Lumpy Investment in Sticky Information General Equilibrium*

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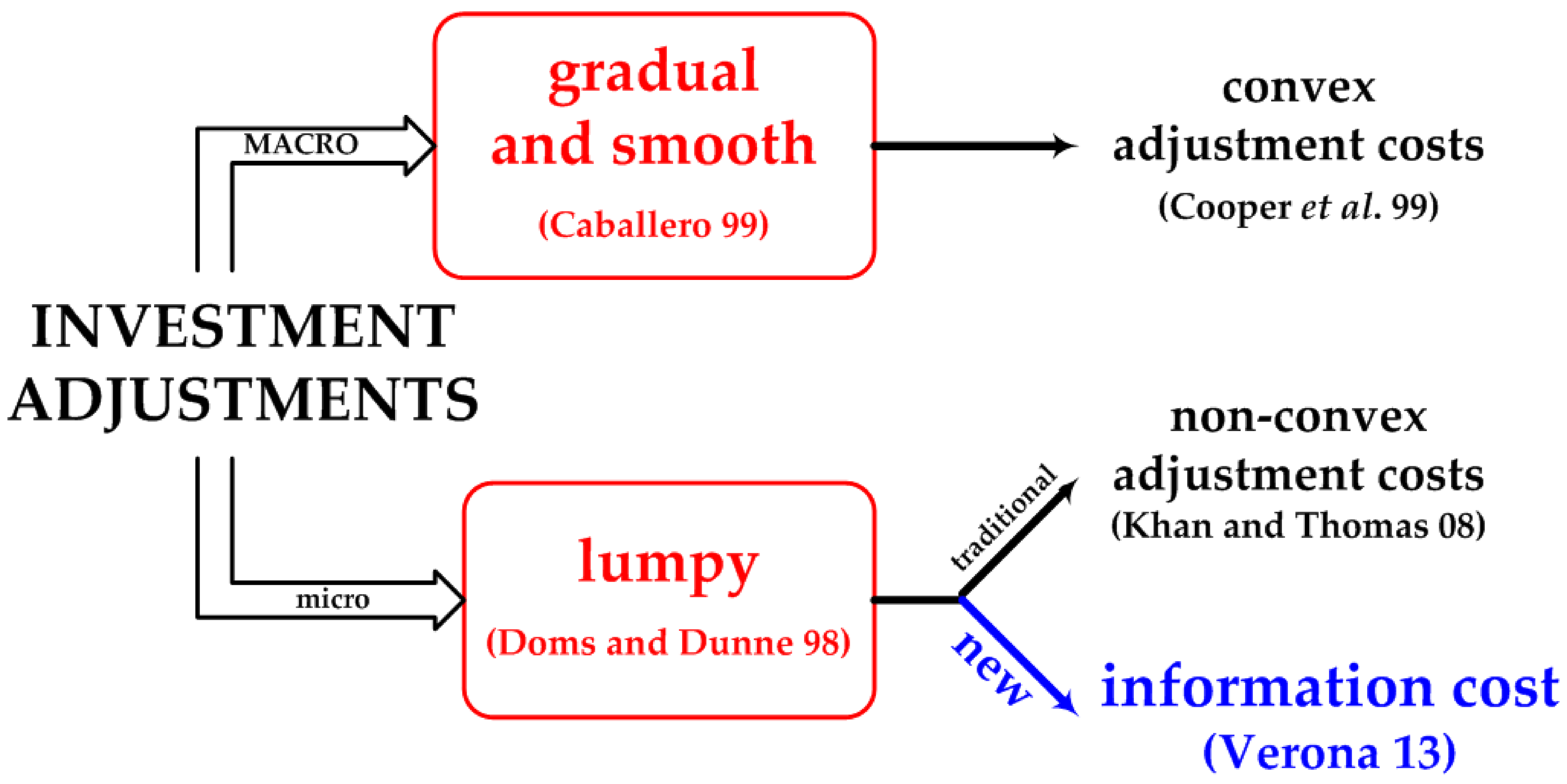
OBJECTIVE: provide a micro-founded Dynamic Stochastic General Equilibrium (DSGE) model with only one type of rigidity – sticky information.

THE MODEL: **Mankiw and Reis (07)** sticky information general equilibrium model augmented with a set of firms that make capital investment decisions inattentively, as in **Verona (13)**. Consumption, wage, price and capital investment decisions are based, to a certain degree, on old information.

FINDINGS: the model with pervasive inattentiveness is better at matching business cycle moments than an otherwise identical model with only a subset of these informational frictions.

1. Introduction



Information cost: cost of collecting and processing information and making decisions and plans based on that information (**Reis 06a,b**)

- cost in money and time of obtaining and assimilating information
- opportunity cost of taking time to think about and to compute optimal plans

Verona (13): **information cost** induces the firm to be **inattentive** and to make **infrequent** investment **decisions**

↠ when inattentive, the firm undertakes continuous (*e.g.* maintenance) investment to compensate for depreciation

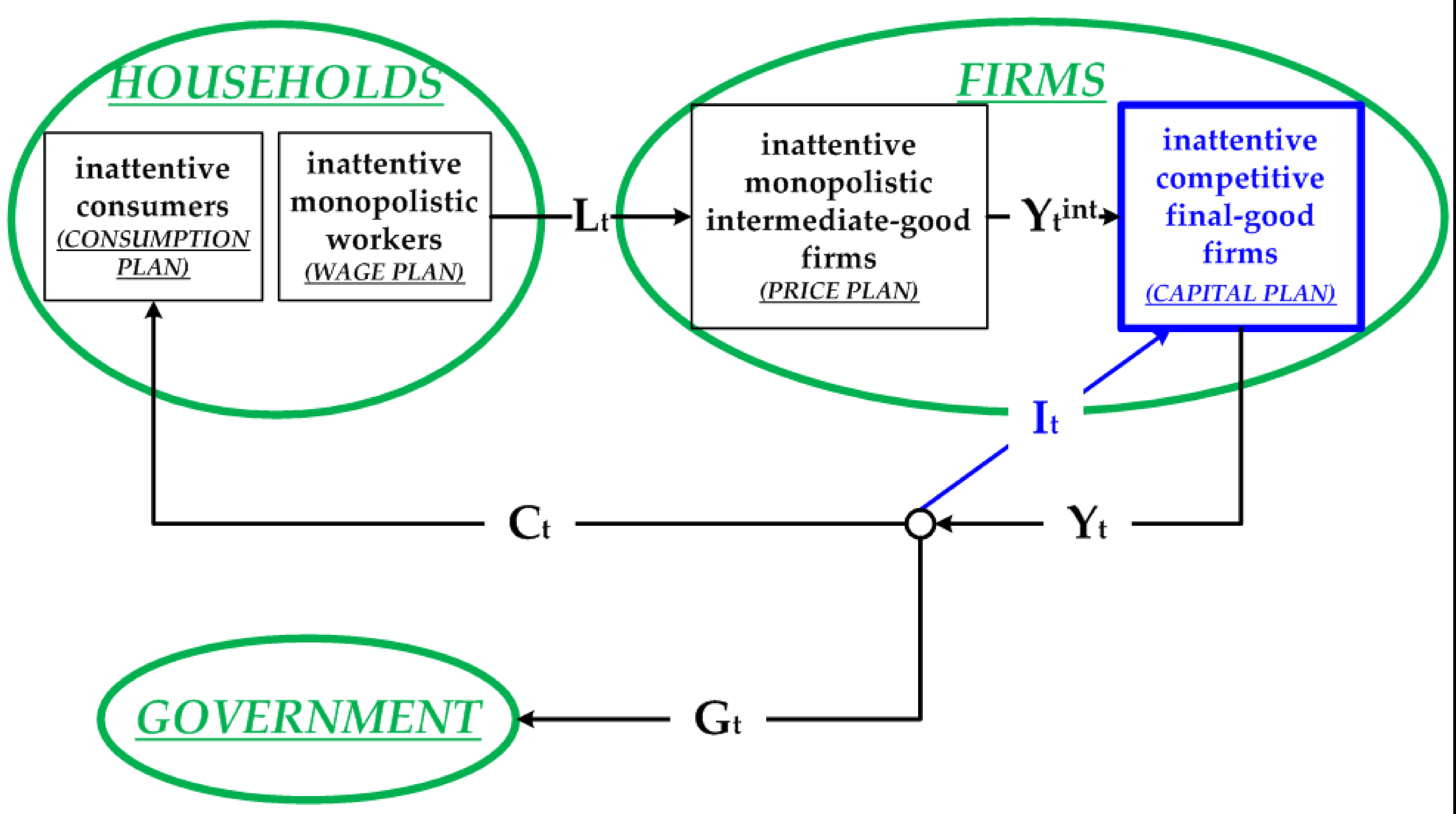
↠ when the firm updates its information, it reacts to all the information since its last observation date, and the capital stock jumps to the new optimal level

⇝ **periods of low activity interrupted by large capital adjustments**

⇒ **NEW MICRO-FOUNDATION FOR LUMPY INVESTMENT:**

INFORMATION COST OR INATTENTIVENESS

2. The DSGE Model with Sticky Information



⇒ a set δ of consumers, ω of workers, λ of price-setting firms and η of capital-investing firms make their plans every period

3. The Sticky-Information Equations

$$k_t = \eta \sum_{\tau=0}^{\infty} (1-\eta)^{\tau} \mathbf{E}_{\mathbf{t}-\tau} \left[\frac{1}{1-\alpha} y_{t+1}^{FIN} - \frac{\alpha}{1-\alpha} k_t - \frac{r}{(r+\rho)(1-\alpha)} r_t \right]$$

$$p_t = \lambda \sum_{\tau=0}^{\infty} (1-\lambda)^{\tau} \mathbf{E}_{\mathbf{t}-\tau} \left[p_t + \frac{\beta (w_t - p_t) + (1-\beta) y_t - a_t}{\beta + v(1-\beta)} - c_1 v_t \right]$$

$$c_t = \delta \sum_{\tau=0}^{\infty} (1-\delta)^{\tau} \mathbf{E}_{\mathbf{t}-\tau} (c_t^n - R_t)$$

$$w_t = \omega \sum_{\tau=0}^{\infty} (1-\omega)^{\tau} \mathbf{E}_{\mathbf{t}-\tau} \left[p_t + c_2 (w_t - p_t) + \frac{l_t}{\gamma + \psi} + c_3 (c_t^n - R_t) - c_4 \gamma_t \right]$$

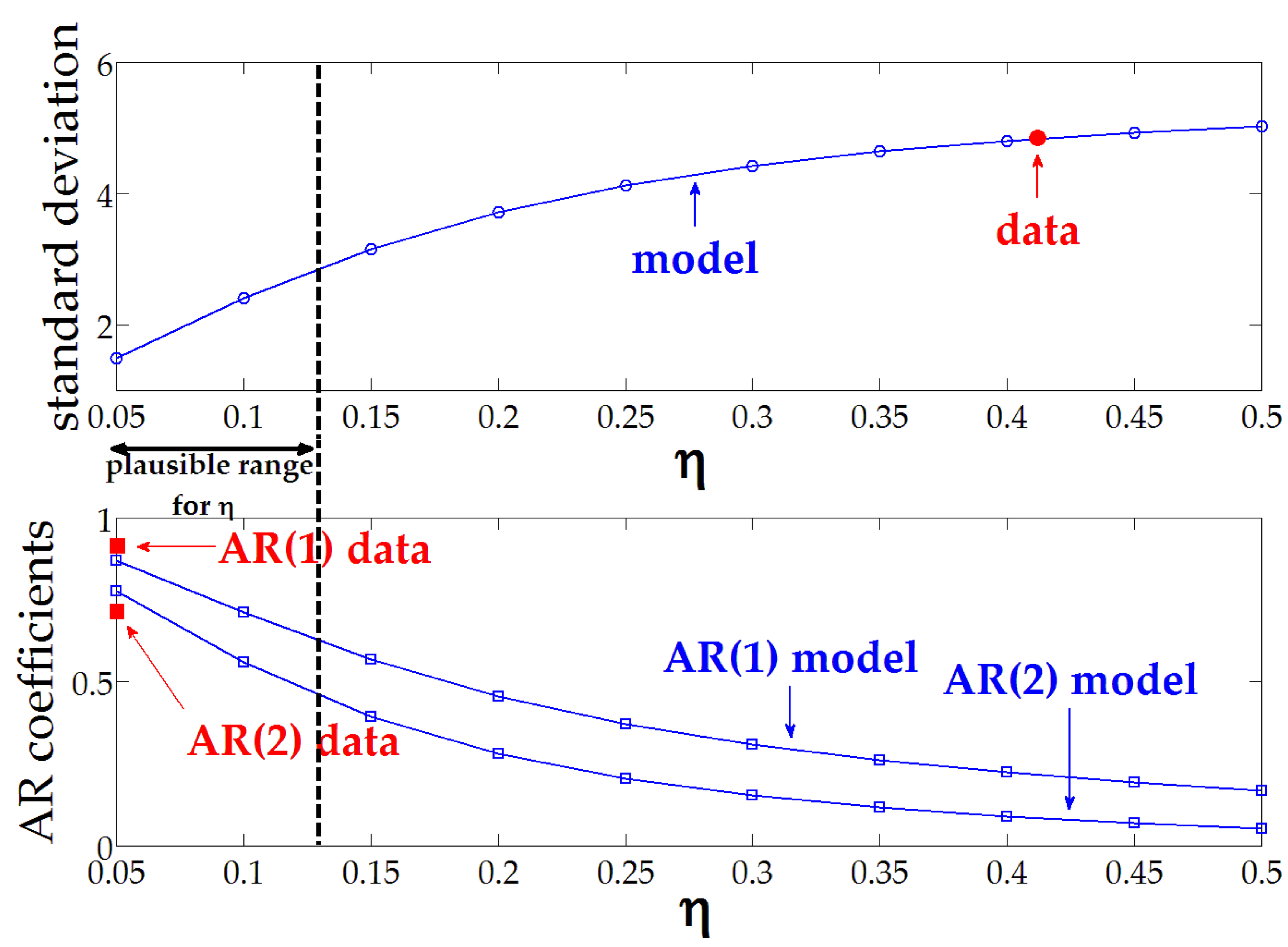
Baseline calibration (quarter): $\underbrace{\lambda = 0.52\,,\ \delta = 0.08\,,\ \omega = 0.74}_{\text{Reis (09)}}$ $\underbrace{\eta = 0.1}_{\text{Sveen and Weinke (07)}}$

4. Results

Aggregate output and investment, U.S. post-86 data vs models

series		standard deviation	autocorrelation coefficients			correlation $(investment_t, output_{t+k})$		
			1	2	3	-1	0	1
output	U.S. data	0.90	0.93	0.76	0.52			
	model ($\eta = 1$)	4.34	0.35	0.30	0.29			
	model ($\eta = 0.1$)	2.67	0.90	0.83	0.79			
investment	U.S. data	4.84	0.93	0.75	0.51	0.82	0.91	0.90
	model ($\eta = 1$)	5.39	0.05	0.00	0.00	0.04	0.86	0.22
	model ($\eta = 0.1$)	2.40	0.71	0.56	0.46	0.41	0.61	0.56

Investment moments - sensitivity analysis for different values of η



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