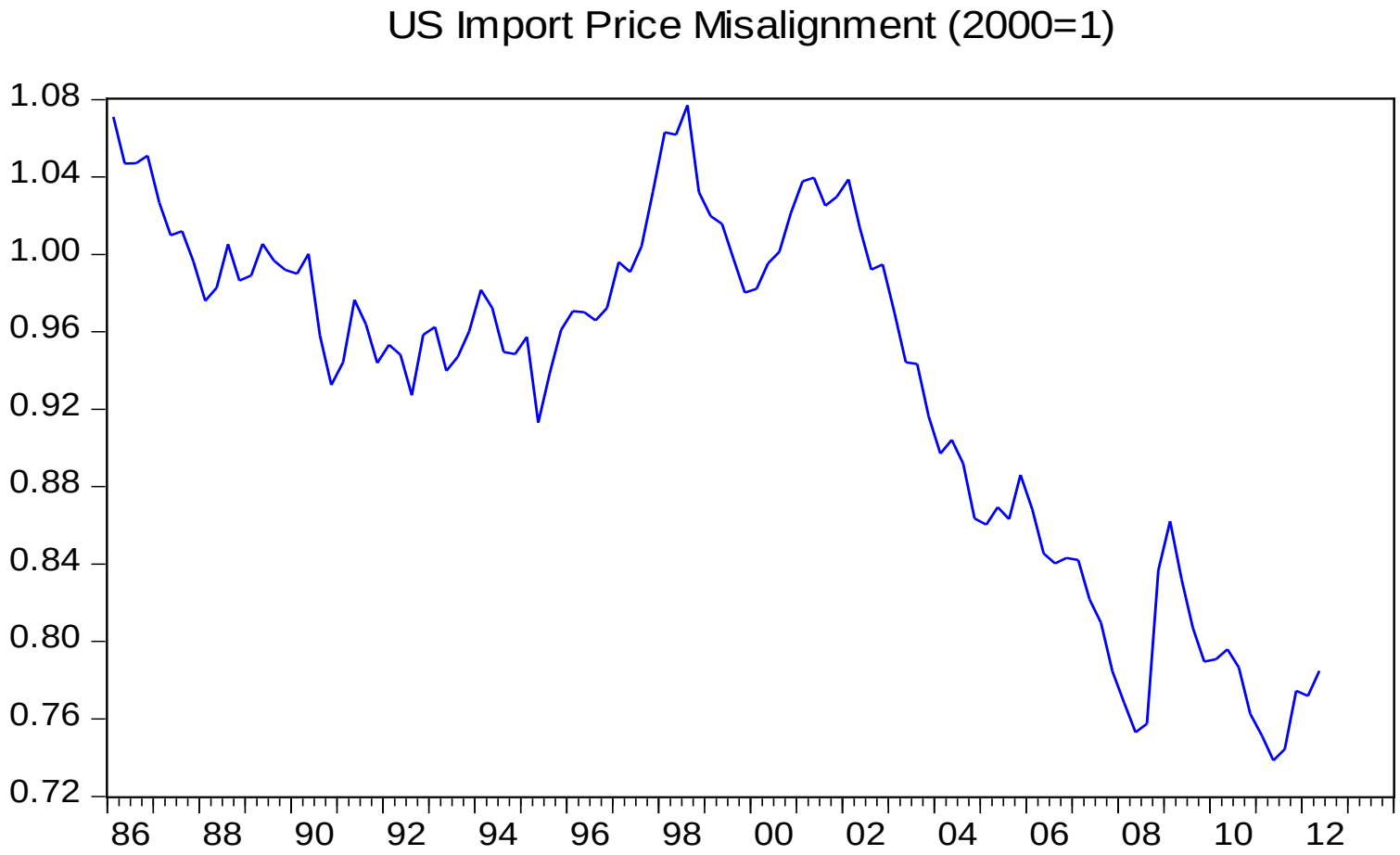


Figure 2a US Import Price Misalignment by Global Region of Origin (2004= 1)

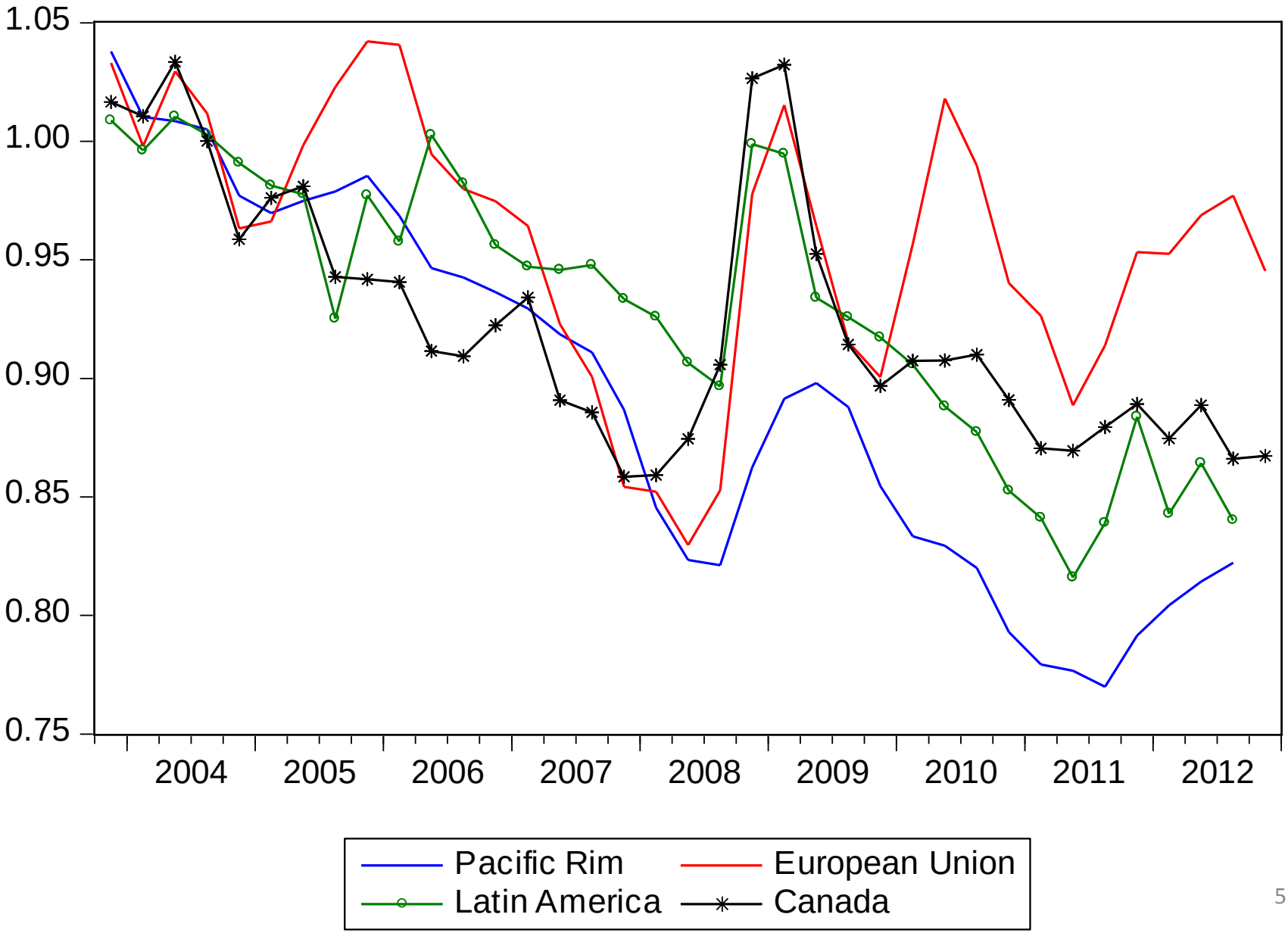
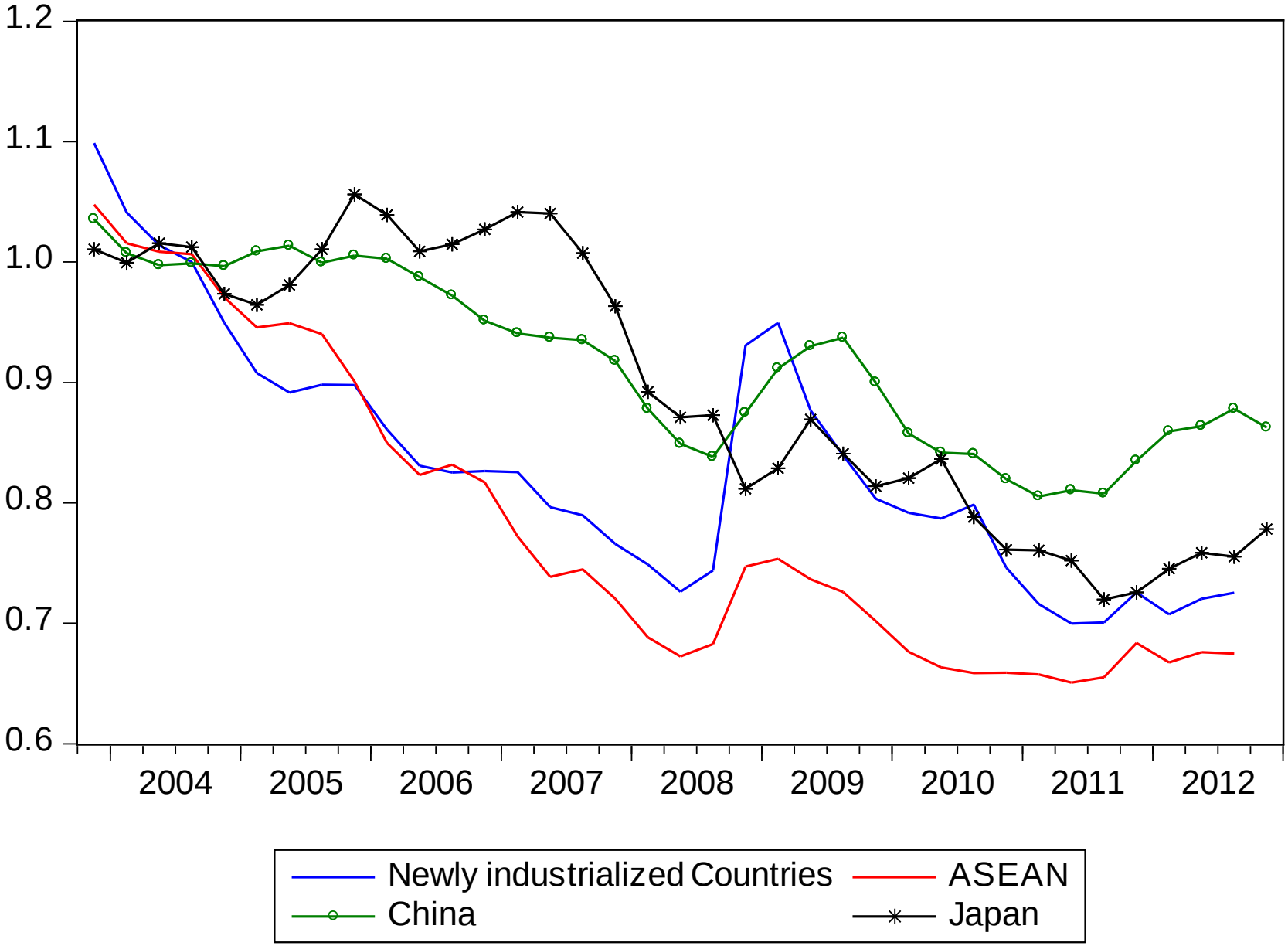


Figure 2b: Import Price Misalignment: Asian Subregions (2004 =1)



State of Play

- U.S. imports have historically been cheap relative to foreign production costs.
  - U.S. dollar has declined but not reflected in more expensive imports.
- The import price misalignment measure declines most extremely among Pacific Rim countries, especially ASEAN.

Import Price Passthrough

- Well documented: slow pass-through and sticky import prices.
- Need optimizing model to:
  - Control for **endogenous costs**: Exchange rates vs. marginal costs.
  - Immunize from **the Lucas critique**: Slow price changes may be attributable to monetary policy response.
- Asian monetary policy challenges for "Full Information" model.

Strategy

- Estimate the degree of price stickiness using the New Keynesian model of local currency pricing (theory by Betts & Devereux 2000).
- Implement the estimation method in Choi and Cook (2013).
- GMM estimation using out-of-sample forecasts of future inflation.

Findings

- U.S. import prices are extremely sticky.
- Imports from Asia are significantly stickier than other regions.
- Differences in price stickiness can mostly explained by goods types.

New Keynesian Building Blocks (1)

- Calvo-type local currency pricing: the likelihood of price change = (1-ν)

$$\pi_t^{LCP} = E_t\left[\frac{(1-\nu)(1-\beta\nu)}{\nu}\left(mc_t - \mu_t\right) + \beta \cdot \pi_{t+1}^{LCP}\right]$$

where S: Exchange Rate;

MC: Marginal Cost in Foreign Currency;

IPI: Index of Import Prices;

mc: ln(MC/PPI);

μ: ln(IPI) - ln(S·PPI);

PPI: Producer Prices in Foreign Currency

New Keynesian Building Blocks (2)

- Domestic New Keynesian Phillips Curve

$$\pi_t^{PPI} = E_t\left[\frac{(1-\kappa)(1-\beta\kappa)}{\kappa} mc_t + \beta\pi_{t+1}^{PPI}\right]$$

- Producer Currency Pricing (PCP)

$$\pi_t^{PCP} = \pi_{t-1}^{PPI} - ds_{t-1}$$

- Combine PCP and LCP (local currency pricing)

$$\pi_t^{IPI} = \lambda \cdot \pi_t^{PCP} + (1-\lambda) \cdot \pi_t^{LCP}$$

where λ : fraction of PCP pricers

Estimating the Model

$$E_t\left(\pi_t^{IPI} - \beta\pi_{t+1}^{IPI}\right) = \lambda \cdot E_t\left(\pi_t^{PCP} - \beta \cdot \pi_{t+1}^{PCP}\right)$$

$$+\left(1-\lambda\right)E_t\left[\frac{(1-\nu)(1-\beta\nu)\kappa}{\nu(1-\kappa)(1-\beta\kappa)}\left(\pi_t^{PPI} - \beta \cdot \pi_{t+1}^{PPI}\right) - \frac{(1-\nu)(1-\beta\nu)}{\nu}\mu_t\right].$$

- Approximate the above equation: $\beta \sim 1$

$$\pi_t^{IPI} - \pi_{t+1}^{IPI}$$

$$= \alpha_0 + \alpha_1 \cdot \mu_t + \alpha_2 \cdot \left[\pi_t^{PPI} - \pi_{t+1}^{PPI}\right]$$

$$+ \alpha_3 \cdot \left[\pi_t^{PCP} - \pi_{t+1}^{PCP}\right] + \varepsilon_{t+1}$$

where $\alpha_1 < 0$; α_2 , $\alpha_3 < 0$ $E_t[\varepsilon_{t+1}] = 0$

Data

- BLS Import Price Indices
- 54 U.S. trading partners
- Spot Exchange Rates, IMF IFS
- PPI – Domestic Manufacturing or as close as possible.
- For country *j*, $M_t^j \equiv \frac{S_t^j \cdot IPI_t}{PPI_t^j} \frac{1}{PPP_{BY}^j}$, PPP relative price from ICP, $M_t \equiv \prod_{j=1}^{J} \left(M_t^j \right)^{w_{t-k}^j}$. and $\mu_t = \ln M_t$.

Instruments

- Expected inflation acceleration not orthogonal.
- IV (Instrumental Variables): $\left[\pi_t^{PPI} - \hat{\pi}_{t+1}^{PPI}\right]$, μ_{t-1}
- For each country *j*, construct rolling out-of-sample forecasts, depending on the availability of data, $\hat{\pi}_{t+1}^{PPI,j}$.
- Construct weighted average

Import Price Stickiness (1)

1. European Union
2. Canada
3. Latin America
4. ASEAN
5. ANICs
6. Japan
7. China

	Joint Estimation (A)	Asian Regions (B)	Non Asian Regions (C)
α_1	0.005***	0.002***	0.016***
	(.001)	(.001)	(.003)
α_2	0.272***	0.197***	0.465***
	(.019)	(.017)	(.047)
α_3, λ	0.083***	0.093***	0.072***
	(.004)	(.006)	(.008)
$N \cdot T$	474	474	
J Stat	18.547	15.993	
d.f.	18	15	
5% C.V.	28.869	24.996	
ν	0.932	0.956	0.883
	(0.005)	(0.008)	(0.008)
κ	0.877	0.905	0.883
	(0.009)	(0.017)	(0.008)

Import Price Stickiness (2)

	Pacific Rim (A)	NICs (B)	ASEAN (C)	China (D)	Japan (E)
α_1	-0.003	-0.001	-0.002	-0.007	-0.005
	(.005)	(.001)	(.004)	(.008)	(.004)
α_2	0.258***	0.096***	0.517***	0.085	-0.049
	(.059)	(.038)	(.076)	(.097)	(.057)
α_3	0.061***	0.138***	0.120***	0.092***	0.057***
	(.022)	(.042)	(.027)	(.03)	(.011)
Adj. R^2	0.601	0.450	0.457	0.173	0.158
Num. Obs.	34	86	34	35	87
Cragg-Donald	15.479	17.88	11.98	9.576	42.79
		Critical	Value	7.03	
ν	.944	.974	.952	.920	.934
	(.036)	(.031)	(.046)	(.042)	(.021)
κ	.895	.922	.934	.770	---
	(.065)	(.011)	(.061)	(.132)	

Industry-Level Regression

	Independent Variable $\ln(M^{j}_{2012} / M^{j}_{2002})$				
	(A)	(B)	(C)	(D)	(E)
Constant	-0.231** (.042)	-0.010 (.132)	-0.196 (.148)	-0.252** (.082)	-0.423** (.049)
Intermediate Dum	0.213* (.109)		0.192* (.111)	0.228** (.112)	
Asean+3 Share 2000		-0.331 (.242)	-0.069 (.25)		
China Share 2000				0.087 (.19)	
$\ln(\nu^{j})$					-2.331*** (.711)
Average Appreciation 2000-2011					-0.019 (.026)
N	36	36	36	36	24
R^2	.100	.055	.102	.102	.633

Concluding Remarks

- Consider two possibilities for U.S. import price misalignments:
  - (1) The level of misalignment is simply a function of the slow passthrough of exchange rates into import prices (Campa and Goldberg 2005; and Gust et al. 2010).
  - (2) The industries with low passthrough have not adjusted quickly to the run up in currency values of U.S. trading partners.
- Import price stickiness—rather than monetary policy per se—may explain the degree of such misalignments.
- The low passthrough of import prices from Asia is attributable to the particular composition of goods rather than any special behavior of East Asian firms.

Thank you!