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Inflation Measurement: Role of Owner-Occupied Housing Costs

Compilation of papers

Policy Department for Economic, Scientific and Quality of Life Policies
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Inflation Measurement: Role of Owner-Occupied Housing Costs

Compilation of papers

This document was requested by the European Parliament's Ccmmittee on Economic and Monetary Affairs.

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How Should Housing Be Treated in the HICP?

Karl WHELAN

Abstract

The ECB has approved a plan to include a measure of the cost of owner-occupied housing in the HICP. This paper reviews the various methodologies that are used to incorporate this element into consumer price indices. It recommends the use of a rental equivalence approach rather than the net acquisitions approach currently used in Eurostat's experimental price index of owner-occupied housing.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 15 November 2021.

CONTENTS

LIST OF ABBREVIATIONS

BLS	Bureau of Labor Statistics
CPI	Consumer price index
ECB	European Central Bank
EMU	Economic and Monetary Union
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
HFCS	Household finance and consumption survey
OOH	Owner-occupied housing

EXECUTIVE SUMMARY

- **The Harmonised Index of Consumer Prices (HICP) does not currently contain a measure of the cost of owner-occupied housing (OOH)**. The European Central Bank (ECB) has approved a plan to include a measure of this sort in the HICP.
- **This paper reviews the various methodologies that are used to incorporate this element into consumer price indices**. It recommends the use of a rental equivalence methodology as the best practice measure of the cost of consuming services of owner-occupied housing.
- **Eurostat currently use a net acquisitions methodology to construct an experimental price index for owner-occupied housing**. They do not use the rental equivalence approach because this approach requires imputations and the current scope of the HICP is household final monetary consumption expenditures, which excludes imputed rentals.
- **This paper presents a number of arguments against the use of the net acquisitions methodology in the HICP**. This approach incorporates investment expenditures into an index that is supposed to measure the cost of consumption of a basket of goods and services.
- **There is no good conceptual basis for this approach**. The convention of focusing on consumption is why consumer price index (CPI) measures do not include items like the price of gold or stock market indices even though consumers sometimes purchase these items. The proposed approach breaks with this convention.
- **The net acquisitions approach will also likely exacerbate the volatility of HICP inflation and perhaps induce an upward bias**. This is because this approach is likely to place a greater weight on house prices when they go up than when they go down.
- **Adopting either the net acquisitions approach or the rental equivalence approach would have had a limited impact on HICP inflation in recent years**. However, this paper shows that the net acquisitions approach could have a relatively large impact during more substantial housing price bubbles and busts, such as occurred in the US during the 2000s.
- **The ECB's monetary policy strategy review recommends that the net acquisitions approach be used but that it be adapted to "better isolate the consumption component"**. However, there is no way to do this because the transactions used by the net acquisitions approach are all investment transactions. There is no consumption component.
- **The ECB should publish a detailed piece of analytical research on how to isolate the consumption component of owner-occupied housing**. This will likely require a fundamentally different approach to that currently used by Eurostat.
- **If the ECB's preferred analytically sound measure of the price of the consumption component of owner-occupied housing proves inconsistent with Eurostat requirements for data quality and timeliness, then the HICP should be kept as it is**. Eurostat can publish an alternative "HICP plus OOH" index that can be used by the ECB for its policy discussions.
- **The ECB should not give any role to Eurostat's OOH price index in its monetary policy assessments**. It relies on a small and unrepresentative set of price quotes.

1. INTRODUCTION

The European Treaties require the European Central Bank (ECB) to pursue price stability as its primary objective. The Treaties, however, do not define what is meant by price stability, leaving it to the Governing Council of the ECB to come up with its own definition. This definition has evolved over time, most recently with the monetary policy strategy review published in July, which revised the ECB's target rate of inflation to 2 % over the medium term, replacing its previous definition of price stability as inflation that was "close to but below 2 %".

Another aspect of defining price stability is deciding on the "basket" of goods and services to be used to calculate inflation. The ECB uses Eurostat's Harmonised Index of Consumer Prices (HICP) to measure inflation in the euro area. One limitation of this measure is that it does not incorporate the costs associated with owner-occupied housing (OOH). This omission has been noteworthy in previous years because house prices in the euro area have risen substantially over this period. This has led to suggestions that the HICP underestimates the true level of inflation prevailing in the economy. One indication that this is the case comes from an experimental quarterly price index for owner-occupied housing published by Eurostat: This index has been growing somewhat faster than the overall HICP in recent years.

In response to these suggestions, the ECB's strategy review contained a decision "*to recommend a roadmap to include owner-occupied housing (OOH) in the HICP.*" This process, which will take several years, will see the ECB and Eurostat continue ongoing analytical work on constructing OOH price indices and preparing the necessary legal work to officially change the definition of the HICP via passing a new regulation through the European Parliament and Council. The review also committed the ECB to assigning an important supplementary role to Eurostat's OOH index during the period prior to the incorporation of an OOH price index into the HICP.

This paper reviews the methodological issues relating to the measurement of owner-occupied housing, discusses the current approach used by Eurostat to construct its OOH price index and reviews the ECB's position on these issues. The paper also provides calculations describing how the inclusion of owner-occupied housing could affect euro area price inflation depending on the methodological approach taken and illustrating how US consumer price inflation would have looked in the past if an approach similar to Eurostat's was taken.

The central argument in this paper is that the methodology used by Eurostat for its current experimental OOH series, the so-called net acquisitions approach, is deeply flawed and should not be incorporated into the HICP. The measure has a weak conceptual basis and confuses costs associated with the consumption of housing services with those associated with housing as an investment asset and savings vehicle. As such, it is inappropriate for use in an index intended to capture the costs of consumption such as the HICP. The ECB's strategic review has recognised this flaw in the net acquisitions approach but its suggestion that there may be a simple fix to this flaw while using the same underlying methodology is not correct.

In place of Eurostat's methodology, I recommend the use of a rental equivalence approach, as implemented in national accounts around the world and in the US implementation of its consumer price index (CPI). Because the current legal basis for the HICP requires it to use only explicit monetary outlays, this would require a change in the scope of the index. But legal work to change the scope of the HICP is required in any case to add any measure of the cost of owner-occupied housing so this would not represent additional work. Moreover, the purpose of the HICP is to provide the ECB with a measure of price stability. If the ECB believes the net acquisitions methodology is conceptually flawed, then it should insist that Eurostat use a different methodology.

The rest of the paper is organised as follows. Section 2 discusses four different methodologies for measuring the cost of owner-occupied housing, focusing in particular on the rental equivalence method used in national accounts and the net acquisition method used by Eurostat. Section 3 discusses some specific issues relating to the HICP, to Eurostat's implementation of the net acquisition method and to the ECB's position on changing the HICP. Section 4 presents calculations estimating how recent inflation rates in the euro area would have behaved if OOH price indexes had been incorporated using either Eurostat's OOH price index or a rental equivalence approach. It also presents longer historical time series for the US, comparing the historic CPI data (based on the rental equivalence approach) to an estimate of the inflation rate that would have been reported using the net acquisitions methodology. Section 5 provides conclusions and recommendations.

2. AN OVERVIEW OF METHODOLOGIES

This section discusses a number of different methodologies that have been used to measure the cost of owner-occupied housing in consumer price indices.

2.1. The rental equivalence approach

Why is price stability a key goal of macroeconomic policy? I suspect that most people when asked this question would answer that it is good to keep the "cost of living" stable. In other words, we wish to avoid substantial increases in the cost of the typical bundle of goods and services that people purchase as part of their daily life.

Occasionally, you will see claims that central banks should target some broader measure of inflation that includes prices of investments like gold or perhaps stock market indices. After all, consumers sometimes buy these items as well. But ultimately, the inclusion of these items does not pass the "common sense" test of what we mean by the cost of living. Nobody needs to own gold or shares, so their prices do not reflect the cost of living. For this reason, central banks around the world usually define price stability in relation to consumption price measures and do not target measures including prices for investment assets.

This conceptual distinction between "consumption" and "investment" becomes complicated when considering owner-occupied housing. The decision to purchase your own home is clearly an investment decision. Indeed, it is the most important investment for most households. The ECB's Household Finance and Consumption Survey (HFCS) from 2017 showed that about 60 % of euro area households owned their own home, which is more than twice the amount of households that owned the most common category of financial asset in the survey (pension funds and life insurance). Housing also accounts for the vast majority of household wealth. The HFCS reports the average value of household assets in the euro area in 2017 was EUR 259,400, with EUR 209,400 of that due to the value of the main residence of households.

Owner-occupied housing, however, also has a consumption element. Owning a house provides its people with somewhere to live and if they didn't own this home, they would need to pay to rent accommodation. So, home ownership also provides households with a valuable service over and above its value as an asset.

The issue of how to classify owner-occupied housing has been the subject of much work by national income accountants and the UN's System of National Accounts (SNA) have come up with a standardised way to approach this issue. As described in United Nations (2008), the SNA approach has been to treat spending on new residential buildings as investment and to use a rental equivalence approach to measure the consumption services subsequently provided by the stock of owner-occupied housing.

The rental equivalence approach matches up the characteristics of the owner-occupied housing stock with equivalent rental properties and calculates what it would cost, at current rental prices, to rent the whole stock of owner-occupied housing. The total of the imputed rental payments is then used as the measure of nominal consumption of owner-occupied housing services, while a quality-adjusted rental cost index is used as the price deflator. The imputed rental payments are also counted as part of household income.

This approach means that rent increases that are not accompanied by corresponding improvements in the quality of housing are considered to be an increase in the cost of consumption of owner-occupied housing services. So, for example, if rents double but the quality of the housing stock remains

unchanged, then both nominal consumption and the price index double but the measure of real consumption of housing services remains unchanged.

There are several arguments in favour of the rental equivalence approach in the measurement of consumption in the national accounts.

First, this approach provides a clear and intuitive measure of the relevant price for the consumption element of owner-occupied housing as opposed to the investment element. Consider for example the case where there is a large increase in house prices but rental rates do not increase. This kind of jump in price-rent ratios occurred in many countries during the various housing bubbles of the 2000s. Under the rental equivalence approach, the implied cost of owner-occupied housing consumption would not rise. Because rental rates have not gone up, the cost of living in a house has not risen—the option to rent exists and has not become more expensive. What has risen in this case is the cost of a house as an investment asset.

Second, this approach provides a measure of the opportunity cost associated with home ownership. For example, consider someone living in a large house that would be expensive to rent. This person is consuming something that has a high value (i.e. a large quantity of housing services) and this value can be measured by the rent that other people are willing to pay to live there. The large "imputed rent" the SNA approach assigns to this person measures the fact that they are foregoing the additional consumption that would be associated with renting this house to someone else and then using the income from this property to rent somewhere less expensive.

Third, this approach means the total amount of real consumption of housing services (across both rental and owner-occupied properties) depends only on the size and quality of the stock of residential housing. Since the total stock of residential housing tends not to change much from year to year, this approach produces a relatively stable series for consumption of housing services. Importantly, this series does not depend on the mix of tenure status in the economy (owners versus renters), the mix of financing used to purchase the housing (debt versus equity) or the current level of activity in the housing market (the amount of sales in a given year). These factors will have little correlation with the amount of housing services actually being consumed so it is good that real GDP will not be sensitive to changes in them.

Beyond national income accounting, the rental equivalence approach has also been applied successfully to cost of consumption of owner-occupied housing in standard monthly consumer price indices CPIs. For example, the US Bureau of Labor Statistics (BLS) has used this approach to measure the price of consumption of owner-occupied housing services in their CPI since 1983. Imputed rent for owner-occupied housing is the largest category in the US CPI, with a weight of about one-quarter in recent years. The use of imputed rents in the monthly CPI combines well with their use in national income accounting measures of consumption since the large dataset of price quotes obtained as part of the CPI process can then be used by national accountants to construct real and nominal consumption measures.

Despite its successful adoption by the BLS and its widespread use in national income accounting around the world, there have been some arguments against the imputed rental approach to measure the cost of owner-occupied housing in monthly consumer price indices.

Transactions versus imputations: One criticism of the rental equivalence approach is that it uses imputations rather than actual transactions related to owner-occupied housing. This contrasts with the ideal of a price index where every quote used in the index can be traced to an actual transaction for the product under consideration. However, the reality is that there is no way to separate the consumption and investment elements of owner-occupied housing using only data on purchases or ongoing

payments on this type of housing. Any transactions data obtained from owner-occupiers—whether they be purchase prices or monthly mortgage payments—will involve a significant investment element.

Moreover, imputations of various sorts are widely used in consumer price indices. For example, even if one was to instead use an index based only on prices paid to purchase houses, for these prices to be combined in a meaningful index requires adjustments to be made for the quality of the houses being purchased. In practice, this requires the use of "hedonic" regressions, involving imputations being made to place valuations on various features of a residential unit.

Data quality and timeliness: Another concern is whether it is possible in practice to collect a sufficient quantity of rental quotes that are an accurate proxy for the cost of renting the owner-occupied housing stock. Most euro area countries have large and active rental markets and so the collection of enough relevant quotes should not be a problem. However, some Member States have limited rental markets and it may be challenging in those circumstances to find enough accurate quotes.

One way the BLS obtains a large sample of quotes is by using a six-month rolling sample to construct its owner's equivalent rent series. This suggests a potential trade-off between accuracy and the timeliness that we would ideally like for high-frequency monthly indicators. However, while these trade-offs may exist, there are few reasons to doubt the quality of the US CPI series and I am confident that euro area statistical agencies can be given the resources to produce accurate and timely monthly imputed rent series.

Comparing renting and owning: One question about using rental quotations to proxy the consumption value of owner-occupied housing is whether this approach compares apples with oranges. People may place additional value on the security of tenure that comes with owning their own homes and being able to adapt them to suit their own needs. This could mean rental quotes underestimate the consumption value obtained from owning one's own home. However, while this may be true, it is not clear there is much change over time in the consumption premium enjoyed from ownership over renting, so changes in rental rates over time can still be a good way to measure changes in the value of owner-occupied housing consumption.

Inconsistency: Housing is not the only good that provides a flow of consumption services for years after the initial purchase. One could argue that the purchase of a television that will last 5 years represents an investment in the future services it will provide. Since rental equivalence approaches are not used for consumer durables such as TVs, it could be argued that applying the rental equivalence approach to housing represents an inconsistent way to treat products with both a consumption and investment feature.

Again, one can make counterarguments. Theoretically, the ideal approach would be to apply a rental equivalence approach to all consumer durables. However, markets for renting household consumer durables are thin and inefficient. For these reasons, the SNA approach has been to count consumer durable expenditures as consumption rather than investment.

Measuring the cost of consumer durables in a price index by only measuring their purchase costs is also less likely to lead to distortions than applying this approach to housing. The amount of money spent this year on televisions is likely to be a good proxy for the total consumption value being generated by these products in the economy—people are not purchasing TVs as an investment vehicle or as part of a lifetime savings strategy[1]. In contrast, because houses are much longer-lived assets, their prices

[1] To give a simple example, suppose a TV costs EUR 500 and lasts for five years. With a zero-profit rental market for TVs and no depreciation charges, the rental price for a TV would be EUR 100 per year. If total spending each year on TVs was constant and the price was unchanged,

regularly rise and fall in ways that have little correlation with the underlying value of the services they provide.

To summarise, while the rental equivalence method is not perfect, I believe it has the advantages of being theoretically sound and there is plenty of evidence that it can be successfully implemented.

2.2. The net acquisitions approach

An alternative approach—the one used by Eurostat, as discussed in greater detail below—is to treat expenditure on housing in a similar fashion to how other consumer durables are treated in consumer price indices. The so-called net acquisitions approach measures the costs associated with the household sector acquiring new residential housing. Properties being sold by one household to another are not counted, only the addition of housing capacity for the household sector. Implementations of this approach typically include all money spent on the net acquisitions of dwellings by the household sector including self-builds, spending on major renovations and repairs and the various service costs associated with acquiring new homes.

This approach has one major advantage. It is based on observable price quotes for each of the categories covered, most notably house sales. From a practical perspective, this means there is less reliance on imputations and most likely fewer statistical resources required than is associated with the rental equivalence approach, which requires obtaining a large number of rental quotes carefully matched with appropriate representative sample of owner-occupied units.

There are also serious disadvantages to the net acquisitions approach, which in my opinion outweigh the advantages. First and foremost, this approach does not produce a consumption price index and so should not be used in an index such as the HICP which is intended to capture movements in the cost of consumption. Most of the expenditures being captured by this approach are considered to be gross fixed capital formation (i.e. investment) by the national accounts. Also, by focusing only on the current acquisition of homes, the approach ignores the service flow of housing services obtained by all pre-existing owner-occupiers.

Another problem with this approach is that would likely induce spurious volatility into a consumption price index. The weight assigned to owner-occupied housing would depend upon the quantity of net housing acquisitions. The residential construction sector is highly cyclical, so the role played in the overall price index by net acquisition of housing would vary widely over time. Historical time series for the euro area are limited, so to give an example with historical context, Figure 1 shows the share of US GDP accounted for by residential investment. This value tends to move around a lot over the business cycle. To give a recent example, this share was 6.6 % in 2005 and only 2.7 % in 2009.

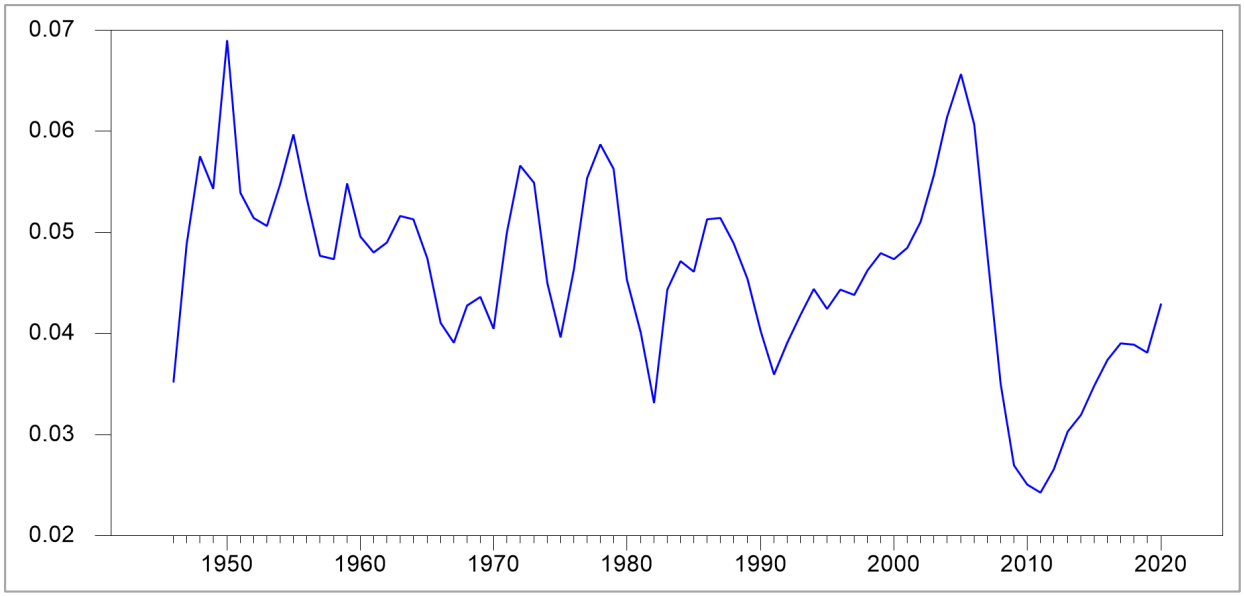
The HICP updates its weights annually based on the level of expenditure on each item for the previous year. The cyclicality of residential housing construction could mean big year-to-year changes in the weight for owner-occupied housing using the net acquisition approach. These fluctuations would not correspond to most people's understanding of changes in the importance of the cost of owner-occupied housing for the cost of living.

In addition, this cyclicality could impart an upward bias to average inflation. Housing markets go through cycles where house prices rise and this encourages additional construction until the cycle turns and prices and construction both fall. The net acquisition approach applied in a HICP context with

then the total amount of EUR 500 purchases would also equate to how much it would cost to rent all the TVs in the economy. In other words, the weight in the CPI from counting just this period's purchases would be the same as the weight from a theoretical calculation of the rental equivalent expenditure for all TVs.

annually updated weights would put a high weight on owner-occupied housing during boom periods when house prices are rising and would then put a low weight on them during periods when prices are falling. The result could be a positive contribution to measured inflation even during a period when the owner-occupied housing price index starts and finishes at the same value.

Figure 1: US residential investment as share of GDP



Source: Author's calculations based on data from the US Department of Commerce, Bureau of Economic Analysis.

2.3. The payments approach

Another approach is to focus on the average cash flows that are related to expenses associated with owner-occupied housing, including mortgage interest payments, insurance, property taxes and maintenance and repair costs among others. While this approach may seem intuitive, it has the same problem as the net acquisition approach in measuring both the consumption and investment element of housing. Mortgage repayments have both an interest and principal element to them. The principal repayments are considered by the SNA approach to be savings rather than consumption and as such these payments should not be included in a consumption price index.

The behaviour of a price index constructed according to the payments approach would vary over time according to factors such as the fraction of people who have a mortgage and the mix of debt and equity for those who do have mortgages. It is questionable as to whether such fluctuations should be considered actual changes in the cost of living. For example, consider the case where people decide to sell their stock market investments to provide more equity and lower the mortgages they need to purchase a house. This doesn't make the households wealthier and it doesn't make housing cheaper but it would result in a reduction in the cost of home ownership (and thus the consumer price index) according to the payments approach.

The payments approach is also unlikely to provide a timely measure of current conditions in the housing market. For example, suppose the housing market is booming, with rents and prices rising but mortgage rates fixed. For new buyers, obtaining owner-occupied housing will have become more expensive but the majority of people surveyed via the payments approach will have bought their houses in previous years and will report no change in their monthly costs.

2.4. The user cost approach

A final approach that has been used by some statistical agencies is the user cost approach[2]. This approach has its roots in the modelling of business investment due to Dale Jorgenson (1967). This approach derives a formula for the optimal rental rate a firm would charge to rent out a unit of its capital subject to the investment in the unit of capital obtaining a required net rate of return. Because this rental rate would be the cost to the user renting out the capital, this is often called the "user cost of capital" approach.

There are various versions of the use cost formula depending on the level of complexity being considered about issues such as tax treatment of capital. However, each of the formulas require that the rental rate on capital should equal a required rate of return for the investment (perhaps given by the interest rate on an alternative investment) as well as covering depreciation on the capital. Applied in the context of residential investment, the formula would generally equate the user cost to the typical mortgage rate plus an additional factor related to depreciation and perhaps a term related to the potential for capital gains on the investment in a property.

The user cost approach is similar to the rental equivalence approach in attempting to distinguish between consumption and investment element of housing. However, provided a sufficiently accurate dataset on rental rates can be assembled, the rental equivalence approach would seem to be superior to the user cost approach. The user cost approach uses economic theory to assess what a reasonable rental rate would be for a residential property. The rental equivalence rate gathers actual data on what those rental rates would be and does not rely on the equilibrating or optimising conditions of Jorgenson's model having to hold in real-life property markets.

[2] See for example Hill, Steurer and Waltl (2017) for an application of the user cost approach and some arguments in its favour.

3. EUROSTAT AND THE ECB

Here, we will briefly describe the origins and current scope of the HICP, discuss Eurostat's experimental price index for owner-occupied housing and the ECB's position on the inclusion of owner-occupied housing in the HICP.

3.1. Some background on the HICP

The need for a harmonised approach to the measurement of consumer prices in Europe emerged in the 1990s during the preparations for Economic and Monetary Union (EMU). Countries were required to meet various criteria for entry into EMU, including a price stability requirement. Effective implementation of this criteria required a credible harmonised approach to the measures of consumer price inflation[3]. In October 1995, the EU adopted a regulation providing the legal basis for the establishment of a harmonised methodology for compiling consumer price indices.

Owner-occupied housing was a difficult issue to deal with as part of this harmonisation process. Some EU countries used rental equivalence measures; others used a payments approach, meaning mortgage rates (and thus monetary policy) influenced headline inflation; other countries ignored owner-occupied housing. The decision was taken to exclude this category from the new HICP. It was decided that the scope of the HICP would be to measure the cost of household final monetary consumption expenditures, thus explicitly excluding imputed costs such as those used in the rental equivalence approach.

With the euro in place, the HICP still plays a role in deciding the suitability of new applicants who wish to join the euro but its main role since 1999 has been to provide a measure for the ECB to assess its performance relative to its primary objective of price stability.

3.2. Eurostat's different house price series

The most recent regulation on the HICP, from 2016, acknowledges the absence of owner-occupied housing from the index and explicitly states that "*The HICP is designed to assess price stability. It is not intended to be a cost of living index*" [4]. However, the absence of any treatment of the cost of owner-occupied housing from Eurostat's publications has been widely acknowledged as a weakness. A 2013 regulation thus required Eurostat to establish "*owner-occupied housing price indices with a view to improving the relevance and comparability of harmonised indices of consumer prices*" [5].

Because the scope of the HICP excludes imputed rentals, the 2013 regulation required Eurostat to prepare an index of the cost of owner-occupied housing based on the net acquisitions approach. This series, which is still classified as "experimental", is now available on a quarterly basis with a time series beginning in 2010. Eurostat have also been producing a broader house price index based on a wider dataset of price quotes rather than just focused on prices for net acquisitions by the housing sector.

Eurostat's OOH index follows the methodology described in the previous section. The index combines sub-indices for purchases of new dwellings, self-build dwellings and major renovations and services related to the acquisition and ownership of dwellings. Figure 2 shows annual data for three different measures of housing prices for the euro area, all published by Eurostat. The black line is Eurostat's overall house price index and the blue line is the experimental OOH index. The green line shows the

[3] Annex 1 of ILO et al (2004) provides a useful summary of the origins of the HICP.

[4] Regulation 2016/792 of the European Parliament and of the Council. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0792&rid=1.

[5] Commission regulation 93/2013. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0093&from=EN.

price index associated with the national income accounts consumption item "imputed rentals for housing" which is based on the rental equivalence method.

The figure shows that the OOH measure does not simply follow Eurostat's overall house price measure. This is not too surprising since the mix of housing involved is different and the OOH index includes service-related costs that are not in the overall house price index. Still, the cumulative increase in these series over 2010-19 was the same, before 2020 saw a somewhat faster pace of increase in the overall house price index. The rental equivalence price index has shown a much steadier growth rate, growing somewhat faster than the other measures in the first few years after 2010 and somewhat slower in the last few years up to 2019 (the last year for which these data are available). These results likely reflect increasing price-rent ratios in housing markets driven by lower financing costs and possibly speculative behaviour.

3.3. The ECB's position

Given the principal usage of the HICP is for monetary policy purposes, the ECB should be the key "stakeholder" in relation to decisions about how the index is constructed. While officially, the HICP is not a cost of living index, the ECB's decision to recommend the inclusion of OOH in the index clearly reflects its assessment that this would make the HICP a better approximation to a cost of living index and that this is a good thing. Surprisingly, however, given the time and energy devoted to the recent monetary policy strategy review, the position taken on OOH prices adopted by the ECB in the review strikes me as confused.

The ECB is clearly in favour of the inclusion of an OOH price index in the HICP and they have "*decided to recommend a roadmap*" for this to occur. The review then states:

> *"The ECB considers the net acquisition approach to be the preferred method for including OOH, based on the transaction prices that households pay for the acquisition of homes."*

However, this statement is immediately followed by a clear articulation of one of the key flaws with the net acquisition approach, as outlined earlier in this paper:

> *"Since the OOH price index measured with the net acquisition approach currently includes an element of investment, the ECB supports further research projects on optimal measurement methods. These should also aim at better isolating the consumption component from the investment component, with the former being the relevant one for monetary policy."*

In other words, the ECB's position is that the net acquisition approach is its preferred method but actually it isn't really. It would actually like Eurostat to do something different. In the meantime, during the transition period to the addition of an OOH index to the HICP:

> "*the quarterly standalone OOH index will play an important supplementary role in assessing the impact of housing costs on inflation and will thus inform the Governing Council's monetary policy assessments.*"

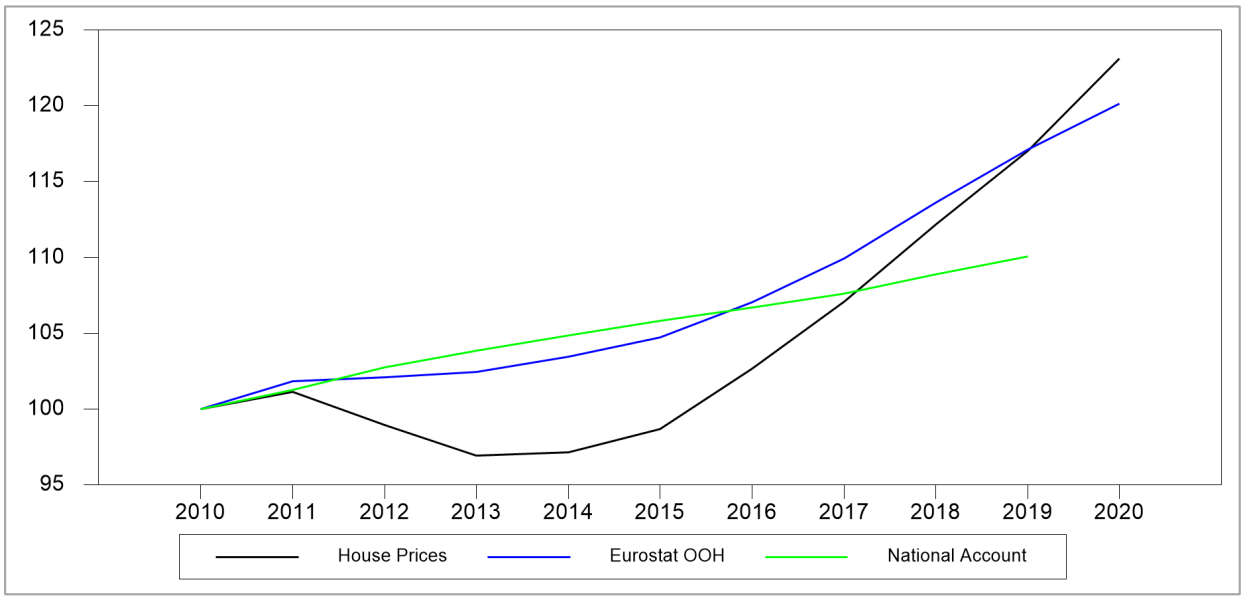
This position strikes me as perhaps a compromise designed to appease different groups of thought within the ECB. Perhaps some members wish to proceed with using Eurostat's methodology—an examination of the Eurostat (2017) technical manual shows that a lot of work has gone into operationalising this index and perhaps it would be unpopular with some for that work to be wasted. Perhaps others are aware that it is inappropriate to include the net acquisition index in what is supposed to be a consumption price measure. However, the suggestion that there is a "split the difference" approach—in which you still essentially use the net acquisition method but somehow

"isolate the consumption component from the investment component"—has no sound basis.

As the Eurostat manual makes clear, the transactions that make up the vast majority of its OOH index (and that would decide its weight in a future HICP) are investment transactions. The weight of this index would be largely determined by gross fixed capital investment in dwellings by the household sector. None of this is counted as consumption in the national accounts, so there is no "consumption component" to isolate. If someone spends EUR 300,000 on a buying a property to live in, this is all investment and the subsequent return on that investment is the flow of housing services they get in future years from owning it. We cannot simply extract a sub-component of the EUR 300,000 and call it "the consumption bit".

So either Eurostat use an approach such as rental equivalence to approximate the consumption element or else they use the net acquisitions approach and incorporate capital investment into the HICP. There is not going to be a coherent middle ground.

Figure 2: Three house price indices for the euro area, 2010-2020



Source: Eurostat.

Note: The black line is Eurostat's house price index. The blue line is Eurostat's experimental series for owner-occupied housing. The green line is the price index for consumption of owner-occupied housing from Eurostat's euro area national accounts. The latest value for this series is from 2019.

4. IMPACT ON HICP INFLATION

How much does this issue matter for the measurement of inflation? Perhaps surprisingly, given the attention that has been paid to the issue in recent years, it appears that including an OOH index in the HICP would have had very little effect on headline inflation in recent years. ECB (2021) reported that:

> *"According to experimental calculations, adjusted inflation figures that give a larger weight to housing costs would currently be slightly higher than the annual HICP inflation rate. Preliminary estimates indicate that the wedge between adjusted and actual HICP ranged between 0.1 and 0.3 percentage points in the third quarter of 2020. At the same time, in the past such adjustments would have resulted in a lower inflation rate (a negative wedge) depending on the state of the house price cycle."*

To give a graphical illustration of the potential impact, Figure 3 reports some calculations that I have done that attempt to approximate what the inclusion of Eurostat's net acquisitions OOH price series would have done to overall annual HICP inflation in recent years.

This calculation requires an assumption about the weight the new series would have in the HICP index. To assess how much spending is involved, I used the national accounts series on gross fixed capital formation for dwellings multiplied by about 0.8 to reflect that about 20 % of euro area households live in rental accommodation (so some residential investment goes into the buy-to-rent sector)[6]. This approach is imperfect in excluding the costs of services associated with acquiring housing but it captures the vast majority of what is measured by the OOH index. The OOH index would have a weight of about 10 % in the HICP if these calculations are correct.

Figure 3 shows the largest difference between the newly constructed HICP series and the published one occurs in 2020, with a difference of 0.25 %: The published annual inflation rate for 2020 was 0.25 % and the series including the OOH index grew by 0.5 %. However, the differences in most years were very small and the average values over this period are very close: 1.21 % for published HICP inflation and 1.28 % for the adjusted series.

One can also ask how the adoption of a rental equivalence price index for OOH would have affected HICP inflation. A longer time perspective is available to answer this question because the national accounts price index for imputed rents for OOH is available going back further in time. To construct this second counterfactual HICP inflation series, I used national accounts data on nominal consumption of actual rents and imputed rents to calculate a weight for imputed rents by scaling them relative to the existing weights in the HICP for actual rents. The weight implied for imputed rentals is about 15 % in recent years, which is higher than my estimate for net acquisitions approach but a lot lower than the 25 % weight for owners equivalent rent in the US CPI. This produces an alternative HICP inflation series going back to 2000.

Figure 4 shows the rental-equivalence-based approach produces an annual HICP inflation series that is even closer to the published one. The largest difference is for 2004 and this is only 0.2 percentage points. Over 2000-2019, the average inflation level for the new series is 0.05 percentage points higher than the published HICP. In other words, it is more or less identical.

A similar study that also comes up with a relatively modest figure is Coffey, McQuinn and O'Toole (2021) who use a large administrative data set of rental quotes in Ireland to estimate a rental equivalence price index for OOH. They find that replacing Ireland's current payments approach to measuring these costs

[6] Data on housing tenure patterns for various countries are available from the OECD. Available at: https://www.oecd.org/els/family/HM1-3-Housing-tenures.pdf.

in its CPI with a rental equivalence would have added 0.1 % per year to inflation over the period of their study, 2012 to 2016.

These calculations suggest that in the circumstances the euro area has been in over the past few years, the inclusion of an OOH price index would not have made much difference. However, house price inflation in the euro area has actually been relatively modest in recent years—Eurostat's house price index has been growing at between 4 % to 5 % per year while its OOH index has been growing a bit slower over the past few years. So, it is not surprising that the inclusion of this index would have had a modest impact on overall inflation.

This raises the question of how Eurostat's proposed approach to measuring OOH prices would impact consumer price inflation during more extreme housing booms and busts. To give an illustration, Figure 5 provides a counterfactual for the US consumer price index in which its current rental equivalence approach to measuring these prices is replaced with the Case-Shiller house price index with the weight determined in a similar fashion to the net acquisitions methodology.

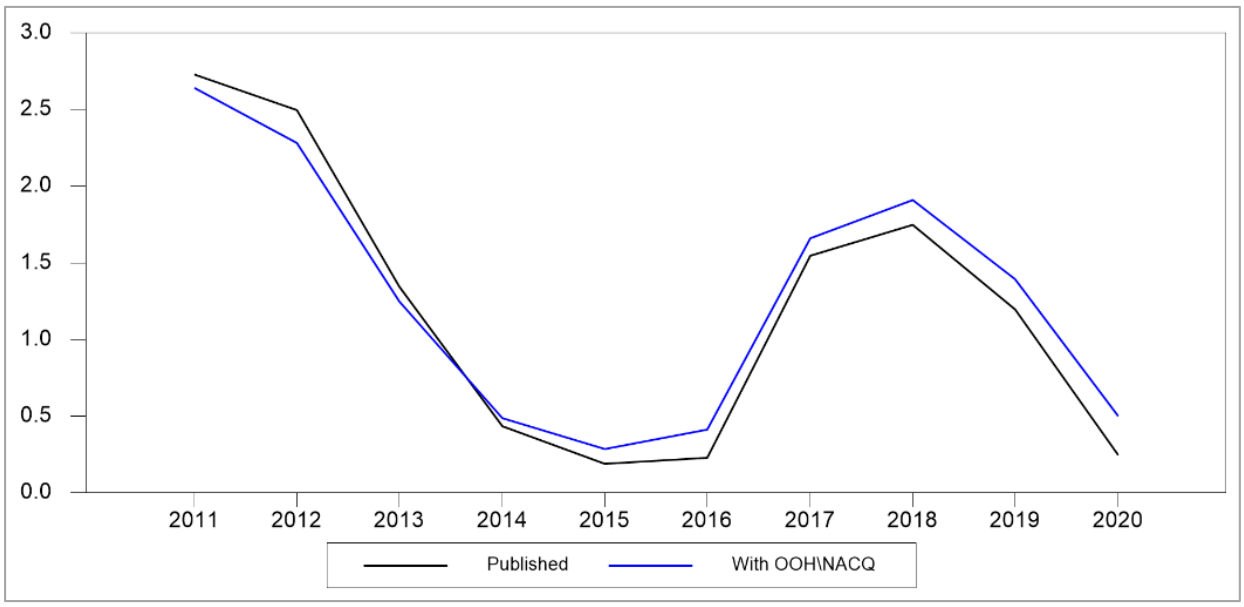
I have used the Case-Shiller house price index, which is a nationally representative index of repeat-sales residential transactions, because the US statistical agencies do not publish a net acquisitions price index such as Eurostat's. So the assumption here is that Eurostat's methodology would generally produce a price index that grows at the same rate as a price index of all residential housing sales, something the evidence from Figure 2 suggests has been approximately true over the past decade. The counterfactual CPI inflation series removes the existing owners equivalent rent series from the CPI and replaces it with the Case-Shiller series with a weight calculated from total residential investment minus three quarters of the amount spent on home improvements, adjusted downwards by one third to reflect OECD estimates that one third of US households rent[7].

The resulting counterfactual inflation series behaves similarly to the published CPI with a few exceptions. Most notably, during the housing bubble of the mid-2000s, the alternative CPI grows much faster: Inflation in 2005 is estimated at 4.9 % compared with the published 3.9 %. For 2009, the estimated rate of deflation is much larger than the published figure.

Some could argue that these calculations provide evidence in favour of including house prices in the CPI. Perhaps the Federal Reserve would have taken stronger action to cool the housing market if it had impacted the headline CPI rate in this way? On balance, I would disagree. There are good reasons related to financial stability and macroprudential policy for central banks to pay attention to house price developments. One should not have to distort the key inflation index to include non-consumption items just because occasionally central banks have failed to act responsibly in the face of threats to financial stability.

[7] Eurostat's methodology includes major renovations and replacements in its measure of net acquisitions. The three quarters figure used here is based on an estimate that one quarter of the value of total US housing improvements are major renovations. This is based on a now-discontinued US Census Bureau survey which suggested, at least as of its final publication in 2004, major renovations represented one quarter of total residential housing improvements spending.

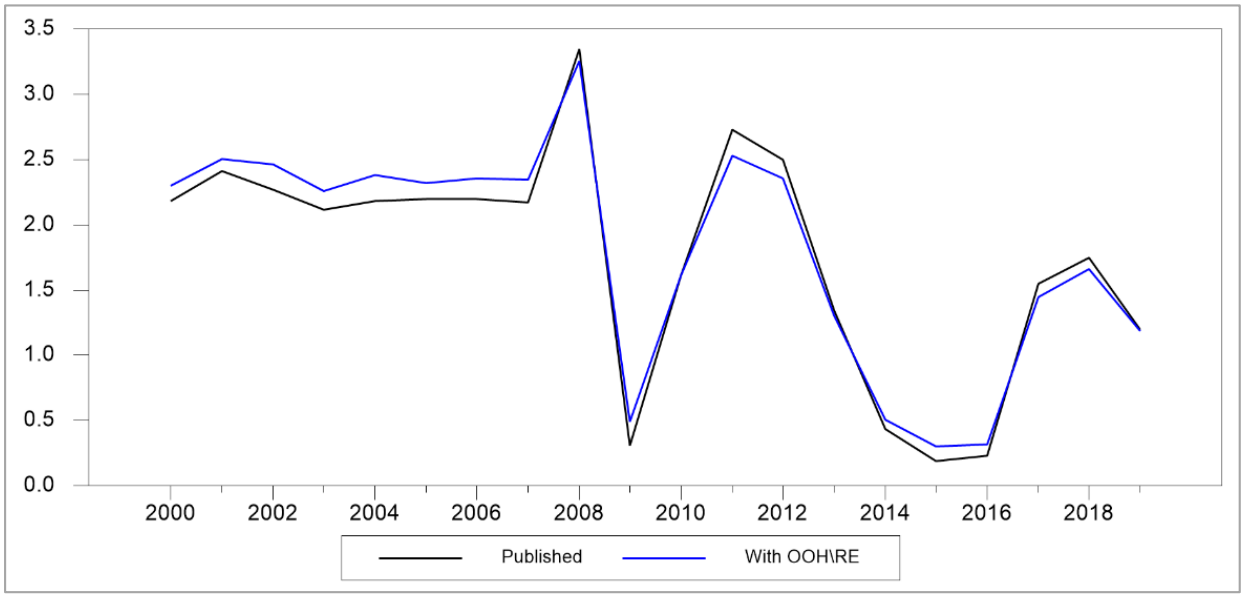
Figure 3: HICP inflation and counterfactual using Eurostat's OOH series, 2011-2020



Source: Eurostat and author's calculations using annual data.

Note: The black line is the published annual HICP inflation series. The blue line is my calculation of what HICP inflation would have been if owner-occupied housing had been added as a category and Eurostat's experimental OOH price index had been used.

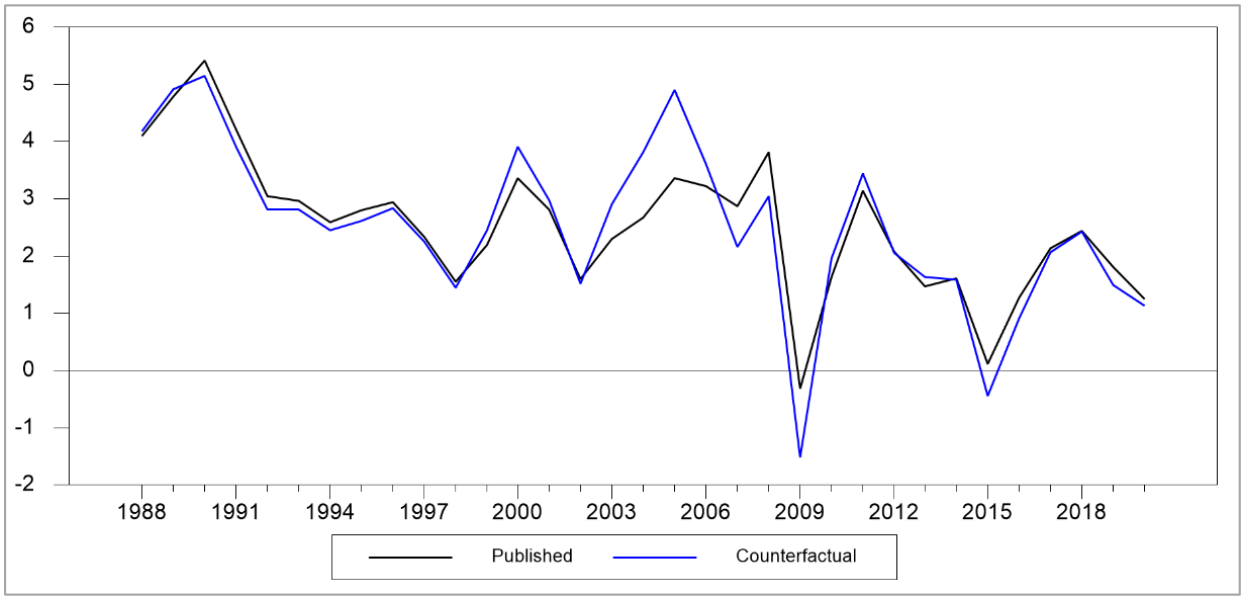
Figure 4: HICP inflation and counterfactual using a rental equivalence series, 2000-2019



Source: Eurostat and author's calculations using annual data.

Note: The black line is the published annual HICP inflation series. The blue line is my calculation of what HICP inflation would have been if owner-occupied housing had been added as a category and rental equivalence price index from Eurostat's national accounts had been used.

Figure 5: US CPI inflation and counterfactual using net acquisition approach weighting for owner-occupied housing and the Case-Shiller price index



Source: Eurostat and author's calculations using annual data.

Notes: The black line is the published annual US CPI inflation series. The blue line is my calculation of what CPI inflation would have been replacing the existing treatment of owner-occupied housing (based on an equivalent rent imputation) with the Case-Shiller house price index with a weight calculated using a net acquisitions methodology.

5. CONCLUSIONS AND RECOMMENDATIONS

The ECB's decision to approve the inclusion of a price index for owner-occupied housing in the HICP likely reflect several factors. With house prices rising, the ECB's leadership likely feels pressure from elements of public opinion that believe the HICP is systematically under-estimating the true rate of consumer price inflation. And within the Governing Council, there are likely some members that would prefer to switch to a new measure of inflation that produces higher rates of inflation which would perhaps accelerate the ECB's exit from unconventional monetary policies that do not sit well with them.

While these pressures are understandable, it is important that the ECB and Eurostat refrain from any actions that undermine the integrity of the defining measure of price stability in the euro area. The HICP provides meaningful content because it is a measure of the cost of consuming a specific basket of goods and services. The inclusion of Eurostat's proposed owner-occupied housing index based on a net acquisition approach would change the HICP to include prices for categories that represent investment and not consumption. This would undermine the coherence of the index and make it conceptually different from the measures used by other major central banks.

The ECB is aware of this problem and its recent monetary policy strategy publication contains a suggestion that Eurostat could alter its methodology to "isolate the consumption component". This is not possible via tinkering with the net acquisition approach because the transactions considered under this approach are all investment transactions.

While the inclusion of Eurostat's proposed approach is unlikely to have large effects on HICP inflation in most circumstances, we have described cases where a methodology of this sort could have large temporary effects. It is also likely that this methodology would induce spurious additional volatility to the HICP and perhaps impart a medium-term upward bias to inflation with house prices getting more weight when they are rising than when they are falling.

My recommendations to the ECB on this issue are as follows.

1. The ECB should publish a detailed piece of analytical research on how to isolate the consumption component of owner-occupied housing. I am confident that such research would find the net acquisitions approach can not be tweaked to achieve this outcome. My recommendation is that the best way to do this is to copy the US BLS and use a rental equivalence approach.

2. If the ECB's preferred analytical price index for the consumption component of owner-occupied housing is best implemented using imputations from rental quotes or other sources, then the ECB should recommend that a new regulation be passed to widen the scope of the HICP, which is currently limited to household final monetary consumption expenditures.

3. If the ECB's preferred analytically sound measure of the price of the consumption component of owner-occupied housing, be it a rental equivalence approach or some other approach, ultimately proves to be inconsistent with Eurostat and the ECB's requirements in relation to data quality and timeliness, then I recommend that the HICP be kept as it is but that Eurostat publish an alternative "HICP plus OOH" index that can be incorporated by the ECB into its policy discussions.

4. The ECB should not give any role to Eurostat's experimental OOH price index in its monetary policy assessments. There are good reasons relating to financial stability and macroprudential policies for the ECB to monitor of house price developments and Eurostat publishes a comprehensive price index based on a representative range of residential house sales. With this series available, there is no good to reason to prioritise any additional focus on the experimental OOH index, which relies on a small subset of total residential housing transactions.

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Housing and the Cost of Living

Daniel GROS and Farzaneh SHAMSFAKHR

Abstract

The Harmonised Index of Consumer Prices (HICP), which constitutes the sole official measure of inflation in the euro area, leaves out an important part of household expenditure, namely the cost of owner-occupied housing (OOH). Most other developed economies include estimates of OOH in their consumer price index. The existing, even if imperfect, indicator available today from Eurostat should be included immediately in the HICP. It is unacceptable that Eurostat and the Commission have not been able to produce a better OOH indicator in the 18 years since the ECB first flagged the importance of housing costs in 2003.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 15 November 2021.

CONTENTS

LIST OF ABBREVIATIONS

ECB	European Central Bank
GDP	Gross domestic product
HICP	Harmonised Index of Consumer Prices
HPI	House Price Index
OOHPI	Owner-Occupied Housing Price Index
OOH	Owner-occupied housing

EXECUTIVE SUMMARY

- **Housing represents an important part of household budgets**. But the cost of housing is not properly measured in the official inflation statistics that the European Central Bank (ECB) uses.
- **The Harmonised Index of Consumer Prices (HICP) currently takes into account only "actual rent paid"**, not the cost of owning one's own home.
- **A consumer price index that neglects the cost of owner-occupied housing fails to measure the living cost for appropriately 70 % of the population (this is the average EU home ownership rate)**.
- **Rent has a low weight in the HICP (7 %)** due to a combination of two factors: the relatively high rate of homeowners in the euro area and smaller size of rented units.
- **The costs of owner-occupied housing (OOH) are not equal to house prices**, which are considered in asset prices, but to the services the house delivers to its occupants.
- **Measuring the housing services of owner-occupied accommodation is difficult, but not impossible**.
- **The net acquisition approach and the rental equivalence approach, as two potential methods for including OOH costs in consumer price baskets, have already been implemented by several countries across the world**. Neither of these two measures is clearly superior, but using an imperfect one is clearly better than ignoring OOH altogether.
- **The HICP without OOH has been misleading materially for some time and is likely to become an ever more misleading measure of actual inflation as felt by families in the years ahead**.
- **For over 10 years, Eurostat has provided an index of the cost of owner-occupied housing but it has largely been ignored**.
- **Reforming the HICP to include the cost of OOH is long overdue**. It would be sufficient to incorporate the existing index provided by Eurostat into the HICP. Formally this a competence of Eurostat (and the Commission) which could be taken soon. The ECB would then have little choice but adapting the way it measures it price stability target.

1. INTRODUCTION

One of the recurring observations, for decades now, has been that inflation has shown up in asset prices, rather than consumer prices. The position of the European Central Bank (ECB), as reconfirmed in its latest monetary policy strategy review, is that asset prices are more of a concern for financial stability than price stability, which should, in turn, be addressed by macroprudential policies, rather than monetary policy (ECB, 2021a). The ECB admits that asset price bubbles could eventually destabilise the economy and thus affect prices in the medium term (ECB, 2003). Therefore, monetary response to asset prices could sustain both financial and monetary stability (see Borio and Lowe, 2002). However, the orthodox position of central bankers is that asset price inflation should be dealt with by macroprudential tools (see also Svensson, 2018).

We do not want to take a side in this discussion but note that the 2 % target for inflation adopted by major global central banks was chosen as the value at which households plan their expenditure without factoring large price increases. For housing this is no longer the case in the euro area today.

For many households, housing-related costs are the major expenditures. But the Harmonised Index of Consumer Prices (HICP), the ECB's measure of inflation and the cost of living, only includes the actual rents paid by tenants and thus leaves out the housing (services) costs borne by owners who live in their own homes. The ECB already recognised this problem in 2003[1]; yet little has been done in the meantime to deal with this issue. In its most recent policy review, the ECB has formally proposed to include the cost of owner-occupied housing (OOH)[2] in the consumer price index, for which it targets an inflation rate of 2 %[3].

The key issue is then how to measure the cost of housing. Economists distinguish between the value of a house (or apartment) as an asset and the services (shelter) that the house yields to those who live in it. Therefore, consumer price indices do not contain house prices (which are asset prices) but estimates of the cost of the services that housing yields. That is also the case for the euro area. The HICP thus rightly neglects house price inflation, which arguably, if not caused, is at least encouraged by an ultra-accommodative monetary policy stance.

Measuring the cost of living in one's own home is important, as this is the situation of a large majority of the population. The average share of home ownership in the EU is close 70 % (as of 2019)[4]. An HICP that neglects OOH thus fails to measure the cost living appropriately for 70 % of the population. Home ownership rates of course differ considerably across Member States as discussed below, but the key for any common price index is the average home ownership ratio.

For more than 10 years, Eurostat has been putting together an index of the cost of owner-occupied housing, but this Owner-Occupied Housing Price Index (OOHPI) remains almost unknown, and little used. Here we use the OOHPI provided by Eurostat to calculate a measure of inflation that reflects the developments in the cost of housing. To this end, we calculate the approximate weight of OOH in the consumer price basket.

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1 ECB, 2003, *Background Studies for the ECB's Evaluation of its Monetary Policy Strategy*. Available at: https://www.ecb.europa.eu/pub/pdf/other/monetarypolicystrategyreview_backgrounden.pdf.

2 Owner-occupier housing (OOH) costs represent those expenditures incurred by households when purchasing, maintaining and living in their own dwelling. According to the definition, the OOH index consists of the transaction costs related to acquisitions of dwellings (including new dwellings, existing dwellings new to the households, and other services related to the acquisition of dwellings), as well as ownership of dwellings (including major repairs and maintenance, insurance connected with dwellings, other expenditure).

3 In ECB speak on 8 July 2021: "Governing Council confirms that HICP remains appropriate price measure and recommends inclusion of owner-occupied housing over time."

4 Eurostat. Available at: https://ec.europa.eu/eurostat/cache/digpub/housing/bloc-1a.html?lang=en.

In what follows, we first briefly discuss the two main different ways to measure the cost of OOH (Section 2). Neither of the two approaches is clearly superior, as both have intrinsic advantages and difficulties. The approach preferred by the ECB (and already implemented by Eurostat) is certainly acceptable.

Next, in Section 3, we provide an overview of actual rents and home ownership across European countries and in the euro area. In Section 4, we present an estimate of a comprehensive HICP – including owner-occupied housing costs – using the euro area data. In Section 5, we examine the relationship between the house price index and OOH in the euro area. In the last section, we summarise our main remarks.

2. HOW TO MEASURE THE COST OF OWNER-OCCUPIED HOUSING?

In general, two methods are commonly considered for incorporating the owner-occupied housing cost in inflation indices: the "net acquisition" and "rental equivalence" approaches.

The rental equivalence approach measures the evolution of the rents which owners would have to pay if they rented their accommodation. This means it is not based on actual prices or actual monetary transactions but imputed ones.

The net acquisition approach measures the price paid by households for new accommodation from outside the household sector. It is thus based on actual monetary transactions, but excludes transactions between households, which on net have no influence on the income available to the household sector. The net acquisition approach thus treats houses like other durable goods (e.g. cars, see below).

In the rental equivalence approach, imputed rents or rental equivalents are estimated rents assigned to households that own and occupy their accommodation. The ECB argues that there are complications in measuring the owners' equivalent rent, since rented dwellings are not quite comparable with owner-occupied dwellings, especially in the locations where these two markets are segregated. Also due to possible long-term rental contracts, as well as rent controls by governments, the imputed rents do not precisely reflect the real dynamics of the housing market. Therefore, the ECB considers net acquisition as the favoured approach, as it can better read the housing market conditions. Despite the fact that it contains an investment element that cannot be disentangled from the consumption component (ECB, 2021a)[5].

The net acquisition approach seems to fit better with the overall philosophy of the HICP:

> *"Public understanding is also facilitated by the fact that the HICP is compiled according to the "acquisition approach", i.e. it includes only items whose purchases involve prices based on actual monetary transactions between the household sector and other sectors in the economy, therefore excluding non-market goods and services."* (ECB, 2021a)

This is also the reason by the OOHPI series provided by Eurostat was developed based on the net acquisition approach.

By contrast, Australia and New Zealand have implemented the net acquisition approach by including the purchase of new dwellings by owner-occupiers in the CPI, besides actual rents, maintenance services and utilities.

Several other countries have already integrated the OOH costs into inflation measures based on the rental equivalence approach. Among major advanced economies, the UK, US, Canada and Japan have included the imputed rents for housing (besides actual rents) in their national CPI[6].

We note that one could also regard the gyrations of the price of used cars in the US as another example for the question of asset versus consumer prices. One could argue that a sale of a used car between two consumers represents a financial transaction, not consumption – similar to a sale of a "used"

[5] According to Regulation (EU) 2016/792 Article 3(3) only "household final monetary consumption expenditure" can be included in the HICP, which basically rules out rent equivalence approach. This would mean that an amendment of the regulation would have been needed if the rent equivalent approach had been chosen (We wish to thank Drazen Rakic for pointing this out to us).

[6] Other countries following the same approach are Austria, Australia, Czechia, Colombia, Denmark, Finland, Iceland, Israel, Netherlands, New Zealand, Norway, Mexico, Slovak Republic, South Africa, Sweden.

house[7]. The used cars item has a weight of close to 3 % in the US consumer basket, with used car prices up 30 %, this element added about one full percentage point to measured inflation (including core inflation) in the summer and autumn of 2021. This element is likely to be temporary as used cars (in contrast to used houses) can be reproduced rather quickly, implying that the price of used cars should soon fall back to its usual relationship with new car prices as soon as the temporary, post-COVID factors (e.g. rebuilding of rental fleets) abate.

[7] However, if most used cars are traded through dealerships, the statistics would record the acquisition of used cars by households as an acquisition from outside the household sector, whereas the sales of cars to the dealers would simply enter household income. This is of course different from housing for which sales between households are recorded directly.

3. RENTS AND THE COST OF HOUSING IN THE EURO AREA

One aspect of the cost of housing is already included in the HICP the ECB uses, but only in the form of "actual rent paid", i.e. the payments by householders who do not own their residence[8]. This item has only a low weight, namely around 6.5 % for the euro area, on average. This low value is surprising at first sight since it is well known that housing is one of the most important parts of the cost of living. Very few households spend only 6 % of their income on rent. For example, in Germany it is estimated that the *Kaltmiete* (i.e. rent without heating) absorbs typically 20 % of income[9]. And a recent ECB report documents that for a significant proportion of the population total housing costs represent over 40 % of income (ECB, 2021b).

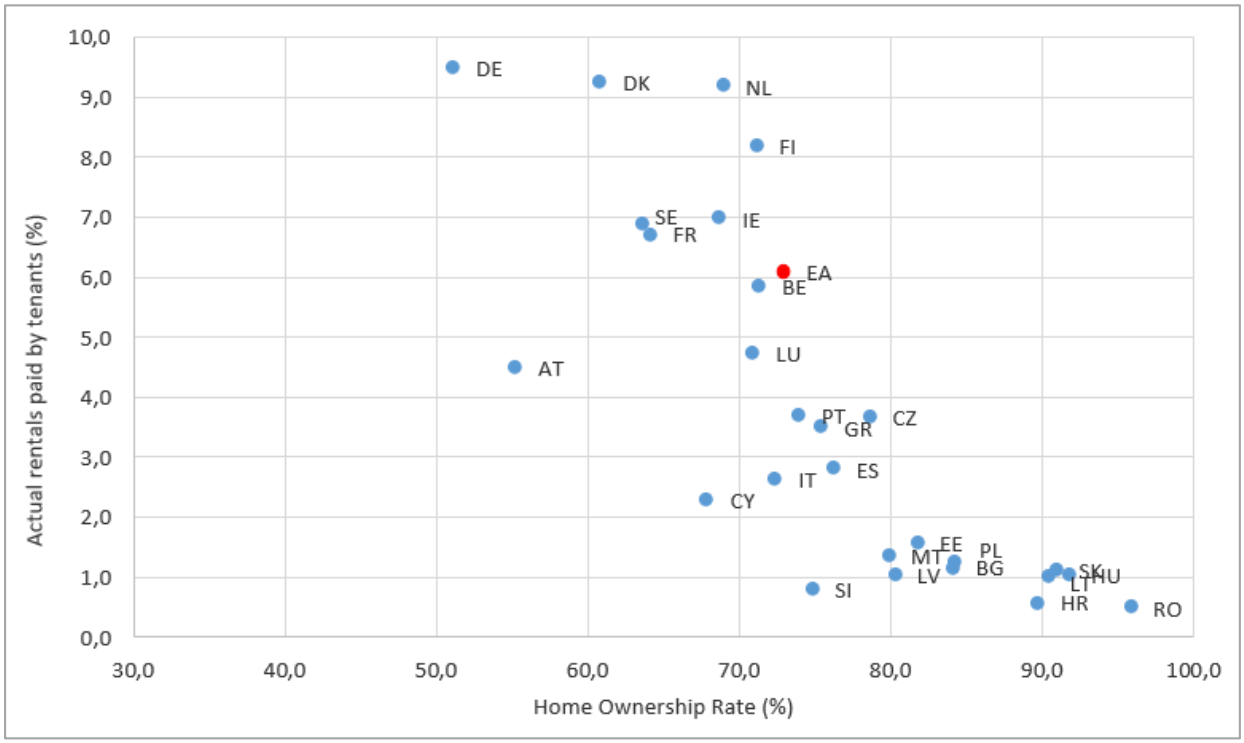
The HICP weights are calculated from national accounts expenditure data and household budget surveys. Only the rent actually paid by people who do not live in a house they own enters in the calculation. The weight for "actual rent paid" (as for any other item) is obtained by dividing the total expenditure on rents paid by those who do not own their own place of living (about 30 % of the total population) by total consumption expenditure, i.e. the consumption expenditure of the entire population, including the owner-occupiers. The implicit rent that owner-occupiers receive is simply ignored. This implies that the weight of actual rent paid will be close to zero in countries where almost everybody lives in owner-occupied dwellings. This is indeed the case in eastern European Member States. For example, in Romania, the home ownership ratio is over 90 % and the weight of actual rent paid in the HICP for Romania is below 1 % (around 0.005). More in general, one would expect a close relationship between home ownership and the ratio of owner occupation.

This is indeed what one can observe across the EU. Figure 1 illustrates the relation between the two measures (weights of actual rents in the HICP and the homeownership ratio), based on available data from 2019. It is visible that, in general, the share of housing rents in the countries with higher home-ownership ratios are relatively lower, which confirms our assumption about the reason for the low weight of rents in the HICP. The red dot refers to the euro area average.

[8] The HICP also contains mainly of ancillary costs of housing, such as heating and the cost of repairs (plumbers, painters, etc.). We concentrate here on the "pure" cost of housing or rather on the "shelter" service provided by an apartment of house.

[9] Destatis, 2018, *Miete und Mietbelastungsquote von Hauptmieterhaushalten.* Available at: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Wohnen/Tabellen/mietbelastungsquote.html.

Figure 1: Actual rental paid by tenants (in terms of corresponding weights in the HICP) and homeownership rate, across EU countries, and the euro area average



Source: Authors elaboration based on data from Eurostat and Statista.

The pairwise correlation between two measures across this sample of countries is found to be -0.85, and statistically significant at the 1 % level. The line of best fit indicates that a 10 percentage point increase in the home ownership ratio is associated with a 2.5 percentage point decrease in the weights assigned to the actual rents in the HICP.

If owner-occupied housing and rented accommodation were otherwise equal, one could find the weight of the implicit rental earned by owners by multiplying the weight for actual rent paid with the inverse of (-1+1/home ownership ratio). But rental accommodations are generally smaller. Data from Germany suggest that owner-occupied units are about 70 % larger than rental units[10] and the available data from Italy suggest that they are 50 % larger[11, 12]. This has implications for the weight OOH should be given in the HICP.

If one considers owner-occupied housing costs as the owners' equivalent rent, one could start with the weight of rent actually paid in the HICP, which is 6.5 %. The homeownership ratio in the euro area is about 71 % (in 2019, this ratio changed very little over time). Multiplying 6.5 % by roughly 2.45 (0.71/(1-0.71)) yields 15.9 for a putative OOH rental equivalent – if the size of the unit were the same.

However, as mentioned above, owners typically have larger (and probably more expensive) units. If owned units are worth 50 % more than rented units (on average, as the data for Germany and Italy suggest), one would have to multiply the 15.9 % by 1.5, arriving at a share for OOH of around 24 % –

[10] Destatis, 2021, *Wohnen*, Auszug aus dem Datenreport 2021. Available at: https://www.destatis.de/DE/Service/Statistik-Campus/Datenreport/Downloads/datenreport-2021-kap-7.pdf?__blob=publicationFile.

[11] Italian Ministry of Economy and Finance, 2019, *Gli Immobili in Italia*. Available at: https://www1.finanze.gov.it/finanze3/immobili/contenuti/immobili_2019.pdf.

[12] Fiscooggi, 2020, *Mercato delle locazioni: la fotografia dell'Omi sul 2020*. Available at: https://www.fiscooggi.it/rubrica/immobili/articolo/mercato-delle-locazioni-fotografia-dellomi-sul-2020.

almost equal to the weight of OOH in the US consumer price index (for owners' equivalent rent). Similarly, the rate of home ownership is quite comparable on both sides of the Atlantic (equal to 65.8 % in 2020, in both the US and euro area, according to the US Census Bureau and Eurostat).

4. ACTUAL INFLATION TAKING INTO ACCOUNT OOH

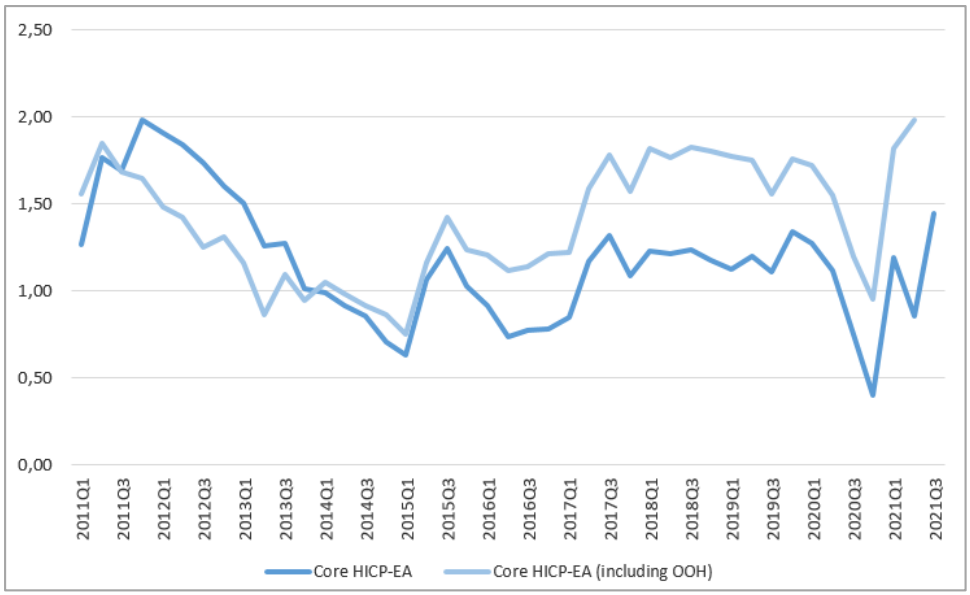
If the OOH was integrated into the HICP with the weight calculated above, the measured inflation rate for the euro area would have been 40-50 basis points higher over the last years, moving measured inflation much closer to 2 %. Figure 2 shows the core inflation rate and the core inflation rate that would result if one added OOHPI with a weight of 24 % to the existing core inflation rate (core defined as all items minus energy and food).

The figure suggests that the addition of OOH would lift a "full core" inflation rate to "close to", but not yet fully to 2 %. This was already noted by Yves Mersch[13], when he observed that the actual inflation rate would have been very close to 2 % on average, over the period 2016-2019.

With the COVID-19 crisis, even core inflation has become more variable, so it is difficult to say whether an "all inclusive" HICP would today be close to 2 % on a forward-looking basis. Overall HICP inflation is now (fall 2021) above 2 %, but most of this is due to higher energy prices. The ECB still projects HICP inflation to return to only 1.7 % and 1.5 % in 2022 and 2023 (provided energy prices stabilise). Over the last quarters the OOHPI has been increasing at a rate of 3-4 %. This implies that properly measured inflation projections should be about 0.6 to 0.7 percentage point higher, leading to inflation projections above 2 % over the medium term.

Moreover, one should consider the fact that house prices are continuing to increase rapidly – now at 6.8 % in 2021Q2 per annum. This could mean that the pace of increase in the cost of owner-occupied housing also increases. In the following, we thus investigate the relationship between house prices and the OOH indicator as put together by Eurostat.

Figure 2: Core inflation with and without taking into account the cost of owner-occupied housing, 2011Q1-2021Q3



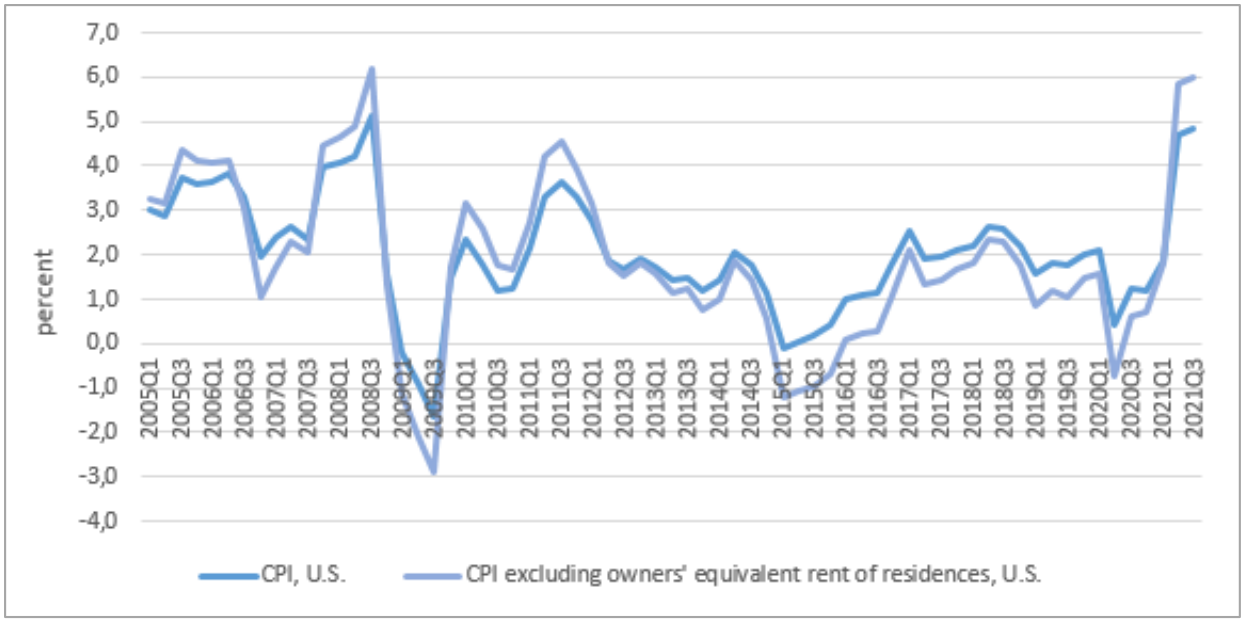
Note: The core HICP including the owner-occupied housing price index has been compiled by the authors using HICP country weights for the euro area excluding Greece. The latest data available for OOHPI is 2021Q2, and for HICP 2021Q3.

Source: Authors' calculations based on data from Eurostat.

[13] Mersch, Y., 2020, *Asset price inflation and monetary policy*, Keynote speech by Mersch, Member of the Executive Board of the ECB and Vice-Chair of the Supervisory Board of the ECB, at the celebration of INVESTAS' 60th anniversary. Luxembourg, 27 January 2020. Available at: https://www.bankingsupervision.europa.eu/press/speeches/date/2020/html/ssm.sp200127~402c545954.en.html.

In the case of the US, as illustrated in Figure 3 and Table 1, a large part of the relative "better" performance of the US in terms of inflation over the last five years of asset price inflation seems to have been due to the inclusion of OOH. Without OOH, the US inflation performance would have been very similar to that of the euro area.

Figure 3: Inflation in the US, CPI and CPI excluding owners' equivalent rent, 2005Q1-2021Q3



Source: Authors' calculations based on Federal Reserve Economic Data.

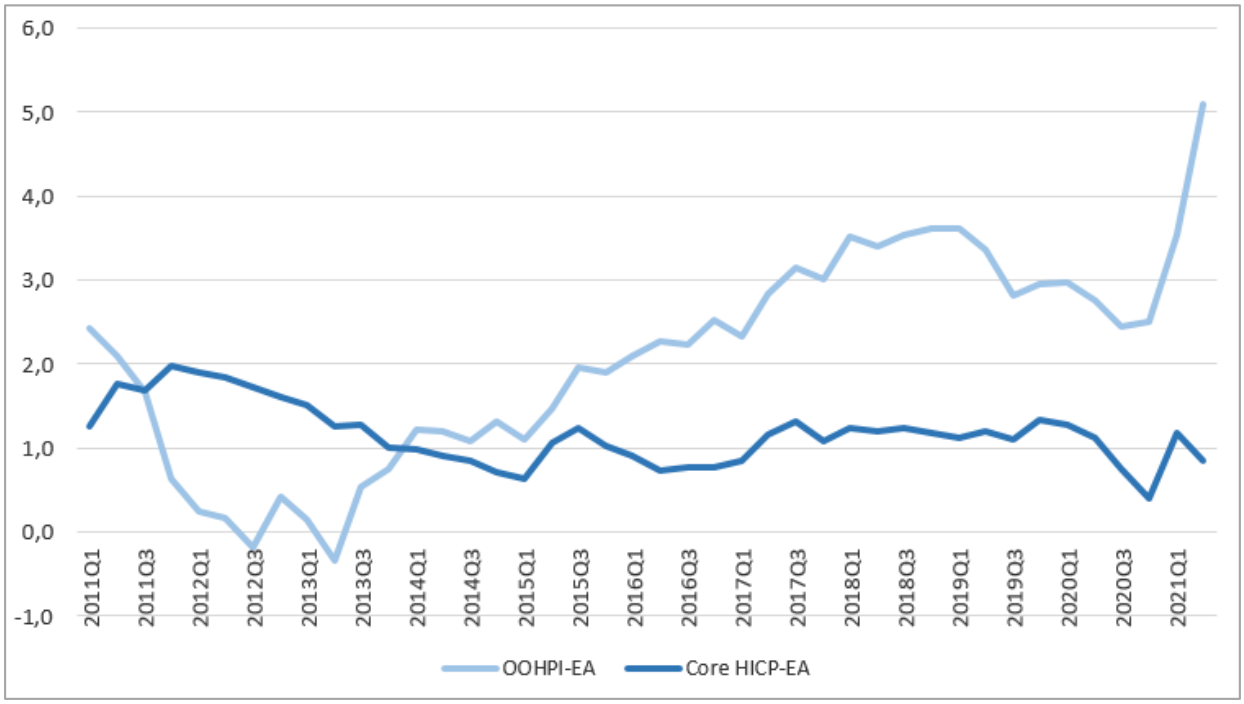
Table 1: Inflation in the US, difference between CPI and CPI excluding owners' equivalent rent (5, 10 and 10 years pre-COVID)

	CPI (%)	CPI excluding owners' equivalent rent (%)	Difference (p.p.)
Average 20 years pre-COVID	2.2	2.0	0.2
Average 10 years pre-COVID	1.7	1.4	0.3
Average 5 years pre-COVID	1.6	1.1	0.5

Source: Authors' calculations based on Federal Reserve Economic Data.

It is evident that the housing cost in Europe is increasing rapidly. The OOHPI has been moving above 2 % p.a. over the last five years and, since 2017, it has been rising, on average, by more than 3 % – much above the core inflation rate (which excludes volatile elements such as energy). Over the last quarter it has shot up to 5 % and is likely to remain high because house prices continue to increase as well. See Figure 4 below.

Figure 4: The rising cost of (owner-occupied) housing compared with measured inflation in the euro area, 2011Q1 - 2021Q1



Source: Eurostat.

Note: The OOHPI published by Eurostat is not available for euro area average but for the member countries except for Greece. The index for the euro area shown here is calculated by the authors.

Figure 4 also shows that the cost of owner-occupied housing does not always increase faster than other prices. Until about 2014, OOH inflation was below the core inflation rate. This was probably due to the fact that after the bursting of the housing bubble in many parts of the euro area housing prices and costs declined (see also below).

5. HOUSE PRICES AND THE COST OF OWNER-OCCUPIED HOUSING

Public discussions about housing costs and inflation often conflate house prices, rents and the rent equivalent of OOH. House prices and the cost of OOH are conceptually distinct concepts. However, they are linked in reality. House prices seem to have a strong impact on OOH[14].

According to IMF staff calculations, based on a cross-country estimate of the link between nominal house price growth and CPI rent inflation, a 1 percentage point year-on-year increase in nominal house prices in the quarter ahead is associated with a cumulative increase of 1.4 percentage point in annual rent inflation over a period of two years. The effect is estimated to persist for about three years (IMF, 2021).

In the following, we estimate the elasticity of owner-occupied housing costs to housing prices in the euro area. We use a panel dataset of 18 euro area countries (no data are available for Greece) over the period 2010Q1-2021Q1.

[14] We also examined the possible relationship between house price index and actual rentals for housing index included in the HICP, across euro area countries. The estimated coefficients imply that the two measures are only marginally correlated, and the dynamics of rents seems to be different from that of house prices in the sample countries.

For robustness we use three different estimation methods: pooled OLS, fixed effects and random effects models. All are estimated using the year-on-year growth rates (in the form of log difference) of the OOHPI and House Price Index. As the output of Hausman test also confirms, no systematic and significant difference between fixed effects and random effects models exists, and the results delivered by both estimators are quite similar, and also close to the one from the pooled regression. We add a lagged dependent variable to account for the potentially slow adjustment of the OOH index to any shock[15].

The coefficient on the lagged dependent variable suggests that about one half of any shock disappears within one quarter, implying that the full effect of any shock is felt within one year. The estimated coefficients show that the (short-term) elasticity of owner-occupied housing costs to housing prices in the euro area is around 0.15-0.17 (Table 2). Together with partial adjustment this implies that the long-run elasticity of OOH with respect to house prices is about 0.3-0.34.

Table 2: House prices and OOH, regression analysis

Dependent Variable: Δlog (OOH)			
	Pooled-OLS	Fixed Effects	Random Effects
lagged Δlog (OOH)	0.531	0.451	0.531
	(0.080)***	(0.114)***	(0.088)***
lagged Δlog (HPI)	0.154	0.170	0.154
	(0.026)***	(0.028)***	(0.024)***
cons	0.008	0.009	0.008
	(0.002)***	(0.002)***	(0.003)***
R2	0.69	0.64	0.69
N	743	743	743

*** denotes significance level of 1 %.

Source: Authors' calculations based on data from Eurostat.

Note: Regression results for the sample 18 euro area countries for which data is available (only Greece missing), 2010Q1-2021Q1. Heteroskedastic-robust standard errors in parentheses.

The regression result suggests that the OOHPI is likely to continue rising at a considerable pace as housing inflation is now running at above 6 % in the euro area. If house prices increase by 6-7 %, the longer-term impact of 0.34 calculated above suggests a rate of increase in the OOH element of consumer prices of about 2-2.4 %. Combined with the estimated weight of OOH in a proper consumption basket of 24 %, this would mean an increase in measured inflation of about 0.5 to 0.6 percentage points (not far from the value observed over the last years). OOH inflation is thus likely to continue at a strong pace and have a significant impact of overall inflation as perceived by the majority of households.

[15] Early inflation models and several empirical measures of inflation include lags in inflation process to feature and capture the persistence of inflation, as a key component of its dynamics (see Fuhrer, 2009). It is likely that the items which make up the OOH component suffer at least partially from similar frictions.

6. CONCLUSIONS

The primary task of the ECB is to ensure price stability. Price stability is attained when price increases are so small that consumers do not worry about prices being much higher in the future. This is no longer the case. Households feel the cost of housing, which is a major element of household expenditure, increasing at a rapid pace. However, the HICP which the ECB uses to measure includes only rents, but does not measure the cost of owner-occupied housing. This is in contrast to international practice since the consumption price indices of most developed countries include the cost of owner-occupied housing.

The HICP currently used measures only a small part of the cost of housing, namely "actual rent paid", whose weight in the HICP is only 6 % of total consumption. Households spend obviously more than just 6 % of their income on housing. The low weight of rents in the HICP is due to a combination of two factors: a relatively high rate of homeowners in the euro area (70 % own and owner-occupiers do not pay rent) and the smaller size of rented units. Adjusting for these two factors yields an estimate of the proper weight of housing of about 30 % in the HICP, of which OOH would be around 24 % (like in the US).

Our calculations suggest that over the next years the existing HICP will underestimate inflation by potentially about 0.5 to 0.6 percentage points. The current survey-based forecast for inflation two years out is at present 1.5 % and 1.8 % for the longer (5-year) term [16]. These forecasts are for the current HICP. Taking into account the full cost of housing would means that professional forecasters expect a properly measured inflation rate of at least 2 % over the next two years and 2.3 over the longer term – making emergency bond purchases unnecessary. Acknowledging the cost of owner-occupied housing would thus have important implications for the stance of monetary policy.

The argument that the existing measure of Eurostat, the OOHPI cannot be used because it comes only at a quarterly frequency is not convincing. The ECB takes also other variables into account which appear only with quarterly frequency (e.g. real GDP growth), and the ECB updates itself its inflation forecasts only 4 times per year. Moreover, the Governing Council takes its monetary policy decisions only every 6 weeks. It would thus have the existing quarterly measure of the OOHPI available at every second monetary policy meeting. At any rate, it should not be difficult for Eurostat to quickly increase the frequency of its existing measure from quarterly to monthly, at least for the major Member States.

The strategy towards including OOH in the HICP, which stretches into the indefinite future is not convincing. Progress on measuring the cost of owner-occupied housing has been painfully slow, very little has been achieved over 15 years. No indicator of OOH will ever be perfect. But at this point is better to be approximately right (using the existing, imperfect indicator), than precisely wrong (ignoring housing costs for another decade).

Including OOH quickly in the inflation measure that the ECB targets would create a "communication problem", because it would indicate that the ECB is much closer to its target of (now) 2 % than perceived today on the basis of an HICP which does not include OOH.

If the ECB were to include OOH in its price stability definition at the present juncture it would have to acknowledge a "jump" in inflation of about ½ of a percentage point. This could lead to two types of criticisms: Some might argue that the ECB is changing the bar to make it easier to attain its target level of inflation. Others might argue that its past monetary policy has been unduly expansionary because it had under-estimated inflation. However, this communication problem should not be a reason to delay

[16] ECB, 2021, HICP, Inflation forecasts. Available at: https://www.ecb.europa.eu/stats/ecb_surveys/survey_of_professional_forecasters/html/table_hist_hicp.en.html.

the implementation of including OOH *sine die*.

This paper has concentrated on the substantive arguments for taking the cost of owner-occupied housing into account when measuring inflation. Formally one should distinguish between two steps: i) including OOH costs in HICP which is the competence of Eurostat, and ii) the inclusion of OOH costs in decision-making on monetary policy. The first step could quickly be taken by Eurostat (under prodding from the Commission).

The ECB has promised that while waiting for the perfect OOH measure it will integrate the cost of owner-occupied housing in its analytical framework which informs monetary policy. This is of course something the ECB could do immediately. It is unlikely to amount to much more than a footnote to its reports. The size of the impact of OOH on inflation is so large that over the next few years it might justify a different direction for monetary policy.

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Including Owner-Occupied Housing Costs in the HICP: Some Technical and Policy Remarks

Luigi BONATTI and Andrea FRACASSO

Abstract

We discuss the full inclusion of the owner-occupied housing costs (OOHCs) in the EU's harmonised index of consumer prices (HICP). We briefly review the main methods used for including these costs into consumer price indices, and in particular the reasons why the EU authorities prefer to adopt the net acquisitions approach rather than the rent equivalence approach, as other major countries did. We also argue that in the current scenario an acceleration of the EU's roadmap towards a full inclusion of OOHCs in the HICP would be desirable.

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CONTENTS

LIST OF ABBREVIATIONS

CPI	Consumer price index
ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
OECD	Organization for Economic Development and Cooperation
OOH	Owner-occupied housing
OOHC	Owner-occupied housing cost
US	United States

EXECUTIVE SUMMARY

- **Consumer price indices (CPIs) should include the prices of all goods and services** that the population living in a certain area buys for consumption purposes, including the housing services consumed by the owner occupiers.
- **At present, Eurostat has included only some owner-occupied housing costs (OOHCs)** in the EU's official CPI, i.e., the harmonised index of consumer prices (HICP). This differs from what occurs in major countries such as the US or Germany, where the respective official CPI takes full account of all OOHCs.
- **There are technical reasons against hasty revisions of the HICP in the attempt at including a measure of the OOHCs**: so far, OOHCs cannot be precisely and homogeneously calculated at monthly **frequency** in all euro area countries, and there is no agreement among statisticians and economists as to what **method** to adopt to measure OOHC given the current legal constraints. Yet, further advances along this direction in the euro area appear necessary.
- **The reasons why the EU authorities decided to exclude imputed values of OOHCs from the HICP, thereby focusing exclusively on prices associated with monetary transactions, are several**. We maintain that this is in particular due to the fact the CPI is a fundamental compass for monetary policy, signalling possible deviations from the central bank's target(s) and the need to recalibrate monetary policy. Inserting imputed prices on the basis of a rent equivalence method in the HICP could amplify the effects of the volatile prices in the rental markets. Moreover, this method could have been particularly distorting in those countries where the large majority of households are owner-occupiers and the rental markets are relatively thin.
- **Notwithstanding some reservations, the ECB has recently defined a gradual roadmap towards the full inclusion of OOHCs in the HICP**, as other major central banks have already done. This process will be based on a number of progressive reforms in the European statistical system, as well as on modifications of the current legal framework, and eventually some changes in the way the ECB analyses and responds to information regarding inflation.
- **The scenario we are facing at this point of the year, however, seems different from what was expected when the ECB defined this roadmap**. With a complete reversal of perspectives with respect to a year ago, many observers warn about the possibility of a strong post-pandemic inflationary context. In such a scenario, it becomes important for the ECB and its anti-inflationary credibility that the indicator used to measure the growth of consumer prices is not perceived as systematically underestimating inflation. **An acceleration of the roadmap that has been given and a rapid full inclusion of OOHC in the HICP are therefore highly desirable**.

1. INTRODUCTION

In principle, consumer price indices (CPIs) should include the prices of all goods and services that the population living in a certain area buys for consumption purposes. Among them, quite important are the housing services that households consume whenever they live in dwellings owned by themselves ("owner-occupied housing", OOH). However, whether to include OOH indices in the official CPI, and above all—if one concludes that it should be included—how to do it, is problematic for more than one reason[1].

Part of the difficulty comes from the nature of housing, that is a consumer durable and at the same time an asset used by households as an investment vehicle. Another difficulty originates from the choice in the EU to measure the price of the housing services consumed by an owner-occupier by using only the prices of observable monetary (or non-imputed) transactions rather than by using the rents of equivalent properties, according the so-called rental equivalence approach, or by exploiting other user-cost methods to input costs. Furthermore, countries in the euro area differ remarkably in the structure of their housing and rental markets, with non-trivial consequences on the OOH weights to use for the inclusion of an OOH price index in the official CPI. Finally, statistics connected with housing tend not to be released at a monthly frequency and in a timely manner, as is instead required for their inclusion (without imputation) in the price index used by the European Central Bank (ECB) for monetary policy purposes, i.e the harmonised index of consumer prices (HICP).

Some of these issues will be addressed in greater detail in this study, which focuses on the possible integration of OOH into the HICP adopted by the EU Member States. This refers to the project, developed by Eurostat between 2000 and 2016, to encourage EU Member States to compile an OOH price index based on the acquisition approach (more on this below). The adoption of Regulation (EU) No 93/2013 provided a legal basis for the compilation of a standalone quarterly OOH price index, and some work in the area has actually been done since then. Only recently, starting in 2015, new OOH indices based on the net acquisition approach were developed and made available by the European Statistical System (ESS) on an experimental basis, only at quarterly frequency and with a delay of three months (Eiglsperger and Goldhammer, 2016). Against this background, Article 3(7) of Regulation (EU) No 2016/792 gave the Commission the task of preparing by the end of 2018 a report assessing the suitability of the OOH price index for integration into the HICP. The ECB was asked to contribute and Member States were consulted.

Very recently, in its review of the monetary strategy, the Governing Council of the ECB recognised the appropriateness of including the costs related to owner-occupied housing in the HICP as part of a multi-year project and, in the meantime, it committed to consider, both in its monetary policy assessments and decisions, also the available inflation measures regarding this issue (namely, measures connected with a quarterly standalone OOH index) among the wider set of supplementary inflation indicators that the ECB ordinarily looks at. During the transition period, thus, the current version of the HICP will remain the main reference index for monetary policy; when the OOH index will have reached the timeliness and quality standards necessary for full integration into a revised monthly HICP index, the ECB will most likely substitute the HICP with the new indicator (often called HICP-H index).

At present, Eurostat has included only some owner-occupied housing costs (OOHCs) in the HICP, that is the expenditures for maintenance, minor repairs, and other running costs. This differs from what occurs in major countries, such as the US or Germany, where the respective official CPIs take fully into account all the OOHCs. Although inflation dynamics may change only to a minor extent when these

[1] For general discussions of the treatment of housing costs in consumer price indices, see Diewert (2007) and Cecchetti (2007).

costs are included in the HICP (more on this in Section 3), it has become clear in the last few years that even minor differences in the dynamics of (very low) inflation rates may seriously affect the Governing Council's decisions to either undertake expansive policy measures or to tighten the stance of monetary policy. Moreover, should the failure to include OOHCs in the HICP lead to a growing discrepancy between the evolution of the HICP and that of the costs of living perceived by euro area citizens, this may have a negative impact on both the credibility and the communication strategy of the ECB. Yet, the reasons and the arguments to be considered in order to assess what OOHC measures to include among the determinants of the EU official CPI are both technical and related to their possible impact on the ECB policy stance. We shall address both in this contribution.

This paper is organized as follows: Section 2 discusses some technical issues concerning the inclusion of all OOHCs in the HICP and briefly presents the three more widely adopted methods for including the OOHCs in the HICP, Section 3 deals with the policy implications of this inclusion, and Section 4 concludes.

2. SHOULD THE HICP INCLUDE ALL OWNER-OCCUPIED HOUSING COSTS? IF SO, HOW?

Among the technical reasons in favour of including all owner-occupied housing costs in the consumer price index of the euro area, one of the most important is the attempt at making sure that such index effectively tracks all the substantial portions of consumers' expenditures. Given the relevance of the HICP for the evolution of wages and social provisions, but even its key role in the ECB's monetary policy strategy, it is well established that the official CPI should not persistently underestimate consumer price inflation. An imprecise measure of the increasing costs of living, in fact, may convey inaccurate signals to the authorities and also lead, in the case of persistent and one-sided deviations, to a gap between the dynamics of the HICP and the citizens' perceptions[2]. A problem on its own that, it is worth noticing, in the euro area is compounded by the heterogeneous characteristics of the housing and rental markets in the area, as well as by the current inclusion of only rental prices in the extant version of the HICP.

2.1. Technical reasons against hasty revisions of the HICP

There are technical reasons that warn against hasty revisions of the HICP with a view to including a measure of the OOHCs.

First, the official price index must preserve a number of features that, short of the necessary adjustment to collect prices for comparable dwellings over time on a regular and timely manner, could be jeopardised by the inclusion of all OOHCs in all euro area countries. For instance, the HICP exhibits a monthly reporting frequency and the authorities provide an early estimate of inflation dynamics at the end of each reporting month. So far, OOHCs cannot be precisely and homogeneously calculated at this frequency in all euro area countries, and this makes it hard to include them into a revised HICP. The adoption of approximated (imputed) measures could certainly be used to circumvent the problem, but this could produce as much noise as valuable information and, *sic stantibus rebus*, would go against the mentioned legal requirement that no-imputed prices are included in the HICP.

Second, there is no agreement among statisticians and economists as to how OOHCs should be actually measured. Different methods have different implications as to what is actually measured, what information are provided to the authorities, and what is implicitly hidden. The net acquisition method, for instance, requires the exclusion of the cost of the land (associated with an investment) from the assessment, as it focuses only on the costs of construction (closer to the concept of consumption): as the separate value of the land and of the dwelling is not always available, this distinction is often hard to make, in particular without resorting to imprecise imputation. The user cost method, on the contrary, is closer to the cost-of-living framework (as the value of a house depends on the benefits it allows to extract and on the costs it implies for the owner) and it considers the depreciation of the dwelling and the opportunity costs associated with alternative investments (both imputed, not observed as part of actual transactions), from which capital gains need be subtracted: this has the unpleasant effect, in terms of policymaking, that the elimination of observed capital gains paradoxically decreases the user costs exactly when the growth of house prices accelerates. The rent equivalence approach does not explicitly consider the costs of repairing and maintenance in the OOHCs that, on the contrary, the net acquisition method considers; moreover, in case of staggering and long-lasting contracts, the observed

[2] As pointed out by ECB (2021), there exists a consistent gap between the consumers' inflation perceptions and HICP inflation, with the former higher than the latter, but the two measures have moved together quite closely, at least before the pandemic.

fluctuations in rental prices may reflect only the contracts for the new tenants, rather than the value in the entire rental market.

Similar methodological controversies regard also at what point in time prices and expenditures should be measured. At the time of acquisition or considering the actual use of the housing service? When the house is paid, also through long-lasting mortgages, or when the contract is signed?

As anticipated, various alternative methods to measure OOHCs have been developed, and they differ both in their theoretical design and in their actual implementation, given the available sources of data. It is worth noticing that no single method serves equally well all the possible uses of an OOHC index. The user cost method, for instance, captures well actual expenditures and the cost of living, but it may create a recursive loop in the interest rate setting process given that it includes mortgage payments that, in turn, depend on monetary policy decisions. It follows that this method could well be used for wage indexation and other purposes, but not really for monetary policymaking. This observation implies that adopting alternative approaches to calculate the OOHCs, as done for instance by the UK Office for National Statistics, is a possible way to tackle the abovementioned methodological uncertainty regarding the indices, but it does not solve the ultimate problem of a central bank, that is choosing one and only one method to assess the evolution of the OOHCs and include it in the official CPI used to set and communicate its policy stance.

2.2. A brief comparison between net acquisitions approach and rent equivalence approach

The net acquisitions approach adopted by Eurostat measures the costs associated with buying and maintaining the housing structure: it captures changes in transaction prices in respect of dwellings that are new to the household sector, and it considers other goods and services purchased by owner-occupiers. It excludes transactions between households and it also excludes the land component, as this latter is not considered as part of the consumption-related expenditures that the HICP aims to capture.

It is worth noticing that this approach has been used by Eurostat so far because as it allows to build a measure that is consistent across all EU countries, notwithstanding their heterogeneity, and because it corresponds to the purpose of the HICP (i.e., measuring changes in the total expenditures associated with monetary transactions by households to buy goods and services for consumption purposes), being calculated from the new residential construction series in the national accounts, without requiring any imputations from other measures[3]. Accordingly, since 2016, Eurostat has released an (experimental) OOH price index that reflects changes in the price of net purchases of residential property by the household sector[4].

If legal restrictions and other considerations led the European authorities to adopt such OOH price index for informational purposes, whether such index could and should be used to adjust the current HICP, however, remains highly controversial. To start, the existing national OOH indices are only available at a quarterly frequency, and thus no purchase-based price index for OOHC can be made available with the timing and frequency that satisfy the HICP data releases. Already on 29 November 2018, the European Commission presented a report assessing the suitability of the OOH price index for

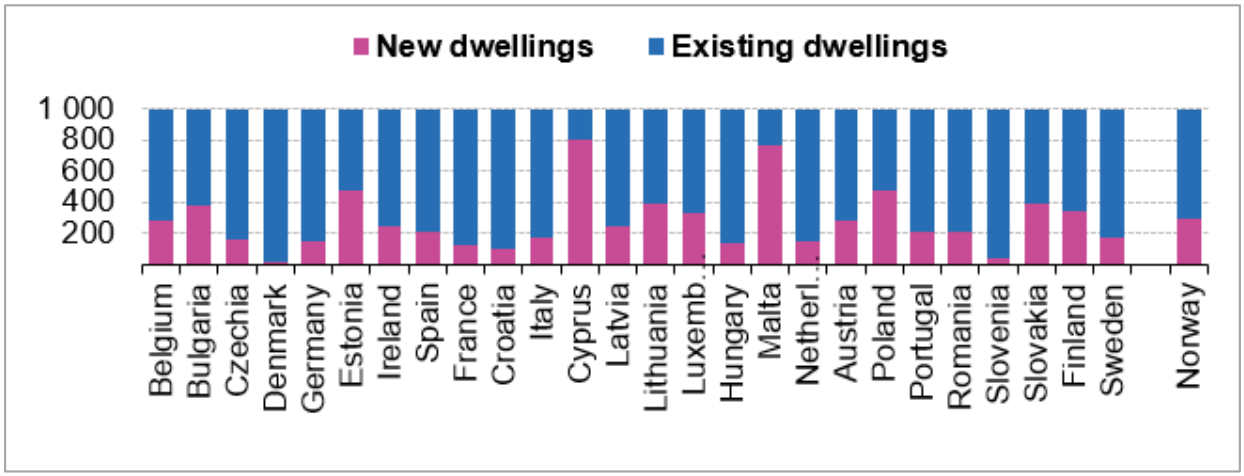
[3] In practice, the separation of land and structure price components can be done only via modelling, and this would entail the infringement of the principle that the HICP is calculated on actual transactions.

[4] This index consists of various sub-indices, namely O.1.1.1.1. Purchases of new dwellings, O.1.1.1.2. Self-built dwellings and major renovations, O.1.1.2. Existing dwellings new to households, O.1.1.3. Other services related to the acquisition of dwellings, O.1.2.1. Major repairs and maintenance, O.1.2.2. Insurance connected with dwellings, O.1.2.3. Other services related to ownership of dwelling.

integration into the coverage of the HICP and concluded that the current OOH price index cannot be produced according to HICP standards of frequency and timeliness[5]. Moreover, this approach may create disadvantages if, in the calculation of the weights to build the national HICP indices including OOHCs, the base year corresponds to a local boom or local slump year, a problem that is compounded by the remarkably different evolution of the housing markets in the euro area. Finally, unless proper fixes are found, the implementation of the net acquisition approach cannot but suffer of the heterogeneous characteristics of the housing sectors in the euro area, for instance in terms of self-build new houses and new/old dwellings (see Figure 1).

The rental equivalence approach, that Eurostat decided not to adopt, uses instead the rental prices as a proxy for the costs of housing services. Although house prices and rents do not move together, and for prolonged periods of time they may diverge as a result of real estate bubbles, they tend to share the same trend in the long term (see Figure 2). Temporary decouplings between the evolution of residential property prices and rents can be due not only to bubbles, but also to frictions, credit constraints, social housing and staggering contracts, that is all those factors that limit the substitutability between renting and owning property. Notwithstanding these limitations, the rental equivalent method permits to establish a robust link between the CPI and the evolution of the fundamental component of the house prices.

Figure 1: Weights of new and existing dwellings in total dwellings – EU, 2021 (‰)



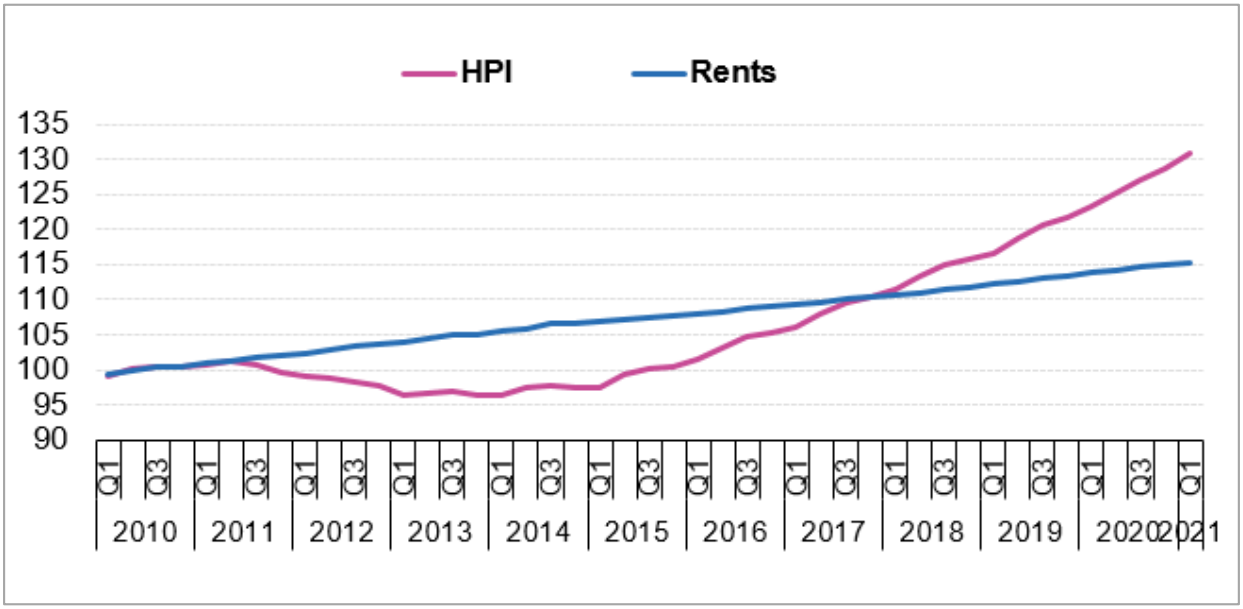
Source: Eurostat.

Being its relative merits and shortcomings as they may, the introduction of such a method in the euro area would have been difficult for two main technical reasons: the approach uses imputed prices rather than actual transaction prices, and this is inconsistent with the EU requirement according to which the HICP shall follow purchaser prices of monetary transactions[6]; an OOH index based on rents is not necessarily representative in those countries that have a small (or peculiar) rental market (see Eurostat, 2017).

[5] European Commission. (2018). "Report to the European Parliament and the Council on the suitability of the owner-occupied housing (OOH) price index for integration into the harmonised index of consumer prices (HICP) coverage". COM(2018) 768 final. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0768&from=EN.

[6] This requirement has its legal base in Article 3(3) of EU Regulation No. 2016/792.

Figure 2: House prices and rents in the EU, evolution since 2010



Source: Eurostat.

Note: Index levels (2010=100), 2010Q1-2021Q1.

Since major countries, such as the United States or Germany (see OECD, 2020), adopt the rental equivalent approach for their national CPIs, it is worth elaborating further on the possible reasons why the EU authorities did and do not intend to use this approach for including OOHCs in the HICP. Let us start this discussion by noticing that that the opportunity cost of living in OOH is the rent that the owner would pay if s/he decided to live in a house with the same characteristics and amenities, but owned by somebody else. Obviously, in assessing this opportunity cost, one should account for the tax treatment of OOHs, that in some countries is more favourable than that applied to the houses rented out to others, as well as the possible rental subsidies received by some tenants. In any case, this opportunity cost is the shadow price of the housing services that an owner-occupier gets from her/his OOH. This shadow price is approximated by the rental paid on the market for a house sharing the same characteristics, and therefore is an "imputed rent", since it refers to items—such as the services provided by OOHs—that are not traded on the market. The fact that these services are not the object of any market transactions does not prevent them from being included in the GDP, which is not the case for other consumer services whose weight in total GDP—if included—would be substantial, such as the domestic and personal services that are produced and consumed within the same household without employing any paid personnel.

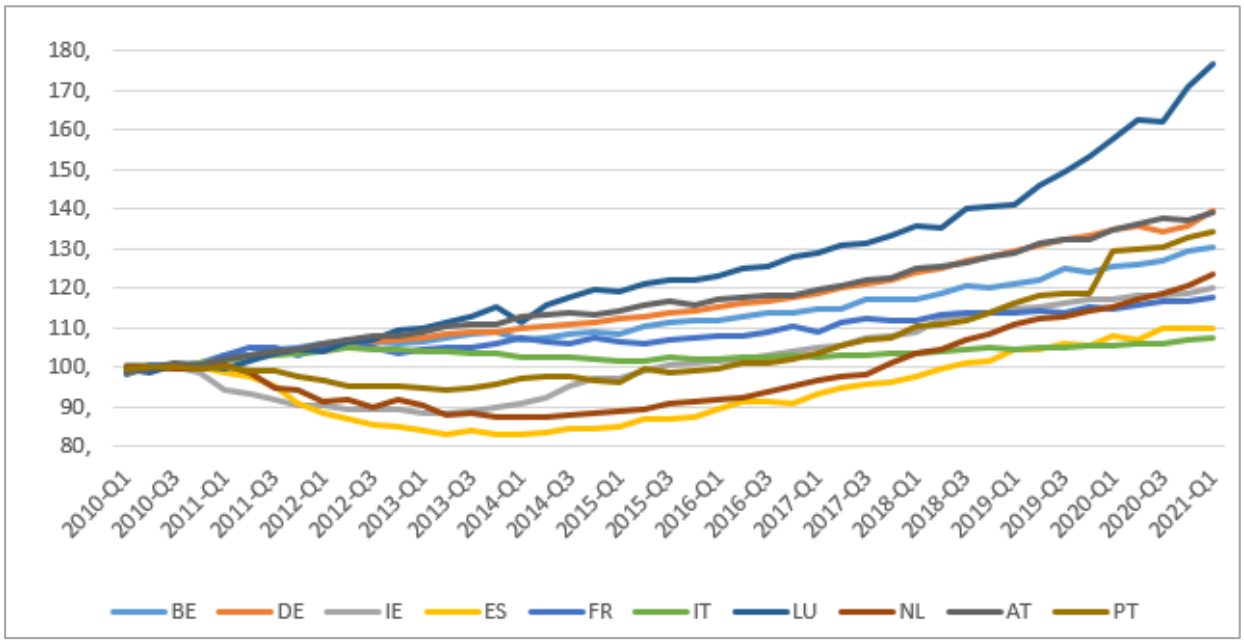
Given that including owners' imputed rents in GDP is a standard practice in national income accounting all over the world and that some of the major advanced economies include them already in their official national CPI, it is natural to wonder why the EU authorities decided to adopt a HICP that includes only the prices associated to actual monetary transactions.

A possible answer to the question is that, especially for a central bank targeting inflation, the CPI is a fundamental compass signalling possible deviations of the main economic aggregates from its target(s) and indicating the need to recalibrate the policy. Inserting imputed rentals in the CPI amplifies the effects on this crucial indicator of the volatile (and often extreme) price variations occurring in the rental markets. This phenomenon could be particularly distorting in those countries where the large majority of households are owner-occupiers and the rental markets are relatively thin. Indeed, extending to all households the changes in prices recorded in the national rental market can make

harder to predict the aggregate effects on consumption and on the transactions demand for money of a change in CPI. For instance, an increase in rentals reduces the real income of tenants (and increase the number of those of them who are liquidity constrained), but leaves unchanged the real income of most owner-occupiers (and increases the real income of those of them who are landlords), in spite of the higher cost of housing that is attributed to them if imputed rentals are included in the CPI. This problem is exacerbated in the EU (or in the euro area), since the member countries are quite heterogeneous with respect to the percentage of households in the hands of owner-occupiers, ranging in the euro area between roughly 50 % in Germany and 90 % in Slovakia. This heterogeneity could complicate the task of interpreting the signals coming from the movements of the EU (or euro area) CPI adjusted for OOHCs, once the costs of housing for the owner-occupiers are approximated by imputing the prices observed on the national rental markets.

Notably, the HICP does already contain an item called "actual rentals for housing" that accounts for 15 % of the HICP services basket. This component, indeed, tracks the costs of housing for non-owner occupiers of residential dwellings, i.e., for tenants. On the one hand, the presence of such a component in the HICP and the discussion above suggest not to include another rent-based measure of OOHCs in the HICP, in particular where housing prices and rents exhibit differentiated cycles and trends (as shown in Figure 2). On the other hand, the presence of rentals in the HICP together with the absence of OOHCs in the index may be conducive to serious distortions in the measurement across the euro area countries, due to their differences in the rental and housing markets (Figure 1). Despite the difficulties discussed in this study, this last consideration makes the adjustment of HICP for the inclusion of OOHCs quite desirable as this can improve the comparability of the HICP across EU (or euro area) countries.

Figure 3: The owner-occupied housing price index (2010=100), quarterly data



Source: Eurostat (as of 8 July 2021).

The experimental OOH index provided by Eurostat for the EU countries offers some preliminary evidence about the importance of including OOHCs in the HICP. As can be seen in Figure 3, the cumulated OOH inflation over the last decade has been relatively large, notwithstanding the economic and financial turmoil in the early 2010s and the pandemic period. Figure 3 also reveals the highly heterogeneous dynamics of OOHC inflation across the EU countries, with negative price changes in several countries during the period 2011-2014, the sluggish evolution of the Italian index across the entire decade, and the impressive and unabated surge of prices in Luxemburg.

3. THE POLICY IMPLICATIONS OF THE FULL INCLUSION OF THE OOHCS IN THE HICP AND THE ECB ROADMAP

Among the policy motivations in favour of the inclusion of the OOHCs in the HICP, one should mention the concern that the abundant liquidity provided to the economy in the last few years by the Eurosystem and other central banks may give rise to a rapid growth of house prices without this being captured by the HICP. The likely consequence of this development would be, according to some observers, the underestimation of inflation and the overestimation of the need to maintain an accommodative stance for long.

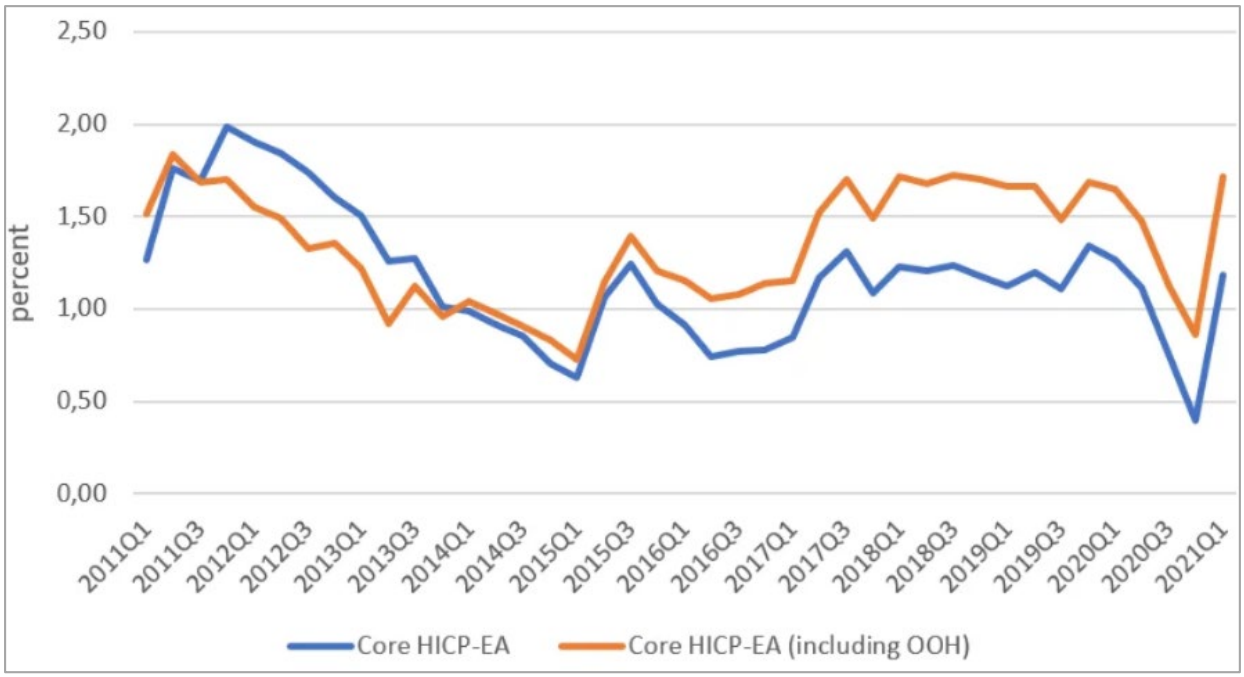
We would not define this as a technical argument for the inclusion of the OOHCs in the HICP, as it voluntarily underestimates some theoretical and technical issues. As mentioned in the introduction, it is widely agreed that the CPI should not capture asset prices, but rather consumer prices. *Strictu senso*, the national accounts aggregate of household consumption expenditures does not include monetary transactions related to dwelling structures (produced non-financial assets) and land (non-produced non-financial asset). The ECB and the European Commission have stretched the interpretation of what should be considered consumption, and concluded that housing structures can be treated as durable consumer goods, whereas land should be seen as an asset. While asset prices have certainly a large impact on the real economy and play a very important role in the transmission of monetary policy to the latter, they are not prices of consumer goods or services, and there is no reason to include them—as such—in the HICP. This is not to say that these asset prices are not important in monetary policy. In fact, the ECB Governing Council can always consider the evolution of asset prices as part of the supplementary and auxiliary information guiding policy-making. It can explicitly take these prices, their evolution and alleged imbalances into account in formulating its policy decisions. What the ECB cannot do, because it is at odds with its mandate, is to target asset prices by surreptitiously inserting them in the HICP.

This implies that those who would like that the HICP responds to housing prices are also implicitly calling for the inclusion in the HICP of the investment component—rather than the consumption component—of OOHs. If including the consumption component of housing is technically difficult and requires to derive proxies from modelling and estimations (even in violation of the non-imputed expenditures rule), encompassing the investment component in the HICP would change its nature and its use in policymaking. Accordingly, maintaining that including OOHCs in the HICP would help to "contain financial stability risks", as argued for instance by Hochstein (2019), or "to lean on a housing boom", as suggested by Hill et al. (2020), amounts to advocate the use of an improper instrument for reaching a desirable goal. In our view, the ECB Governing Council has implicitly acknowledged the point by observing that, during the transition period, it will continue to look at other independent measures of housing prices among the battery of auxiliary information guiding policy-making. This confirms our interpretation that the ECB will consider all prices in its assessment of the economic conditions, but it will refrain from targeting (directly or indirectly) housing prices. An additional reason for the ECB to proceed carefully along this line is that the inclusion of a volatile asset component in the target inflation measure "might blur the lines between macroprudential and monetary policy" (ECB 2021), with unpleasant trade-offs.

Having clarified what an OOH-adjusted HICP could capture, one should examine another policy issue raised by those puzzled by the alleged slowness with which the ECB intends to proceed towards the full inclusion of OOH in the HICP. As mentioned above, some preliminary studies have shown that the inflation rate in the euro area would have been slightly higher, had the OOHCs already been included in the HICP in the last 5-10 years. The OOH index published by Eurostat, for instance, has been running

above 2 % per year in the last five years (Gros and Shamsfakhr, 2021). The inclusion of such price dynamics in the HICP would have reduced the inflation differential that the euro area has accumulated with respect to the US and—the argument goes—would have led the ECB Governing Council to adopt a less accommodative approach, as the perceived risk of deflation would have appeared lower, as shown in Figure 4[7]. Looking forward, Gros and Shamsfakhr (2021) have argued that "the current 'post-pandemic' boom in house prices will increase this discrepancy between the official HICP used by the ECB and the real increased cost of living as perceived by families. The ECB might thus be much closer to its target of 2 % than it thinks".

Figure 4: An estimate of core inflation with and without OOHCs



Source: Gros and Shamsfakhr (2021), Figure 2.

Note: that the core HICP including owner OOH index is compiled by using HICP country weights for the euro area, excluding Greece.

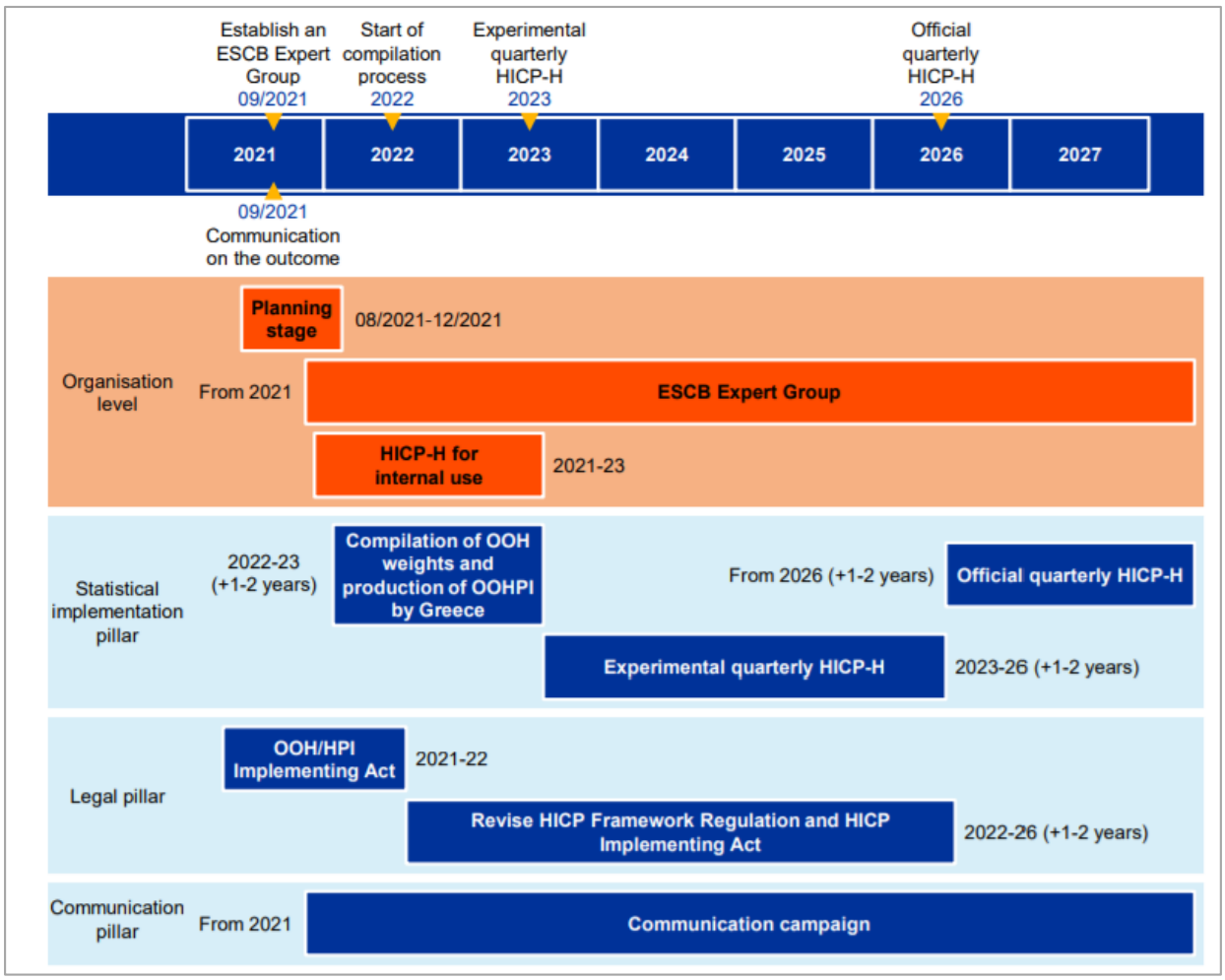
In a nutshell, the failure to account for the fastest growing components of consumer prices in the last decade may have led the ECB to underestimate relevant inflationary pressures, to overestimate the risk of deflation and to adopt an excessively dovish approach (which, in turn, may have fed housing prices). In fact, the ECB has already provided some evidence that the housing components already included in the HICP (i.e., rental prices and minor housing costs) have been weighing down on inflation in the past (ECB, 2016). Moreover, as pointed out by Danske Bank (2020), "with housing being more responsive to cyclical swings, its inclusion … would be likely to exacerbate a decline in inflation rates during a downturn". This is to say that the available evidence suggests that, in principle, the exclusion/inclusion of certain OOHCs from/into the HICP can bias the estimate of consumer price inflation either way, and the bias may have been both positive and negative over alternative time spans in the last two decades.

[7] Other analyses, such as Danske Bank (2020), suggest a limited impact of OOHCs on euro area inflation dynamics. The conclusion reached by Danske Bank (2020) for the recent past, for instance, is that the HICP-adjusted inflation rate would have been higher by 0.11 percentage points since 2011, and core inflation by 0.15 percentage points on average, both applying a weight of 6.5 % to OOH in the HICP. Indeed, the larger is the weight attributed to OOH in the revised HICP, the larger the estimated gap between the current and adjusted measure of HICP inflation. According to Unicredit (2020), depending on the weight of OOH, the gap between hypothetical core inflation rates and actual core inflation has amounted to an average of 0.2-0.5 percentage points per year since 2015", in line with Gros and Shamsfakhr (2021) who use the weight of OOH in the US consumer price index.

It is also noteworthy that, even before the recent review of its monetary policy strategy, the ECB Governing Council has never adopted a monetary rule that automatically and exclusively associates policy interventions (i.e., changes in the interest rates) with the observed dynamics of HICP inflation. The two-pillar approach adopted by the ECB, in fact, has always left enough room for economic considerations based on the entire set of economic information available to the authorities. A clear example of this is represented by the attention given to the dispersion of long-term interest rate differentials due to the market fragmentation following the sovereign debt crisis, a phenomenon interpreted by the ECB, together with other evidence, as a signal that the monetary policy transmission mechanism was seriously impaired and needed be adjusted with ordinary and extraordinary measures. Accordingly, we maintain that it remains an open question whether the ECB would have reacted differently in the past, had the HICP explicitly included the OOH index.

As a matter of fact, the ECB, in the context of its new strategy, has defined a roadmap towards the full inclusion of OOHCs in the HICP (see Figure 5), as other major central banks already did. The explanation for postponing this objective far in the future has been mainly technical, as the ECB refers to problems associated with the HICP requirement of timeliness and frequency. However, it should be stressed that the scenario we are facing at this point of the year seems to be quite different from what was expected when the ECB defined this gradual roadmap. With a complete reversal of perspectives with respect to a year ago, many independent observers have warned about the possibility that strong post-pandemic inflationary pressures might be underway, and might prove to last longer than previously expected. In such a scenario, it becomes important for the ECB's anti-inflationary credibility that the indicator with which it measures the growth of consumer prices, i.e. the HICP, is not perceived as systematically underestimating inflation. An acceleration of the roadmap that has been given and a rapid full inclusion of OOHC in the HICP would therefore be highly desirable. If this might require some derogations from the current legal requirements, such as the need to use only observable monetary (or non-imputed) transactions, the departure from the HICP coverage from the national accounts, and other changes to the regulations governing the current HICP framework, so be it. These changes, however, would be worth only to the extent that the information regarding housing costs will be timely, credible and suitable to capture the heterogeneous conditions across the euro area.

Figure 5: The ECB's proposed roadmap for the inclusion of OOH in the HICP



Source: ECB (2021), Figure 3, p. 64.

Note: Bars reflect the median timeline expectation.

4. CONCLUSION

CPIs should include the prices of all goods and services that the population living in a certain area buys for consumption purposes, including the housing services consumed by the owner occupiers. At present, Eurostat has included only some OOHCs in the EU official CPI (i.e., the HICP), and these are the expenditures for maintenance, minor repairs, and other running costs. As rents are already included in the current version of the HICP, the current composition of the HICP fails to map the evolution of owner-occupied housing prices. This differs from what occurs in major countries, such as the US or Germany, where the respective official CPIs take full account of all the OOHCs.

There are several technical reasons that warn against hasty revisions of the HICP to including a measure of the OOHCs. In particular, so far, OOHCs cannot be precisely and homogeneously calculated at monthly frequency in all euro area countries, and there is no agreement among statisticians and economists as to what method to adopt to measure OOHCs more effectively. Moreover, the current EU regulations provide for the inclusion of only the prices of observable monetary transactions, which prevents to adopt imputed prices derived from rental equivalence or simulations of user costs.

Since some major central banks include imputed rents in their official national CPI, it is natural to ask why the EU authorities decided to exclude them from the HICP and to consider only prices associated to actual monetary transactions. A possible answer is that, especially for a central bank targeting inflation, the CPI is a fundamental compass signalling possible deviations from its inflation target and it forces the recalibration of monetary policies. Given that, inserting imputed rentals in the HICP is likely to amplify the impact of price variations occurring in the rental markets on this crucial indicator, this could be distorting, particularly in those countries where the large majority of households are owner-occupiers and the rental markets are relatively thin.

Very recently, the ECB has defined a gradual roadmap towards the full inclusion of OOHCs in the HICP, as other major central banks already did. Some observers have argued that the inclusion of OOHCs in the HICP in the past could have led to a different monetary policy stance in the recent past, as the ECB would have faced a slightly more positive scenario in terms of deflationary risks. Including OOHCs, in other words, could have helped and will help the ECB to abandon its sombre forecasts and its accommodative policy earlier than otherwise. We maintain that this claim is controversial and we believe that the reasons to push for accelerating the proposed roadmap are different.

The scenario we are facing at this point of the year seems to be quite different from what was expected when the ECB defined this process. With a complete reversal of perspectives with respect to a year ago, many independent observers have warned about the possibility that strong post-pandemic inflationary pressures might be underway, and might prove to last longer than previously expected. In such a scenario, it becomes important for the ECB's anti-inflationary credibility that the indicator with which it measures the growth of consumer prices is not perceived as systematically underestimating the inflation faced by the euro area consumers. An acceleration of the roadmap that has been given and a rapid full inclusion of OOHC in the HICP would therefore be highly desirable.

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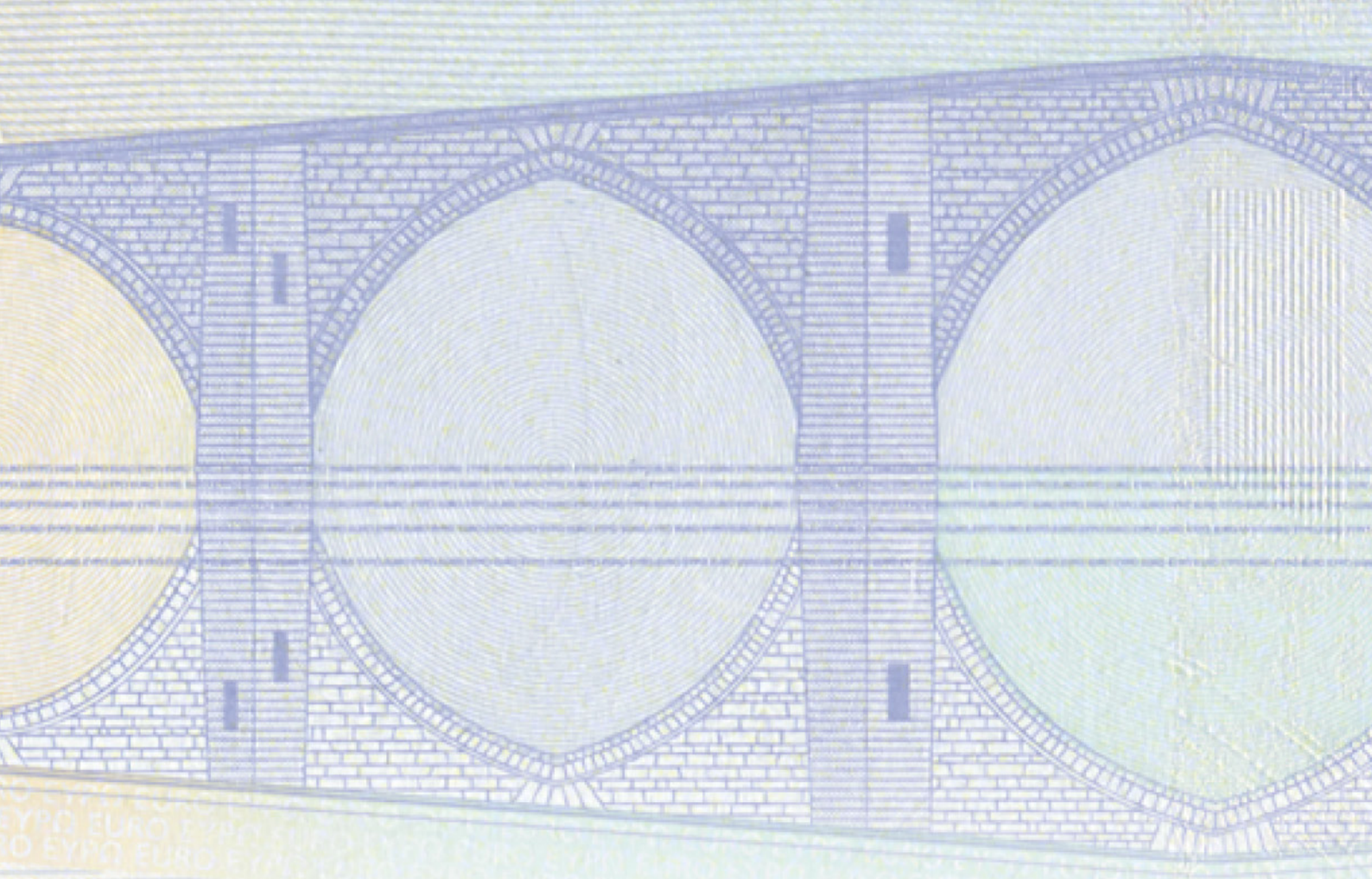

Owner-Occupied Housing Costs and Monetary Policy: Goals and Challenges for the Euro Area

Geraldine DANY-KNEDLIK and Andrea PAPADIA

Abstract

Owner-occupied housing costs represent an important expenditure for households and should be included in the Harmonised Index of Consumer Prices. Conceptual and practical challenges must be resolved before this can be implemented. Estimates suggest that these costs would have a small impact on monetary policy. At the same time, different degrees of home ownership in the euro area mean that their inclusion may affect countries differently. Significant complementarity with other EU policies, like financial stability, are unlikely to materialise.

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CONTENTS

LIST OF ABBREVIATIONS

CPI	Consumper price index
EC	European Commission
ECB	European Central Bank
EP	European Parliament
EU	European Union
HICP	Harmonised index of consumer prices
HICP-H	Harmonised index of consumer prices inclusive of housing costs
HOR	House ownwership rate
NA	Net acquisitions
OOHC	Owner-occupied housing costs
OOHPI	Owner-occupied housing prices index
RE	Rental equvalent
UC	User cost

EXECUTIVE SUMMARY

- **From a monetary policy perspective, the timely inclusion of owner-occupied housing costs (OOHC) in the Harmonised Index of Consumer Prices (HICP) is important and desirable.** The HICP should track changes of costs for consumers as closely as possible. Since home ownership rates across the euro area are far from negligible, owner-occupied housing costs should no longer be omitted in the key inflation measure of the euro area. Most central banks of other advanced economies have already included owner-occupied housing prices in the target inflation measure.
- **OOHC should not contain investment costs in order for the HICP to continue to exist as a target inflation measured for fulfilling the European Central Bank's primary mandate of price stability.** In practice, the investment and consumption costs of dwellings are not observed separately. Thus, the compilation of an admissible OOHC component of the HICP requires a deviation from the current money transaction principle.
- **The net acquisition approach, which is the current statistical approach employed by Eurostat for the owner-occupied house prices index (OOHPI), is generally suitable for compiling an OOHC component for the HICP but a change of regulations will be needed to allow for deviations from the money transaction basis of the HICP.** These changes would enable the statistical decomposition of the investment and consumption costs of dwelling acquisitions, thus allowing for an investment-adjusted OOHPI to enter the HICP. The possibility of Eurostat generating two separate OOHC indices - one employing the net acquisitions and the other the rental equivalent approach – is worthy of consideration in the long-term to further improve OOHC component, particularly for countries with deep rental markets like Germany. Moreover, practical issues regarding timeliness, frequency, and the legal framework of the HICP must be addressed and resolved before OOHC can be included in the HICP.
- **Despite its importance for monetary policy, including owner-occupied housing costs in the target inflation measure is unlikely to substantially change the picture of euro area consumer price inflation.** Thus, the inclusion will not shift the conduct of monetary policy in the euro area in the near future in another direction, unless economic conditions and/or the functioning of housing markets change dramatically. Moreover, there are no recognisable complementarities with other European Union policies that would stem from this inclusion.

1. INTRODUCTION

The European Central Bank (ECB)[1] mandate stipulates that its primary goal is to maintain price stability. To achieve this goal, the Bank symmetrically targets an annualised growth rate of the Harmonised Index of Consumer Prices (HICP) of 2 %, which is generally considered a good approximation of such a goal, after accounting for the difficulty in measuring improvements in the quality of goods[2].

Given the centrality of the HICP for ECB policy, this index should reflect actual prices facing consumers as closely as possible. However, housing costs for owner-occupied dwellings are currently underrepresented in the HICP, as only maintenance, minor repairs, and other running costs are included. In the case of non-owner-occupied dwellings, the inclusion of rental costs ensures that a broader range of housing services are accounted for. Since home ownership rates differ across euro area countries, housing costs – mostly captured by non-owner-occupied housing – currently enter the HICP with distinct weights for each country.

The underrepresentation of owner-occupied-housing costs (OOHC) in the current statistical framework of the HICP is already recognised by European Union (EU) officials. In 2016, the European Parliament (EP) and the Council passed a regulation that requests the establishment of "price indices for dwellings, and in particular for owner-occupied housing (OOH)" (Article 10, Regulation (EU) 2016/792). In 2018, however, the European Commission (EC) rejected the inclusion of the current OOH price index into the HICP (European Commission, 2018).

The reasons behind the EC's decision fall into two categories. The first is conceptual: acquiring a dwelling is not pure consumption (i.e., the acquisition of a stream of housing services), but has an investment component as well. The latter should be discounted when estimating an OOHC index for inclusion in the HICP, since the goal of the overall consumer price index is to capture only consumption expenditure[3]. However, the distinct parts of dwelling costs that make up consumption and investment are not directly observed separately. The statistical modelling required to distinguish them is ruled out by the legal framework of the HICP (Article 3(3), Regulation (EU) 2016/792), which stipulates that costs must be based on actual monetary transactions only. Hence, this impedes the inclusion of an OOHC index that decomposes investment- and consumption-related dwelling costs based on the net acquisition (NA) approach that is currently employed by Eurostat. For the same reason, OOHC indices based on alternative methodologies - e.g., the rental equivalent (RE) approach employed by the US[4] - cannot be integrated in the HICP, unless the legal framework is changed.

The second category of challenges for the inclusion of OOHC in the HICP is practical. The HICP is currently released monthly at the end of the reference period as a flash estimate and 15 days later with the full set of figures. These features are critical for the ECB's timely monitoring of inflation developments and, when needed, for adjusting monetary policy. The OOHC index is currently compiled every quarter and released 100 days after the end of the reference quarter. This long delay in the release of reliable information makes a housing-augmented HICP based on current data unsuitable for the ECB to make a timely calibration of monetary policy.

The first set of challenges must be resolved with a compromise, as has been done in most other advanced economies around the world, to achieve the desirable goal of including OOHC in the HICP. An imperfect measure seems preferable over the continued omission of these costs, also because these

[1] Set in the Treaty on the Functioning of the European Union and in the Statute of the European System of Central Banks.

[2] Another reason for a target above zero, is reducing the risk of deflation, which is generally considered economically harmful.

[3] Some economists argue that asset prices should explicitly be included in measures of inflation (see Goodhart, 2001), but this stance is far removed from current statistical and monetary policies practices and will not be discussed here.

[4] See Bureau of Labor Statistics (2020) for details.

have a large bearing on the inflation perceived by euro area citizens (ECB, 2021). Specifically, two solutions are possible. First, tolerating the inclusion of an investment component in the HICP index via OOHC computed through NA. Second, allowing the use of imputation and modelling to purge the investment component from housing transactions as accurately as possible, either within the framework of the NA or by relying on a different methodology for calculating OOHC, such as the RE approach.

This report does not advise to include the investment costs of owner-occupied housing in the HICP (see last paragraph in this section) or to pursue the option of introducing alternative methodologies given the existing ongoing work to include an NA-based OOHC index in the HICP. Adopting another methodology, with its own set of practical and conceptual challenges, would invariably delay the inclusion of OOHC in the HICP. However, the possibility of Eurostat generating two separate OOHC indices – one employing the NA approach and the other the RE approach – is worthy of consideration for the longer term. This is because each index presents its own set of advantages, which are discussed in detail below. It should be noted that this is the approach taken by the UK Office for National Statistics (2020). Whatever the route chosen, a change in the legal framework of the HICP will be necessary, as highlighted by the ECB (2021).

The second set of challenges will require the continued collaboration of different bodies in the euro area, including, but not limited to, the ECB, Eurostat, national statistical offices, and national central banks. The EP should be duly informed during this process and will be involved in any changes to the legal framework necessary to introduce OOHC in the HICP. The ECB has produced a roadmap of the envisioned process, which is discussed in Section 2.

While the desirability of accurately including OOHC in the HICP is clear, the impact of having omitted it thus far on the conduct of monetary policy appears rather limited. The most recent estimates suggest that the inclusion of these costs would have led to 0.2-0.3 percentage points, on average, higher HICP from 2018 to 2020. In the previous period, this difference was negative, leading to an overall practically unchanged inflation figure in the medium term. Future developments may, of course, change this situation, but not radically unless major shifts in housing markets materialise. What is worthy of consideration, however, is the fact that OOHC have a substantially different weight in each euro area country due to stark differences in home ownership rates. The impact of this on the conduct of monetary policy and inflation trends across the euro area is explored in Section 3.

Finally, in terms of complementarity with other ECB policies, the inclusion of OOHC in the HICP should play no role, for various reasons. One is that the ECB's monitoring of asset prices in the context of macro-prudential policies can be undertaken by simply tracking house and other asset prices, rather than relying on OOHC indices through their inclusion in the HICP. More importantly, the HICP is specifically designed to capture consumption, not investment. If its main inflation indicator included investment then not only would it be a contradiction to gauge asset price movements from this index, it would also violate the ECB's primary mandate to stabilise consumer prices. Finally, envisioning a role for the HICP in the pursuit of financial and not just price stability could introduce counterproductive confusion regarding the ECB's mandate and policy decisions at a time when the ECB is striving to improve its communication to the public. Thus, the issue of better incorporating OOHC in to the HICP is separate from the issue of whether the central bank should look at asset prices to preserve financial stability: there should be no confusion between the appropriate measure of inflation and the issue of central bank policy to pursue financial stability.

2. HOW ARE OWNER-OCCUPIED HOUSING COSTS MEASURED?

As discussed in the introduction, measuring owner-occupied housing costs poses several conceptual and practical challenges. Different approaches with both advantages and disadvantages exist to address these. We describe these in broad strokes below. For a more thorough treatment of technical aspects, the reader is referred to Diewert (2004), Eurostat (2017), and Hill, Streurer & Waltl (2018, 2020) who provide detailed discussions. This section also gives an overview of the status of affairs regarding the measurement of OOHC in the euro area, as well as planned steps to improve the situation and a brief discussion of the treatment of OOHC in other advanced economies.

2.1. Net acquisitions approach

The NA approach employs actual transactions involving housing to reflect changes in the cost of acquiring housing services. The current OOHC index compiled by Eurostat is based on the NA approach and comprises four components: new dwellings, existing dwellings that can be included in the owner-occupancy framework, self-built new dwellings, and major renovations, services related to the acquisition of a dwelling (ECB, 2021).

An advantage of the NA approach is that it is also employed for other consumer durables, like cars and washing machines (i.e., goods that do not exhaust their ability to provide services to the owner in one period), included in the HICP. Using this approach for housing would guarantee consistency across different goods included in the consumer basket. Moreover, the approach is consistent with the current legal HICP legal framework, in the sense that it is based on actual monetary transactions.

The main disadvantage of the NA approach, as mentioned in the introduction, is that the acquisition of housing contains both consumption and investment components. Although the latter is incompatible with the requirements of the HICP to reflect only consumption expenditure, it cannot be observed directly, thus it cannot be subtracted out. Even if one were to rely on the rough, but commonly accepted, assumption that the acquisition of land represents the investment portion of housing transactions, whereas housing structures are the consumption component, modelling would still be needed to "purge" the land component. Such an approach, however, is incompatible with the above mentioned HICP legal framework, which stipulates that only actual monetary transactions can be used in its compilation.

Another issue with the NA approach is the degree of representativeness of new dwellings and other allowed categories for the owner-occupied housing sector as a whole. This problem could be partially mitigated through careful sampling, but only on the condition that markets are deep enough to provide a representative sample. This may be particularly problematic in smaller countries. Additionally, the new dwellings sector tends to be volatile, introducing a challenge for the weighting of the housing component in the HICP.

A further issue is that self-built and market-acquired dwellings are treated differently in Eurostat's NA-based OOHC index. The latter includes the cost of acquiring land, whereas the former does not. This is simply because, in the self-built case, transactions involving land are separate and building costs can be proxied using a construction price index. Differences in the share of self-built dwellings across the euro area mean that the degree of harmonisation of the OOHC index across the euro area is limited.

2.2. Rental equivalent approach

The RE approach takes a very different perspective: it purports to include OOHC in the price index in the same way that rental costs are. Naturally, rents for owner-occupied housing are not actually observed, so they must be imputed through either actual rents and statistical modelling - based on the characteristics of the dwelling, such as size, location, number of rooms, etc. - or surveys asking owners what rent they believe they would have to pay for their dwelling. The main advantage of this approach is precisely its consistency with the treatment of non-owner-occupied housing costs. However major challenges also exist.

On the statistical modelling side, rental and owner-occupied housing may simply be too different to extract reliable information from the former for the latter. Moreover, housing services obtained through rental and owner-occupying can also differ, along with their value. Other key issues relate to the size and structure of rental markets. For example, widespread rent-control may make rental prices unrepresentative of the actual value of housing services obtained through rent. A small rental market may simply not be representative or deep enough to accurately reflect owner-occupied housing.

The use of owner surveys presents its own sets of challenges. Over or undervaluation can occur, as owners place different values on specific features of their housing compared to renters or are simply not informed enough about the rental market.

Additionally, periods in which the decoupling between rent and house prices increases, for example during booms, could make an RE based OOHC index particularly unrepresentative of actual housing costs faced by owner-occupiers. The final challenge of the RE approach in the euro area context is that it is not based on actual monetary transactions. The inclusion of such an index in the HCPI would presumably require more far-reaching legal changes to the HCIP framework than an NA-based one.

2.3. User cost approach

The user cost (UC) approach aims to measure OOHC by capturing actual expenditures related to housing that households incur. These include repairs and maintenance, insurance, fees related to purchase and construction, mortgage interest, depreciation, and the opportunity cost of alternative investments. Additionally, this approach attempts to net out the investment component of housing by excluding capital gains (i.e., increases in the value of housing).

The main advantage of this approach is that it is designed to comprehensively capture housing costs faced by households. An issue that it shares with the other approaches in reference to the HICP legal framework is that some of the costs included in the UC approach cannot be observed directly – e.g., depreciation and opportunity costs – and thus must be imputed based on some assumptions.

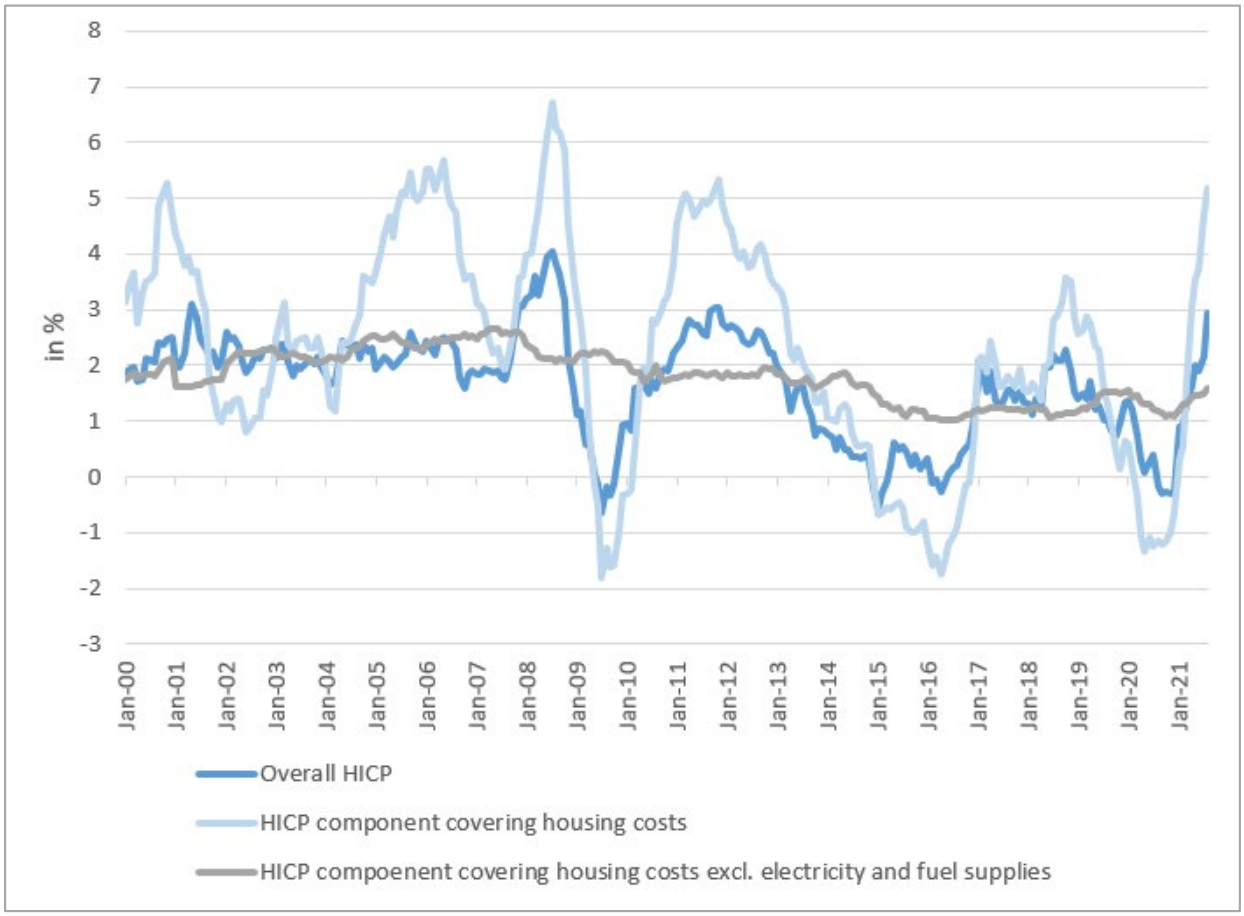
The UC is further characterised by particularly serious conceptual issues, especially if the goal of measuring OOHC is their eventual inclusion in the HICP. For instance, mortgage payments are influenced by prevailing interest rates, which are a key tool employed by central banks to influence inflation. Thus, the inclusion of such costs in the HICP would conflate the tools of monetary policy (interest rates) with its target (prices), making it of limited use. The inclusion of financing costs for the purchase of housing (i.e., mortgage payments) would also create an inconsistency with the treatment of other goods in the HICP for which the cost of credit for their acquisition is not considered. Finally, the treatment of capital gains in this index can lead to some puzzling results. For example, increases in house prices and, thus, higher capital gains would result in lower inflation, since these gains are netted out from the index.

2.4. Status in the euro area and foreseen future steps

The current HICP includes a component of housing that covers costs for non-owner-occupied housing, in form of rents, which provide a holistic picture of the costs of housing services for renters. For owner-occupied housing, instead, the component only includes maintenance, minor repairs, and other running costs like water, electricity, gas, and other fuels supplies. Overall, year-on-year inflation of the HICP housing component comoves closely with the overall HICP inflation and is more volatile (Figure 1). However, this is driven by the running costs of housing that reflect up and down swings of commodity prices, like the price of natural gas. The inflation of housing excluding the running costs evolves much more gradually.

Discussions regarding the inclusion of OOHC in the HICP in a way that reflects the cost of acquiring housing services are older than the euro itself. The inclusion of such costs has long been considered desirable, but not advisable given the status of data collection and statistical reporting of these costs. Eurostat has been publishing a quarterly OOHC index for euro area countries using the NA approach for a number of years, but this has not been deemed reliable and timely enough to be included in the HICP by the ECB due to the conceptual, frequency, and timeliness issues discussed above (European Commission, 2018)[5].

Figure 1: Overall inflation and inflation of housing costs in the euro area measured by the HICP (year-on-year)



Source: Eurostat, own calculations.

[5] For latest legislation in force with regards with the measurement of OOHC see Regulation (EU) 2016/792, implemented by European Commission (2020).

Recognising the importance of housing costs as a consumer expenditure item in the HICP, the ECB recently provided a roadmap (see ECB, 2021 pp. 64) of organisational, statistical, legal, and communication changes necessary to achieve this goal. These changes involve several key actors, besides the ECB: namely Eurostat, national statistical offices, central banks, and the EP. The process is expected to lead to the creation of an official HICP index inclusive of housing costs (HICP-H) published at a quarterly frequency sometime in 2026 or 2027. The methodology for calculating OOHC is expected to be NA- or RE-based. An HICP-H for the ECB's internal use might materialise as early as 2022.

After the creation of an official quarterly HICP-H index, the ECB foresees further improvements in methodology and timeliness, as well as the exploration of the possibility of eventually creating a monthly index. The latter point appears particularly important to align the new HICP-H to the current standard of inflation reporting in the euro area.

It is very difficult to assess whether the proposed timeline to arrive at an official quarterly HICP-H is realistic, given the complexity of the task and the number of organisations involved. However, what appears clear is that the euro area has incurred a substantial delay compared to most other advanced economies in the timely and reliable inclusion of OOHC in its reference price index. The euro area should aim for the successful inclusion of OOHC in the HICP as rapidly as possible.

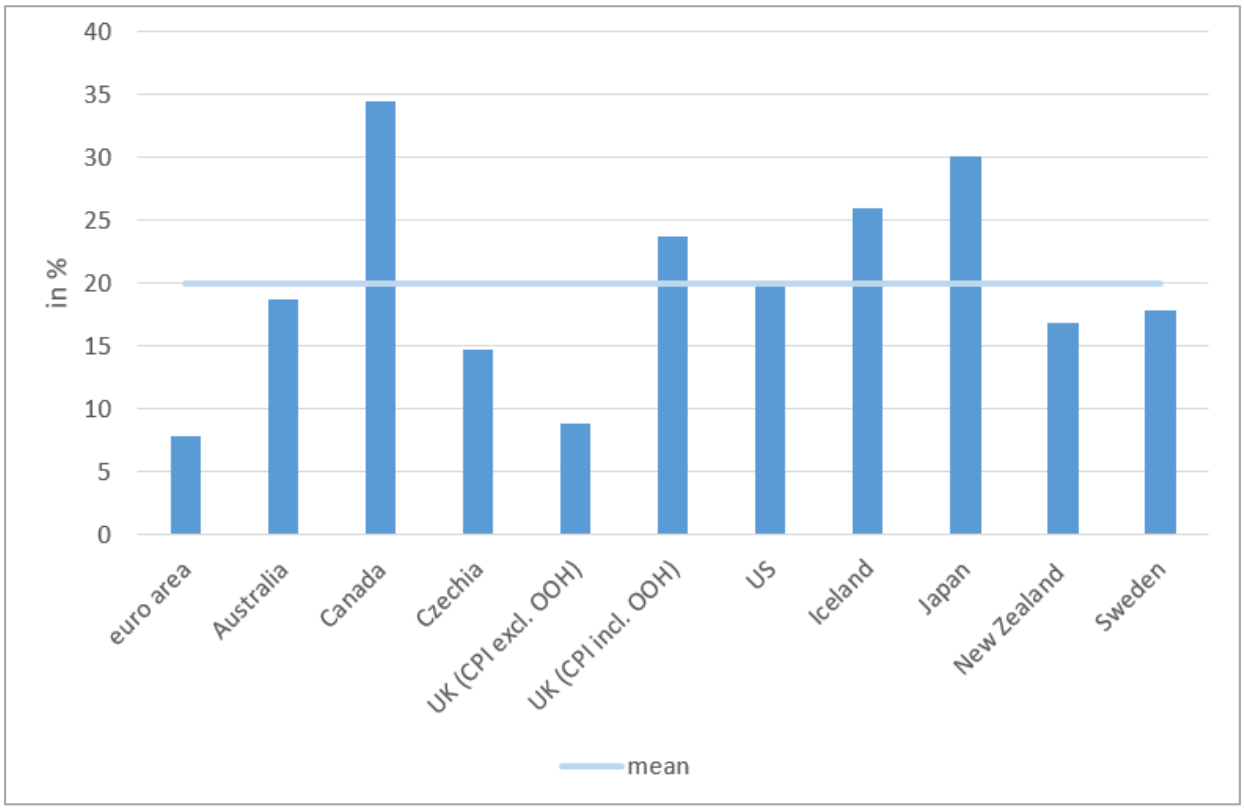
2.5. Comparison with other countries

Countries around the world take a variety of approaches to the measurement of OOHC. Most fall within the three aforementioned categories. For example, the US, Japan, Czechia, and Switzerland, amongst others, employ the RE approach. The NA approach is used in Australia and New Zealand, while Canada, Iceland, and Sweden rely on the UC approach (ECB, 2021). The United Kingdom produces different OOHC indices employing all three methodologies.

Most of the countries mentioned also include some version of their OOHC index in the price indices used in the implementation of monetary policy. The exception is the UK, which, like the euro area, excludes most OOHC from their consumer price index but releases a separate version of the consumer price index (CPI) including owner-occupied housing costs.

Figure 2 illustrates the weights of housing costs in the consumer price indices of various countries. As could be expected, the euro area stands out in international perspective for the low weight it places on housing costs, below 10 % for both, compared to an international average of nearly 20 %. Not all this difference is due to the omission of OOHC; consumption patterns vary across countries, which leads to differences in the composition of the consumption basket. However, omitting nearly all owner-occupied housing costs clearly plays a role.

Figure 2: Percentage share of housing costs in the CPIs for selected economies

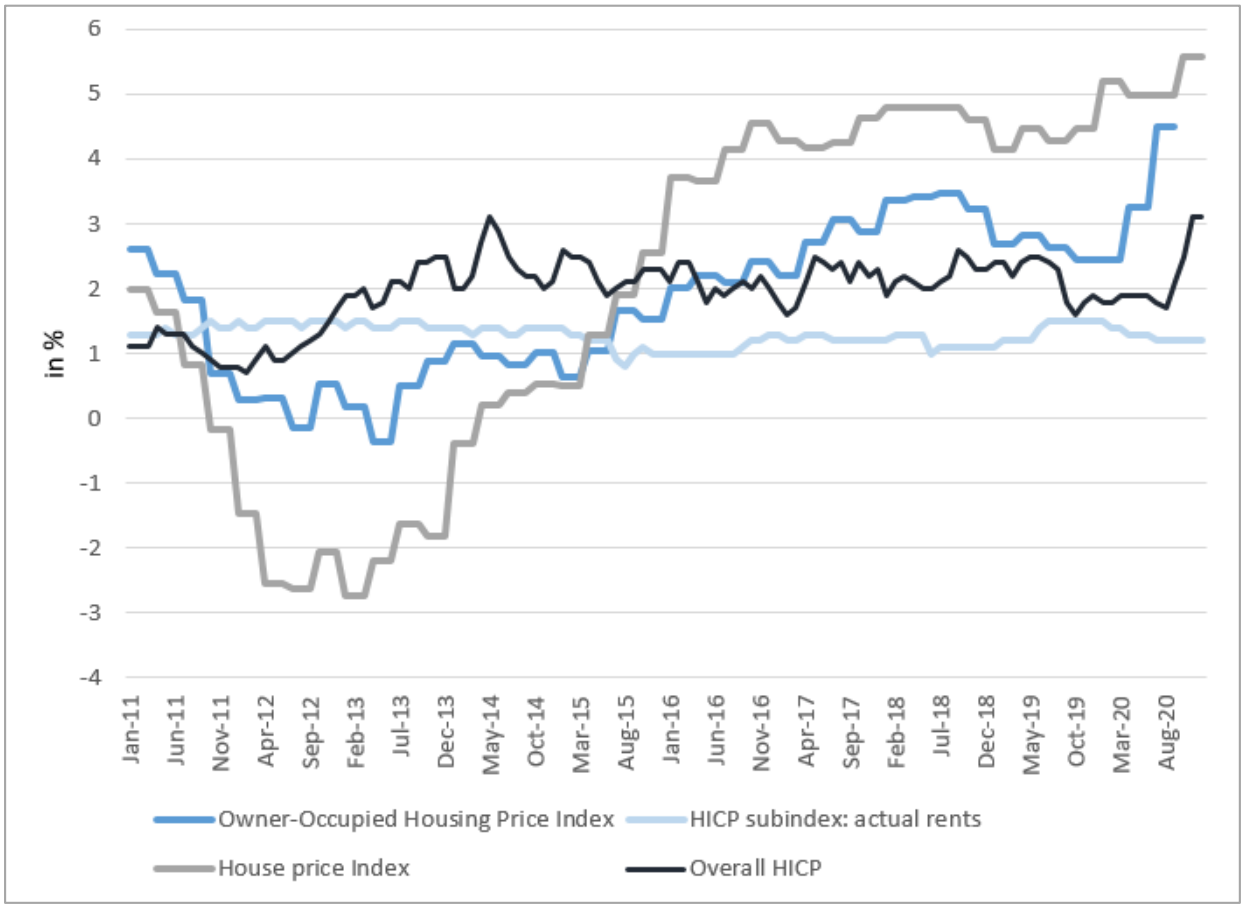


Source: Bremus et al. (2020).

The owner-occupied housing prices index (OOHPI) produced by Eurostat can be compared to its equivalent indices produced in other parts of the world in order to better understand its characteristics. While this is only a provisional analysis, as the current OOHPI is not yet deemed reliable enough to be included in the HICP, the exercise provides some useful indications.

Figure 3 plot the index vis-a-vis the evolution of actual rents and the house price index in the euro area. As already suggested by Figure 1, the rental component is characterised by a low volatility. A combination of factors, including rent controls, play a role in this. Unsurprisingly, given that the OOHPI is based on the NA approach, which relies on house acquisition transactions, the index tracks actual house prices quite well, clearly reflecting their ups and downs. From a conceptual perspective, this is both a strength and a weakness of the index. While it is desirable for the index to capture changes in the costs of acquiring housing, a share of these are driven by the investment rather than the consumption component of housing. Striking a balance between accurately reflecting housing costs and leaving out investment costs represents the main challenge of the NA approach, as discussed above.

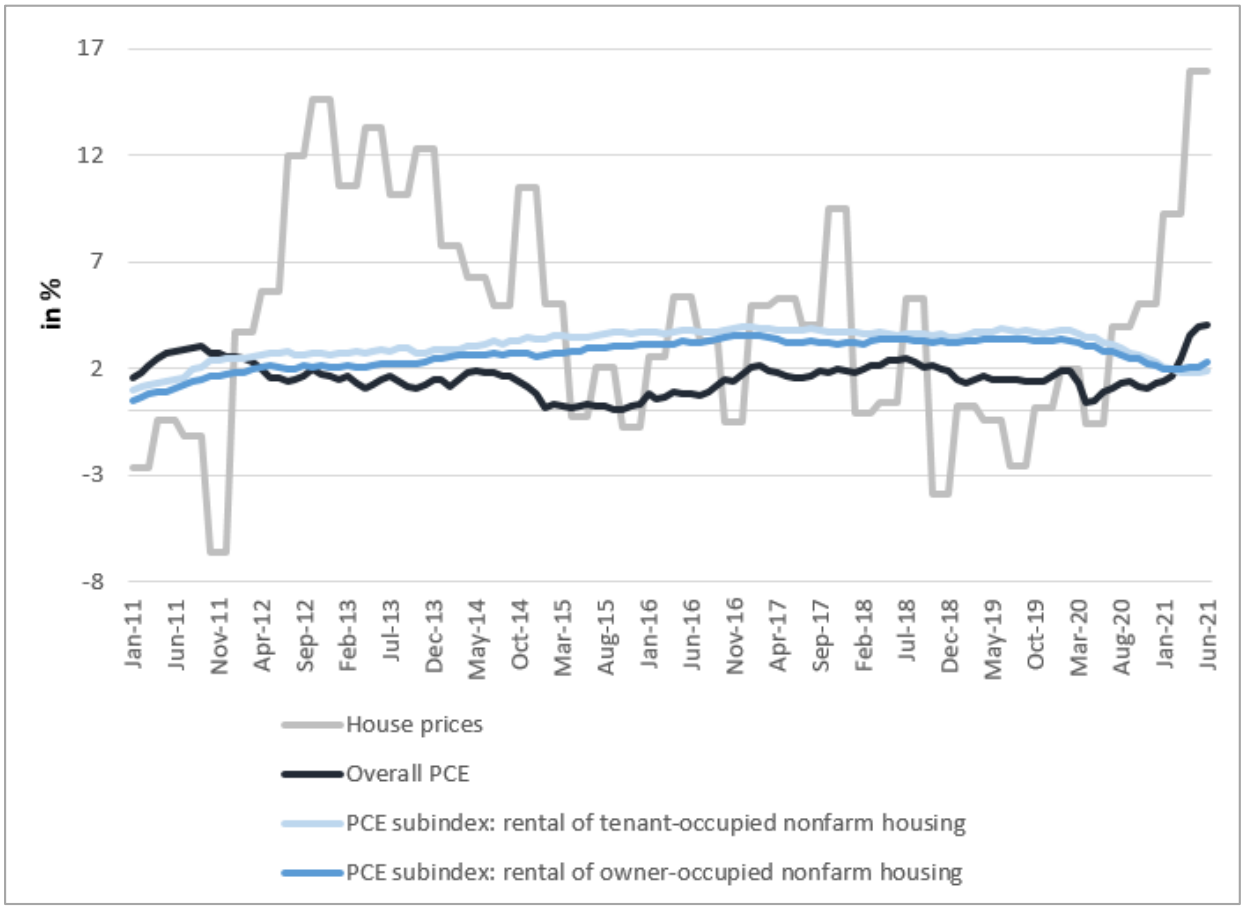
Figure 3: Year-on-year inflation rate of overall HICP, actual rents, OOHC and house prices in the euro area



Source: Eurostat, own calculations.

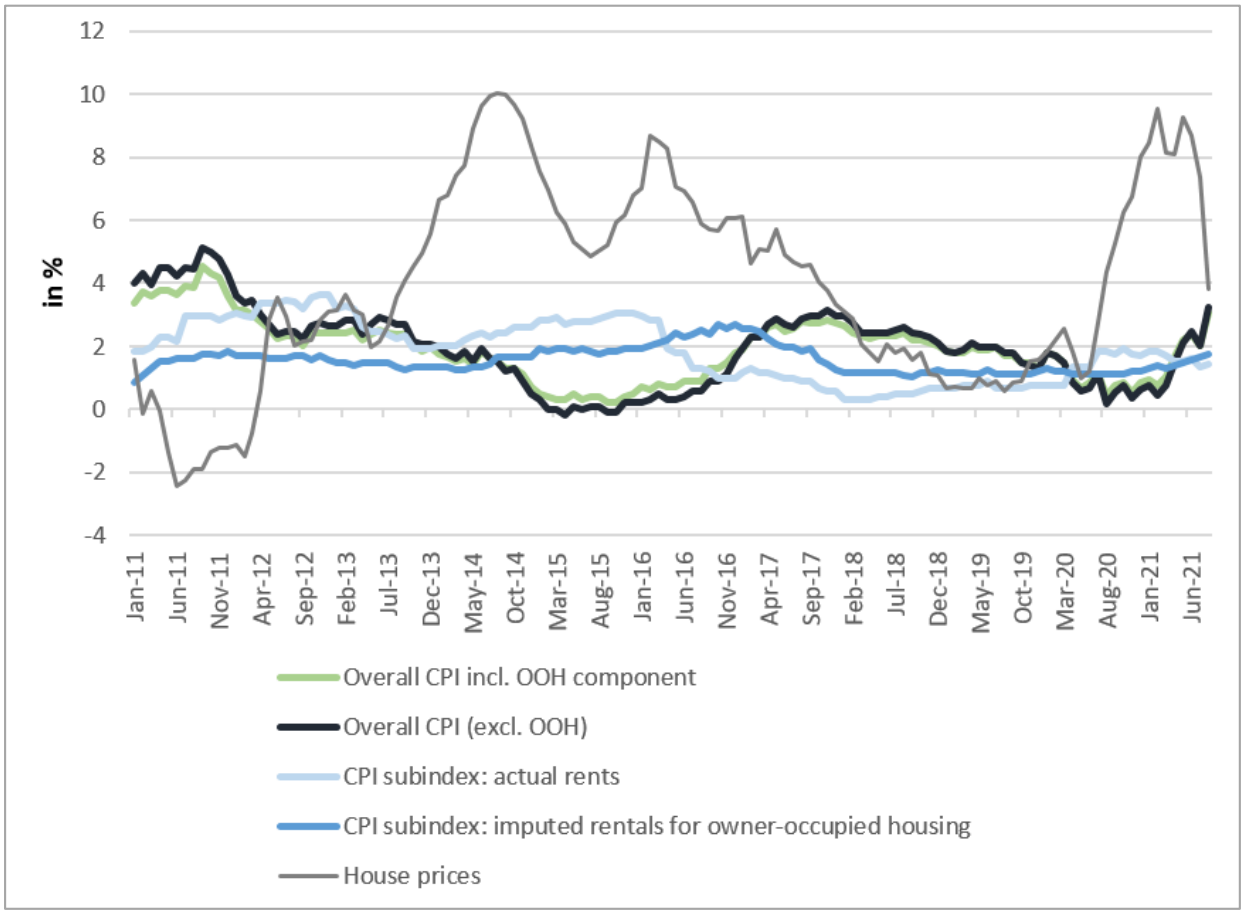
Figure 4 provides a similar plot for the US, adding the main US consumer price index (the personal consumption expenditure index), both actual and imputed rent indices, the latter of which is the US equivalent of the OOHPI, and the house price index. It is immediately apparent that rents in the US are also relatively stable; certainly far less volatile than house prices. This is reflected in a low volatility and general disconnect of the OOHPI from house prices. While the US index seems to successfully screen out changes in house prices unrelated to the general cost of living, the question remains of how accurately it reflects the cost of acquiring housing services for owner-occupiers, for whom actual house prices are clearly relevant. This is especially relevant because the US relies on the RE-approach and rental markets might suffer from under representativeness as the home ownership rate in the US is large, roughly 65 %. Figure 5 depicts the situation in the UK. It similarly indicates that imputed rents are mostly disconnected from general changes in the cost of living and from house prices, raising similar questions to those of the US context. The international comparison also highlights that the methodology chosen to capture OOHC can matter a great deal.

Figure 4: Year-on-year inflation rate of US personal consumption expenditure (PCE) index, actual and imputed rents as well as house price index



Source: U.S. Bureau of Labor Statistics, U.S. Census Bureau, own calculation.

Figure 5: Year-on-year inflation rate of UK overall CPI incl. and excl. OOH, actual rents, imputed rents as well as house prices



Source: Office for National Statistics, Acadata Ltd, own calculations.

3. POLICY IMPLICATIONS

3.1. Monetary policy

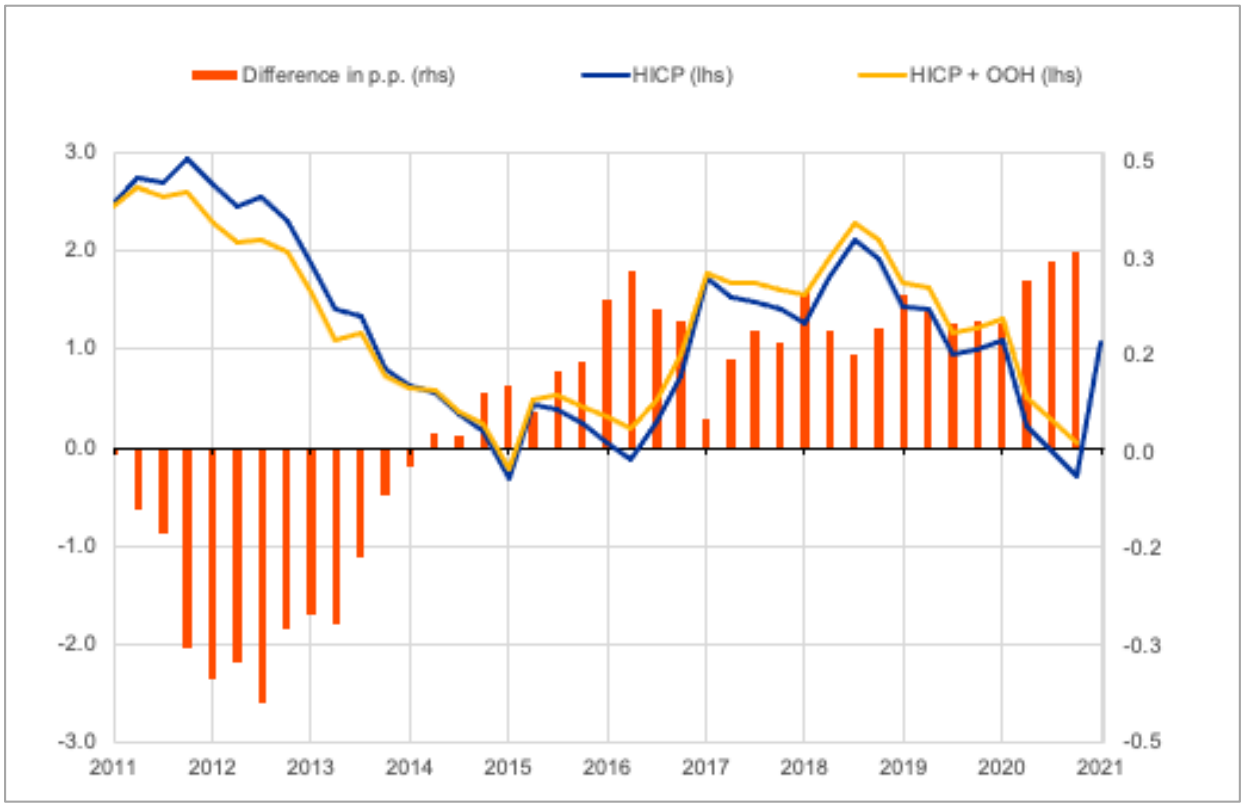
The ECB has specified the HICP to be the overriding price stability objective mandated to it by the Treaty. Achieving a 2 % target for this variable is the main task of the ECB and, thusly, its correct measurement is crucial. From a conceptual perspective, the introduction of OOHC in the HICP is of utmost importance, given the weight of housing costs in overall consumer expenditure. From the perspective of the practical implementation of monetary policy, the critical parameter is whether the changes to the HICP due to the inclusion of OOHC are significant or not.

The ECB has recently provided estimates of the impact of a more thorough inclusion of OOHC in the HICP over the last two decades, finding that it would have been small. For the 2018-2020 period, for example, it would have raised the inflation rate by 0.2-0.3 percentage points on average (ECB, 2021, pp. 57). This assessment largely confirms the conclusions reached by the ECB in 2016, namely that the assessment of inflation would not have changed by including OOHC (ECB, 2016, pp. 50).

Figures 6 and 7, drawn from ECB (2021), illustrate this point visually, by presenting two measures of a housing-augmented HICP obtained employing simplified versions of the NA approach – i.e., by including the OOHC index currently produced by Eurostat in the HICP using the share of imputed rents as weights (Figure 6) - and the RE approach – i.e., by expanding the weight of observed rents to also captured owner-occupied housing (Figure 7). The latter figure can be back cast further in time (and at a monthly rather than quarterly frequency) since data on rents has been recorded for far longer by Eurostat.

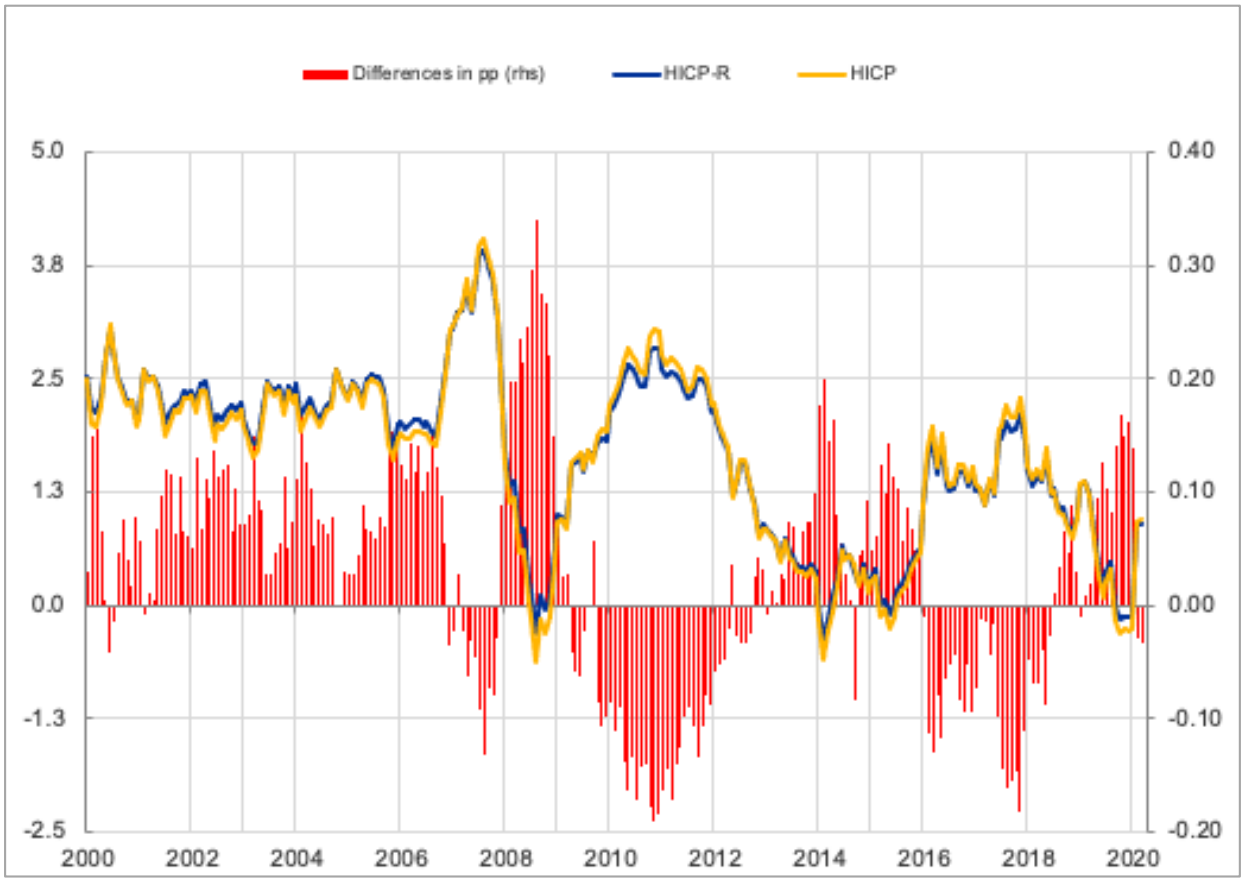
Both approaches yield a housing-augmented HICP very close to the actual HICP. Furthermore, over the last decade there was no overall downward or upwards bias in housing-augmented HICP compared to the standard HICP. Given that the ECB pursues its inflation objective over the medium run, any temporary deviations between the two indices would presumably have had an extremely limited, if any, impact on the conduct of monetary policy.

Figure 6: HICP and housing-augmented HICP (HICP+OOH) using the NA approach, year-on year percentage changes



Source: ECB (2021).

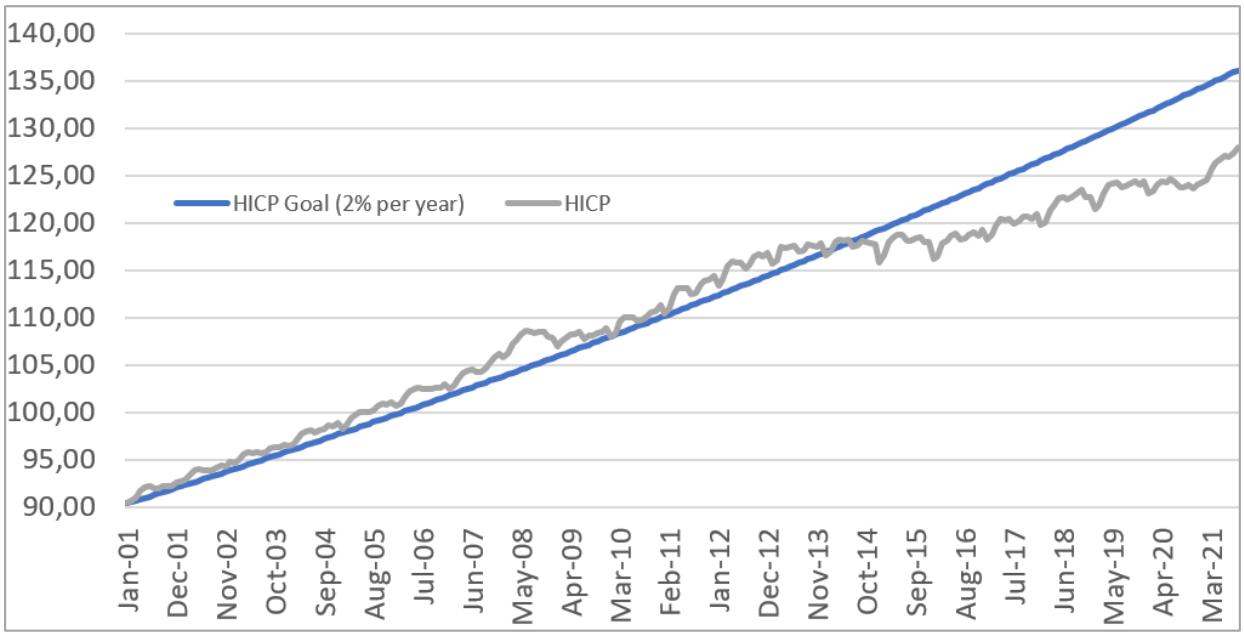
Figure 7: HICP and housing-augmented HICP (HICP-R) using the RA approach, year-on year percentage changes



Source: ECB (2021).

Another aspect to consider is that, since the Great Financial Crisis in 2007-2008, the ECB, like other central banks around the world, has struggled to meet its inflation target of 2 % (see Figure 8). This highlights the limited ability of central banks to influence inflation in the face of other economic developments. The inclusion of OOHC would have still led to the ECB undershooting its inflation target by a large margin, implying no change in the direction of policy. Given this long period of missed inflation targets, a fine-tuning of monetary policy following the inclusion of OOHC in the HICP appears even less realistic.

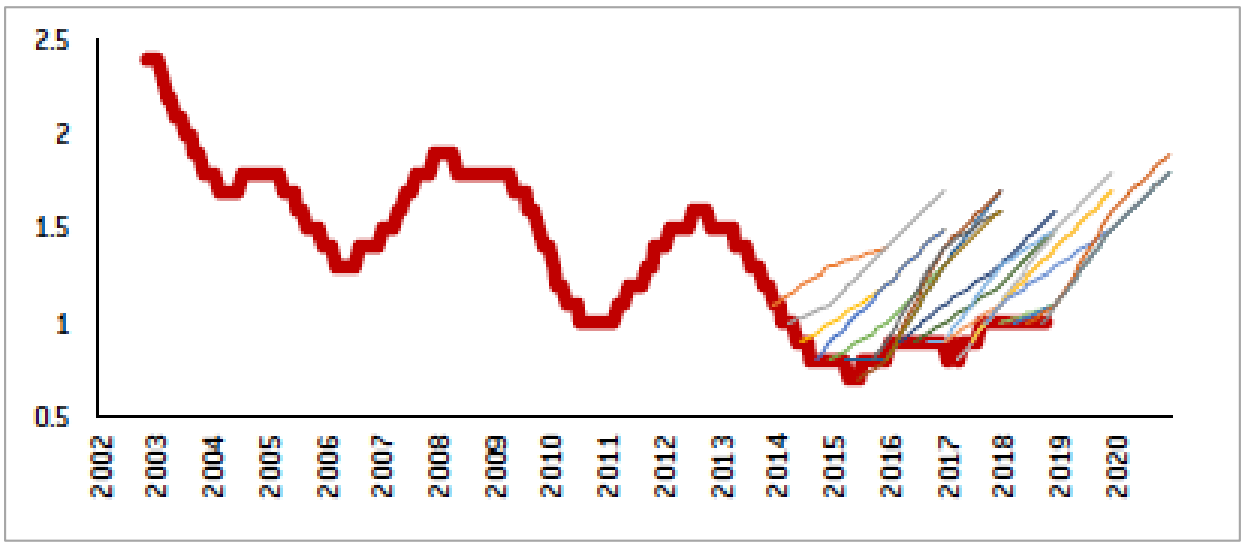
Figure 8: Actual HICP and ECB's HICP target



Source: Eurostat, own calculations.

Another way to infer the limited impacted that including OOHC in the HICP would have had on the implementation of monetary policy in the euro area comes from Figure 9. This reports the actual rate of inflation and ECB inflation projections: errors in the ECB in projecting core inflation since 2013 are a multiple of the correction deriving from the inclusion of the OOHC into the HICP, suggesting a minimal impact of such correction on the overall monetary policy strategy.

Figure 9: Actual core inflation rate (thick line) and ECB's forecasts (thin lines)



Source: Darvas (2018).

A different perspective on the quantitative impact of including OOHC in the HICP is obtained by comparing it to the overall effects of the large monetary policy interventions of the ECB between 2014 and 2018. Rostagno et al. (2019) estimate the effect on inflation of the combination of forward

guidance, quantitative easing, negative interest rates, and favourable bank refinancing to have been one-third of a percentage point. Through this lens, the OOHC correction of 0.2-0.3 percentage points estimated by the ECB for the 2018-2020 period is very close to the total effect of monetary policy action on inflation between 2014 and 2018, thus appearing more consequential. However, the point regarding its likely negligible effect on the conduct of monetary policy stands.

A final consideration is that the past evolution of OOHC, and thus its limited effect on inflation in the euro area, does not necessarily serve as a reliable predictor for the future evolution of such costs. In particular, as noted by the ECB itself, a stronger synchronisation in house price cycles across the euro area could lead to a substantially stronger impact of OOHC on the overall price level (ECB, 2021). A larger decoupling between rental and house prices than has been witnessed in the past could also have a similar effect, since the share of housing costs included in the current HICP would be less representative of the housing sector as a whole.

Overall, the inclusion of OOHC in the HICP is important for monetary policy but it is not expected to drastically change the current situation.

3.2. Differential effects across euro area countries

Home ownership rates (HOR) differ starkly across euro area countries (see Figure 10). As noted in the introduction, this raises the question of how including OOHC in the HICP could affect the recorded inflation rates of individual countries differently and what implications this could have for the conduct of the ECB's monetary policy.

Figure 10: Home ownership rates in the euro area, latest available figures

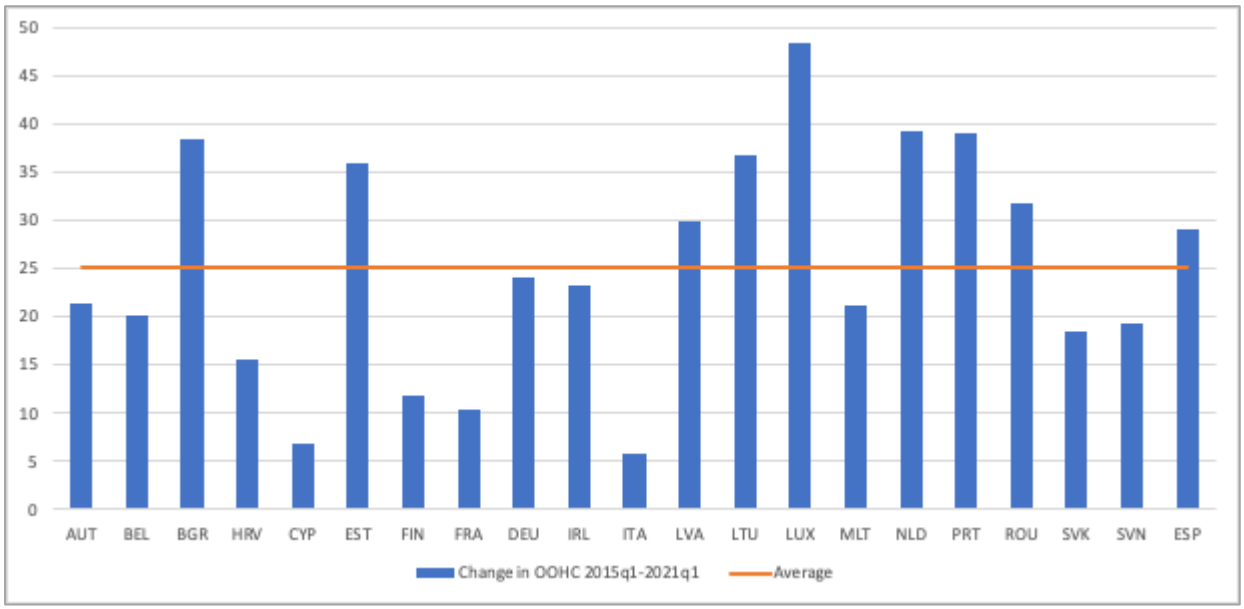
Source: Authors' elaboration based on data in Kholodilin (2020) and Kholodilin and Kohl (2021).

Note: Reference years are 2011 for Belgium, Cyprus, Greece, Ireland, Malta, Portugal, and Spain; 2012 for Croatia and the Netherlands, 2013 for Italy; 2014 for Estonia, Hungary, Latvia, Lithuania, Luxembourg, Slovakia, and Slovenia; 2015 for Austria, Bulgaria, and Romania; 2017 for Finland; 2018 for France and Germany.

The expectation is that countries with relatively high home ownership rates will be most affected by the inclusion of OOHC in the consumer price index since housing costs are most underrepresented in these countries. However, the actual impact of OOHC also depends on the evolution of these costs. While future changes in prices cannot be observed, we can investigate their evolution in the recent

past to gain a sense of how national consumer price indices might have been affected. This information is presented in Figure 11, which illustrates percentage changes in such costs between 2015 and 2021.

Figure 11: Percentage increase in OOHC between 2015 and 2021



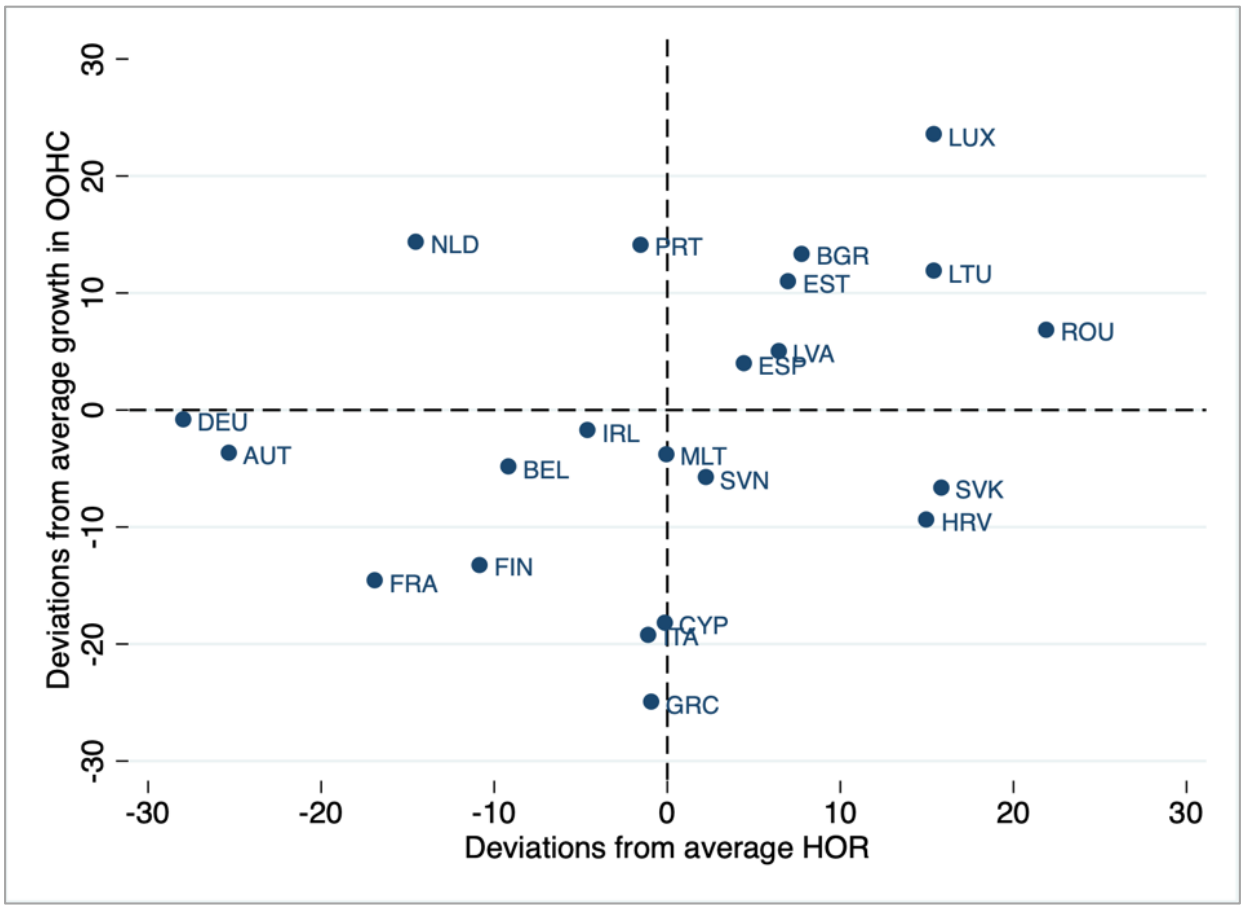
Source: Authors' elaboration based on data from Eurostat.

Note: Data for Greece is not available.

We can combine information from the two figures to arrive at a rough assessment of the potentially distinct effects of OOHC on national CPIs in past five years across the euro area. Figure 11 does this by presenting deviations from the mean of both indicators[6]. The expectation is that countries most affected by the inclusion of OOHC in their consumer price indices would be those in the top-right quadrant – i.e., countries with higher-than-average home ownership rates and OOHC growth rates – whereas those least affected would be those in the bottom left quadrant – i.e., countries with lower-than-average home ownership rates and OOHC growth rates. As can be seen, smaller countries that account for a relatively small share in the euro area aggregate are much more affected (upper right quadrant) than countries that enter the euro area aggregate with a large weight (lower left quadrant). This confirms that the effect on the overall HICP is expected to be limited. As already mentioned, this is a backwards-looking assessment, given that the future evolution of OOHC may be different. Home ownership rates tend to move slowly, so these may be a more reliable indicator of the future impact of OOHC, but without knowledge of price changes, the picture remains, by necessity, incomplete.

[6] An alternative would have been to construct housing augmented CPIs for all countries, since most do not produce these, but this would require making assumptions regarding the weight of housing and would only give the illusion of precision.

Figure 11: Deviations from average HOR and growth rates of OOHC



Source: Authors' elaboration based on data from Figures 6 and 7.

The main implication for monetary policy of the inclusion of OOHC in the measurement of consumer prices is that the effect on the overall HICP is limited but there might be a potential increase in the dispersion of inflation rates across the euro area. The new HICP would simply better reflect an existing phenomenon. In turn, this might increase the complexity of implementing a unitary monetary policy in the euro area, as well as of communicating it to the public.

3.3. Complementarity with other EU policies

The inclusion of OOHC in the HICP is only remotely connected to other EU policies. However, it could be argued that including a component strongly influenced by an important asset price – housing – could help the ECB pursue the objective of financial stability alongside that of price stability.

This is not an advisable course of action: there should be no confusion between the appropriate measure of inflation – and the ECB's primary mandate of price stability – with the Bank's policy to pursue financial stability. The latter is a legitimate, but separate, activity that cannot be substituted by overloading the inflation measure with asset price characteristics. The central bank should rather concentrate its attention on developments in the housing market as well as on other asset prices, like stocks, to assess the risks for financial stability. There is also the risk that conflating the two objectives could lead to confusion in the public and an overall less effective monetary policy.

4. CONCLUSION

Including OOHC in the CPI is not just desirable and important, but something already implemented by the majority of central banks in other advanced economies. The HICP is the primary measure of inflation in the euro area and the most important quantitative indicator in the conduct of monetary policy for the ECB. Therefore, it should track changes of costs for consumers as closely as possible. Since home ownership rates across the euro area are non-negligible, owner-occupied housing costs should no longer be omitted from the key inflation measure of the euro area.

In order for the HICP to continue to exist as a target inflation rate that fulfils the ECB's primary mandate, the OOHC cannot contain any investment costs. In practice, investment and consumption costs of dwellings are not observed separately. Thus, the compilation of an admissible OOHC component of the HICP requires deviation from the money transaction principle. A change of regulations on the admissible compilation procedures of the HICP is required.

The current statistical approach of the OOHPI employed by Eurostat, the acquisition approach, is generally suitable for compiling an OOHC component of the HICP, when statistical decomposition of investment and consumption costs can be applied. The possibility of Eurostat generating two separate OOHC indices – one employing the NA approach and the other the RE approach – is worthy of consideration for the longer term to further improve OOHC component, particularly for countries with deep rental markets like Germany.

Although it is important for the conduct of monetary policy to include owner-occupied housing costs in the target inflation measure, past experience suggests that this inclusion is unlikely to substantially change the picture of euro area consumer price inflation. Thus, the inclusion will not shift the conduct of monetary policy in the euro area in the near future in another direction, unless economic conditions and/or the functioning of housing markets change dramatically. Moreover, there are also no recognisable complementarities with other EU policies that would stem from this inclusion.

Time is needed to fully assess the monetary policy implications of introducing an index influenced by the price of an asset into the HICP, including its effects on the HICP's variability over time and on differences across countries. No perfect way exists to fully resolve this conceptual issue, so a compromise will need to be struck. Practical issues regarding timeliness, frequency, and the legal framework of the HICP will also need to be addressed and resolved before OOHC can be included in the HICP. Close cooperation between the ECB, Eurostat, national statistical offices, and the EP will be necessary to achieve the desirable goal of accurately reflecting OOHC housing costs in the HICP within a reasonable time frame.

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