

---

# Panel: Inflation objective, structural forces, central bank communication

---

**Volker Wieland**  
GCEE and IMFS, Goethe University Frankfurt

2020 ECB Forum on Central Banking  
Central banks in a shifting world  
Wednesday, November 11, 2020

# President Lagarde, ECB Watchers conference, September 30, 2020

---

“Most importantly, the last decade has been defined by a **persistent decline in inflation** among advanced economies. In the euro area, annual inflation averaged 2.3% from 1999 to the eve of the great financial crisis in August 2008, but only 1.2% from then until the end of 2019.

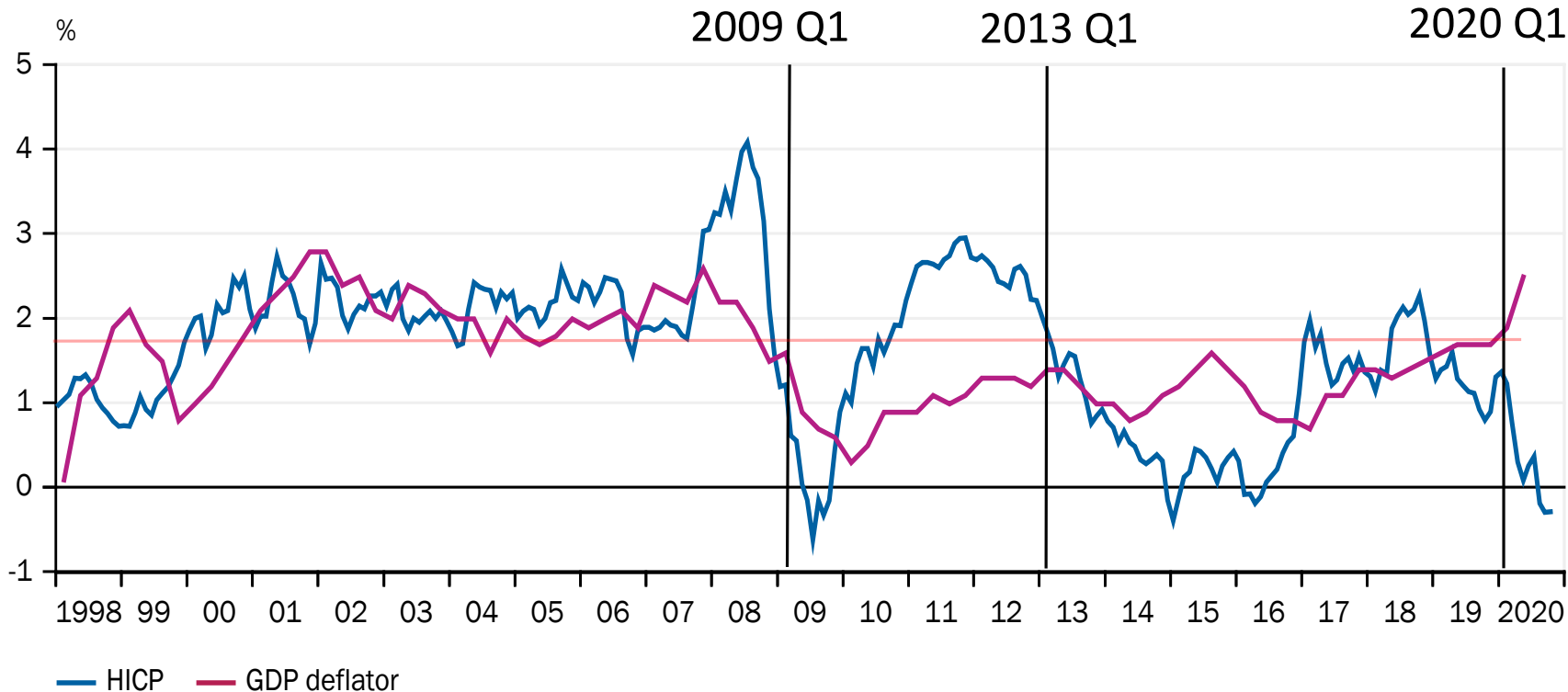
We need to thoroughly analyse the forces that are driving inflation dynamics today, and consider whether and how we should adjust our policy strategy in response.”

# Inflation averages – 3 periods: Pre-financial-crisis decade, double recession & recovery

Inflation measures % growth rates	1999 Q1 - 2009 Q1 Up to GFC recession	2009 Q2 - 2013 Q1 Double recession	2013 Q2 – 2020 Q1 Recovery
HICP: Harmonized Index of <b>Consumer Prices</b> in the euro area	<b>2.2</b>	<b>1.8</b>	<b>0.9</b>
GDP Deflator: <b>Prices</b> of all goods & services <b>produced</b> in the euro area	<b>2.0</b>	<b>1.0</b>	<b>1.3</b>
Import Price Deflator: <b>Prices</b> of <b>imported</b> goods & services.	<b>1.6</b>	<b>2.1</b>	<b>-0.3</b>

# Domestic price inflation reached 1.8 % end of 2019

Growth rates of HICP and GDP deflator in the euro area



Sources: ECB, Eurostat

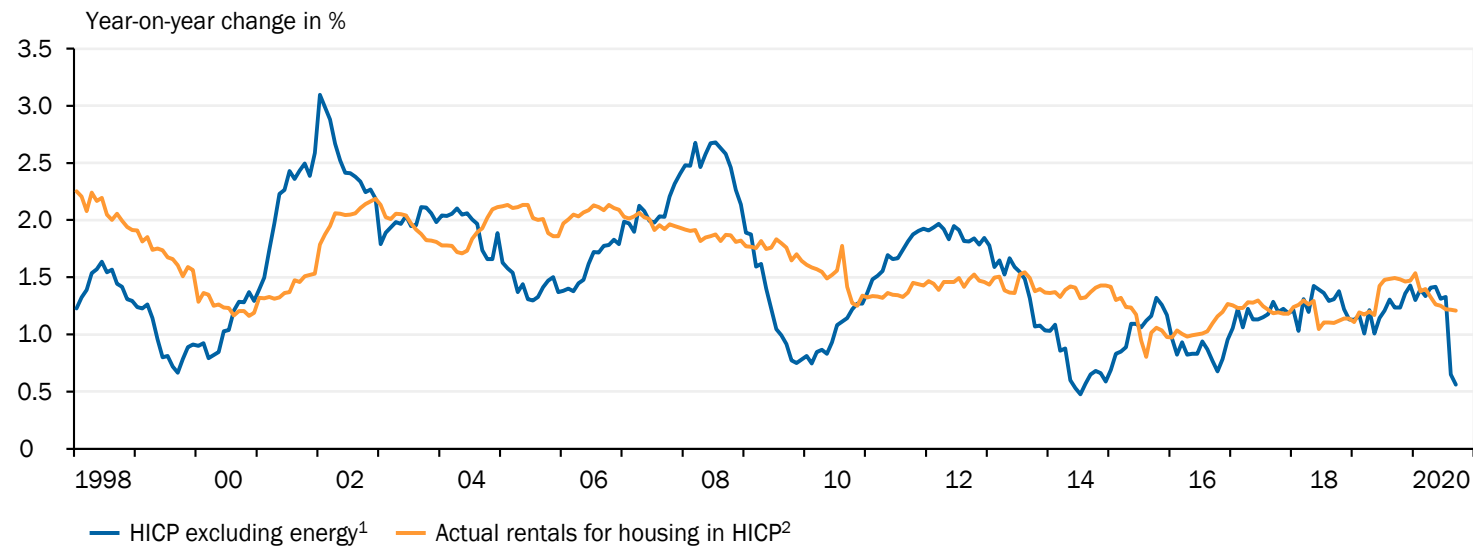
© Sachverständigenrat | 20-416

- HICP & GDP deflator very similar from 1998 to mid 2007.
- HICP more variable in double recession.
- GDP deflator trends up with recovery.

**Bletzinger-Wieland  
ECB target estimate  
from reaction function:  
1.74%**

# Cost of housing under-represented in HICP, only rental cost while owner-occupied housing is not included.

Actual rentals for housing and HICP excluding energy: Euro area



- Cost for housing under-represented in HICP.
- Low weights of rental cost.
- Rental cost inflation smoother higher than HICP inflation in low inflation periods.

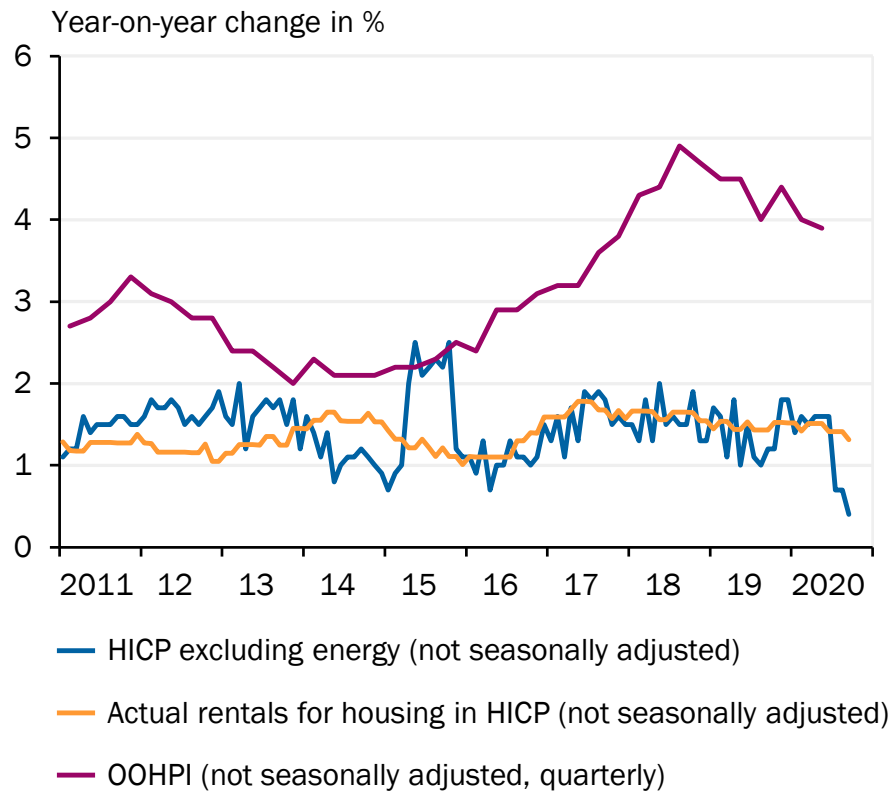
1 - Working day and seasonally adjusted. 2 - Not seasonally adjusted.

Sources: ECB, Eurostat, own calculations

© Sachverständigenrat | 20-582

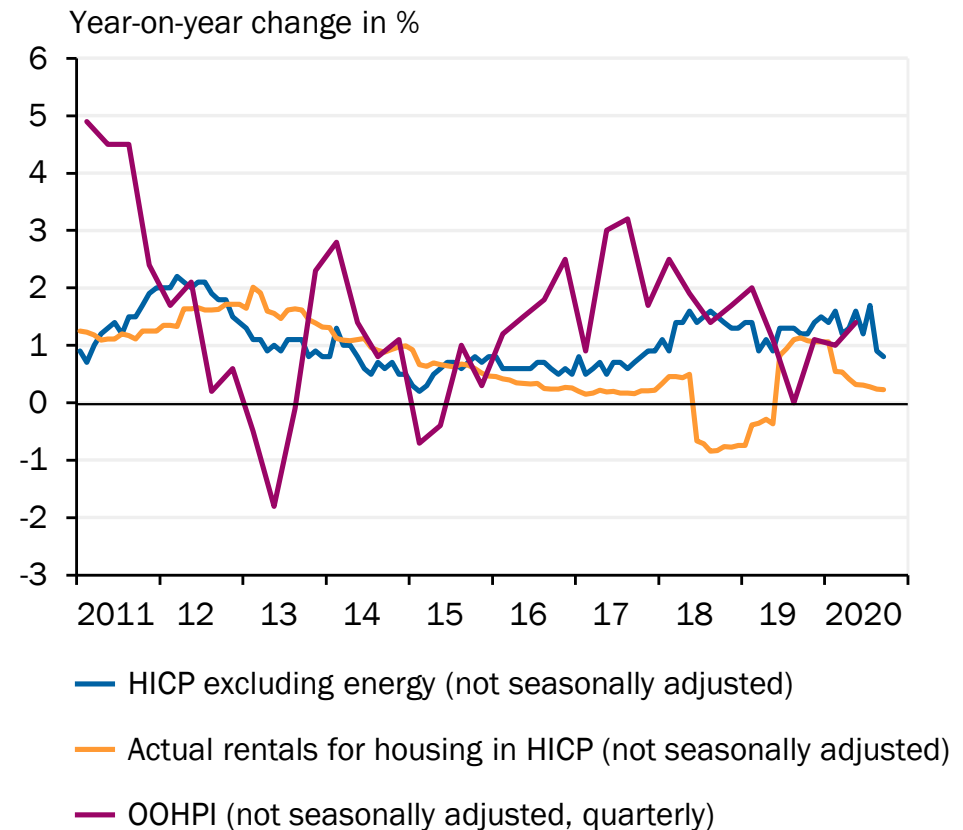
# Owner-occupied housing index increased in Germany, quite variable, partly asset price of land.

## Germany



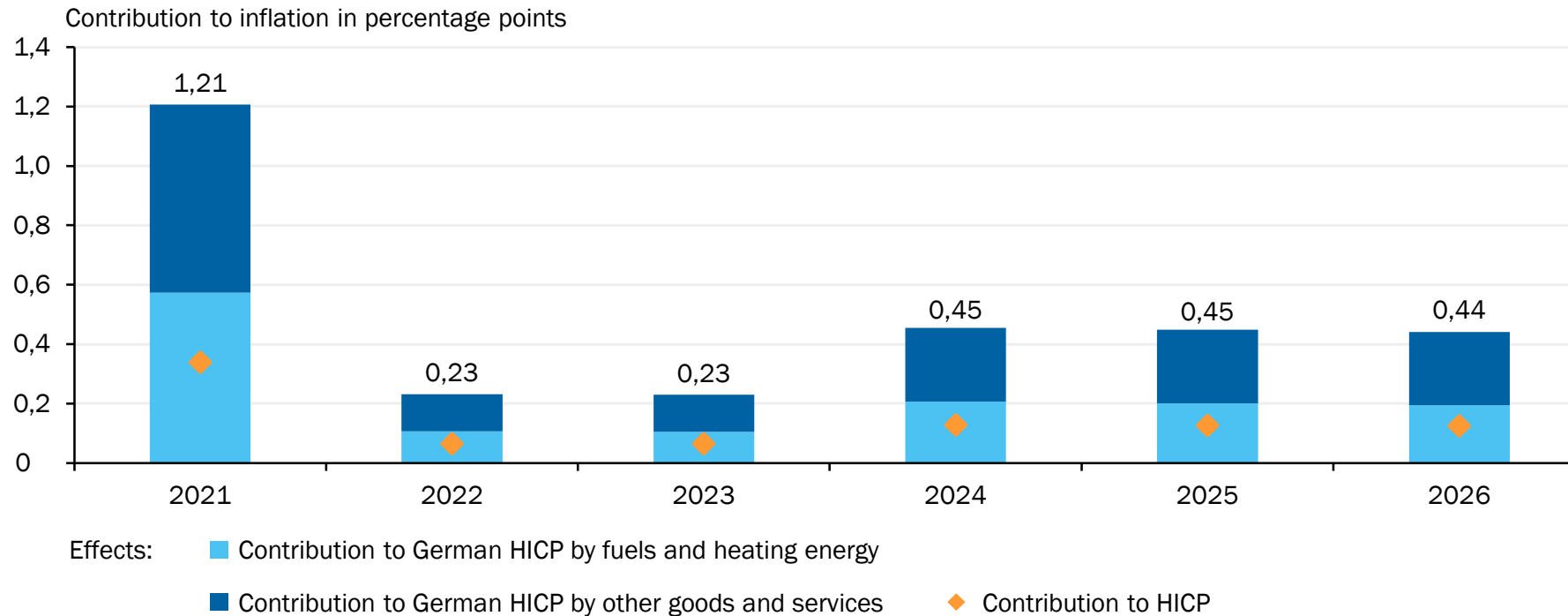
Sources: Eurostat, own calculations

## France



# Anticipated increase of HICP inflation due to CO<sup>2</sup> Pricing for heating and mobility in Germany

## Effects of German national emissions trading system on HICP between 2021 und 2026



Contribution to euro area HICP roughly 0.34 pp (0.17 direct effect) in 2021.

Possibly more like a cost-push shock.

Sources: Eurostat, Federal Statistical Office, RDC of the Federal Statistical Office and Statistical Offices of the Länder, Einkommens- und Verbrauchsstichprobe 2013 Grundfile 5 (HB), own calculations

© Sachverständigenrat | 20-584

# Policy at the ELB: Switching from interest rate to QE, while QE effects are uncertain.

---

$\pi$ : inflation,  $\pi^*$ : target,  $i$ : nominal interest rate,  $i^*$ : nominal equilibrium rate,  $q$ : quantitative policy,  $e$ : shock,  $\sigma$ : variances.

$$(1) \quad \pi_t = -a(i_t - i^*) + bq_t + \pi_{t-1} + e_t \quad b \sim N(\bar{b}, \sigma_b), e_t \sim N(0, \sigma_e)$$

$$(2) \quad \text{Max}_{i,q} E[-(\pi_t - \pi^*)^2] \Leftrightarrow \text{Max}_{i,q} (-(E\pi_t - \pi^*)^2 - V\pi_t)$$

$$(3) \quad \text{if } i_t \geq i^{LB} \Rightarrow i_t = i^* + \frac{1}{a}(\pi_{t-1} - \pi^*), \quad q_t = 0 \quad E_t \pi_t = \pi^*$$



# At ELB it may be optimal to have inflation converge more slowly to target from below, because of uncertainty ...

---

$\pi$ : inflation,  $\pi^*$ : target,  $i$ : nominal interest rate,  $i^*$ : nominal equilibrium rate,  $q$ : quantitative policy,  $e$ : shock,  $\sigma$ : variances.

$$(4) \quad \text{if } \pi_{t-1} < \pi^* + a(i^{LB} - i^*)$$

$$i_t = i^{LB}, \quad q_t = -\frac{\bar{b}}{(\bar{b}^2 + \sigma_b)} (\pi_{t-1} - a(i^{LB} - i^*) - \pi^*)$$

$$\Rightarrow E\pi_t < \pi^*$$

Brainard (1967) on policy attenuation under multiplicative uncertainty and Orphanides & Wieland (2000) on optimal quantitative easing under uncertainty.

..., or because of the risk of side effects of QE,

---

$z$ : side effects of QE,  $s$ : shock,  $\sigma$ : variances.

$$(5) \quad z_t = cq_t + s_t \quad c \sim N(0, \sigma_c), s_t \sim N(0, \sigma_s)$$

$$(6) \quad \text{Max}_{i,q} E[-(\pi_t - \pi^*)^2 - \lambda z^2]$$

$$(7) \quad i_t = i^{LB}, \quad q_t = -\frac{\bar{b}}{(\bar{b}^2 + \sigma_b + \lambda\sigma_c)} (\pi_{t-1} - a(i^{LB} - i^*) - \pi^*)$$

$$\Rightarrow E\pi_t < \pi^*$$

# Factors that influence the constraint on interest rate policy.

---

$$(8) \quad [i_t - i^{LB}]_+ = \left[ r^* + \pi^* + \frac{1}{a} (\pi_{t-1} - \pi^*) - i^{LB} \right]_+$$

$r^* \downarrow \Rightarrow$  Interest rate policy more constrained.

$\pi^* \uparrow \Rightarrow$  Depends! When at ELB it widens the distance to cover and requires even easier policy.

$i^{LB} \downarrow \Rightarrow$  Interest rate policy less constrained.

$\pi_{t-1}$  measurement  $\uparrow \Rightarrow$  Interest rate policy less constrained.

## → Some conclusions for strategy

---

- Consider inflation more broadly in policy communication, not just HICP.
- Range as in “below but close to 2%” offers flexibility to include other measures in policy communication.
- At ELB it may be optimal to have inflation return to target more slowly due to uncertainty and side effects of QE.
- Raising inflation target when at ELB is tricky. Greater distance to target, requires easing policy further.
- Negative effect of lower  $r^*$  at ELB may be offset by exploring potentially lower  $i^{LB}$ .