Output-Inflation Trade-offs and the Optimal Inflation Rate

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OUTPUT-INFLATION TRADE-OFFS IN STAGGERED PRICE MODELS

In a staggered price model with trend inflation, a Kimball-type non-CES aggregator generates relationships between the slope of the Phillips curve and trend inflation (left panel) and the average markup and trend inflation (right panel) consistent with empirical evidence.
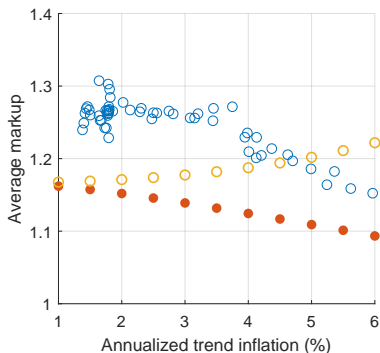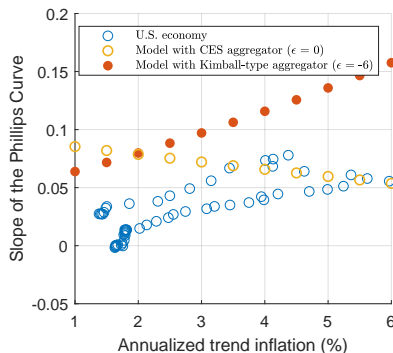

Sources: Trend inflation of Chang, Clark and Koop (2018); average markup of De Loecker, Eeckhout and Unger (2020).

To examine the implications of the Kimball-type aggregator for the optimal inflation rate, we derive the welfare function as a second-order approximation to the representative household's utility function in the model.

THREE WELFARE COSTS

1. Steady-state cost (Γ_{ss})
2. Cost of inflation-related variability ($-\Gamma_\pi \mathrm{var}_\pi / 2$)
3. Cost of output variability ($-\mathrm{var}_y$)

The Kimball-type aggregator substantially alters how higher trend inflation affects the first two of the welfare costs.
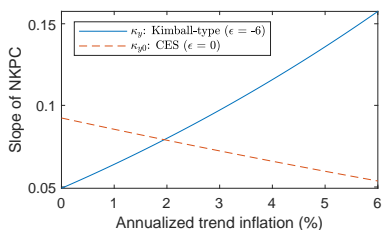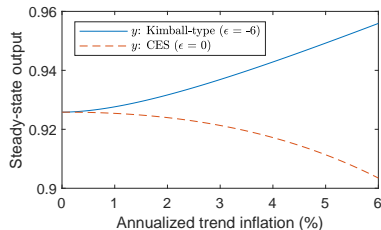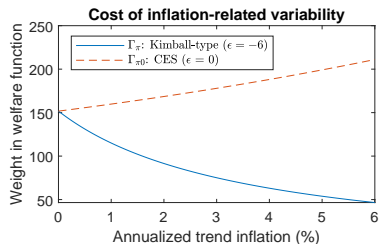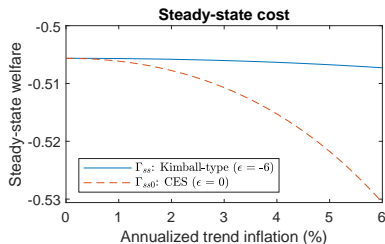
IMPLICATIONS FOR THE OPTIMAL INFLATION RATE

1. The optimal inflation rate is moderately positive under a Taylor-type monetary policy rule, even without considering the ZLB.

   - Optimal inflation is 2.4% under a baseline calibration.

   - Rises mildly to 3.3% once taking the ZLB into account.

   - Contrasts with the CES aggregator, which implies optimal inflation is zero without ZLB and 1.5% with ZLB.

2. There is no substantial welfare difference between a 2 percent and a 4 percent inflation target.

   - The welfare loss of raising the inflation target is close to zero, even for a calibration that induces a large welfare loss in the CES case.