Discussion of

Endogenous volatility at the zero lower bound: implications for stabilization policy

By Susanto Basu and Brent Bundick

Sebastian Schmidt (ECB)

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This paper

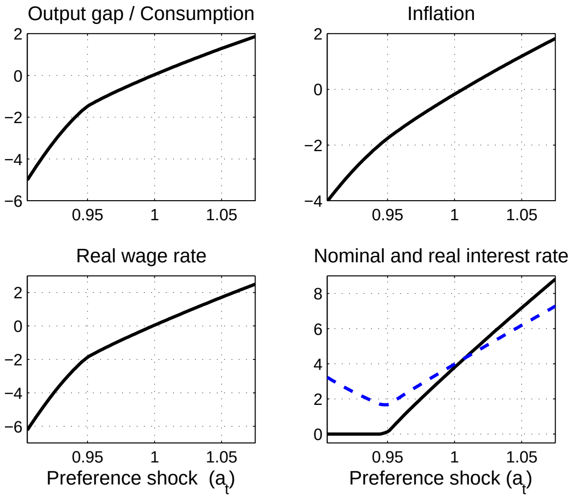
- Inspects the mechanisms by which an increase in uncertainty about future shocks can give rise to non-negligible declines in aggregate demand in states where the effective lower bound (ELB) is binding

- Studies the role of the monetary (and fiscal) policy configuration

Framework

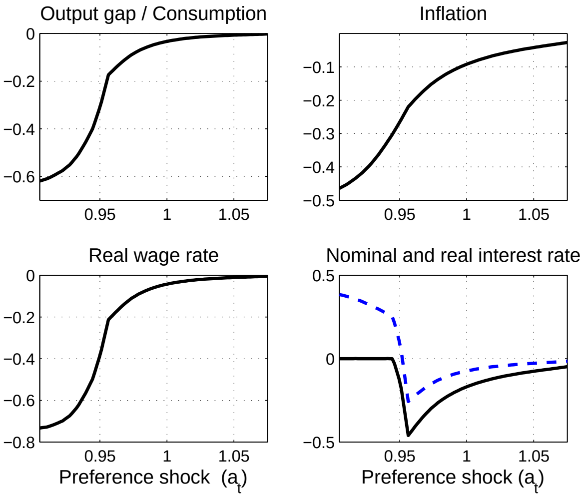
- Small non-linear business cycle model with price adjustment costs and rational expectations, calibrated to the U.S. economy
- Preference shock with stochastic volatility
- Baseline policy configuration consists of a Taylor rule, no fiscal stabilization policy
- Implicit focus on 'intended equilibrium' where inflation fluctuates around target

Equilibrium responses to the preference shock



Note: The chart depicts equilibrium responses to the preference shock when the uncertainty shock is at steady state.

Implications of an increase in uncertainty for equilibrium responses



Note: The chart depicts the effects of an uncertainty shock equal to one unconditional standard deviation (+50bp) for equilibrium responses to the preference shock.

Uncertainty and the ELB

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- At the ELB, central bank cannot lower current policy rate to counteract precautionary saving motive associated with an exogenous increase in uncertainty
- Asymmetric response of baseline policy rule to shocks gives rise to downward bias in expected inflation, thereby raising ex-ante real interest rate
- This so-called deflationary/contractionary bias increases with the degree of uncertainty

Related literature on the role of uncertainty at the ELB

- Semi-loglinear sticky price models:

  Adam and Billi (2007), Nakov (2008)

- Fully non-linear sticky price models:

  Nakata (2013a), Johannsen (2014), Plante, Richter and Throckmorton (2014)

The role of the monetary and fiscal policy configuration

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- History-dependent monetary policies that make up for past deviations of inflation from target, e.g. optimal commitment policy
- Fiscal stabilization policy, e.g. optimal government spending
- More generally, those policies that are effective in mitigating the adverse effects of first-moment shocks [Adam and Billi (2006), Nakov (2008), Schmidt (2013), Nakata (2013b)]

Comments

Question I

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Two considerations:

i. Labor market

ii. Preferences

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- Model features competitive labor market, hence firms' marginal costs are quite volatile
- Are the adverse effects of uncertainty shocks at the ELB smaller when nominal wages are sticky?
- Here, I consider downward nominal wage rigidities (DNWR)[1]

[1] For empirical evidence, see, for instance, Fallick, Lettau and Wascher (2016).

Augmenting the baseline model with DNWR

Household j faces asymmetric adjustment costs $\Phi_{t,j}$ when posting its nominal wage.

Linex function specification of Varian (1974)[2]

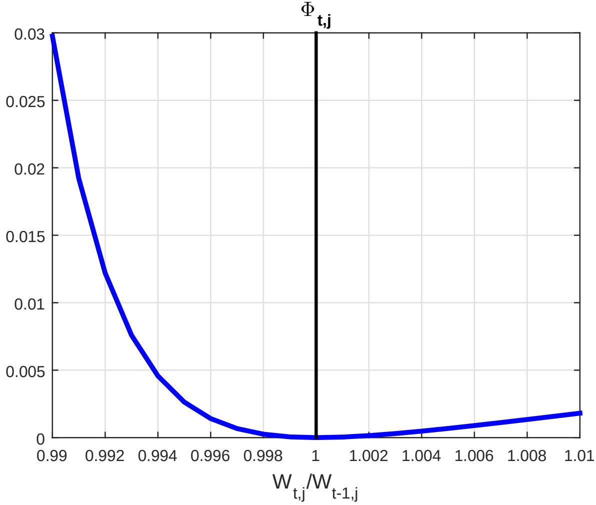
$$\Phi_{t,j} = \phi^W \frac{\exp\left[-\psi\left(W_{t,j}/W_{t-1,j} - 1\right)\right] + \psi\left(W_{t,j}/W_{t-1,j} - 1\right) - 1}{\psi^2}$$

Adj. costs are proportional to aggregate labor income $W_t N_t$.

Wage Phillips curve

[2]See also Kim and Ruge-Murcia (2009); and Fahr and Smets (2010).

Nominal wage adjustment cost function for $\psi > 0$

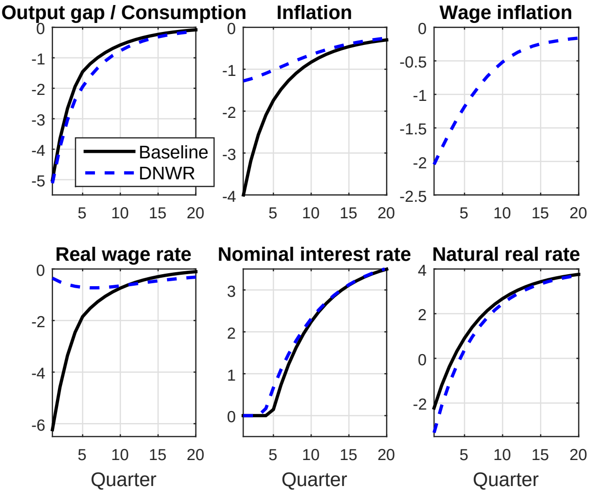


Calibration of model with DNWR

β	0.99	ϕ^P	192	σ^a	0.015	ϕ^W	96
σ	2	ϕ_π	1.5	ρ_{σ^a}	0.85	ψ	400
η	0.24	ϕ_x	0.25	σ^{σ^a}	0.005		
θ	6	ρ_a	0.85	θ^W	6		

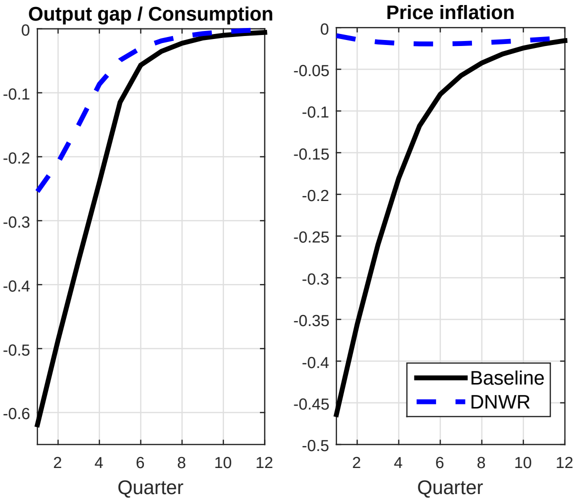
- Higher standard deviation of a_t than in the baseline model ($+0.005$)
- New parameters related to nominal wage adjustment costs

Impulse responses to a negative preference shock: Baseline model vs DNWR



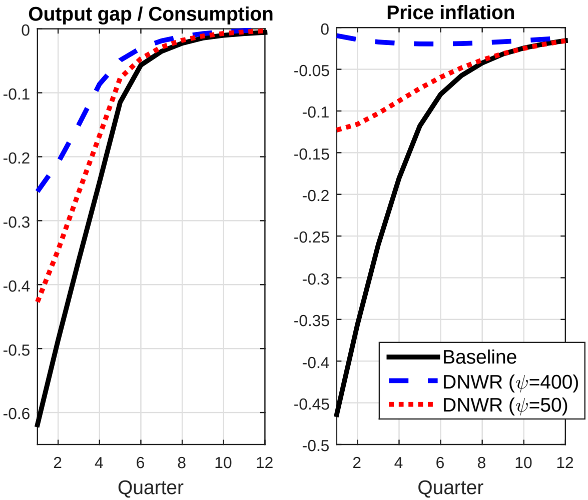
Note: The chart depicts impulse responses to a negative preference shock for the baseline model and the model with DNWR. The size of the shock in the two models is chosen such that the initial drop of the output gap is similar.

Implications of an increase in uncertainty for impulse responses: Baseline vs DNWR



Note: The chart depicts the implications of an uncertainty shock equal to one unconditional standard deviation (+50bp) for impulse responses to a negative preference shock in the baseline model and in the model with DNWR.

Alternative degrees of asymmetry in nominal wage adjustment costs



Note: The chart depicts the implications of an uncertainty shock equal to one unconditional standard deviation (+50bp) for impulse responses to a negative preference shock in the baseline model and in the model with DNWR.

ii. Preferences and precautionary motive

- Assumed preferences are non-separable in consumption and leisure

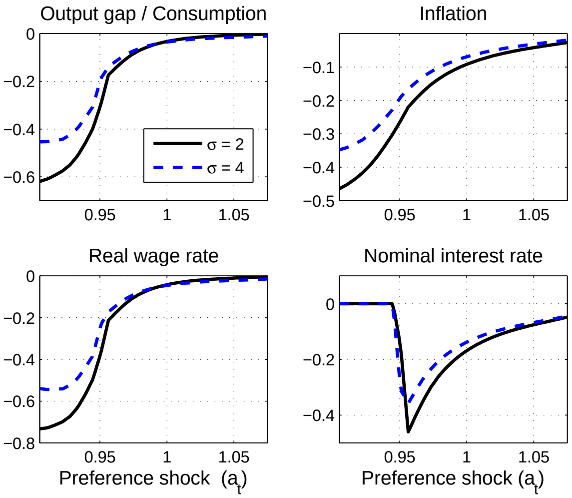
$$U(C_t, N_t, a_t) = a_t \frac{\left(C_t^{\eta}(1 - N_t)^{1-\eta}\right)^{1-\sigma}}{1 - \sigma} \tag{1}$$

with $\eta \in (0, 1)$, $\sigma > 1 \to U_{C,N} > 0$

- A reduction in consumption raises the marginal utility of leisure

- Hence, substitutability between consumption and leisure weakens precautionary labor supply motive (the more so the larger σ)

Implications of an increase in uncertainty for equilibrium responses



Note: The chart depicts the effects of an uncertainty shock equal to one unconditional standard deviation (+50bp) for equilibrium responses to the preference shock.

Question II

Authors suggest to focus analysis on monetary policy configurations that arguably remove the contractionary bias channel on account of

- non-existence of equilibrium under baseline policy rule for realistic calibration of exogenous shock volatility
- the baseline policy rule not being a realistic description of recent U.S. monetary policy

$\rightarrow$ "Should we remove the contractionary bias?"

I am a bit skeptical:

1. A more realistic model would allow for higher exogenous shock volatility without necessarily contesting equilibrium existence, as exemplified by the model with DNWR

2. A rule that responds to the price level - like the one proposed by the authors - allows for a transitory overshooting of the central bank's inflation objective after a period of too-low inflation.

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   This does not seem to reflect well U.S. central bankers' perceptions of their strategy during the crisis:

   > *To be sure, we have not followed the theoretical prescription of promising to keep rates low enough for long enough to create a period of above-normal inflation.*

   Donald L. Kohn, then Vice Chairman of the Board of Governors (October 9, 2009)

Summary of economic projections, December 2015

U.S. policymakers do not seem to anticipate a temporary overshooting of the inflation objective under their individual assessments of projected appropriate monetary policy

Table: PCE inflation

	2015	2016	2017	2018	Longer run
Median	0.4	1.6	1.9	2.0	2.0
Central tendency	0.4	1.2-1.7	1.8-2.0	1.9-2.0	2.0

Conclusion

- Basu and Bundick provide a very concise analysis of the mechanisms by which an exogenous increase in uncertainty about future shocks gets amplified when the ELB is binding
- Relevant when thinking about how to design policies in the current low-interest-rate environment
- Would be interesting to verify quantitative implications from the stylized baseline model in a more complex model

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Background slides

Wage Phillips curve in model with DNWR

$$\frac{1-\eta}{\eta}\frac{C_t}{1-N_t} - w_t = -\frac{\phi^W}{\theta^W \psi}\Big[\pi_t^W w_t \left(\exp(-\psi(\pi_t^W - 1)) - 1\right)$$
$$-\beta E_t \frac{a_{t+1}}{a_t}\frac{\lambda_{t+1}}{\lambda_t} w_{t+1}\frac{N_{t+1}}{N_t}\left(\exp(-\psi(\pi_{t+1}^W - 1)) - 1\right)\Big]$$

where $\lambda_t = \eta \frac{\left(C_t^\eta (1-N_t)^{1-\eta}\right)^{1-\sigma}}{C_t}$.

Parameter ψ represents the degree of asymmetry in nominal wage adjustment costs.

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