

The Interaction Between Monetary and Macroprudential Policies

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Range of views on monetary-macroprudential interaction

- Svensson (2015): *'Little or no support for leaning against the wind for financial stability purposes'*
- Stein (2013): only *'monetary policy gets in all the cracks'*
- Shin (2015): *'both monetary policy and macroprudential policies have some effect in constraining credit growth and the two tend to be complements'*
- I'll talk you through some results from a model I've developed with BoE colleagues (Aikman et al. 2017)

Basic model (extends Ajello et al. (2016))

$$y_1 = E_1^{ps} y_2 - \sigma(i_1 - E_1^{ps} \pi_2 + \omega s_1) + \epsilon_1^y \quad \text{IS curve}$$

$$\pi_1 = E_1^{ps} \pi_2 + \kappa y_1 + \nu s_1 + \epsilon_1^\pi \quad \text{Phillips curve}$$

$$\Delta Credit_1 = \varphi_0 + \varphi_i i_1 + \varphi_s s_1 + \epsilon_1^B \quad \text{Real credit growth}$$

$$s_1 = \psi C C y B_1 + \epsilon_1^s \quad \text{Credit spread}$$

$$\gamma_1 = f(\Delta Credit_1, C C y B_1) \quad \text{Crisis probability}$$

$$y_2 = \begin{cases} y_{2,nc} & \text{with probability } 1 - \gamma_1 \\ y_{2,c} & \text{with probability } \gamma_1 \end{cases} \quad \text{Period 2 outcomes}$$

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Resilience: Crisis prob depends on credit growth and CCyB

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CCyB and
monetary
policy both
reduce
build-up in
credit

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$$\Delta Credit_1 = \varphi_0 + \varphi_i i_1 + \varphi_s s_1 + \epsilon_1^B \quad \text{Real credit growth potential output}$$

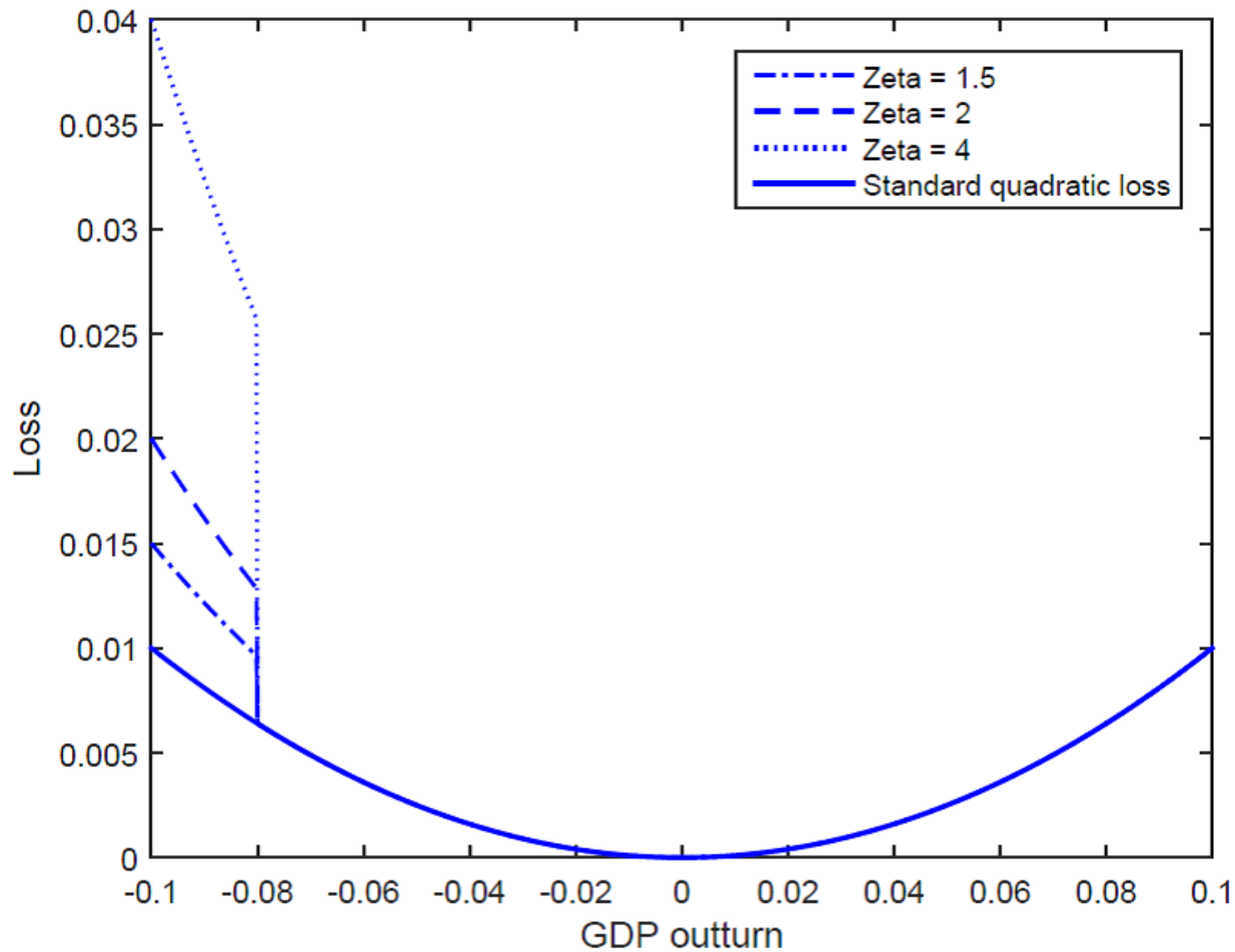
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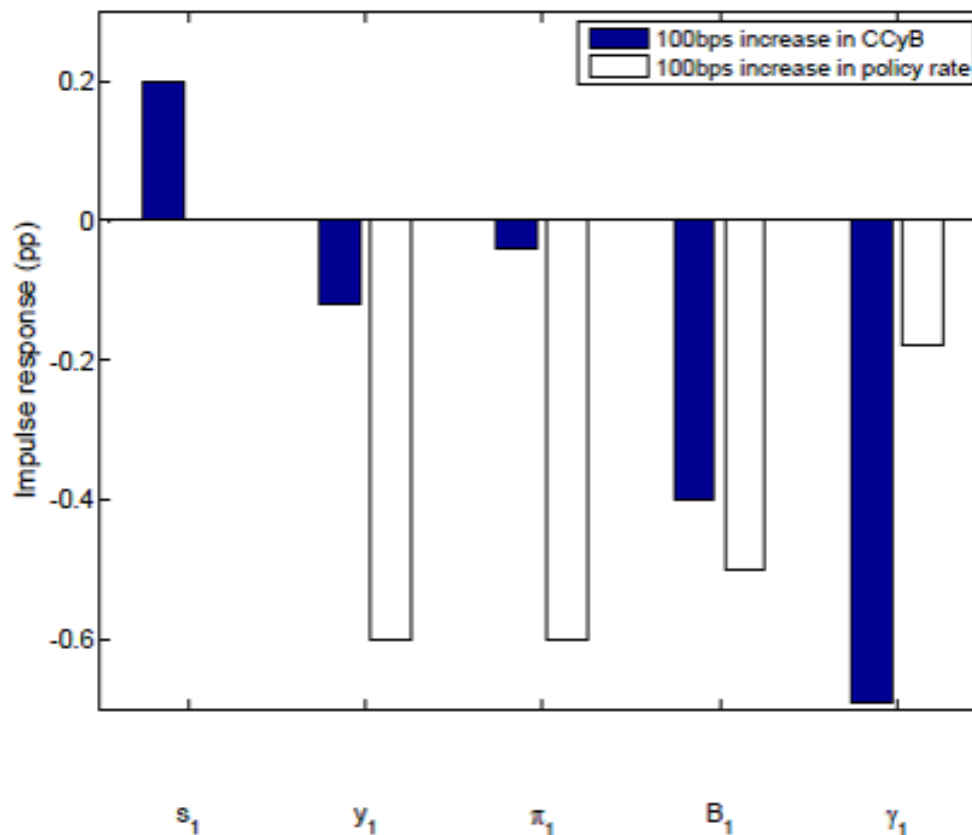
Credit spread affects both demand and output

Policy objectives – beyond quadratic loss



Model calibration – match evidence on monetary policy and CCyB transmission mechanism

Figure 1: Impacts of 100 basis point increases in the CCyB and monetary policy rate

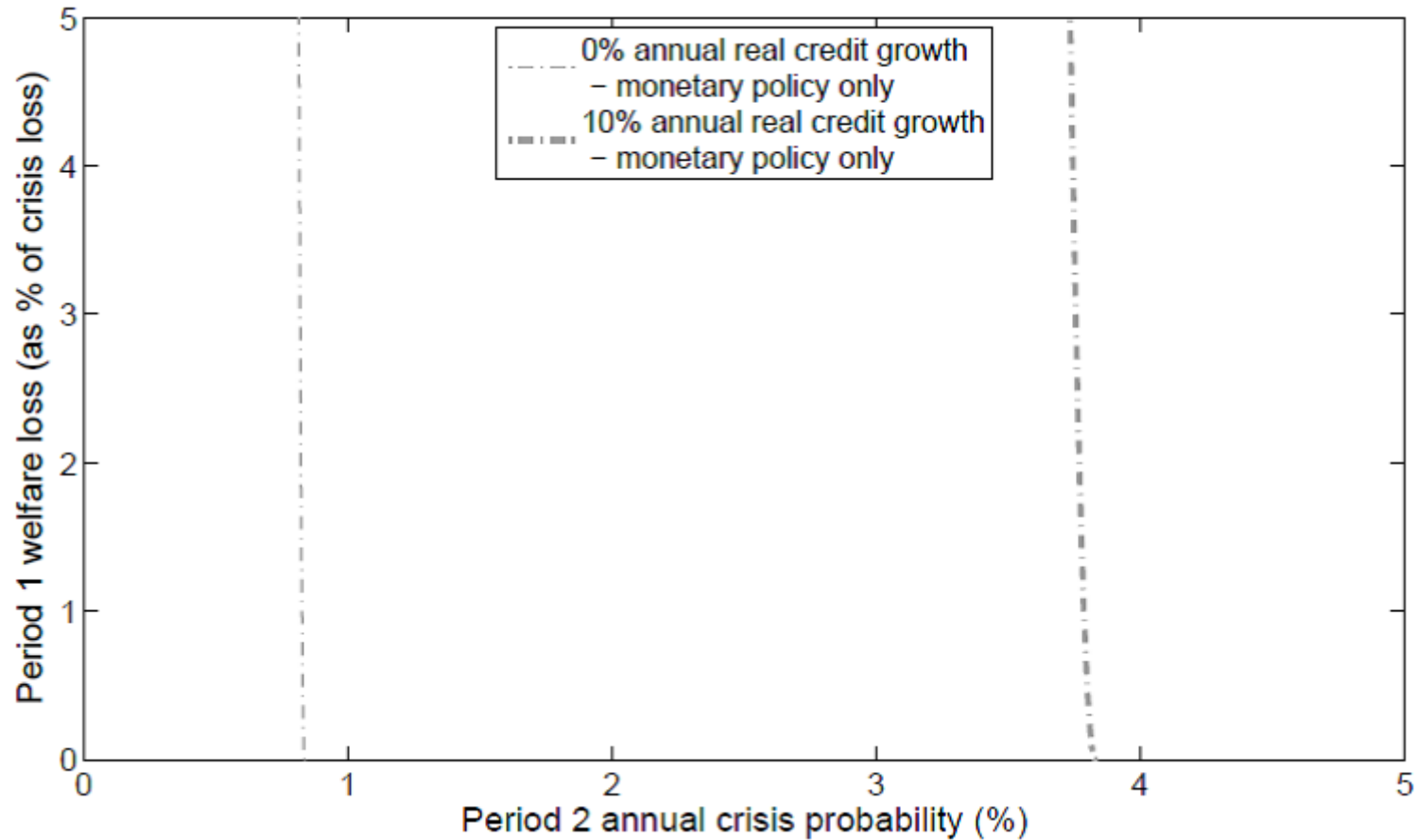


Notes. The figure presents the impact on key model variables (the credit spread, s_1 , output, y_1 , inflation, π_1 , credit growth, B_1 , and the crisis probability, γ_1) of a 100 basis point exogenous increase in the CCyB (dark blue bars) and the monetary policy rate (white bars).

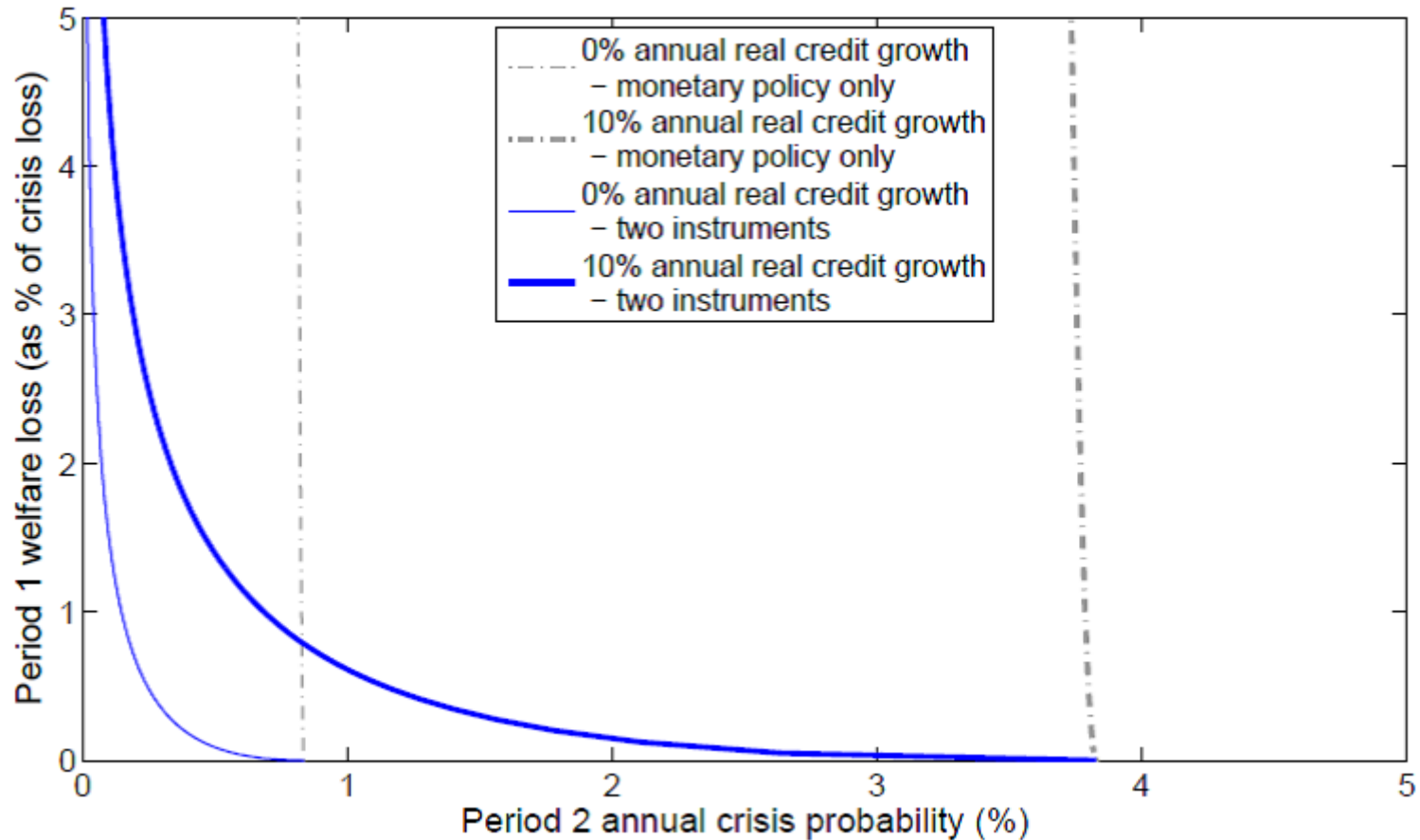
Key results

- Introducing the CCyB dramatically improves the intertemporal trade-off
- CCyB needs to be adjusted aggressively to achieve these benefits
- Monetary policy and macroprudential policy can be complements or substitutes depending on the source of the shock
- The gains from formal policy coordination are small – except at the ZLB

Intertemporal trade-off with monetary policy only



Intertemporal trade-off with monetary policy and CCvB



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Table 4: Macroeconomic outcomes under different policy regimes and model variants

Case	SD(y_1)	SD(π_1)	SD(B_1)	median(γ_1)	SD(i_1)	SD(k_1)	$E(L)$
<i>Simulation using credit shocks only</i>							
$\zeta = 0$:							
(i) Myopic policy regime	0	0	5.8	2.39	0	-	3.62
(ii) Monetary policy-only regime	0.002	0.002	5.8	2.39	0.003	-	3.62
(iii) CCyB regime	0.11	0.005	5.3	0.77	0.11	1.45	1.37
$\zeta = 2$:							
(iv) Myopic policy regime	0	0	5.8	2.39	0	-	10.86
(v) Monetary policy-only regime	0.005	0.005	5.8	2.39	0.008	-	10.86
(vi) CCyB regime	0.13	0.006	5.2	0.40	0.13	1.74	2.48
<i>Simulation using all shocks</i>							
$\zeta = 0$:							
(vii) Myopic policy regime	0.25	0.013	5.9	2.57	2.03	-	4.10
(viii) Monetary policy-only regime	0.25	0.013	5.9	2.57	2.03	-	4.09
(ix) CCyB regime	0.16	0.008	5.4	0.75	2.05	2.28	1.53
$\zeta = 2$:							
(x) Myopic policy regime	0.25	0.013	5.9	2.57	2.03	-	11.51
(xi) Monetary policy-only regime	0.25	0.014	5.9	2.57	2.03	-	11.50
(xii) CCyB regime	0.20	0.010	5.3	0.40	2.1	2.23	2.66

Notes. The table presents results obtained by running a stochastic simulation of the model. The standard deviations of output (y_1), inflation (π_1), credit growth (B_1), the interest rate (i_1) and the CCyB (k_1) are reported in terms of annual percentage points; the median crisis probability (γ_1) is reported as an annual percentage rate; expected losses are reported as a per cent of losses incurred in the event of a financial crisis occurring in period 2. The results are reported for two alternative values of ζ , the relative weight placed on stabilising the crisis probability in the loss function. For both sets of results, expected losses are shown as a per cent of losses incurred in the event of a crisis assuming that $\zeta = 0$, $L_{2,c}|\zeta = 0$.

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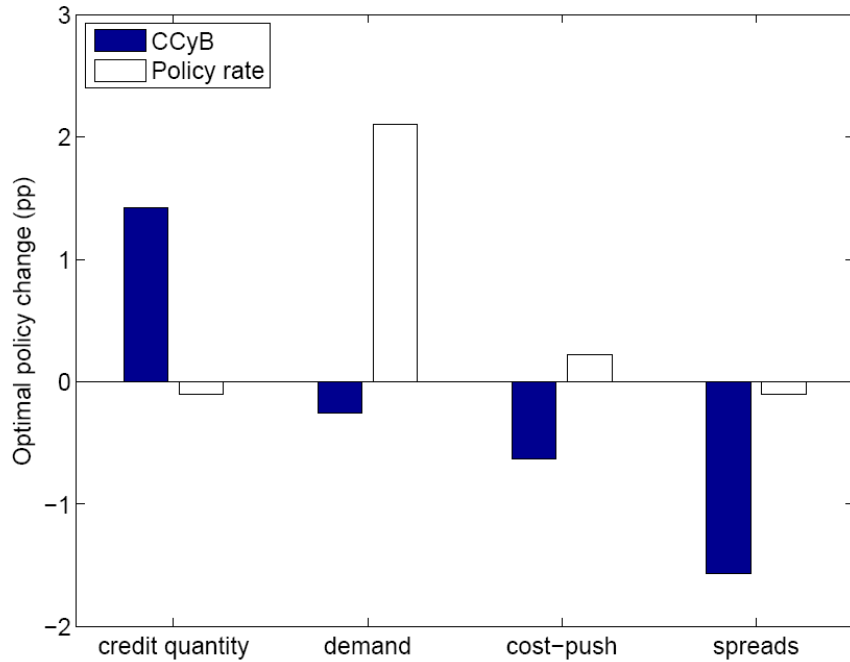
Policies can be both substitutes and complements

Table 5: Optimal policy in response to a credit boom (Shock to: ξ_1^B)

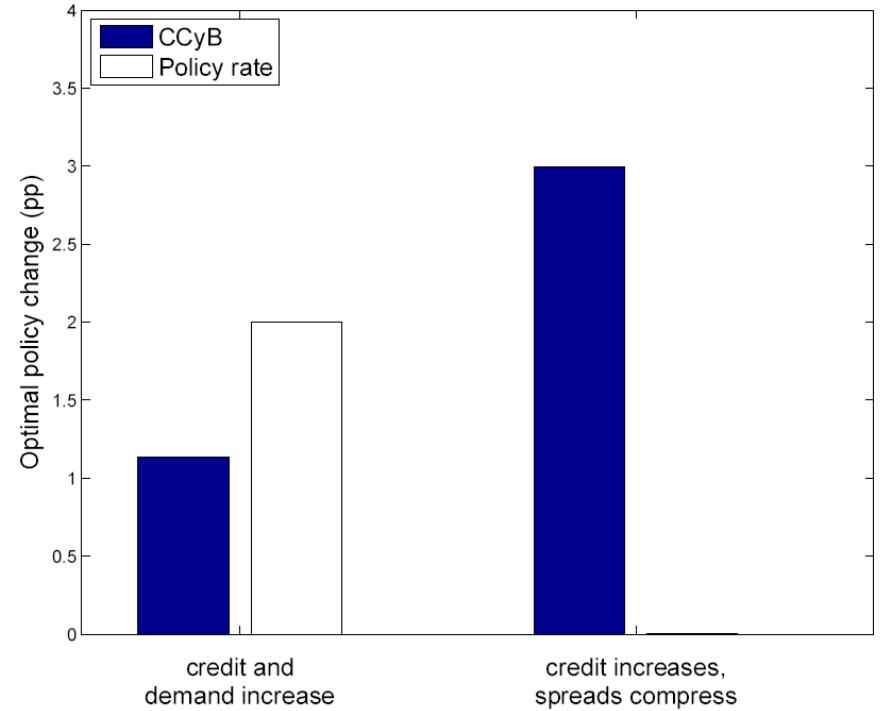
Case	Δk_1	Δi_1	Parameter restriction	Intuition
Instrument complements	+	+	$\frac{\kappa^2}{\kappa^2 + \lambda} \frac{\nu\psi}{\kappa} > \sigma\omega\psi$	The impact of the CCyB on potential output sufficiently exceeds its impact on demand
Instrument substitutes	+	-	$\frac{\nu\psi}{\kappa} \frac{\kappa^2}{\kappa^2 + \lambda} < \sigma\omega\psi,$ $\frac{\frac{\partial \gamma_1}{\partial k_1} \sigma}{\frac{\partial \gamma_1}{\partial i_1} (\sigma\omega\psi + \frac{\kappa^2}{\lambda + \kappa^2} \frac{\nu\psi}{\kappa})} > 1$	The impact of the CCyB on potential output does not sufficiently exceed its impact on demand, and the CCyB has a comparative advantage for reducing crisis probability
Instrument substitutes and sign switches	-	+	$\frac{\frac{\partial \gamma_1}{\partial k_1} \sigma}{\frac{\partial \gamma_1}{\partial i_1} (\sigma\omega\psi + \frac{\kappa^2}{\lambda + \kappa^2} \frac{\nu\psi}{\kappa})} > 1$	The impact of the CCyB on potential output does not sufficiently exceed its impact on demand, and monetary policy has a comparative advantage for managing the crisis probability

Optimal response to different shocks

Individual shocks



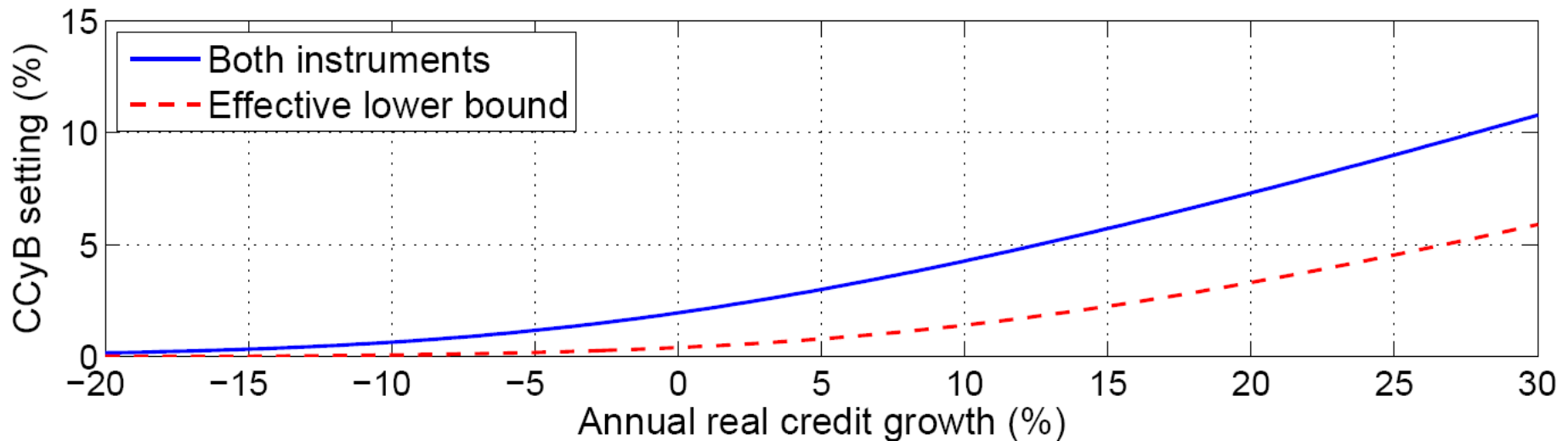
Combinations of shocks



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Implications of the effective lower bound



- If monetary policy is constrained, use the CCyB less aggressively as greater consideration is needed for its effects on aggregate demand