BEGS: Quantitative Results

September 2013

Numerical exercise

Solve a $N = 5$ agent economy with realistic level and movements in wage dispersion across booms and recessions

- Long run dynamics: Study settings that differ in covariance of interest rates and output
- Transient dynamics: Study outcomes in recessions that are accompanied by higher inequality

Aggregate shocks affect,

1. Wages:
$$\log \theta_i = \epsilon[1 + (.9 - i)m]$$
2. Payoffs:
$$P = 1 + \chi\epsilon$$

Calibration

Parameter	Value	Description
$\{\bar{\theta}_i\}$	$\{1$, 1.4, 2.1, 3.24, $4.9\}$	Wages dispersion for $\{10,25,50,25,90\}$ percentiles
ψ	0.53	Average Frisch elasticity of labor supply of 1
β	0.98	Average (annual) risk free interest rate of 2%
m	$\frac{1.5}{.8}$	Changes in dispersion
σ_e	0.03	Business cycle fluctuations in wages
g	.13 %	Average pre-transfer expenditure- output ratio of 12 %

Table : Benchmark calibration

The Pareto weights and initial distribution of wealth is chosen to match an average tax rate of 20% and debt to gdp ratio of 60% and transfers to gdp ratio of 10%.

Long run

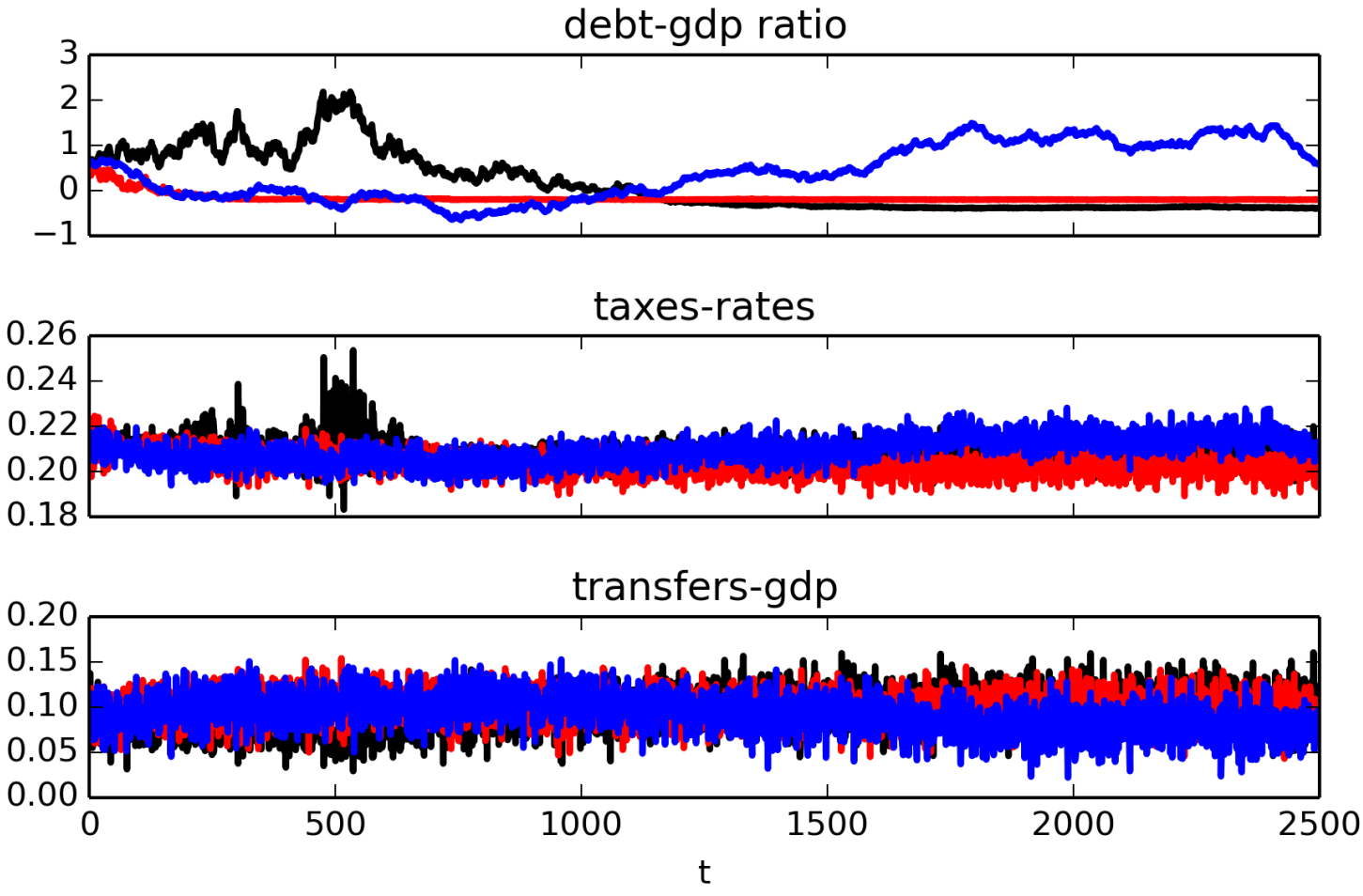

Figure : The red, black and blue lines plot simulations for a common sequence of shocks for values of $\chi = -1.5, 0, 1.5$ respectively

Long run: Speed of convergence

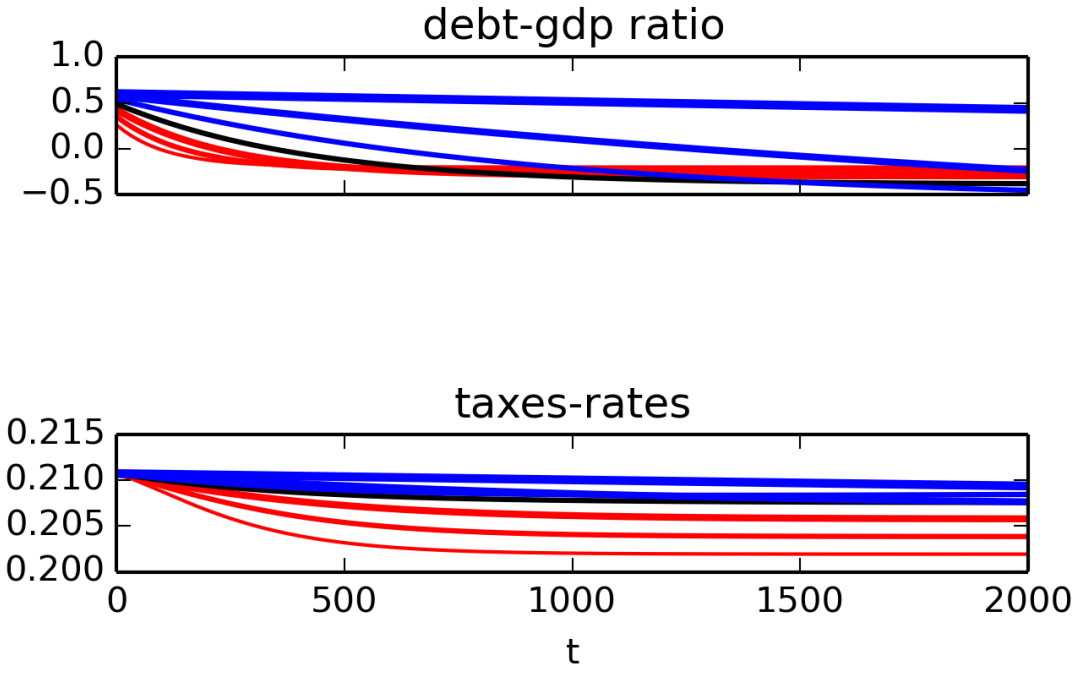

Figure : The plot shows conditional mean paths for different values of χ. The red (blue) lines have $\chi < 0$ ($\chi > 0$). The thicker lines represent larger values.

Short run

Lets denote consecutive period of negative (positive) one s.d ϵ shocks a "recession" (boom)

- Simulate a recession that is followed by no further shocks
- Decompose responses into TFP component and inequality component:

$$\textbf{Baseline: } \log \theta_i = \epsilon[1 + (.9 - i)m]$$

  - Only TFP:

$$\log \theta_i = \epsilon$$

  - Only Ineq:

$$\log \theta_i = \epsilon[(.9 - i)m]$$

Recessions with higher inequality: Risk free bond, $\chi = 0$

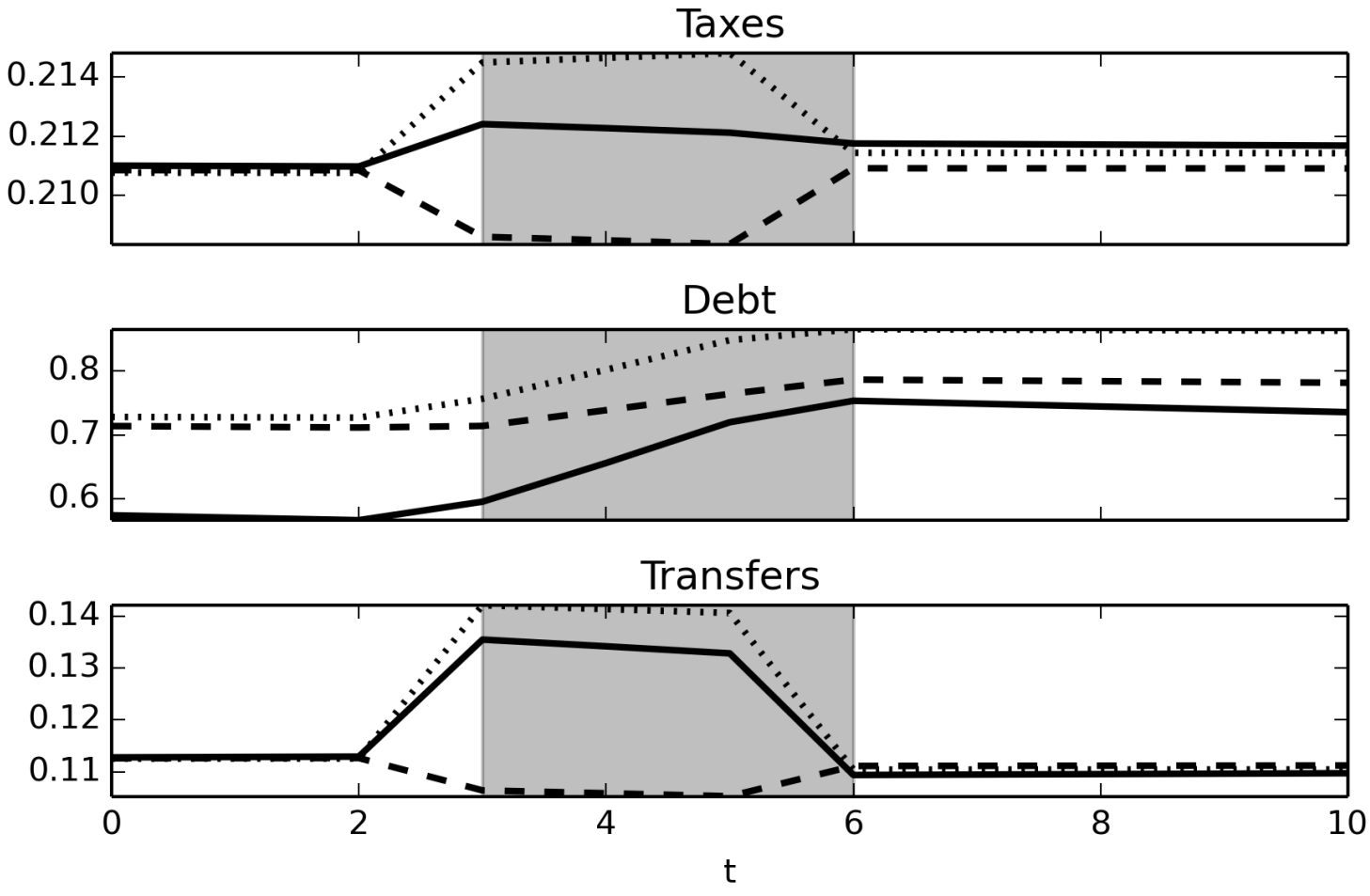

Figure : The bold line is the total response. The dashed (dotted) line reflects the only TFP (inequality) effect. The shaded region is the recession

Recessions with higher inequality: Procyclical returns, $\chi > 0$

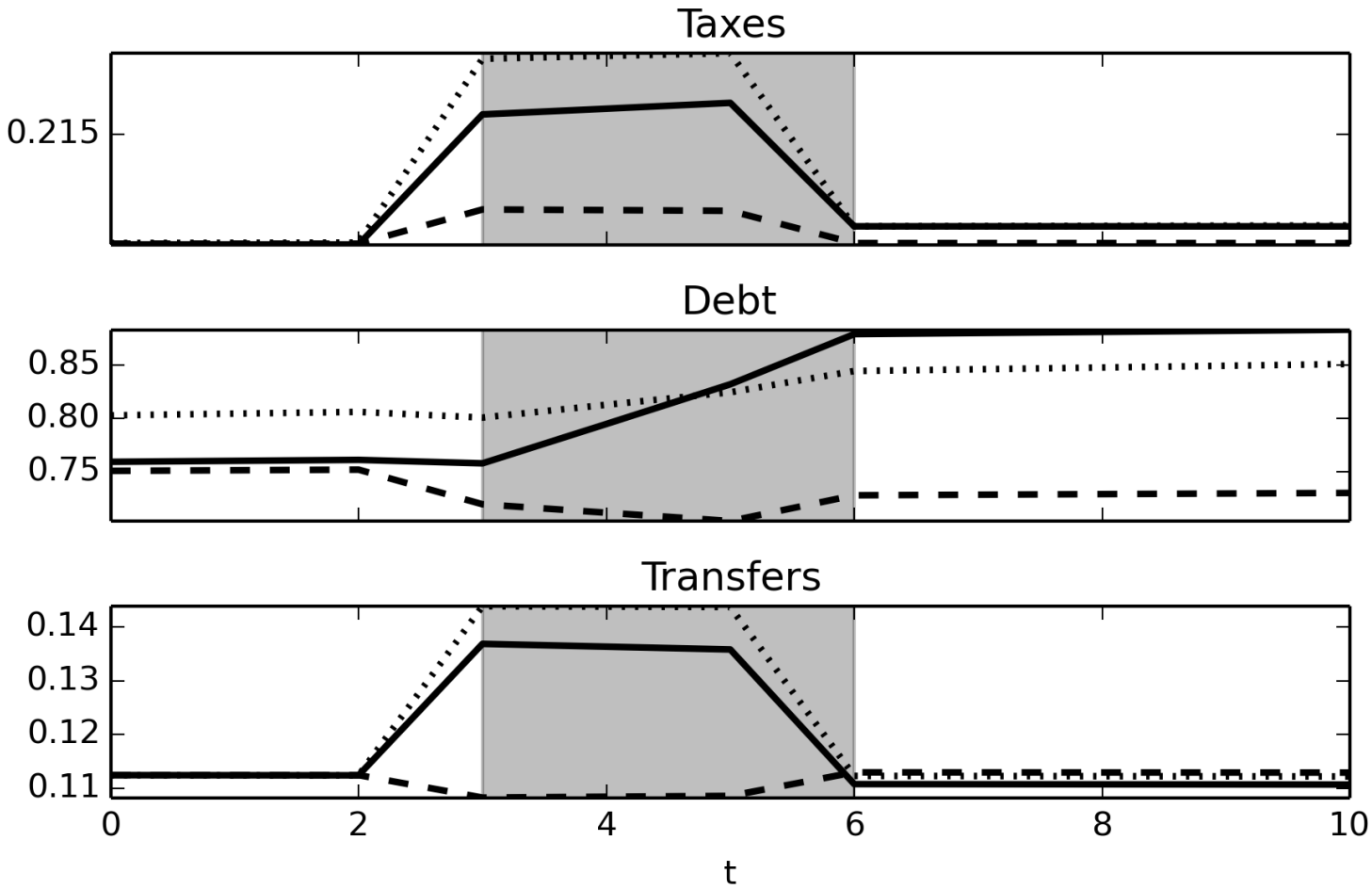

Figure : The bold line is the total response. The dashed (dotted) line reflects the only TFP (inequality) effect. The shaded region is the recession

Recessions with higher inequality: Counter-cyclical returns, $\chi > 0$

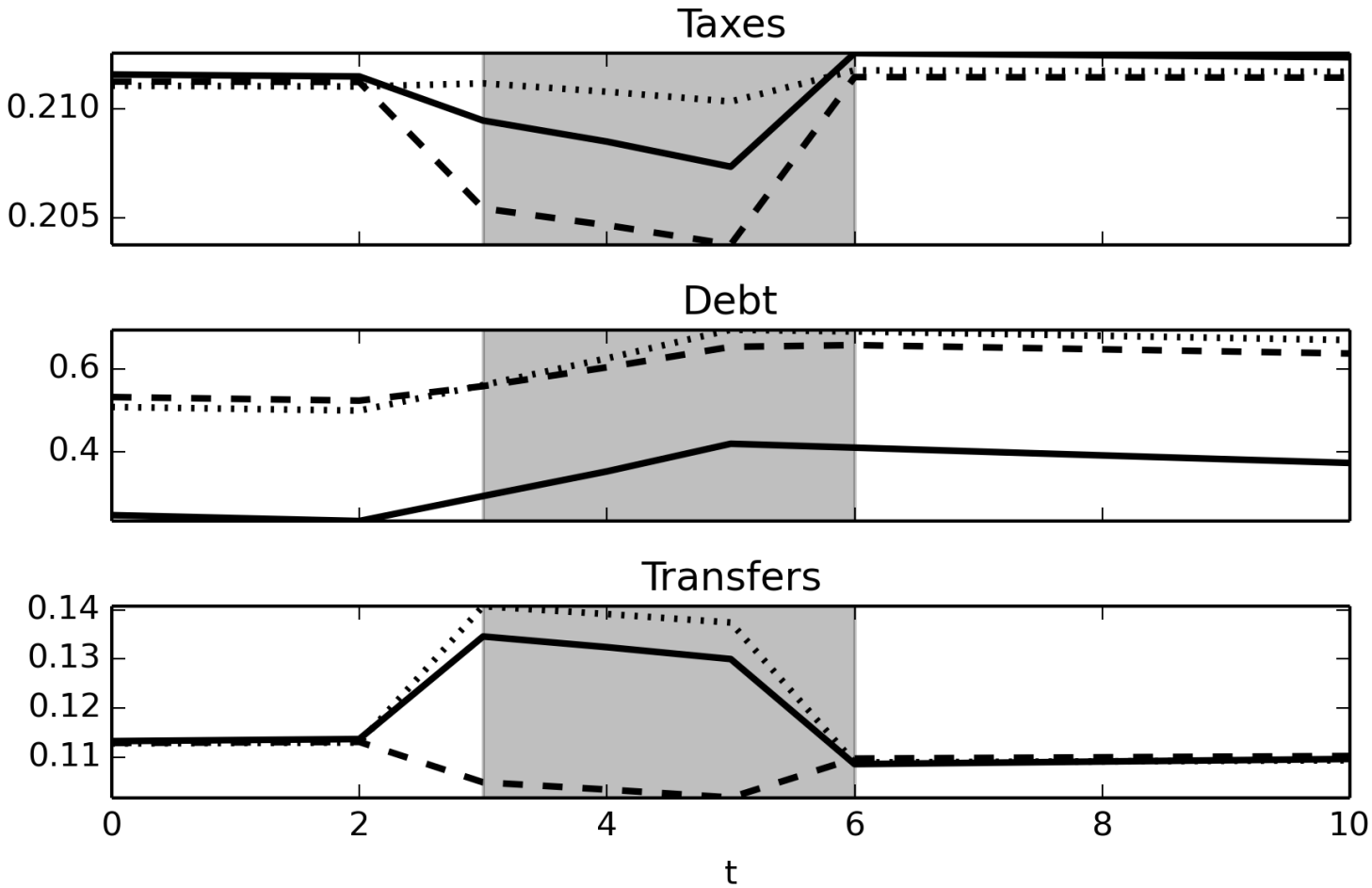

Figure : The bold line is the total response. The dashed (dotted) line reflects the only TFP (inequality) effect. The shaded region is the recession

Redistribution in recessions

- TFP : Relative inequality is unchanged and planner redistributes by lowering tax-rates on impact.
- Only Ineq : Earnings gap increases by factor m. The planner mainly redistributes mainly through higher transfers and taxes.
- TFP + Ineq: For both tax rates and transfers are higher.

In all cases the burden is spread over time by lower future transfers and higher tax rates.