JOHANNES GUTENBERG
UNIVERSITÄT MAINZ

Discussion of

Prudential Policy For Peggers

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Overview

- **Summary**

- **Comments:**

    – Theory: The model with productivity growth

    – Data: A casual look at the evidence

    – Implementation: Challenges for policymakers

- **Concluding remarks**

Summary

- **A very topical (set of) paper(s)**

  - <u>Schmitt-Grohé/Uribe (2011)</u>:
    „Pegs and Pain" (henceforth **PaP**):

    With downward nominal wage rigidity,
    fixing the exchange rate may entail large
    welfare losses.

  - <u>Schmitt-Grohé/Uribe (2012)</u>:
    „Prudential Policy for Peggers" (henceforth **PPfP**)

    With downward nominal wage rigidity and a fixed exchange rate,
    allowing for **unconstrained international borrowing** may entail
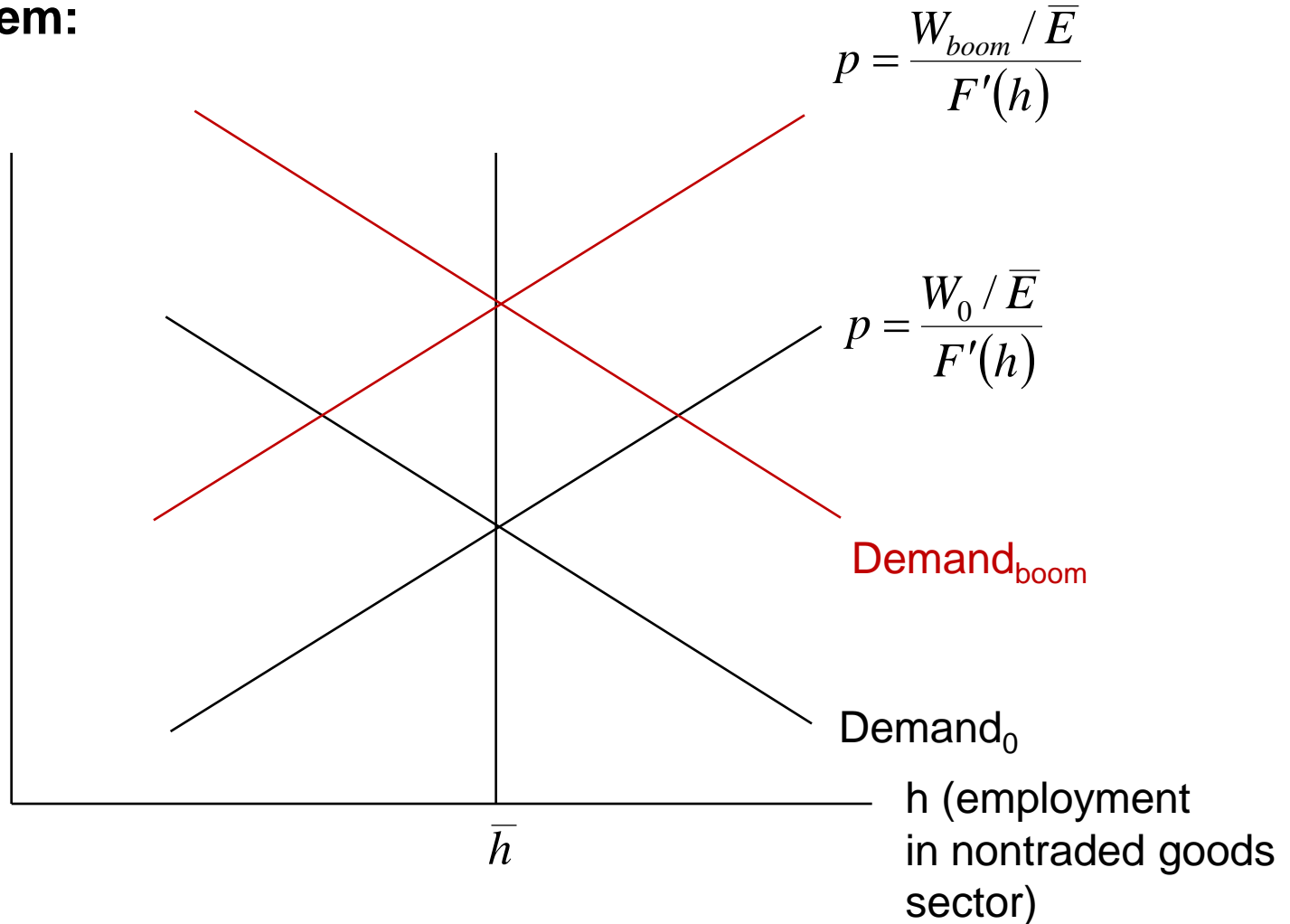   large welfare losses.

Summary

- **The problem:**

$$p = \frac{W_{boom} / \overline{E}}{F'(h)}$$

$$p = \frac{W_0 / \overline{E}}{F'(h)}$$

p (relative price of non-traded goods)

Demand$_{boom}$

Demand$_0$

$\overline{h}$

h (employment in nontraded goods sector)

Harms: Discussion of Schmitt-Grohé/Uribe

Summary

- **The problem (contd.):**

p (relative price of non-traded goods)

$$p = \frac{\gamma W_{boom} / \overline{E}}{F'(h)}$$

$$p = \frac{W_0 / \overline{E}}{F'(h)}$$

unemployment

Demand$_0$

$\overline{h}$

h (employment in nontraded goods sector)
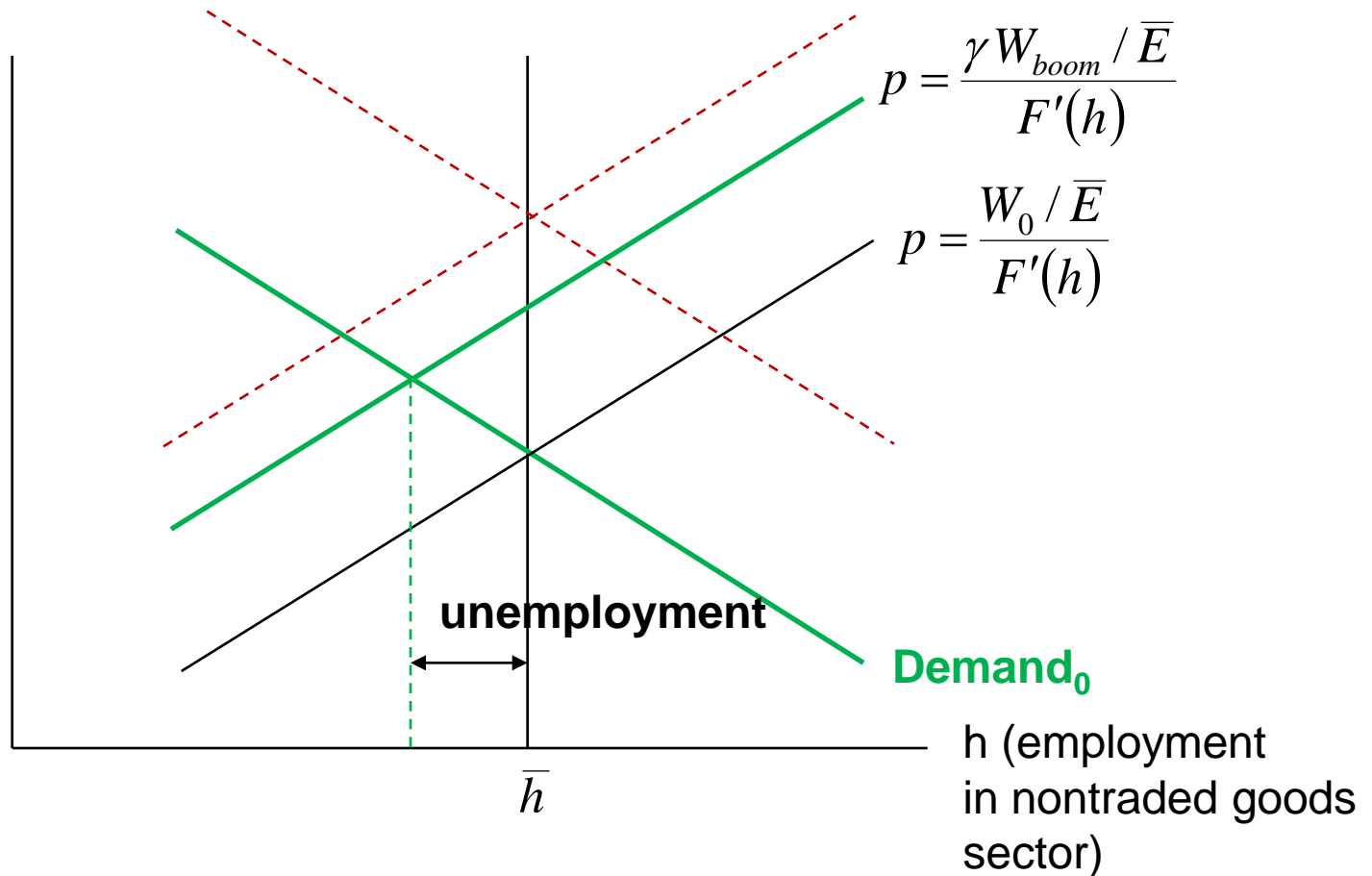
Summary

- **Solution 1 (PaP): Ex-post depreciation**

p (relative price of non-traded goods)

$$p = \frac{\gamma W_{boom}/\overline{E}}{F'(h)}$$

$$p = \frac{W_0/\overline{E}}{F'(h)}$$

$$= \frac{\gamma W_{boom}/E}{F'(h)}$$

$\overline{h}$

h (employment in nontraded goods sector)

Demand$_0$

Harms: Discussion of Schmitt-Grohé/Uribe
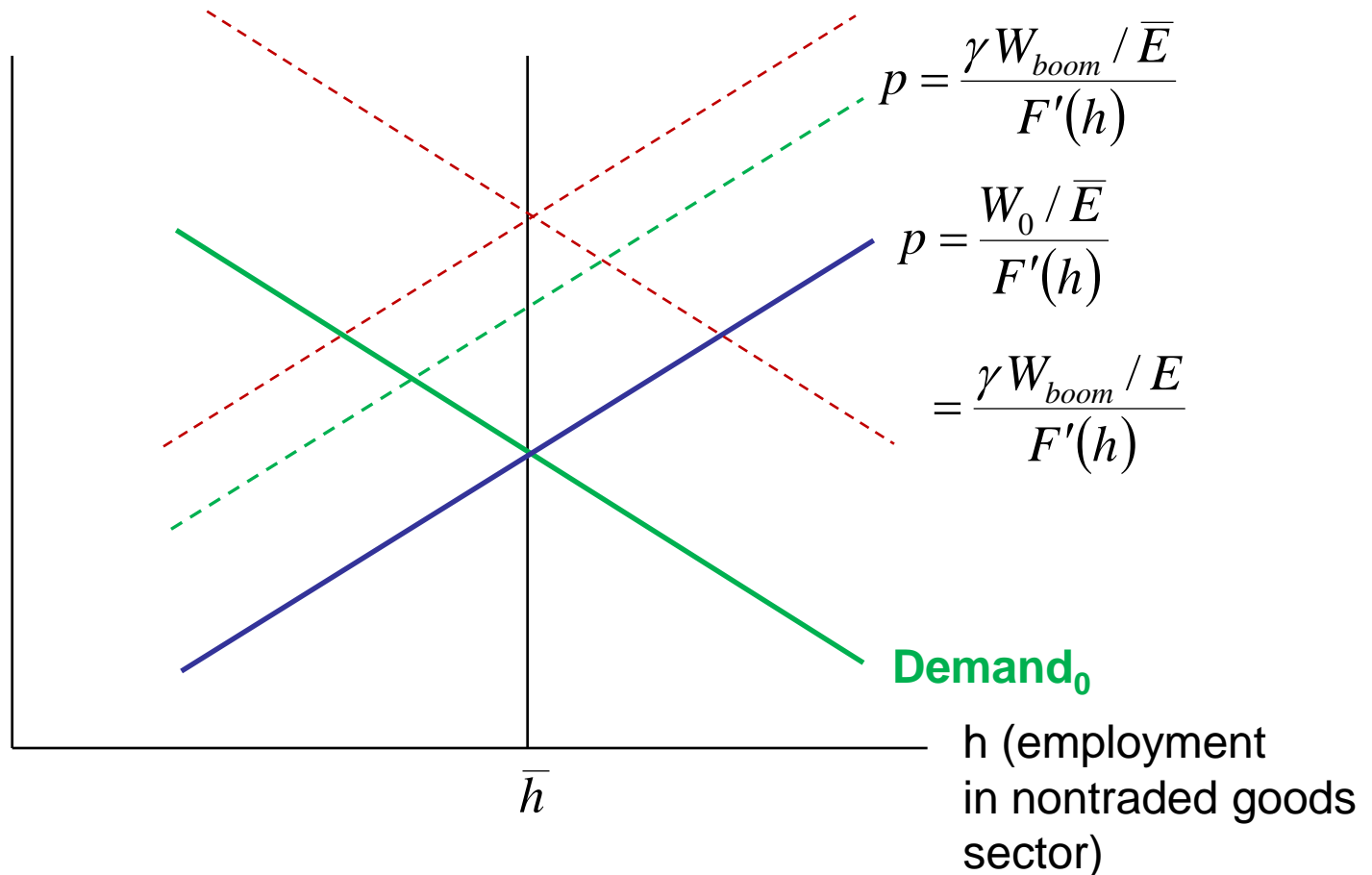
Summary

- **Solution 2 (PPfP): Ex-ante taxation of borrowing (the „PPfP rule")**

p (relative price of non-traded goods)

$$p = \frac{W_{boom} / \overline{E}}{F'(h)}$$

$$p = \frac{W_0 / \overline{E}}{F'(h)}$$

$$= \frac{\gamma W_{boom} / \overline{E}}{F'(h)}$$

Demand$_{boom}$ (with constrained foreign borrowing)

$\overline{h}$

h (employment in nontraded goods sector)

Harms: Discussion of Schmitt-Grohé/Uribe
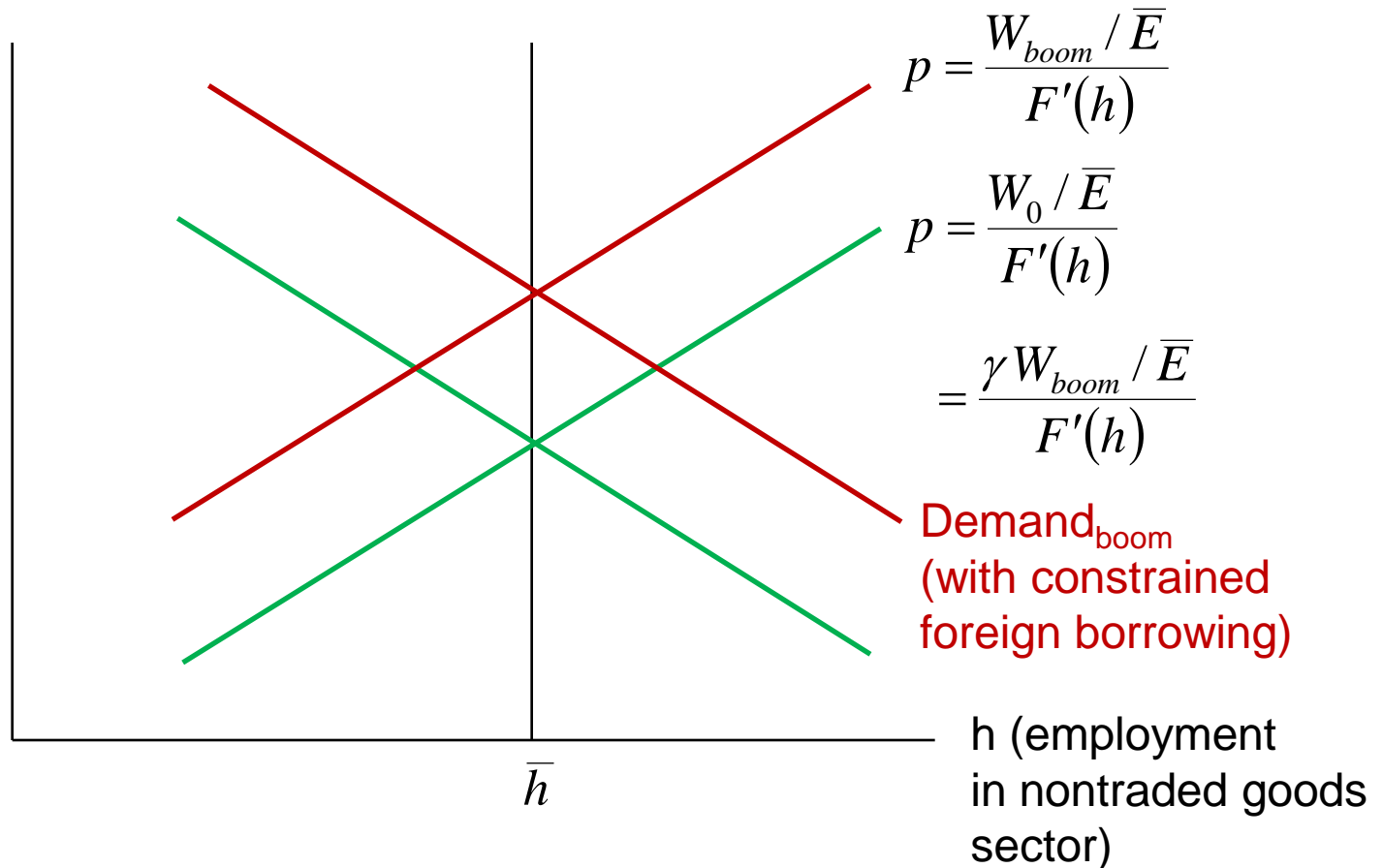
Summary

- **Questions:**

  - Does the nature of the problem change if capital inflows are not driven by improved borrowing conditions but, e.g., by anticipated **productivity growth**?

  - Do the data support the paper's key **ingredients** and **implications**?

  - What are the challenges for **policymakers**?

Theory: The model with productivity growth

- **Assumptions**

  - Output in the N-sector

$$y_t^N = \boxed{A_t^N} h_t^\alpha$$

Assumed to be constant in PaP and PPfP

  - Consumption aggregator

$$A\left(c_t^T, c_t^N\right) = \left(c_t^T\right)^a \left(c_t^N\right)^{1-a}$$

Note: *Intra*temporal elast. of subst. = 1 (greater than *inter*temporal elast. of subst. $(1 / \sigma)$.

Harms: Discussion of Schmitt-Grohé/Uribe

Theory: The model with productivity growth

- **Optimal consumption path of tradables**

    – The intertemporal Euler condition for T-goods:

$$\frac{c_t^T}{c_{t+1}^T} = \left[\beta(1+r_t)\right]^{-\frac{1}{\sigma}}\left(\frac{p_t}{p_{t+1}}\right)^{(1-a)\left(1-\frac{1}{\sigma}\right)} \qquad \text{with} \quad p_t \equiv P_t^N / P_t^T$$

Lowering the interest rate enhances period-t consumption

With intratemporal elast. of subst. > intertemporal elast. of subst.: Anticpated decline in N-goods price enhances period-t consumption of tradables

Theory: The model with productivity growth

- **Wages, prices, and N-goods consumption**

  - Wage in period t:

  $$w_t = p_t \, \alpha \, A_t^N \, h_t^{\alpha-1}$$

  - Nontraded goods price in period t:

  $$p_t = \frac{1-a}{a} \frac{c_t^T}{c_t^N}$$

  - Nontraded goods output in period t:

  $$c_t^N = A_t^N h_t^{\alpha}$$

Theory: The model with productivity growth

- **The time path of prices and wages with full employment:**

  – Prices:

$$\frac{p_t}{p_{t+1}} = \left[\beta\left(1+r_t\right)\right]^{\frac{-1}{a(\sigma-1)+1}} \left(\frac{A_{t+1}^N \overline{h}^{\alpha}}{A_t^N \overline{h}^{\alpha}}\right)^{\frac{\sigma}{a(\sigma-1)+1}}$$

Harms: Discussion of Schmitt-Grohé/Uribe

Theory: The model with productivity growth

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  full employment
  in N-sector

Theory: The model with productivity growth

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  full employment in N-sector

  - Wages (full employment):

  $$\frac{w_t}{w_{t+1}} = \frac{p_t}{p_{t+1}}\frac{A_t^N}{A_{t+1}^N} = \left[\beta\left(1+r_t\right)\right]^{\frac{-1}{a(\sigma-1)+1}} \left(\frac{A_{t+1}^N}{A_t^N}\right)^{\frac{(1-a)(\sigma-1)}{a(\sigma-1)+1}}$$

Theory: The model with productivity growth

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    - <u>Interpretation</u>: Productivity growth in N-sector results in decline of equilibrium wage over time.

Theory: The model with productivity growth

- **The time path of employment with sticky wages:**

  - <u>Assumptions</u>:

    - Full employment in period t

    - Extreme persistence of wages: $\gamma = 1$

      (with fixed exchange rate $\rightarrow w_{t+1} = w_t$)

  - <u>Time path of employment</u>:

$$\frac{h_{t+1}}{h} = \left[\beta\left(1+r_t\right)\right]^{\varphi}\left(\frac{A_t^N}{A_{t+1}^N}\right)^{(\sigma-1)(1-a)\varphi} \quad \text{with} \quad \varphi \equiv \frac{1}{(1-\alpha)\left[a(\sigma-1)+1\right]+\alpha\sigma} > 0$$

Theory: The model with productivity growth

- **Interpretation:**

$$\frac{h_{t+1}}{\overline{h}} = \left[\beta\left(1+r_t\right)\right]^{\varphi}\left(\frac{A_t^N}{A_{t+1}^N}\right)^{(\sigma-1)(1-a)\varphi}$$

Theory: The model with productivity growth

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  – Lowering the interest rate at time t raises period-t consumption of tradables, generating a current-account deficit in period t, and unemployment in period t+1 (the PaP/PPfP story)

Harms: Discussion of Schmitt-Grohé/Uribe

Theory: The model with productivity growth

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- – Lowering the interest rate at time t raises period-t consumption of tradables, generating a current-account deficit in period t, and unemployment in period t+1 (the PaP/PPfP story)

- – Anticipated productivity growth in the nontradables sector has a similar effect.

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Theory: The model with productivity growth

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$$\frac{h_{t+1}}{h} = \left[\beta\left(1+r_t\right)\right]^{\varphi}\left(\frac{A_t^N}{A_{t+1}^N}\right)^{(\sigma-1)(1-a)\varphi}$$

   – Lowering the interest rate at time t raises period-t consumption of tradables, generating a current-account deficit in period t, and unemployment in period t+1 (the PaP/PPfP story)

   – Anticipated productivity growth in the nontradables sector has a similar effect.

   – Consequence: „Prudential rule" established in PPfP likely to apply even if shocks come from other sources than those highlighted in the paper.

Harms: Discussion of Schmitt-Grohé/Uribe

Data: A casual look at the evidence

- **Question 1:**

  Is the growth of **unit labor costs** related to **financial openness**?

- **Question 2:**

  Does the **exchange rate regime** affect the reaction of **unit labor costs** to **negative growth**?
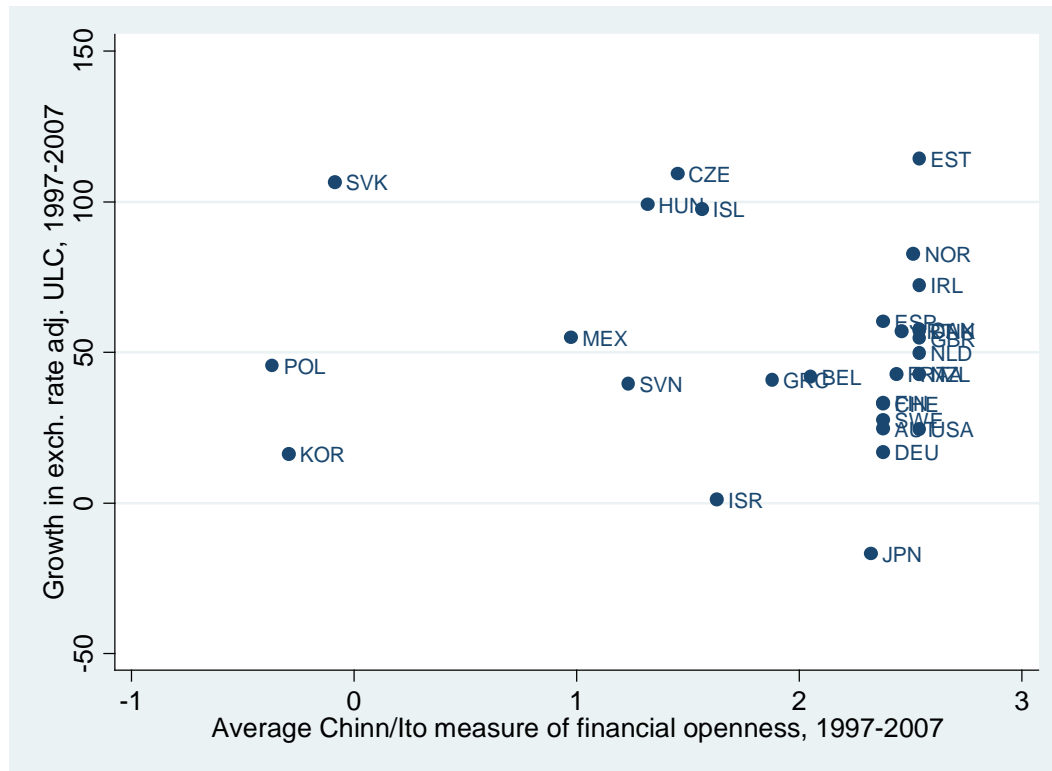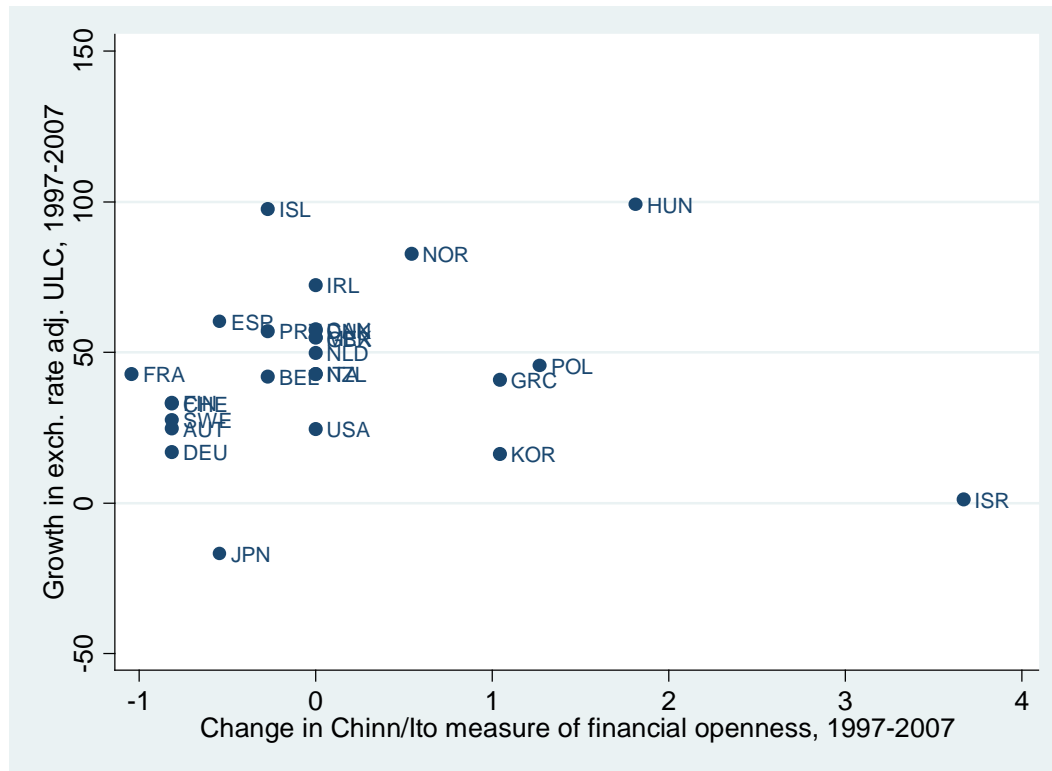
- **Question 3:**

  Does the behavior of **growth** and **unemployment** in years of **negative growth** depend on the **exchange rate regime**?

Harms: Discussion of Schmitt-Grohé/Uribe

Data: A casual look at the evidence

- **Question 1a:** Is the growth of unit labor costs related to financial openness?

Harms: Discussion of Schmitt-Grohé/Uribe

Data: A casual look at the evidence

- **Question 1b:** Is the growth of unit labor costs related to **changes** in financial openness?

Data: A casual look at the evidence

- **Question 2:** Does the exchange rate regime affect the reaction of unit labor costs to negative growth?

  - <u>Data</u>: Annual data for OECD countries, 1991-2010

    - Change in unit labor costs (exchange rate adjusted): ULC (Source: OECD)
    - Growth of real GDP per capita: growth (Source: PWT 7.0)
    - Index of de-jure exchange rate flexibility: ERflex, with 1 = peg, 2 = intermediate, 3 = float. (Source: IMF)

  - <u>Estimation</u>: Prob(ΔULC < 0) using the linear probability model (Probit yielding similar results).

Harms: Discussion of Schmitt-Grohé/Uribe

Data: A casual look at the evidence

- **Question 2:** Does the exchange rate regime affect the reaction of unit labor costs to negative growth? (contd.)

  – Result:

$$\text{Prob}\left(\Delta ULC_{it} < 0\right) = \underset{(0.57)}{0.007}\ growth_{it} + \underset{(2.30)}{0.053}^{**}\ ERflex - \underset{(-2.26)}{0.014}^{**}\ growth_{it} \cdot ERflex_{it}$$

  (576 observations, t-statistics in parentheses)
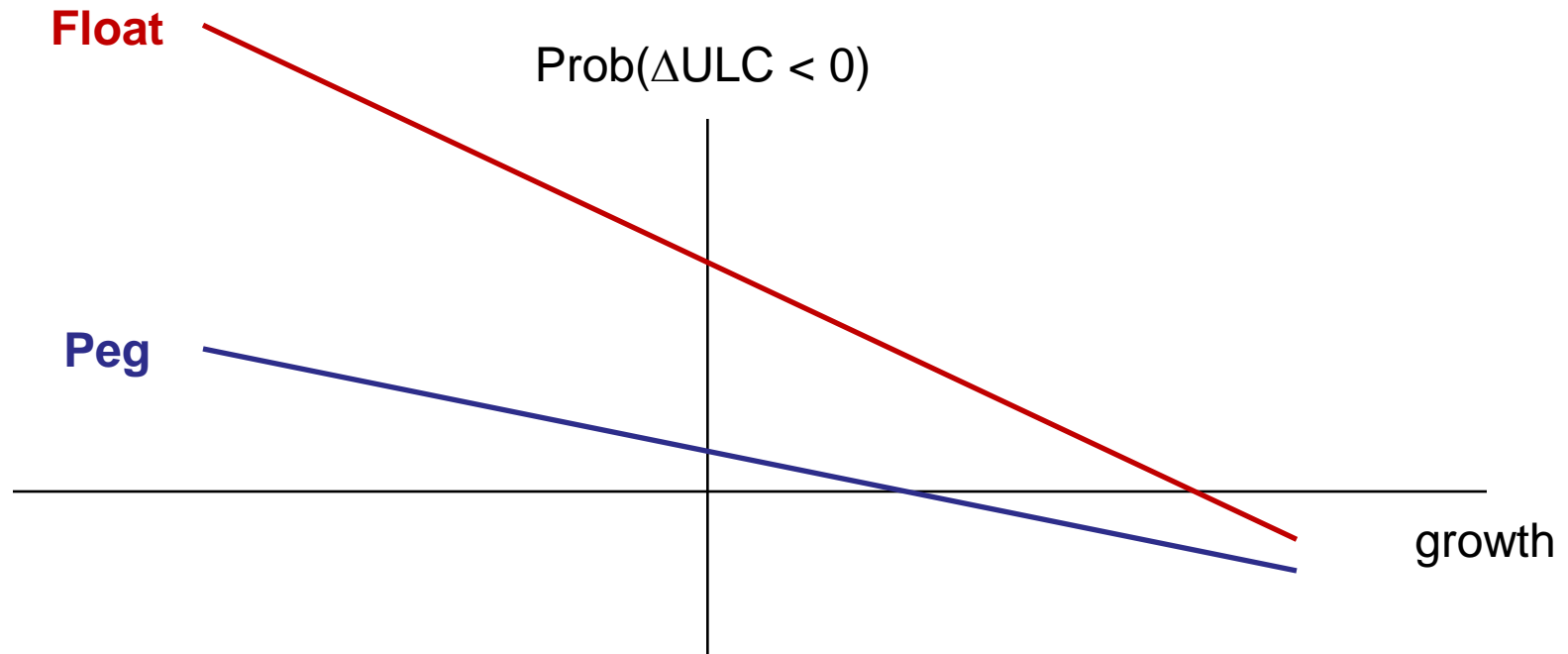
  – Interpretation:
    - Exchange rate flexibility raising the likelihood of a decrease in ULC
    - Marginal effect of growth depending on exchange rate flexibility: Likelihood that negative growth results in decreasing ULC increases in exchange rate flexibility.

Harms: Discussion of Schmitt-Grohé/Uribe

Data: A casual look at the evidence

- **Question 2:** Does the exchange rate regime affect the reaction of unit labor costs to negative growth? (contd.)

$$\text{Prob}\left(\Delta ULC_{it} < 0\right) = \underset{(0.57)}{0.007}\ growth_{it} + \underset{(2.30)}{0.053^{**}}\ ERflex - \underset{(-2.26)}{0.014^{**}}\ growth_{it} \cdot ERflex_{it}$$

Harms: Discussion of Schmitt-Grohé/Uribe

Data: A casual look at the evidence

- **Question 3:** Does the behavior of growth and unemployment in years of negative growth depend on the exchange rate regime?
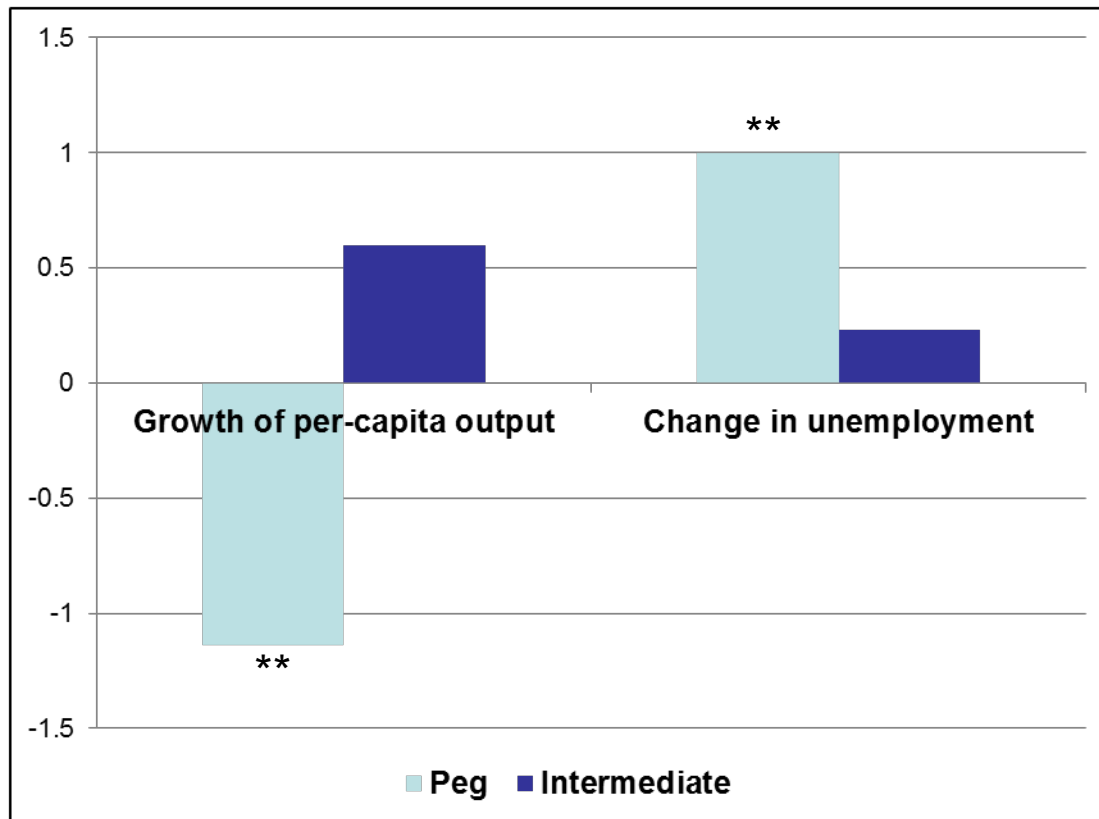
Results of a regression of growth/ change of unemployment on de-facto exchange-rate regime dummies for years, in which growth < 0. (floats as omitted category.)

Harms: Discussion of Schmitt-Grohé/Uribe

Implementation: Challenges for policymakers

- **Issues:**

  - What is the optimal policy if some borrowing takes place to finance **investment**?

  - How **flexibly/quickly** can taxes on debt be varied according to the PPfP rule? If taxes are **persistent**: Does this introduce or exacerbate **volatility**?

  - Implication of PPfP rule: **subsidization** of foreign borrowing in bad times → problems if economy does *not* recover?

  - Is exchange-rate flexibility still preferable to prudential regulation if nominal depreciations have substantial **balance-sheet effects**?

Implementation: Challenges for policymakers

- **Issues (contd.):**

    – How do alternative **policy choices** (the PPfP rule, the choice between flexible and fixed exchange rates etc.) affect the **time path of nominal wages**?

Harms: Discussion of Schmitt-Grohé/Uribe

Concluding remarks

- Important contribution to a very **topical debate**

- **Model** can probably be generalized without abandoning the key policy prescription

- Casual look at the **data** supports some of the key ingredients / implications

- **Implementing** the policy recommendation is associated with some tough challenges.