

Consequences for Euro-Area Monetary Policy of Omitting Owner-Occupied Housing from the *HICP*

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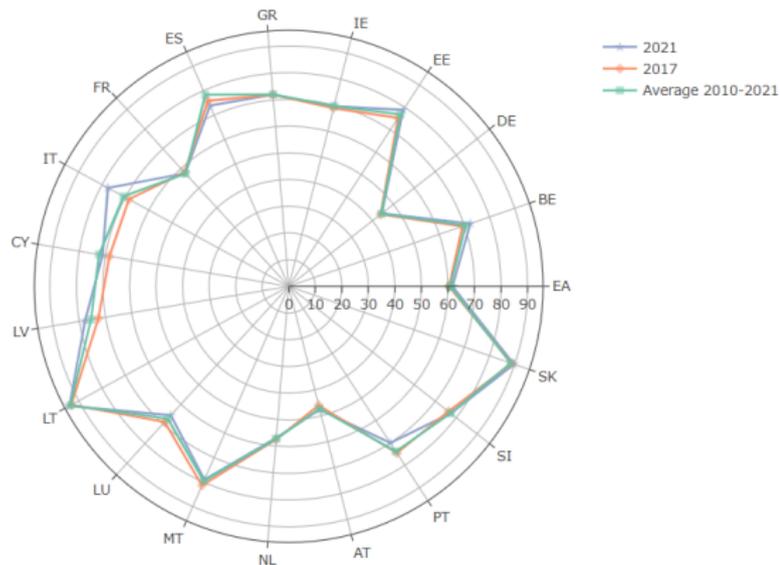
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Motivation

- ▶ The **Harmonized Index of Consumer Prices (HICP)** (**HICP**) is the target index for Monetary Policy for the Euro Area.
- ▶ Since the euro's inception in 1999, owner-occupied housing (OOH) is excluded from the HICP.
- ▶ There are large differences in the share of owner occupiers across euro-area countries.
- ▶ If included, OOH would be the biggest component – in terms of expenditure weight – in the HICP.
- ▶ Leaving out a direct measure of housing costs accrued to owner-occupiers means that housing costs of only roughly 40% of households (the renters) are represented in the euro-area HICP.

Share of Owner-Occupiers in Euro-Area Countries



Note: The figure shows the shares [%] of owner-occupiers per country and the Euro Area (EA). The shares are computed from weighted HFCS data and averaged over all existing survey years between 2010 and 2021.

Why Is OOH not in the HICP?

Three main ways of including OOH in a CPI.

(i) Rental equivalence

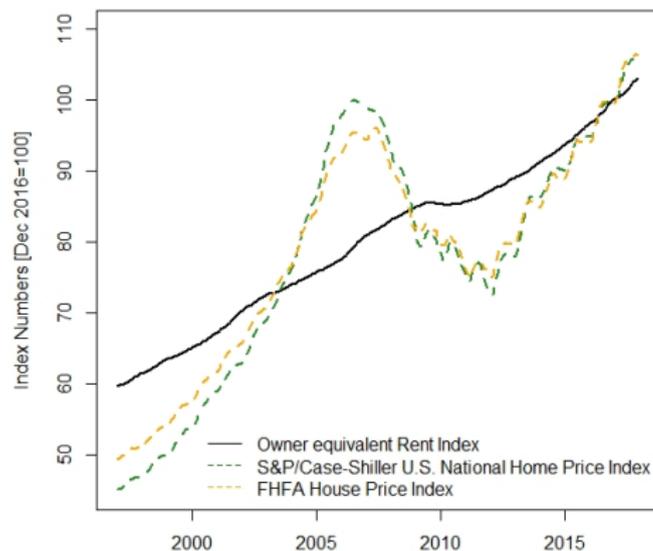
Most countries that include OOH in their CPIs use the rental equivalence method.

But some countries in Eastern and Southern Europe say their rental markets are too small. Hence, rental equivalence was ruled out as an option.

Also, rents (especially continuing rents) can follow a very different path from house prices. Hence rents often do not provide a good proxy for changes in the cost of owner-occupied housing services.

Trends in House Prices and Rents can be very different

Example from the US (Hill, Steurer & Waihl 2025).



(ii) User Cost

The user cost method measures OOH costs directly, not via rents. It was first applied to housing by Blinder (1980) and Poterba (1984).

The main concerns with the user cost method are:

- ▶ It could destabilize the HICP.
- ▶ It could make inflation jump upwards whenever monetary policy is tightened.

(iii) Net acquisitions

This treats housing like a consumer durable - focusing on the cost of building new structures.

When computing OOH expenditure it completely ignores land – which is the main issue!

While it is true that land is not produced, **land produces a service flow!** The cost of the service flow of land and structures should be included in the CPI.

Eurostat has been trying to implement the net acquisitions method for 20 years.

It was again recently rejected over concerns that it mixes consumption and investment. This is because it uses a house price index as the OOH price index.

Our Contribution

- ▶ We develop a user cost based method that could be used to include OOH in the HICP. Our method would make the HICP more responsive to developments in the housing market, without destabilizing it.
- ▶ Note: The user cost method focuses on measuring the cost of the service flow provided by OOH. Hence it does not mix consumption and investment.
- ▶ We show how measured inflation in the euro area would have differed if OOH had been included in the HICP.
- ▶ We show how monetary policy would have been more proactive if OOH had been included – for example, the ECB would have responded sooner to the 2021 inflation.

The Per Euro User Cost ($u_{c,t}$)

This is the cost incurred by the property owner in period t .

$$u_{c,t} = (1 + r_{c,t}) + \omega_{c,t} - (1 - \delta_t)(1 + g_{c,t}^e + \pi_{c,t}^e - \gamma_{c,t}),$$

$r_{c,t}$ is the nominal interest rate;

δ_t is depreciation;

$\omega_{c,t}$ is running and average transaction costs (including taxes);

$\gamma_{c,t}$ is the risk premium of owner-occupying rather than renting;

$g_{c,t}^e$ is the expected real capital gain on housing;

$\pi_{c,t}^e$ is the expected rate of inflation.

$$\delta_t(g_{c,t}^e + \pi_{c,t}^e - \gamma_{c,t}) \approx 0.$$

When we make this approximation, the user cost formula reduces to the following simpler more widely used form:

$$u_{c,t} = r_{c,t} + \delta_t + \omega_{c,t} + \gamma_{c,t} - g_{c,t}^e - \pi_{c,t}^e.$$

User Cost Expenditure and the User Cost Price Index

Using this formula, OOH expenditure is given by

$$\text{OOH expenditure}_{c,t} = N_{c,t}^{OOH} u_{c,t} \bar{P}_{c,t}$$

and the OOH price index by

$$\text{OOH price index} = \frac{u_{c,t} \bar{P}_{c,t}}{u_{c,t-1} \bar{P}_{c,t-1}}.$$

$\bar{P}_{c,t}$ denotes the average cost of an owner-occupied property in country c in period t .

$N_{c,t}^{OOH}$ denotes the number of owner-occupied properties in country c in period t .

Ways to Ensure that User-Cost Based OOH Does Not Destabilize the HICP

We have three tools that can be used as required to ensure the inclusion of OOH does not destabilize the HICP.

- ▶ The way we compute our risk premium term (see below) partially offsets the capital gain term. We have a parameter k in the risk premium term that can be adjusted as needed.
- ▶ We include a smoothing parameter when calculating the per euro user cost u , which can be used when needed.
- ▶ We impose the restriction that in each period/country $u \geq 0.01$ (see below).

Calculating the Elements of User Cost

The **nominal interest rate** (r_t) here is the 10-year government bond rate (updated each quarter).

The **depreciation rate** (δ_t) should refer to the the whole property, consisting of the structure and the associated land, but excluding any maintenance costs. We set the depreciation rate to 1%, which is close to the 1.1% rate used by Fox & Tulip (2014) and between the estimates of 0.77% and 1.1% used by Svensson (2022).

We estimate **running and average transaction costs** (ω_t) by combining two elements, maintenance costs m and property/land taxes τ (amortized transaction fees and recurrent taxes).

Following Barrios et al. (2019), we set the maintenance cost equal to 1.5% for all countries in all years. Property/land taxes vary by country.

We argue that the risk premium rises in a housing boom (Duca et al. 2021). We calculate it as depending on the price-rent ratio as follows:

$$\gamma = 0.02 + k \ln \left[\frac{P_{c,t}/R_{c,t}}{\text{Avg}(P_{c,t}/R_{c,t})} \right],$$

We set $k = 0.05$. The higher the value of k , the more it offsets the capital gains term. A higher k makes it less likely that negative values of u are observed.

We set **expected inflation** (π_t^e) to 2%. This is the ECB's inflation target and expected inflation stayed close to this level during our sample period (Bankowska et al. 2021).

For the **expected real capital gain** (g_t), we use the 10-year average real capital gain as an empirical proxy to measure households' extrapolative behavior in forming expectations.

Smoothing User Cost

The per euro user cost can be smoothed if needed.

$$\tilde{u}_{c,t} = \alpha u_{c,t} + (1 - \alpha)\tilde{u}_{c,t-1}.$$

If $\alpha = 1$ there is no smoothing, while $\alpha = 0$ refers to perfect smoothing, that is, keeping the user-cost constant over time.

What is a good value for α ? It should be low enough that OOH does not have a destabilizing impact on the HICP.

In our empirical comparison we find that smoothing is not needed (i.e., we can set $\alpha = 1$).

Ensuring the User Cost Is Never Negative

The per euro user cost must be strictly positive for the OOH price index to be defined.

Negative expenditure would also be problematic a CPI setting.

It is also important that u is not too small. For example, suppose $u_{c,t-1} = 0.00001$. This means that the OOH price index in country c in period t could be implausibly large:

$$\text{OOH price index}_t = \frac{u_{c,t} \bar{P}_{c,t}}{u_{c,t-1} \bar{P}_{c,t-1}}.$$

Hence we impose the following restriction:

$$\hat{u} = \max(0.01, \tilde{u}_{c,t})$$

Figure 1: Comparison of HICP Inflation with and without OOH

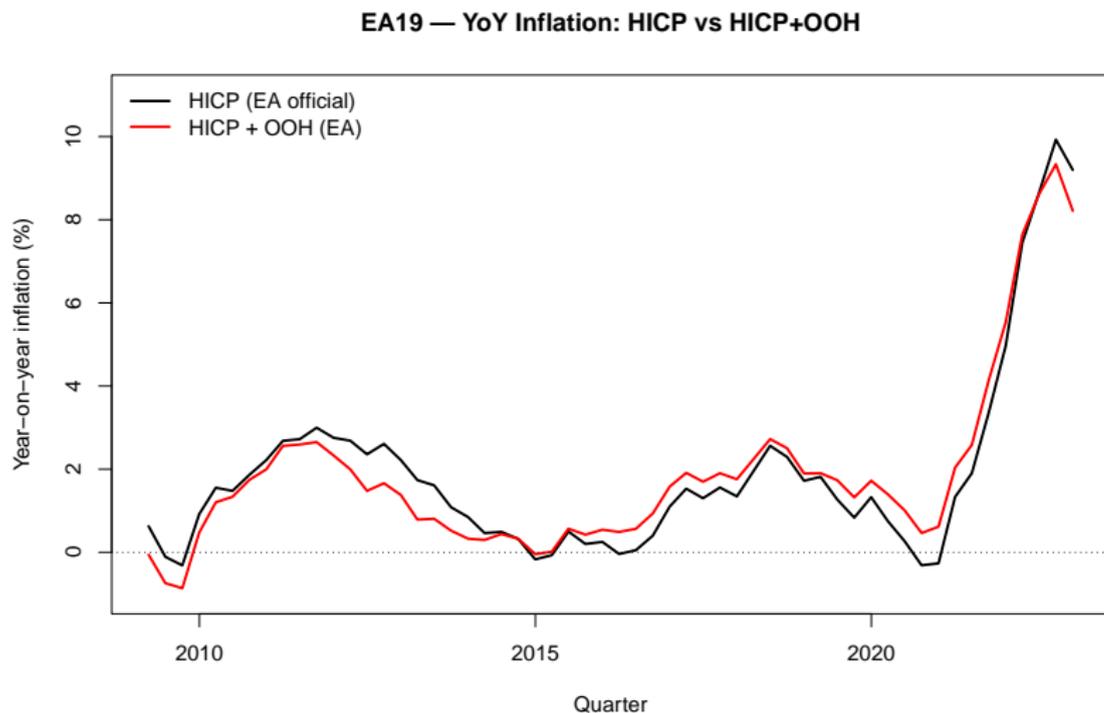


Figure 2: Country Level Comparison of HICP Inflation with and without OOH

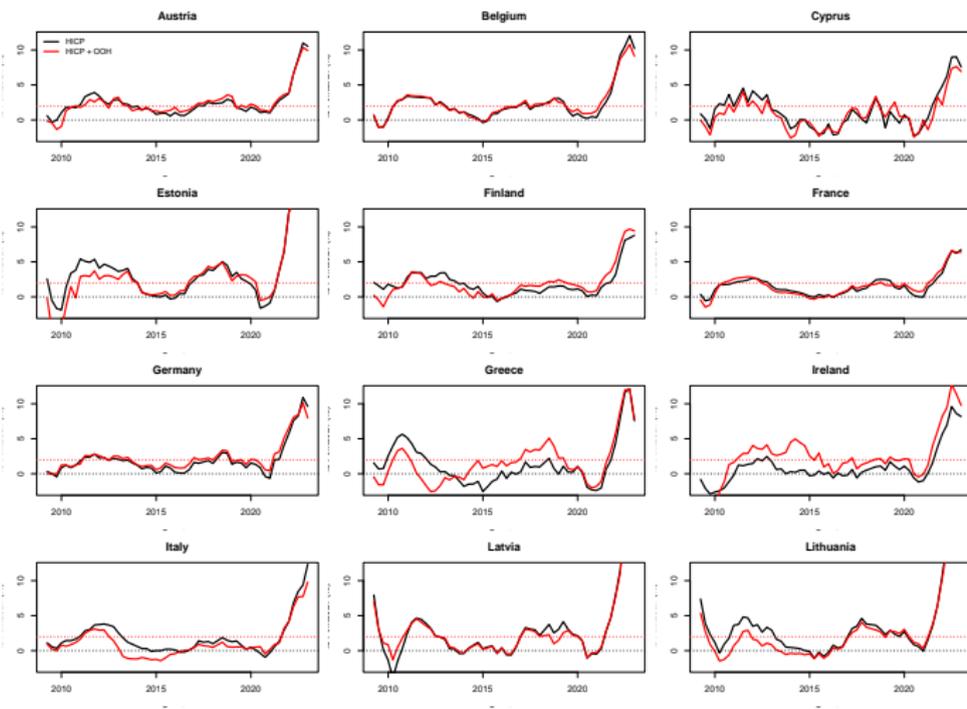
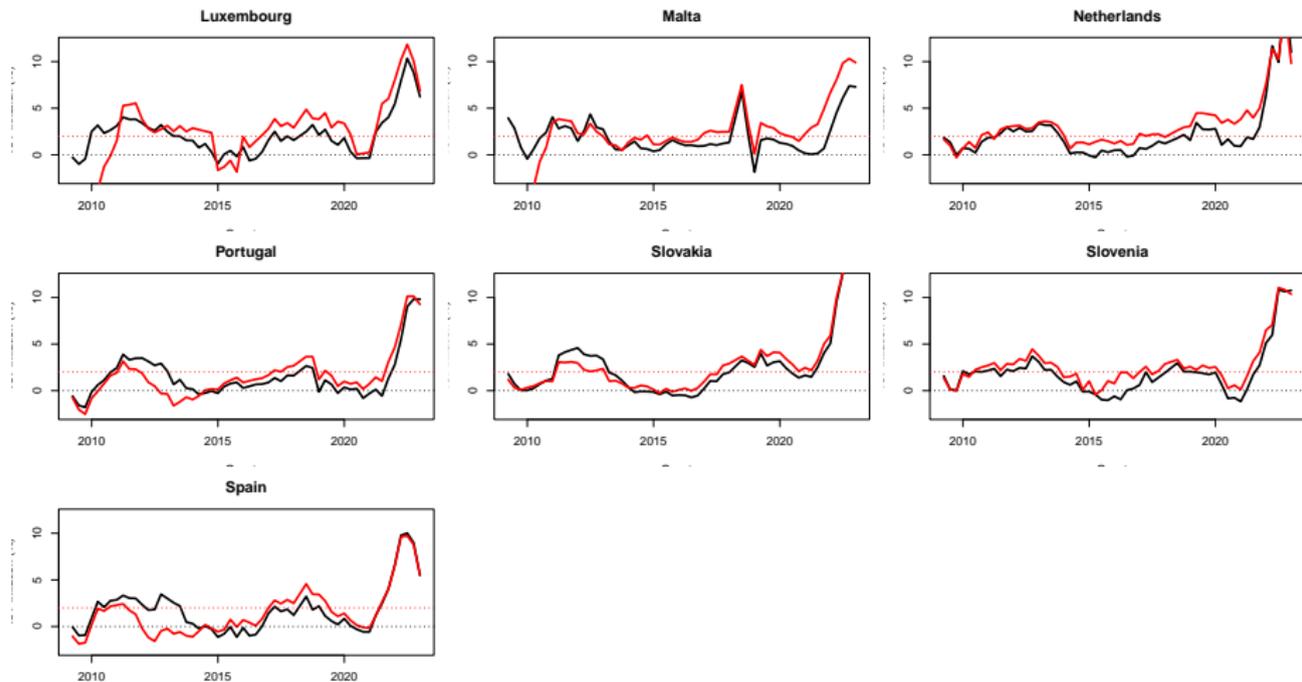


Figure 3: Country Level Comparison of HICP Inflation with and without OOH (continued)

HICP vs HICP+OOH — YoY Inflation by Country (Eurostat method)



Interpretation and the Taylor Rule

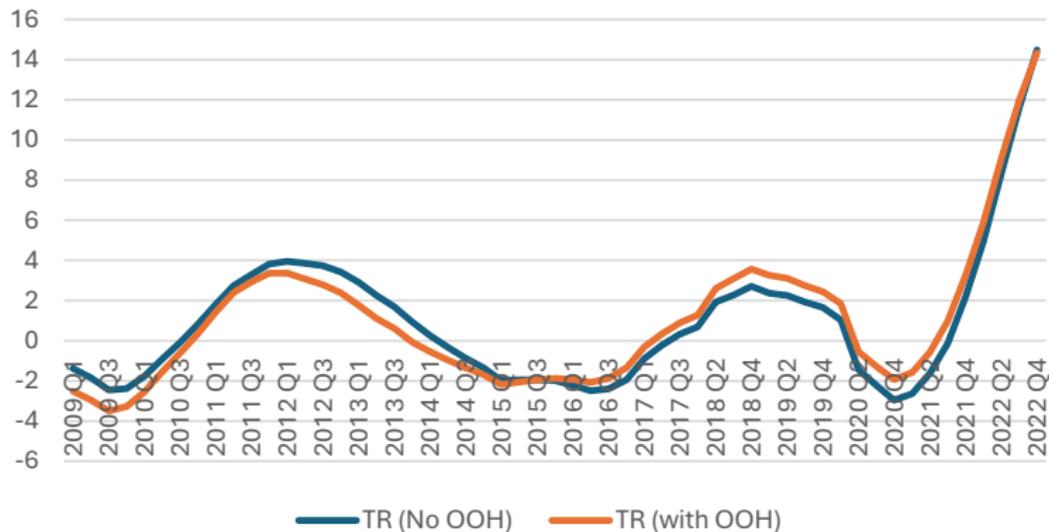
Countries where the gap between the two HICPs is largest (at least over part of the sample period) are Greece, Ireland, Italy, Lithuania, Luxembourg, Malta and Spain.

Next we consider how the inclusion of OOH in the HICP affects the Taylor rule interest rate. We focus on the following version of the Taylor rule:

$$i_t^* = 0.75i_{t-1}^* + 0.25[r_t^* + \pi_t + 1.5(\pi_t - \pi^*) + 0.5(Ygap_t)].$$

The results are shown on the next slide.

Taylor Rule Interest Rates



Conclusions

- ▶ Monetary policy would have been slightly looser before 2015 and slightly tighter after 2015 if OOH was included in the HICP.
- ▶ In particular, monetary policy would not have been as loose in 2019-2021. Hence the subsequent surge in inflation in 2022-2023 would probably have been slightly smaller.
- ▶ The results suggest that the peaks and troughs in inflation may be slightly larger when OOH is excluded from the HICP.

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