Thai Inflation Dynamics in a Globalized Economy

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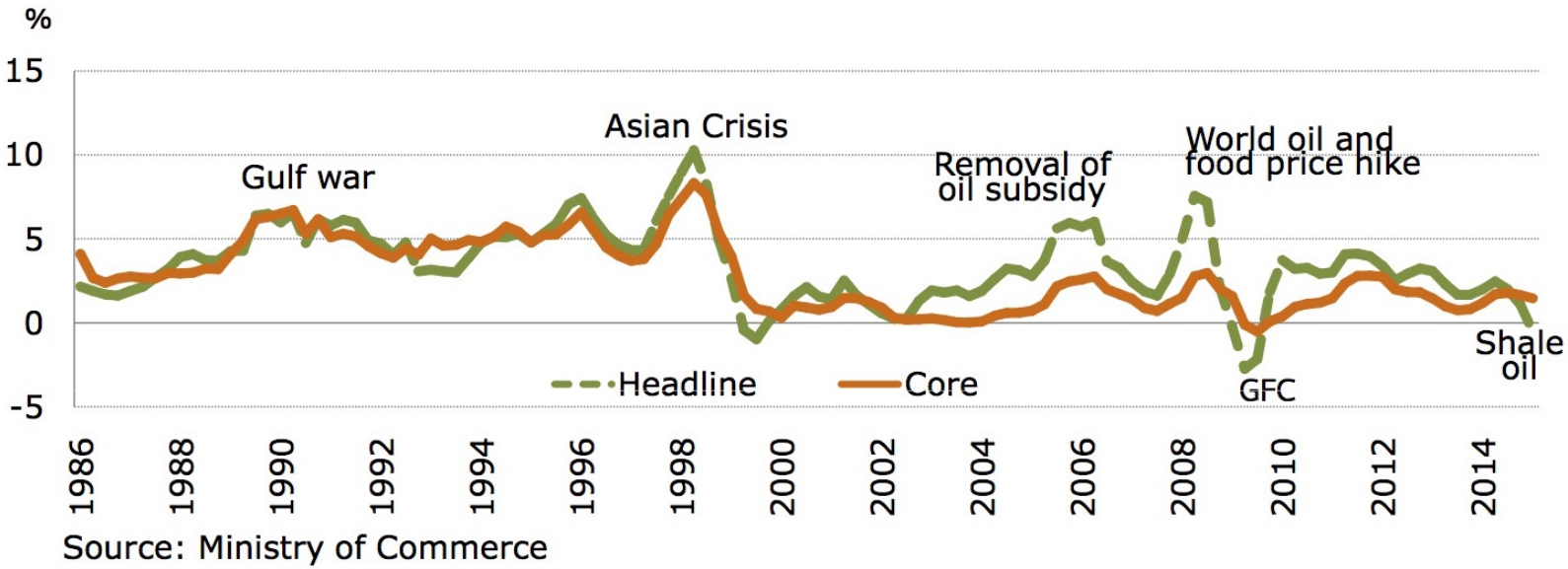
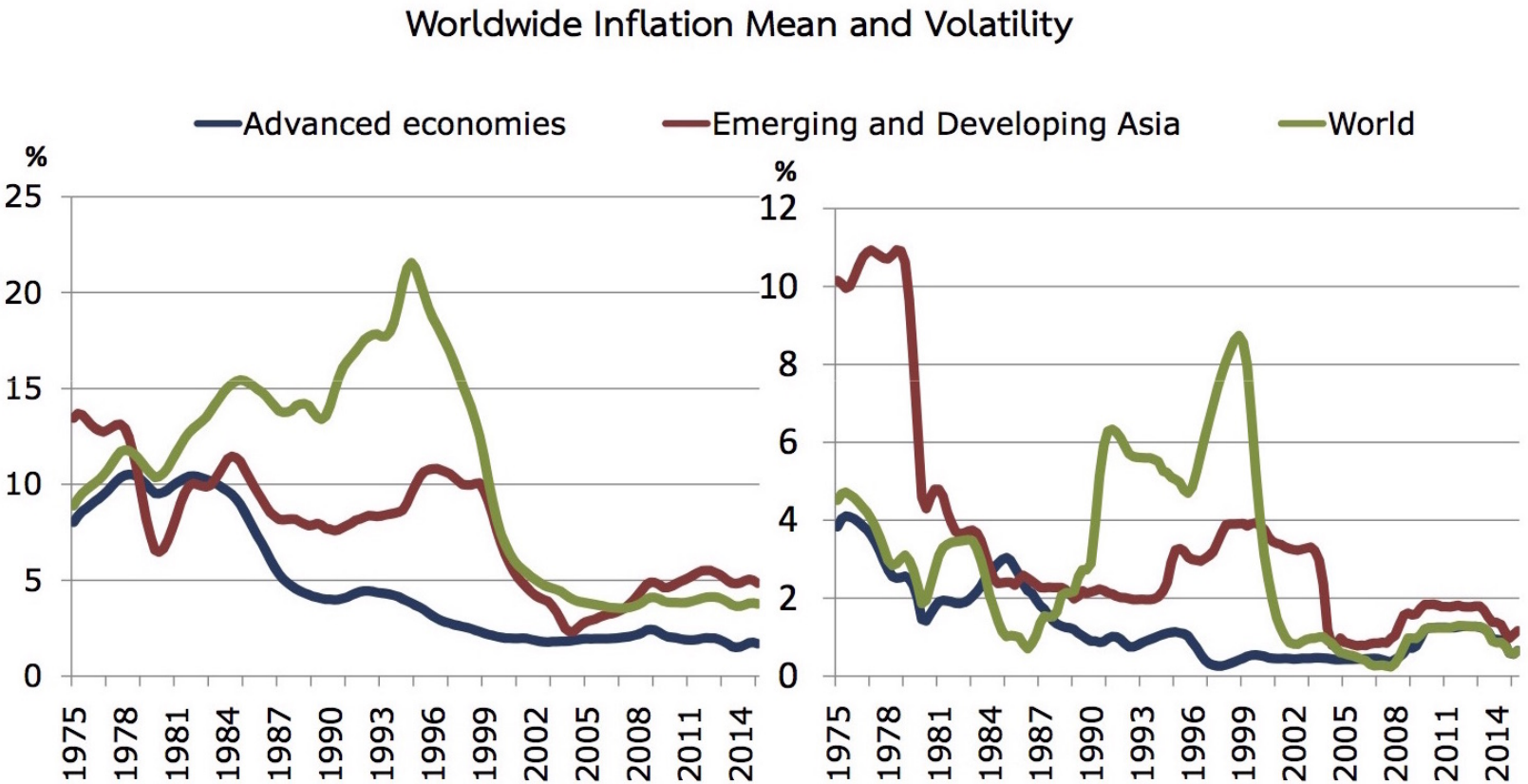
Thai Inflation Dynamics



Source: Ministry of Commerce

	%	1985-1999	2000-2014
Mean	**Headline**	4.5	2.6
	Core	4.5	1.2
Standard Deviation	**Headline**	2.2	1.9
	Core	1.6	0.9

Worldwide Inflation Dynamics



Note: Inflation is the year-on-year changes in the headline consumer price index. The mean (LHS panel) and standard deviations (RHS panel) are computed using a five-year rolling window. The horizontal axis marks the date at the end of the rolling sample.
Source: IMF International Financial Statistics Database, Authors' calculations.

Ongoing Debates

The "Good Policy" Hypothesis

- The widespread adoption of implicit and explicit inflation targeting frameworks largely contributed to low and stable inflation

However, inflation targeting cannot entirely explain the improved inflation performance and increased comovements among inflation rates.

(Ball and Sheridan, 2005; Cecchetti and Debelle, 2005; Wang and Wen, 2006)

The "Good Luck" Hypothesis

- Favorable shocks linked to globalization helped keep inflation low
- Integration of markets contributed to the enhanced synchronization of inflation rates across countries

Research Questions

What can explain the changes in Thai inflation dynamics?

- Past work focused on the **good policy** explanation
- What about **good luck** - did globalization play a key role?
- Did the effect of globalization for inflation change over time?
- If global factors are important, does this imply that domestic monetary policy has lost the ability to control inflation?

Empirical Methodology

1. **Dynamic Factor Model**
   - Preliminary analysis to separate global, regional and country-specific components

2. **Unobserved Components Model**
   - Main model based on the Open Economy New Keynesian Phillips Curve (Clarida et al., 2002)
   - Gives a trend-cycle decomposition of inflation
   - Incorporates structural breaks to identify dates of structural change
   - Provides estimates of unobserved variables such as inflation expectations and the output gap

[Model 1] Dynamic Factor Model

A system of equations to decompose inflation in each country as:

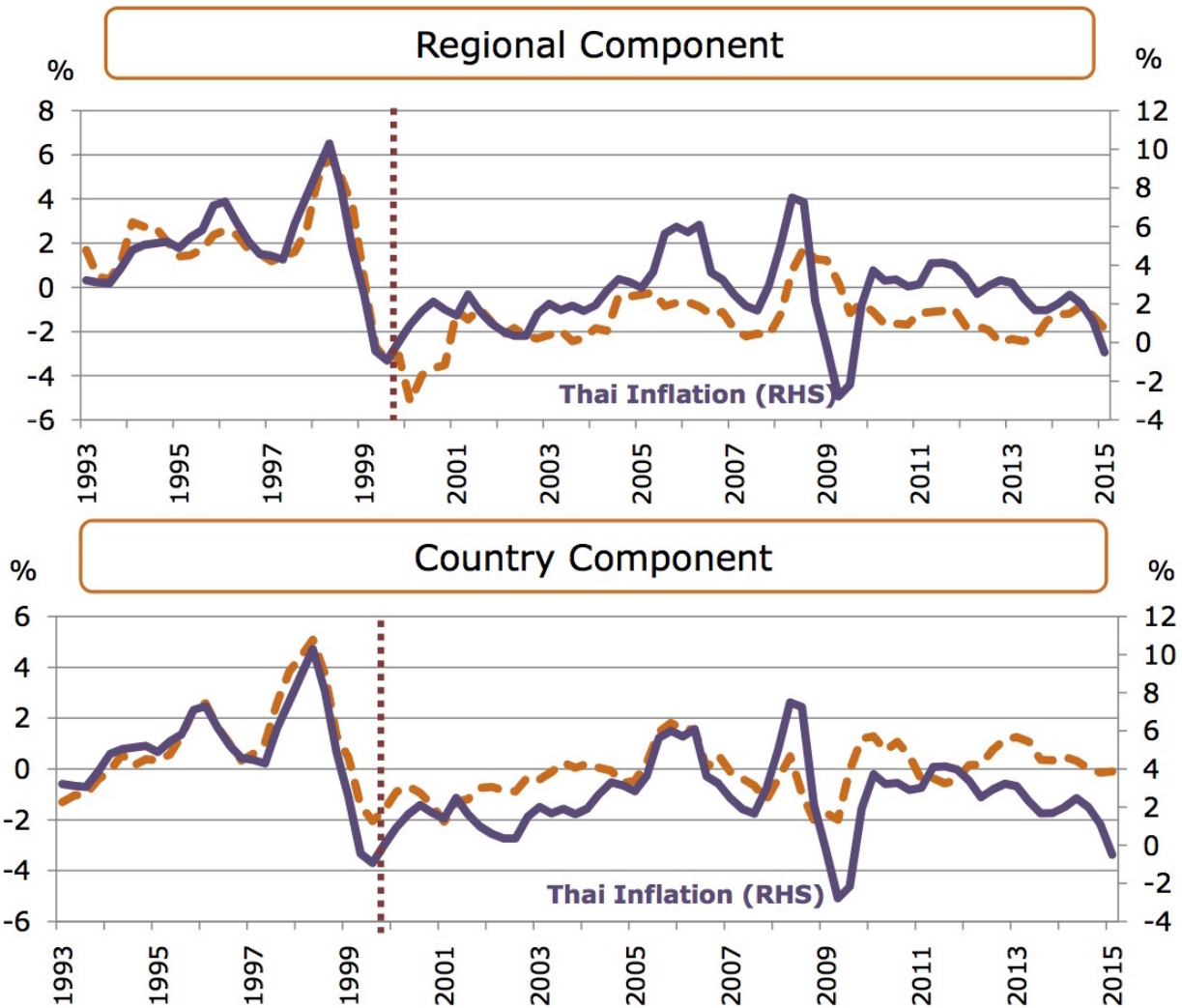
$$\pi_{i,t} = \alpha\, g_t + \beta\, r_t + z_{i,t}$$

CPI inflation — Global factor — Regional factor — Country-specific factor

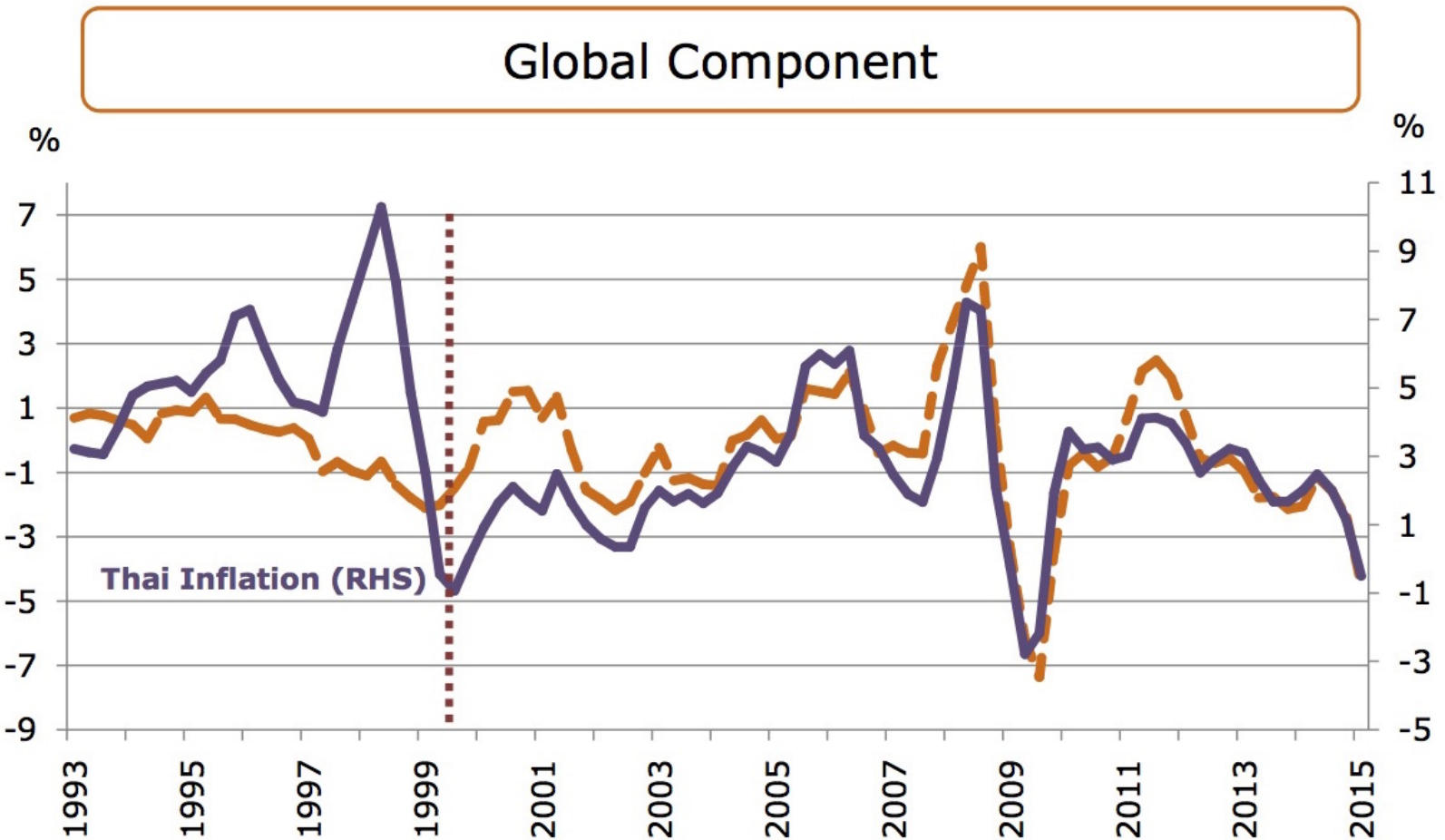
List of countries (i=14)

Regional (Asia Pacific):		
Australia	China	United States
Hong Kong	Indonesia	United Kingdom
Japan	Korea	EU-18
Malaysia	Philippines	
Singapore	Taiwan	
Thailand		

Prior to 2000 - Regional and Country Components are Important



After 2000 - Global Component Becomes the Key Driving Factor

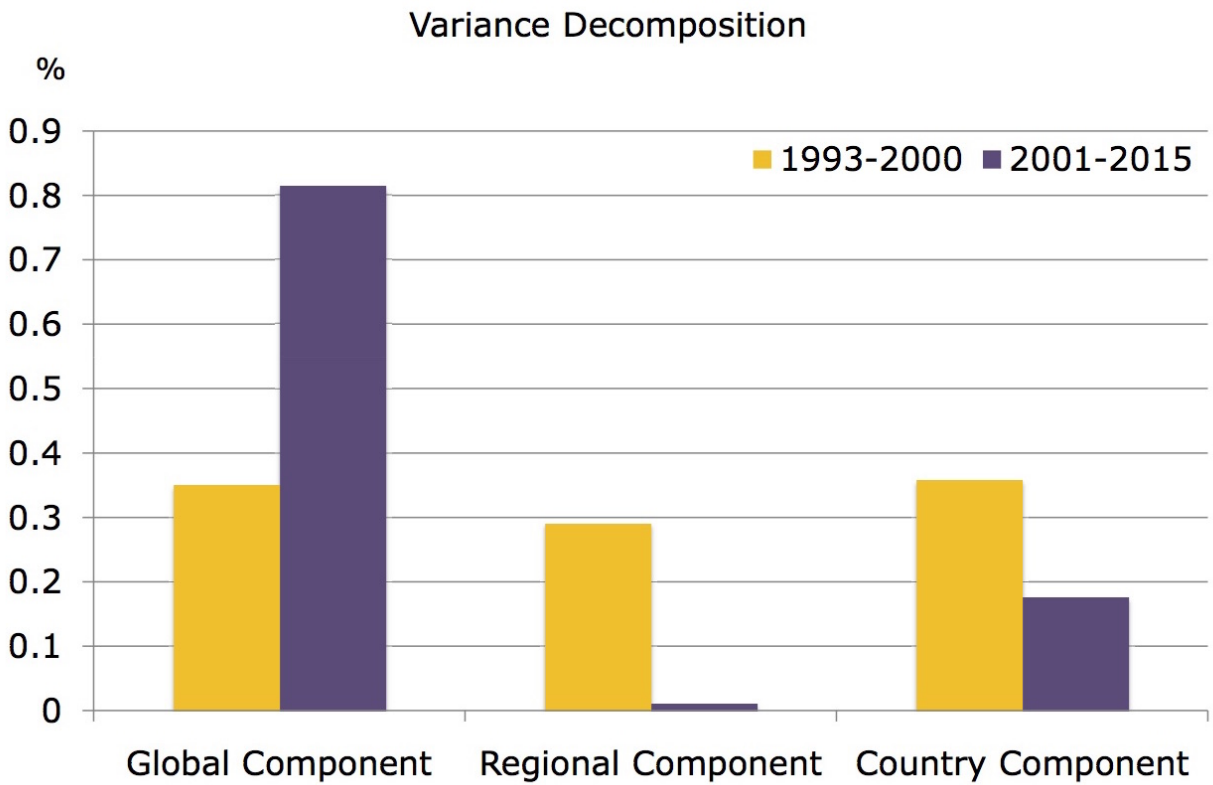


A Structural Change Occurred in 2001Q1

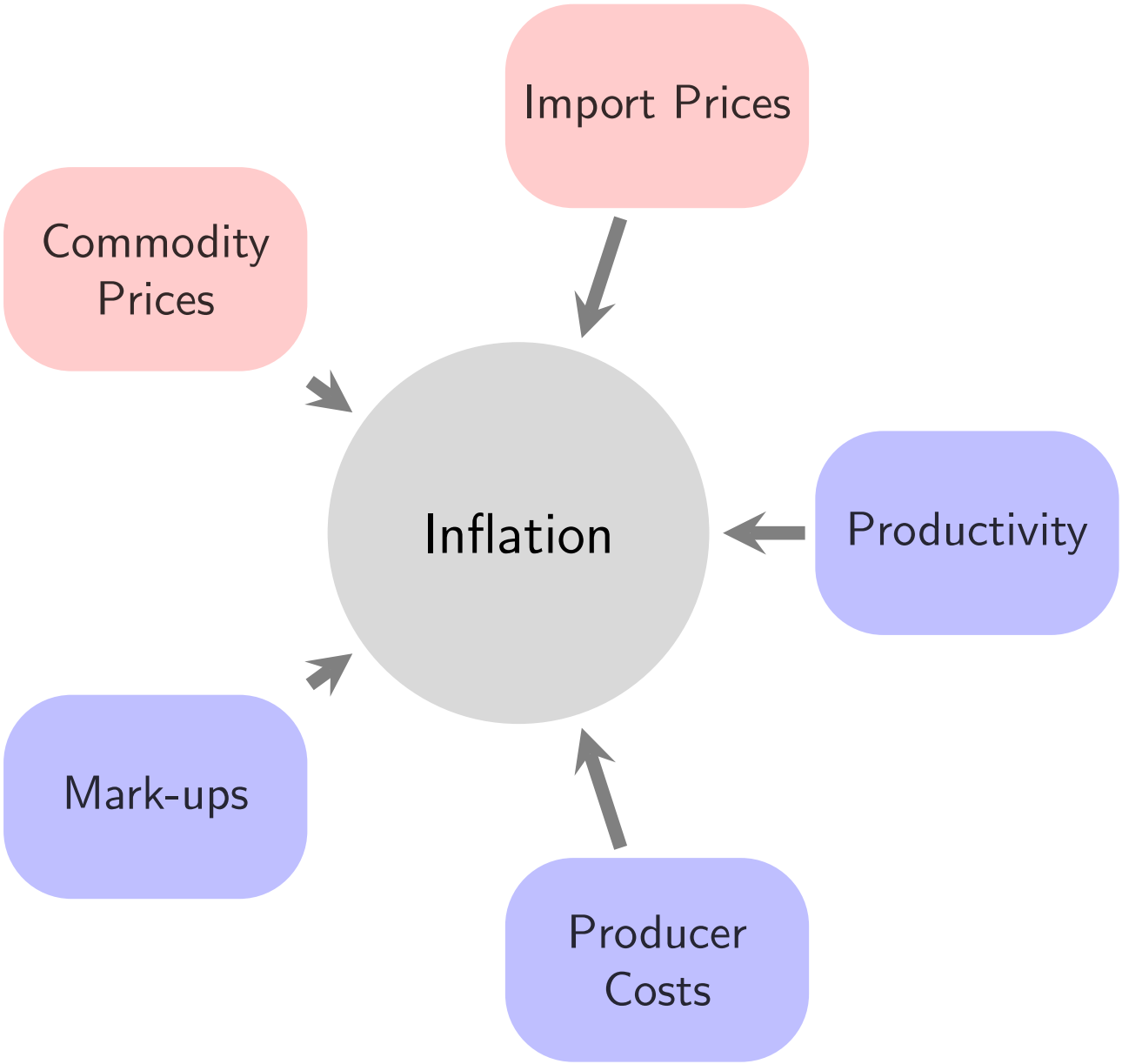
$$\pi_{i,t} = \alpha_{S_t} g_t + \beta_{S_t} r_t + z_{i,t}$$

Increases from 0.557 to 1.108

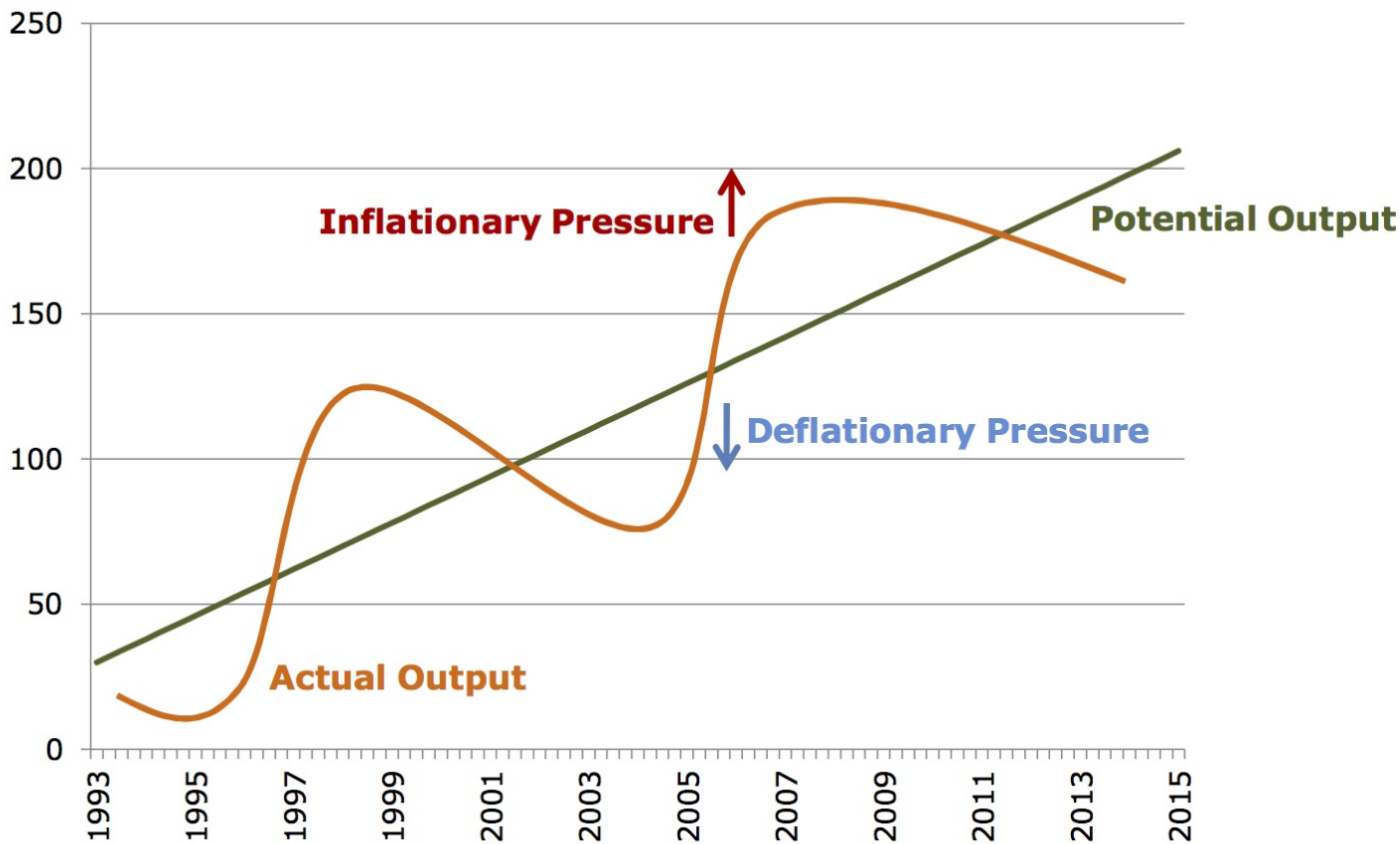
Declines from 0.644 to 0.148



What Drives the Global Factor?



Capturing these Effects as a 'Global Output Gap'



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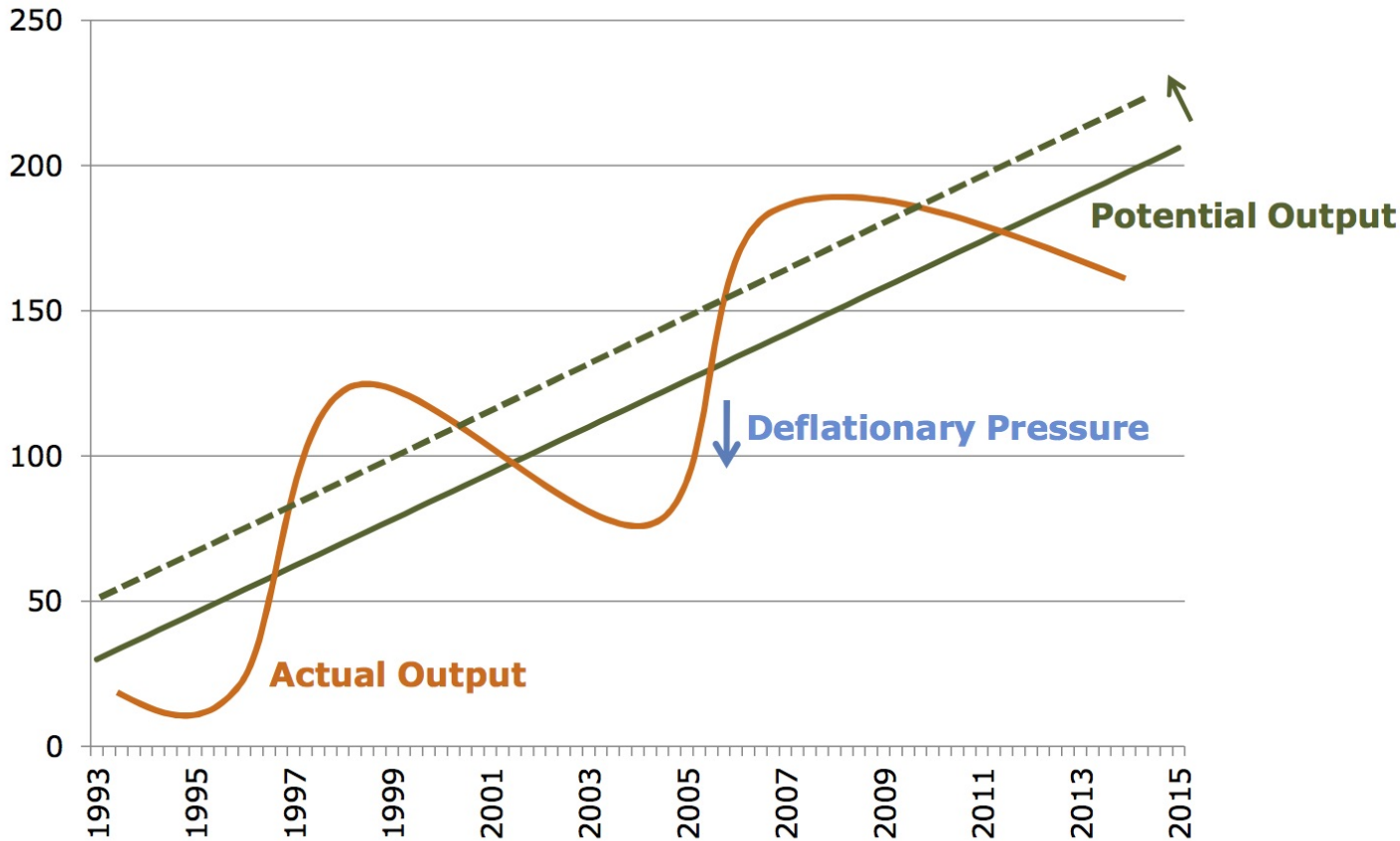

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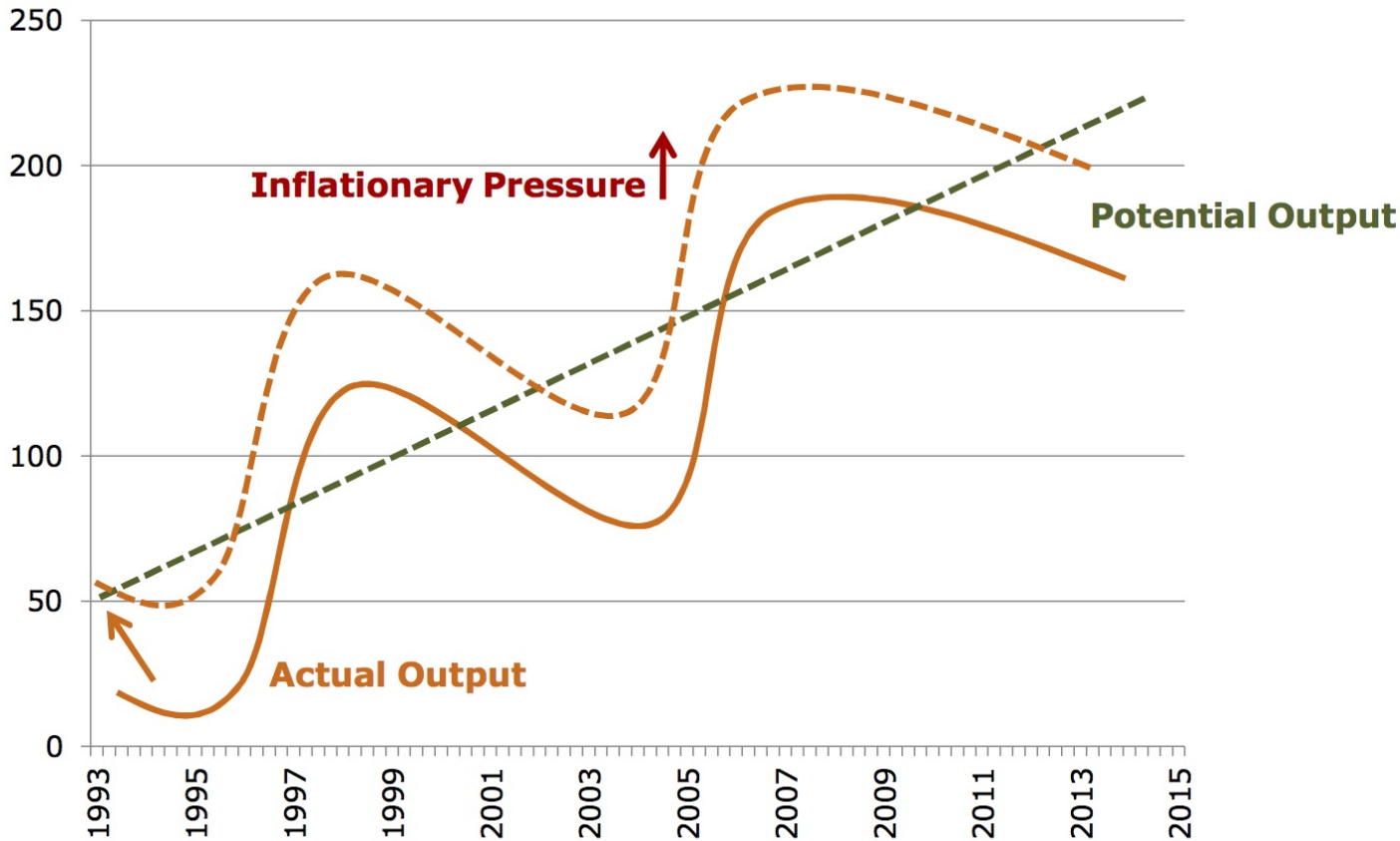
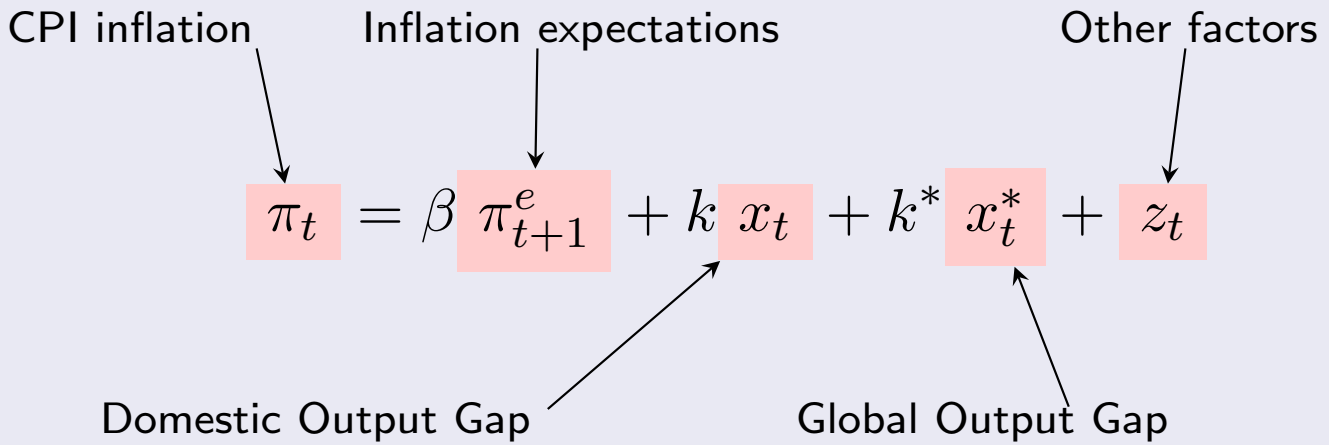


[Model 2] Unobserved Components Model

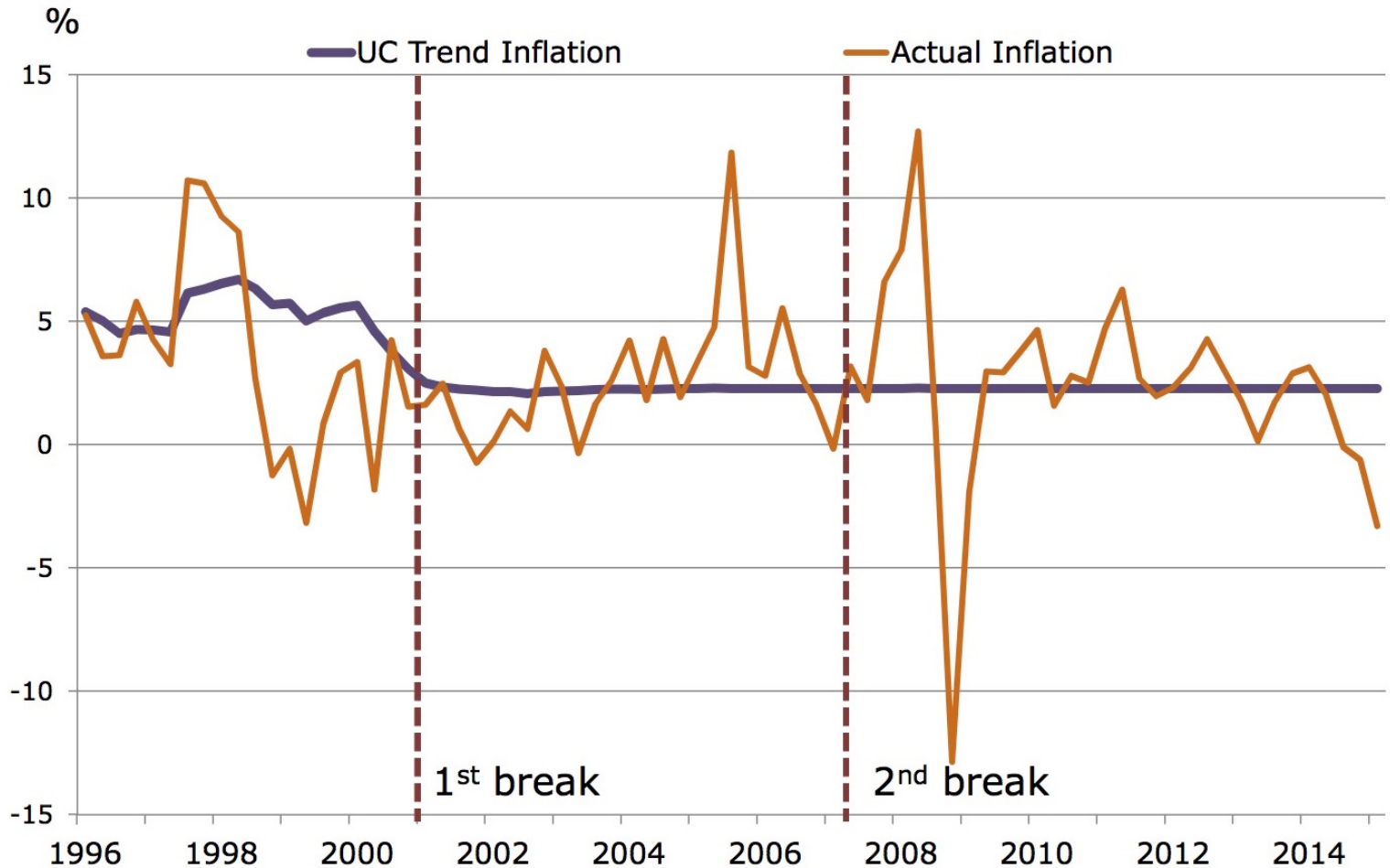
Based on the Open Economy New Keynesian Phillips Curve:



Rewrite as:

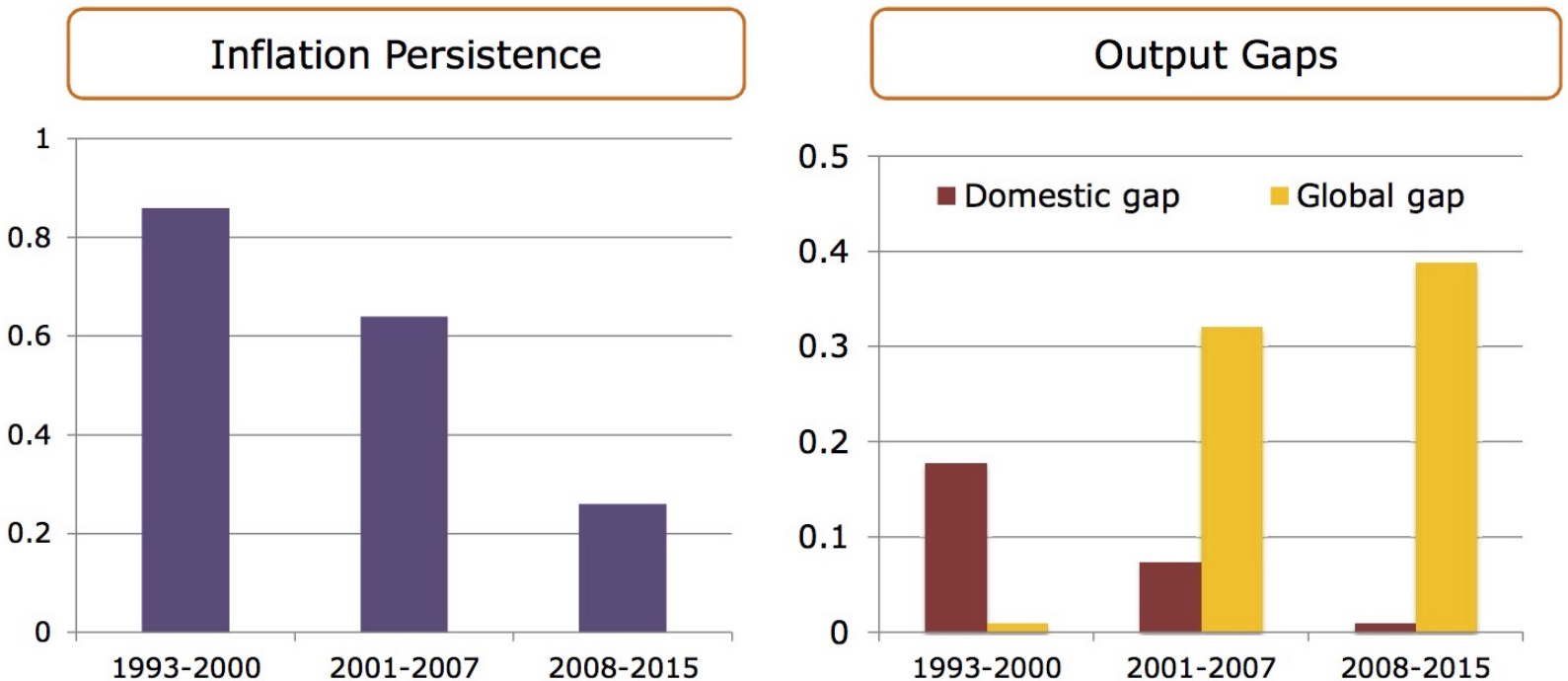
$$\pi_t = \underbrace{\lim_{j\to\infty} E_t(\pi_{t+j})}_{\text{Trend Inflation}} + \underbrace{\overbrace{k\sum_{j=0}^{\infty} E_t(x_{t+j}) + k^*\sum_{j=0}^{\infty} E_t(x^*_{t+j})}^{\text{Output gap influences}} + \overbrace{\sum_{j=0}^{\infty} E_t(z_{t+j})}^{\text{Other short-run influences}}}_{\text{Inflation Cycle}}$$

Trend Inflation or Long-term Inflation Expectations Declined Since 2001



Note: Estimates of trend inflation from an unobserved components model for inflation. The estimated structural break dates are 2001Q1 and 2007Q1 which are obtained from a Kim filter (Kim and Nelson, 1999) based on a three-state Markov-Switching model.

Inflation Cycle Changed in 2001 and 2007



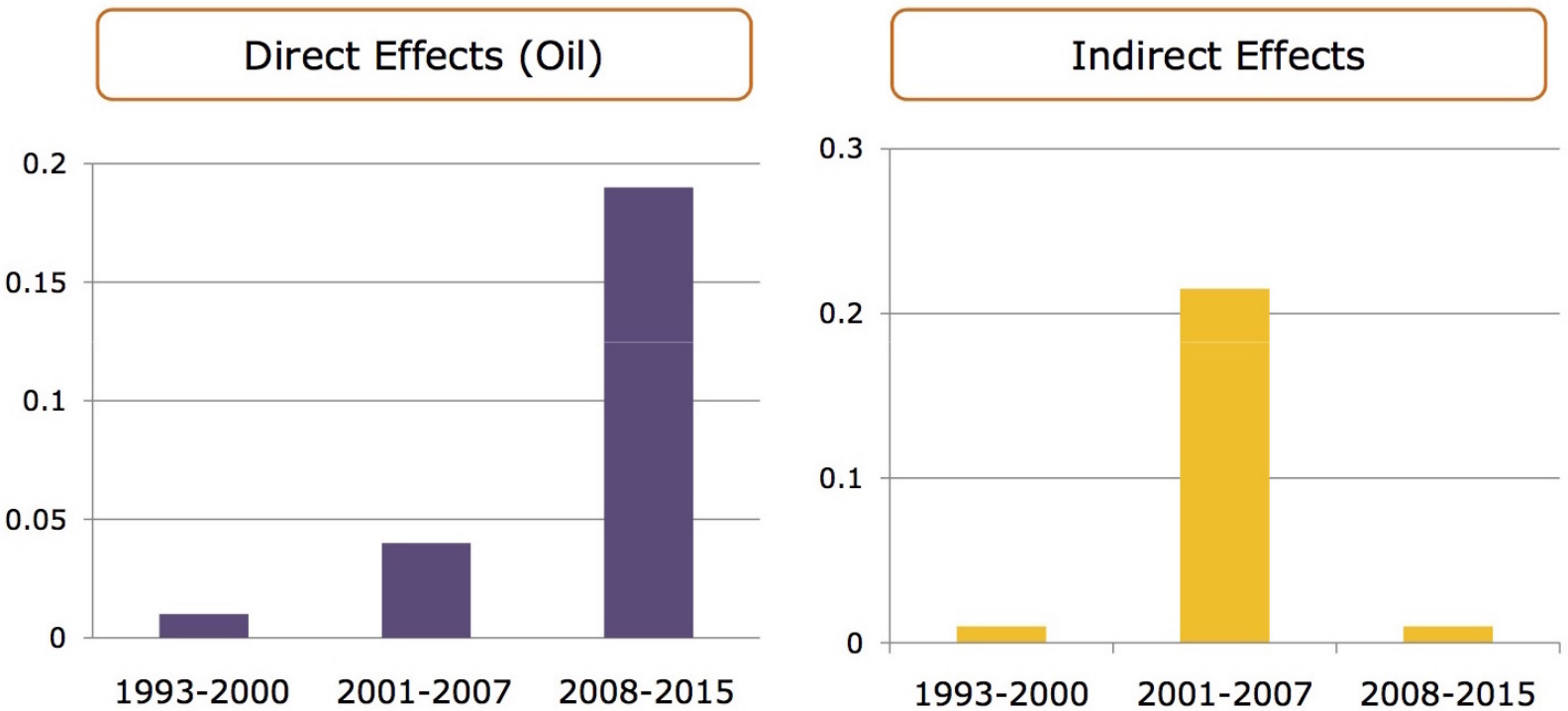
Note: Estimates of inflation persistence (LHS panel) are based on the largest autoregressive root of the z_t process in the unobserved components model for inflation. The relationship between inflation and the domestic and global output gaps (RHS panel) are the estimated coefficients k and k^* respectively.

What Drives the Global Output Gap?

$$\pi_t = \lim_{j\to\infty} E_t(\pi_{t+j}) + k\sum_{j=0}^{\infty} E_t(x_{t+j}) + \overbrace{\underbrace{k_1^*\sum_{j=0}^{\infty} E_t(x_{1,t+j}^*)}_{\text{Direct Effects}} + \underbrace{k_2^*\sum_{j=0}^{\infty} E_t(x_{2,t+j}^*)}_{\text{Indirect Effects}}}^{\text{Global Output Gap}} + \sum_{j=0}^{\infty} E_t(z_{t+j})$$

- Direct effects are measured by changes in import prices, real exchange rates, oil prices, non-fuel commodity prices, and term of trade effects.
- Indirect effects may include the effects of enhanced competition, spillover of technology shocks, and increased productivity.

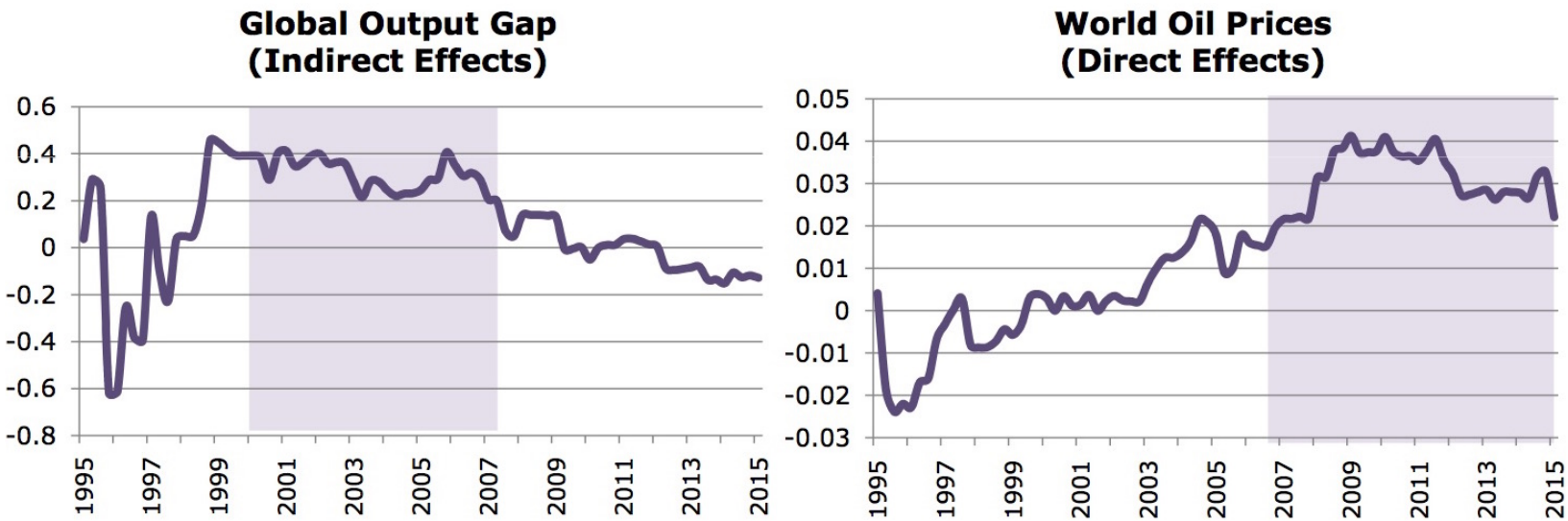
Oil Becomes Important since 2007



Note: Estimates of the direct effects (LHS panel) and the indirect effects (RHS panel) are the coefficients k_1^* and k_2^* from the unobserved components model respectively. The direct effects are calculated with the log QOQ changes in the Dubai oil price series.

The Thai Inflation Experience is a Mirror Image of the World ...

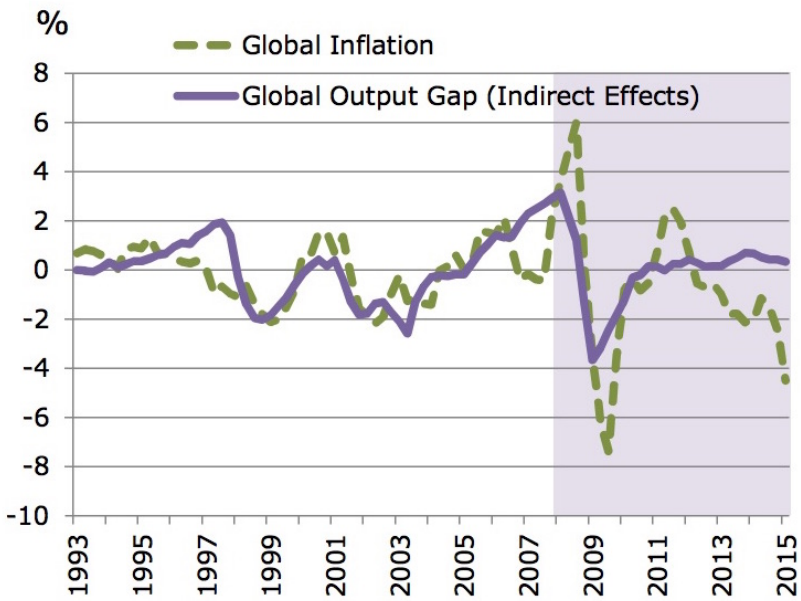
- Global Inflation (from the Dynamic Factor Model) depends on global factors in the same way

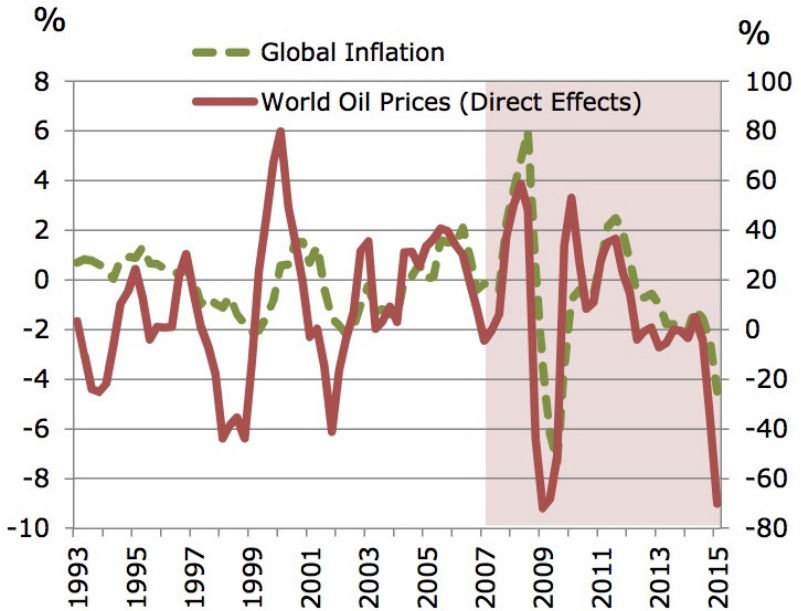


Note: Estimates of β_{2t} (LHS graph) and β_{3t} (RHS graph) are from the time-varying parameter model $g_t = \alpha_t + \beta_{1t} g_{t-1} + \beta_{2t} x_t^* + \beta_{3t} \Delta oil_t + \beta_{4t} \Delta pwnonf_t + \epsilon_t$ where g_t is global inflation, x_t^* is the global output gap, Δoil_t is the QOQ changes in Dubai oil prices, $\Delta pwnonf_t$ is the QOQ changes in non-fuel commodity prices, and ϵ_t is the disturbance term with GARCH(1,1) effects.

Why is Oil So Important?

- Other driving variables of inflation has been pretty stable as of late



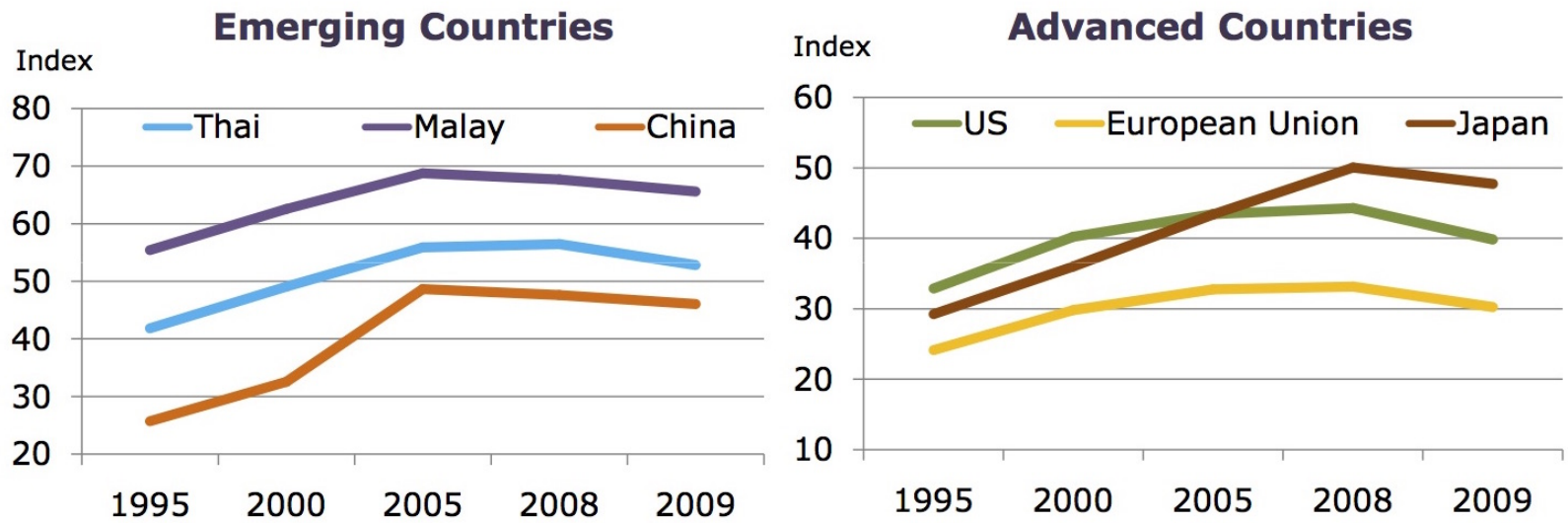


Note: Global inflation is estimated from a dynamic factor model for inflation. The global output gap series (indirect effects) is estimated from an unobserved components model for inflation. The direct effects of oil is calculated from the QOQ changes in the Dubai oil price series.

Why Did Indirect Effects Disappear?

- Maturing GVCs may be part of the explanation

Global Value Chain Participation



Source: OECD

Conclusion

What explains the changes in Thai inflation dynamics?

- The growing importance of the global output gap for Thai inflation enhanced the degree of comovement with global inflation rates since 2001
- Since 2001, long-term inflation expectations in Thailand has remained low and stable
- After 2007, while global factors remain important, all the movements in the global output gap can be explained by oil
- It is too early to tell whether the 2007 structural break will be a new normal for Thai inflation

Monetary Policy Implications

- Central banks must now pay more attention to external developments and respond to a wider range of shocks
- The reduced sensitivity between inflation and domestic factors does not necessarily imply that central banks can no longer control inflation
- Managing long-term inflation expectations is key towards keeping inflation low and stable
- The impact of globalization may create incentives to inflate - beware of the 'Lucas Critique'!

Thank you