Course in Heterogeneity: Econ 081

I: Reassessing the Role of Heterogeneity for Business Cycles

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Heterogeneity and Inequality are a Sign of the Times

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- But as Macroeconomists, should we care?

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- The Great Recession has highlighted its shortcomings: How come we got such a large recession.

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    1. Recessions hit (lower earnings, more unemployment) more vulnerable (poor) households more.
    2. Poor households have a higher Marginal Propensity to Consume out of income than rich households Johnson, Parker, and Souleles (2004), Misra and Surico (2014).

Data: Marginal Distributions (Sorted by each variable)

Heterogeneity (Inequality) in 2006:
Marginal Distributions

	y	c	a	SCF 07 a
Mean (2006$)	62,549	43,980	291,616	497,747

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$Q5$	47.5	45.6	82.7	82.5
$90-95$	10.8	10.3	13.7	11.1
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Top 1%	8.0	8.2	30.9	33.5

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95 – 99	12.8	11.3	22.8	25.3
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- *a*: Bottom 40% holds basically no wealth
- *y*, *c*: less concentrated

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- 80% poorest acount for 63% of consumption

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   3.2 A lot of agents in the states where their behavior is non linear (close to zero cash in hand).

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    2. Moreover, most agents are in the essentially linear part of the state space
- Heterogeneous agents models are like Rep Agent models for business cycle purposes. Also confirmed in life-cycle models.

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  3. Large enough shocks

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- Unemployment insurance system with size $\rho = 50\%$.

Inequality in the Benchmark Economy

Net Worth	Data		Model
% Share held by:	PSID, 06	SCF, 07	
$Q1$	-0.9	-0.2	0.3
$Q2$	0.8	1.2	1.2
$Q3$	4.4	4.6	4.7
$Q4$	13.0	11.9	16.0
$Q5$	82.7	82.5	77.8
$90-95$	13.7	11.1	17.9
$95-99$	22.8	25.3	26.0
Top 1%	30.9	33.5	14.2
Gini	0.77	0.78	0.77

- Get's inquality almost right at the very bottom

Joint Distributions (2006): data v/s model

	% Share of:					
	y		c		%c/y	
a Quintile	Data	Model	Data	Model	Data	Model
$Q1$	8.6	6.0	11.3	6.6	92.2	90.4
$Q2$	10.7	10.5	12.4	11.3	81.3	86.9
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- Rudimentary life cycle is crucial for level of consumption rates and their decline with wealth.

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- If we were to think of Endogenous Labor, it would be Worse (Guerrieri-Lorenzoni-2009)

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- The main feature is to imply a slightly larger drop in consumption to that in Rep agent Models.

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- These margins open the door to other type of shocks (financial shocks, government policy shocks, international shocks).

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- Wealth Destruction
  - In Rep Agent Models assets are priced by their shadow value. Proper movements of assets (houses) should include transactions and a theory of their determination. Moreover, Bankruptcies destroy wealth and redistribute wealth. (Hedlund various papers, Head, Lloyd-Ellis & Sun (14), Huo & Rios-Rull (14), Kaplan, Mitman & Violante (16), Head, Sun & Zhou (15)).

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  - In Rep Agent Models assets are priced by their shadow value. Proper movements of assets (houses) should include transactions and a theory of their determination. Moreover, Bankruptcies destroy wealth and redistribute wealth. (Hedlund various papers, Head, Lloyd-Ellis & Sun (14), Huo & Rios-Rull (14), Kaplan, Mitman & Violante (16), Head, Sun & Zhou (15)).
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A second update: Heterogeneity and the new margins

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  - These are mechanisms that transform a drop in consumption into drops in TFP without reallocation of output to investment. Triggered by drops in Consumption.

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- Households assets are in houses and/or in financial assets with a collateral constraint.

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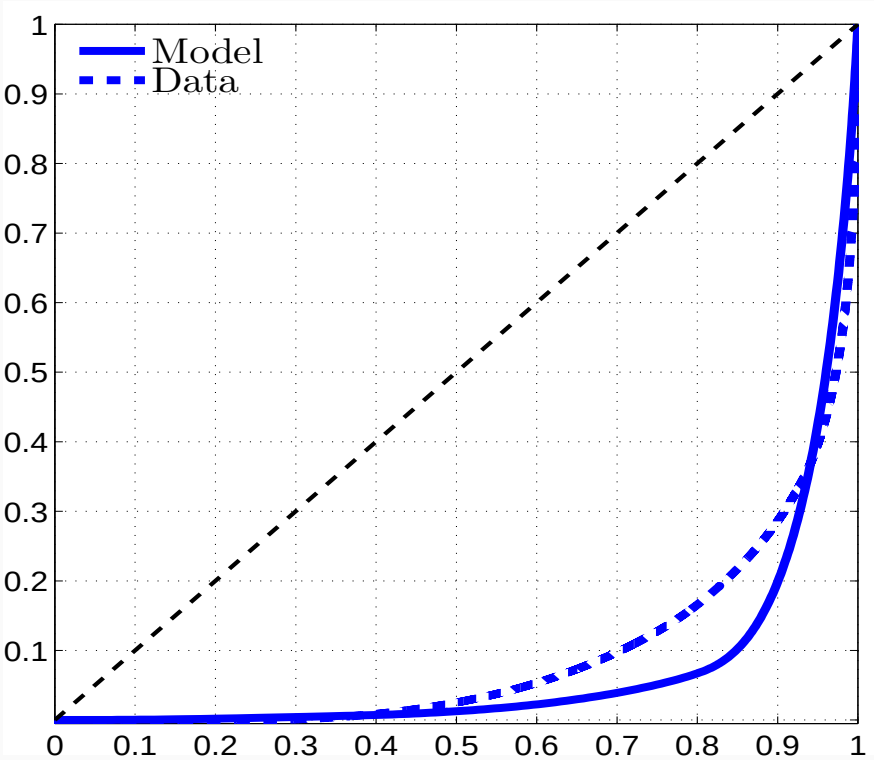
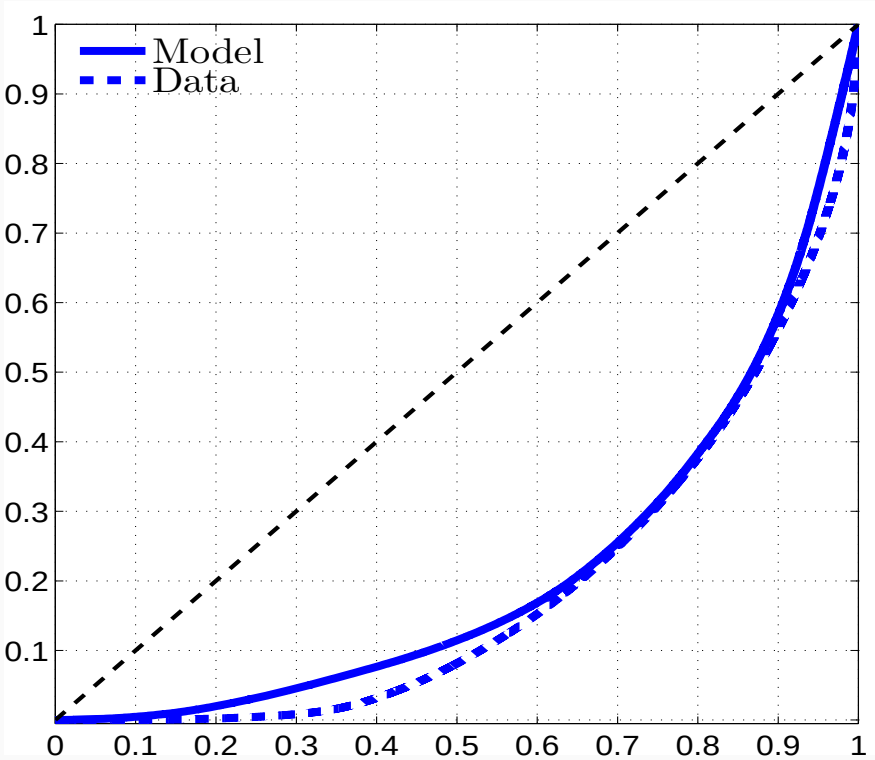
- Some additional parameters involve the transition and are specified later

A Glimpse: Lorenz Curves of Net Worth and Housing

Networth



Housing



1 Putting the Model to Use: An Experiment

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- We look at the transition. It involves solving for the steady state and then iterating backwards (with the additional problem of solving for equilibrium prices. Hard, but not too hard. Dynare can do it.)

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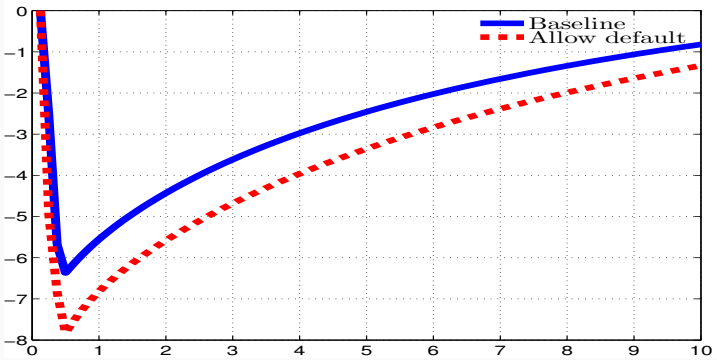
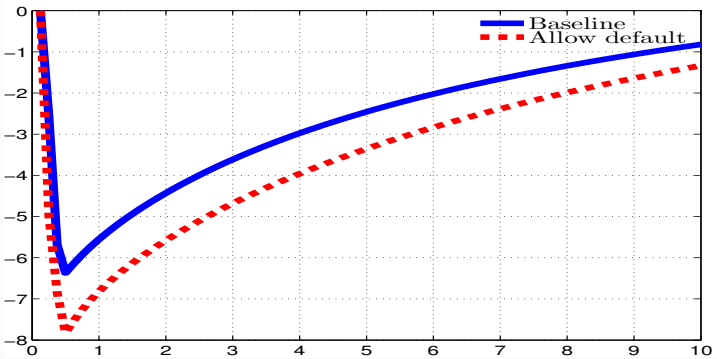
    - But in our economies the transition is associated to a recession.



Consumption



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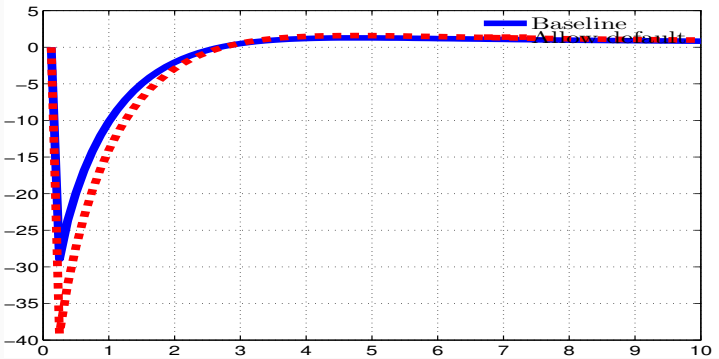

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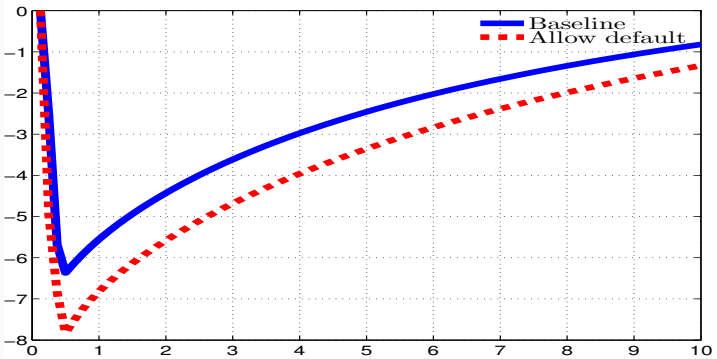

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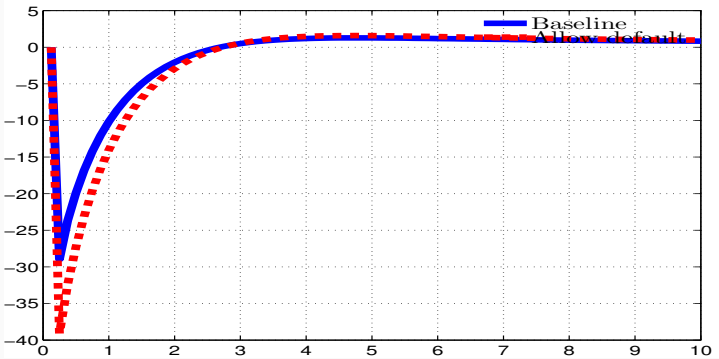

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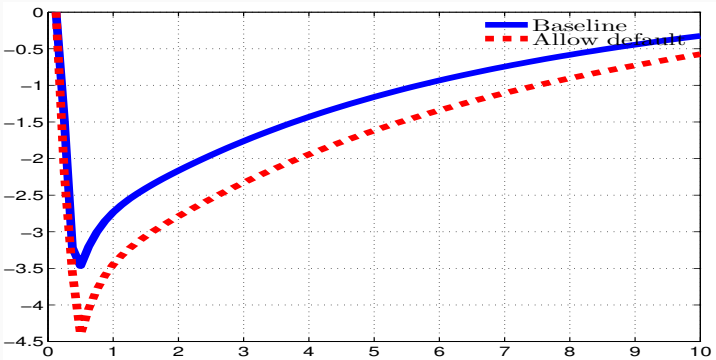
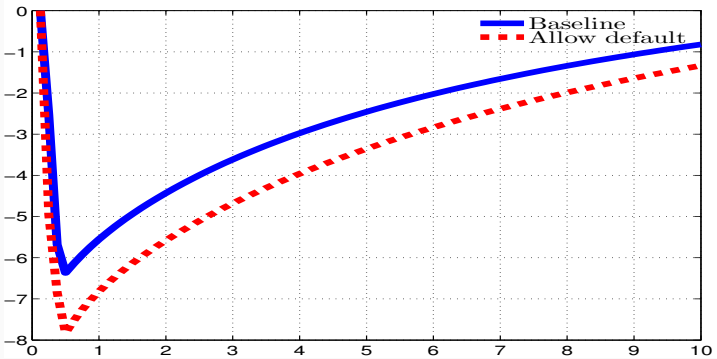


Output



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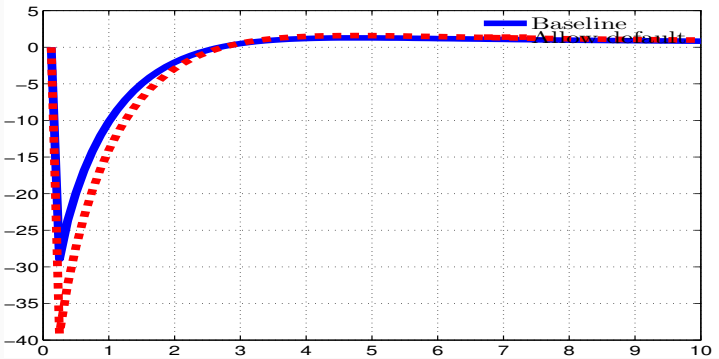

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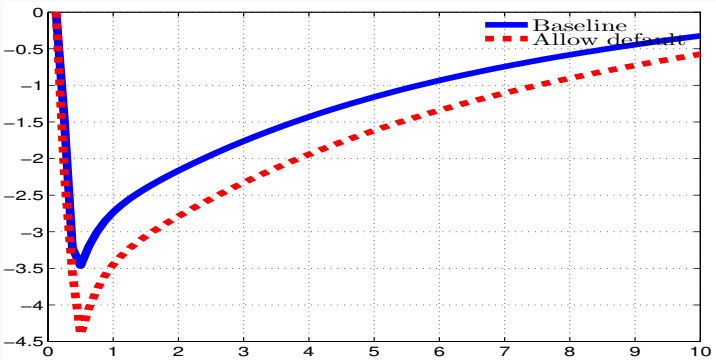

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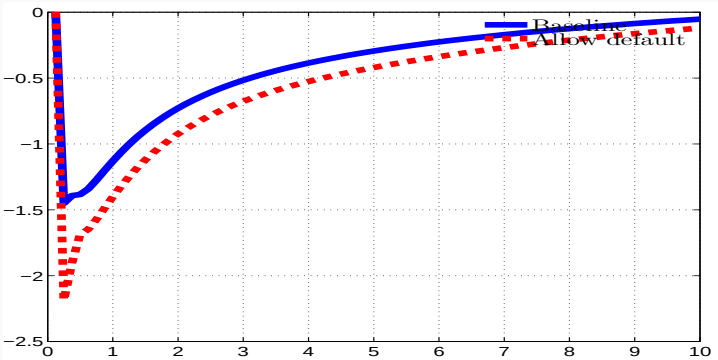
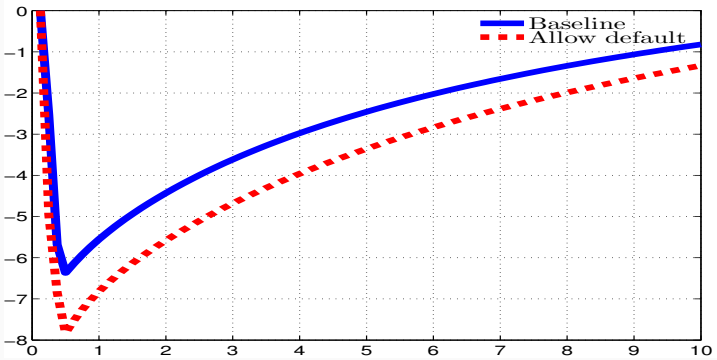


TFP



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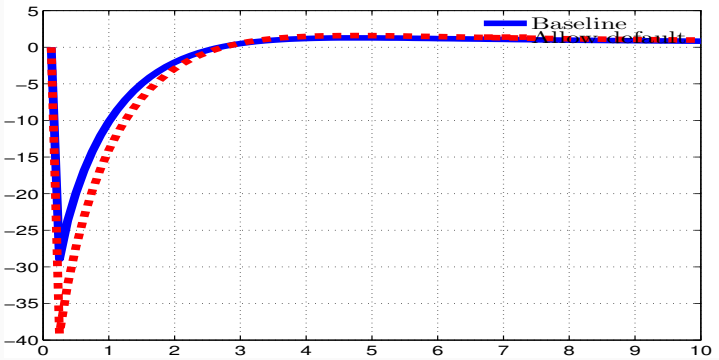

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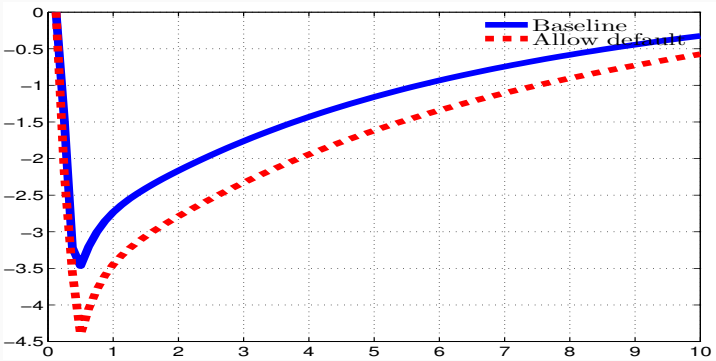

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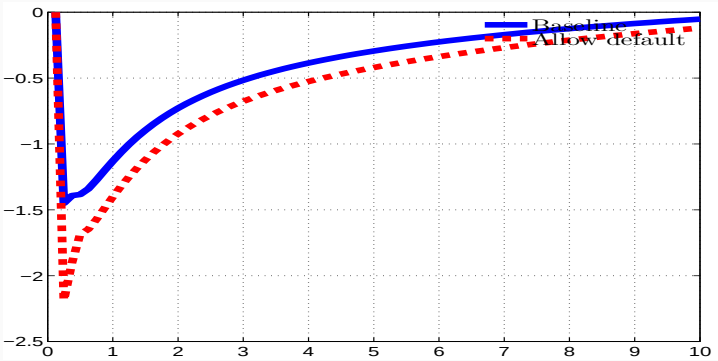

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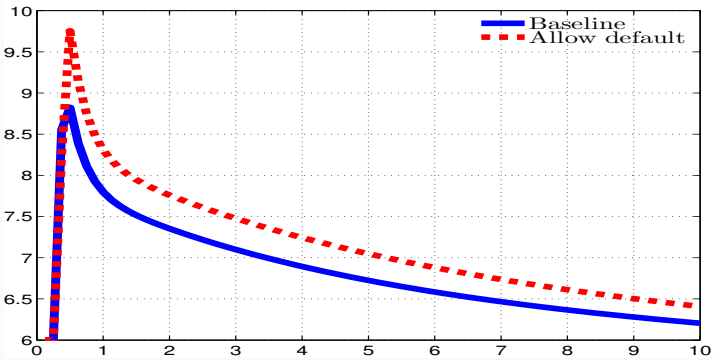
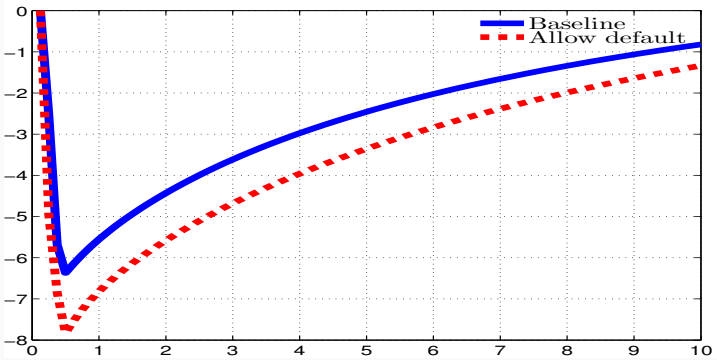


Unemployment rate



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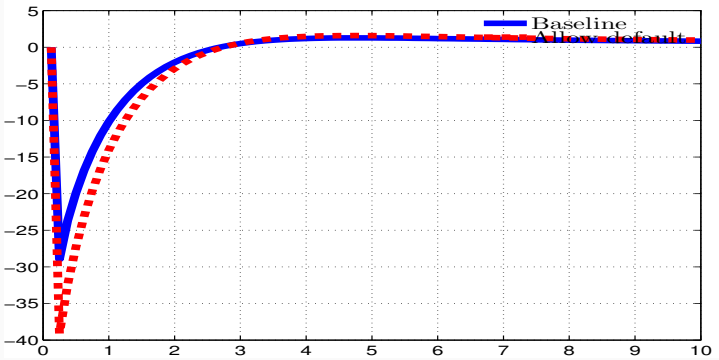

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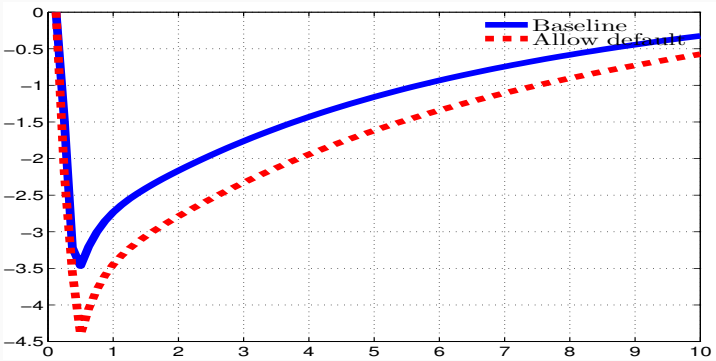

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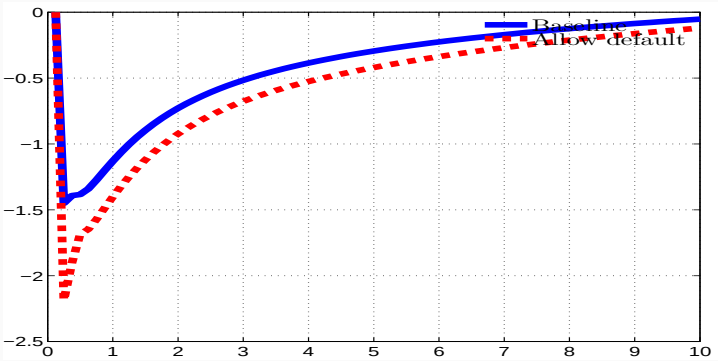

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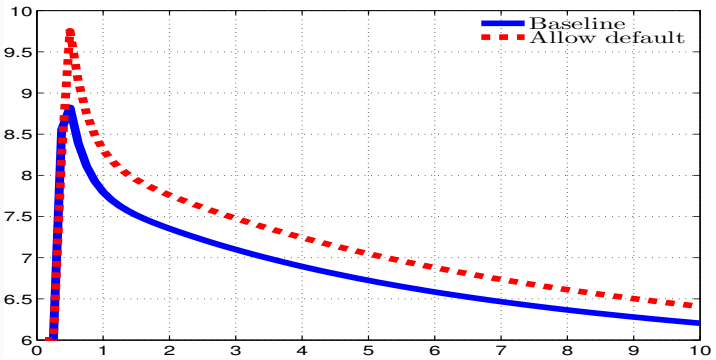

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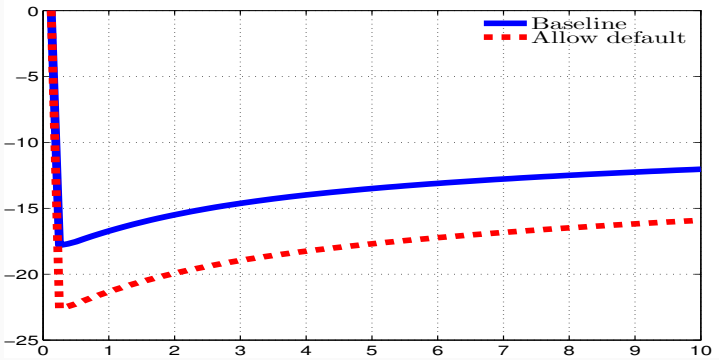
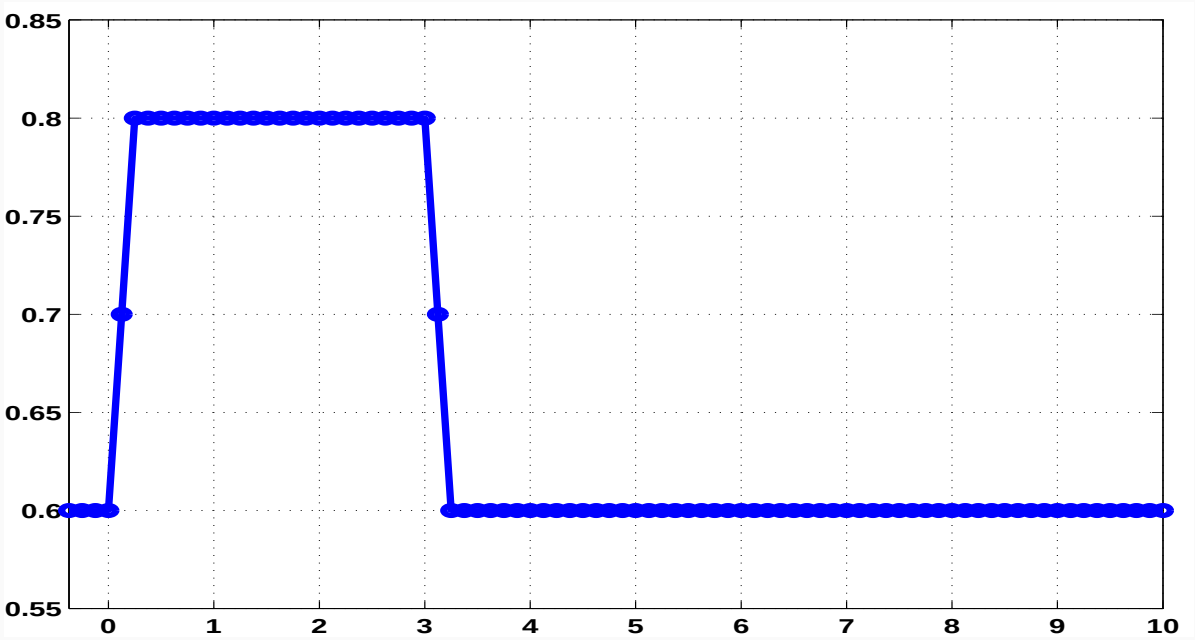


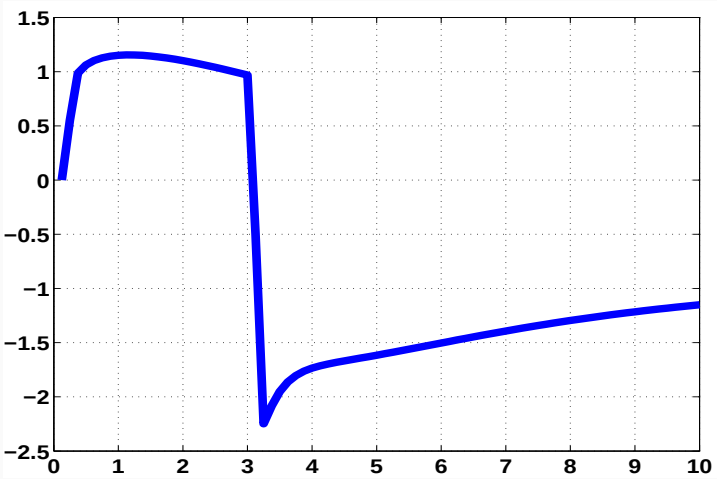
Housing Prices

What about Expansions?: A Credit Cycle

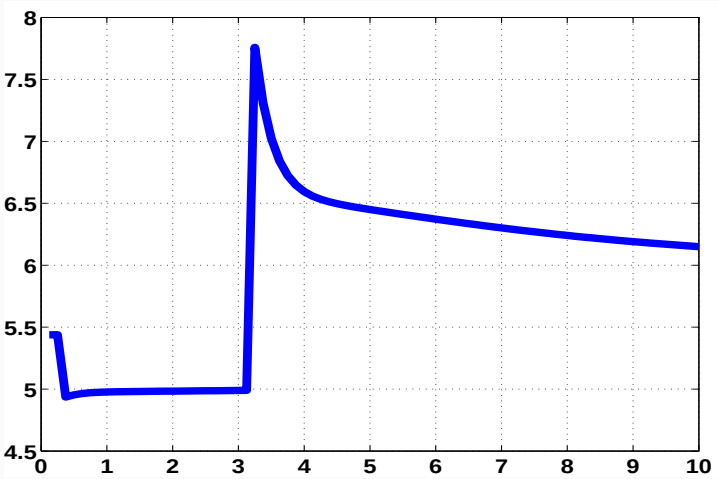


Loan to value ratio λ

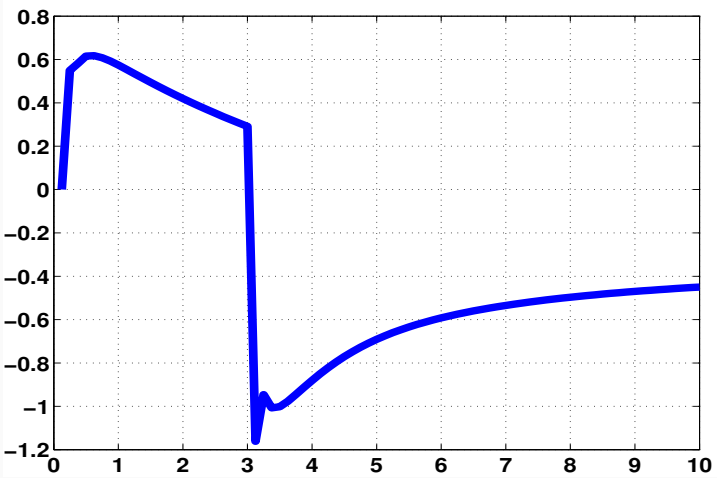
Another Experiment A Credit Cycle



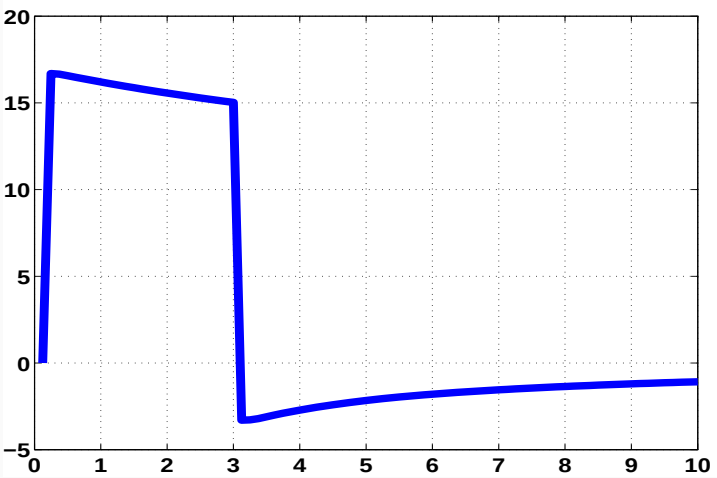
Real output



Unemployment rate



TFP



Housing price

What about Standard Analysis of Fluctuations?

- MIT shocks are NOT the way to study fluctuations.
- Traditionally very complicated methods have been proposed. Some of them based on *quasilinearity* or aggregate capital is the only thing that matters (Krusell and Smith (97,98)) interesting really happens. There are modern linearization versions based on Reiter such as Ahn et al. (17) and Childers (17).
- They approximate somehow the distribution of agents and look for its equilibrium law of motion.

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$$\widehat{x}_t = x_0\epsilon_t + x_1\epsilon_{t-1} + x_2\epsilon_{t-2} + ...$$

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- Adding more shocks is linearly more costly

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- Not only Heterogeneity of households but of firms and financial entities.

Thank You for Coming and Listening!