

Navigating climate policy shocks: Optimal monetary policy responses

4.9.2026 - Marco Carli, Francesca Diluiso, Mathias Hoffmann | Deutsche Bundesbank

Climate policy shocks create a stabilisation trade-off for monetary policy by pushing inflation and output in opposite directions. We show that optimal policy should prioritise stabilising real activity and accommodate temporary inflation fluctuations, as energy-related distortions amplify output effects. Accordingly, policy rules that respond to both inflation and the output gap outperform inflation-only strategies, implying that central banks should tolerate short-run inflation pressures while credibly maintaining medium-term price stability.

Climate policy is increasingly reshaping relative prices, affecting both production costs and household consumption. This raises a fundamental question for monetary policy: should central banks respond to the inflationary consequences of climate policies, or prioritise stabilising real economic activity?

We show that when climate policy shocks push inflation and output in opposite directions, optimal monetary policy should place greater weight on stabilising real activity and should accommodate short-run inflation fluctuations. Policy rules that respond to both inflation and the output gap deliver substantially lower welfare losses than inflation-only rules.

Climate policy as a source of stabilisation trade-offs

Carbon pricing and green subsidies can induce sizeable and persistent changes in relative prices over the monetary policy horizon. These policies simultaneously affect firms' marginal costs and households' real income, thereby influencing both inflation and aggregate demand.

As a result, climate policy shocks generate stabilisation trade-offs for monetary policy. In particular, increases in carbon prices tend to raise inflation while depressing output, whereas green subsidies exert downward pressure on inflation and support economic activity.

Underlying mechanism

The trade-offs arise from the central role of energy in both production and consumption. Energy is only imperfectly substitutable with other inputs and goods. Consequently, increases in carbon prices raise firms' production costs while reducing households' real disposable income. This dual effect amplifies the contraction in demand and widens the welfare-relevant output gap.

In this environment, strict inflation stabilisation would require sizeable adjustments in wages, employment, and output. As a result, the standard "divine coincidence" between price stability and output stabilisation breaks down.

Optimal monetary policy response

Optimal monetary policy resolves this trade-off by placing greater emphasis on stabilising real activity. Rather than offsetting short-run inflationary pressures, the central bank allows temporary deviations from its inflation target, while maintaining well-anchored inflation over the medium term.

This approach mitigates inefficient fluctuations in employment and output.

From a welfare perspective, the gains from stabilising real activity outweigh the costs associated with accommodating short-term inflation movements.

Performance of simple policy rules

Simple policy rules differ markedly in their ability to approximate the optimal policy response.

Dual-mandate Taylor rules that respond to both inflation and the output gap significantly outperform rules that focus exclusively on inflation stabilisation. Moreover, once the output gap is actively stabilised, the distinction between targeting headline versus core inflation becomes quantitatively less important.

Policy implications

These findings have direct implications for the conduct of monetary policy during the green transition.

When policy-induced shocks simultaneously affect marginal costs and aggregate demand, strict inflation stabilisation is no longer optimal from a welfare perspective. In such circumstances, a mechanical response to inflation developments may lead to unnecessary volatility in real activity.

Instead, central banks should tolerate temporary deviations from inflation targets and focus on stabilising the real economy over the relevant policy horizon. A credible commitment to medium-term price stability remains essential but does not require offsetting all short-run inflationary pressures.

Conclusion

As climate policy becomes an increasingly important driver of macroeconomic fluctuations, monetary policy frameworks need to account for the resulting stabilisation trade-offs.

Central banks that accommodate temporary inflation movements while stabilising real activity are better positioned to support the transition and preserve macroeconomic stability.

Carli, M., F. Diluiso, M. Hoffmann (2026), Navigating climate policy shocks: Optimal monetary policy responses, Bundesbank Discussion Paper, No 24/2026.

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