AFFORDABLE HOUSING: CONCEPT AND AFFORDABILITY MEASUREMENTS

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ABSTRACT

This study investigates the challenges of affordable housing, delving into its concept and the diverse metrics used for measuring housing affordability, which influence the formulation of relevant affordable housing policies. The primary focus of this paper centers on defining the concept of affordable housing, exploring its implications for enhancing the quality of life and addressing the complexities involved in measuring its affordability accurately. Building upon the research, the paper proposes a possible optimal methodology for measuring housing affordability. This method suggests employing a price/rent-to-income ratio, encompassing a comprehensive assessment of housing-related expenses and a refined calculation of household income. Importantly, the study highlights the need for policymakers to differentiate between home-renters and homeowners when discussing housing affordability as well as between the immediate and structural lack of affordability.

Key words: *affordable housing concept, housing policy, affordable housing measurements, actual affordability, long-term affordability*

JEL Classification: R21, D14, R31, R38

1 INTRODUCTION

The discussion about housing affordability has arisen over the past several decades and encompasses home prices, rents and its relation to household income. Many Western countries found themselves with less room to manoeuvre in terms of housing affordability. A growing number of households are confronted with the problem of covering housing costs in terms of rent or mortgage instalments. The rise of energy prices increased operational costs of housing that impacted heavily the affordability. In the United States, for instance, the proportion of rent-stressed households has increased from 23.8% to 47.5% in the last fifteen years (Favilukis, 2019). Growing sales prices as well as rents not only for new housing units but also for existing ones create considerable hurdles for households seeking appropriate and secure housing solutions. This is caused by a lack of affordability and limited availability. Apartment prices in many countries have outpaced wage growth in recent years. For example, in the Czech Republic, the price of a new apartment now corresponds to more than 14 times the average annual salary (Deloitte, 2023).

Although many cities are struggling with housing affordability, the issue is still poorly understood and even the general consensus on what affordable housing actually is is missing. A number of questions still remain, namely: how to address the issue of affordable housing, what is the burden on public finances, whether the creation of affordable housing is an intervention in the free market, what impacts on the real estate market and its value affordable housing programmes might have, what should be the goals for affordable housing policies and, most importantly, how to measure ‚housing affordability – without deeper understanding, arbitrary decisions on what level of housing costs is affordable are taken. Without precise housing affordability measurements no policy can be evaluated. Most of the academic studies focus on the affordability related to the nominal house price (homeowners); much fewer studies concentrate on rents (Abelson, 2009), which are actually more sensitive to affordability shocks. The decline in publicly-owned apartment stocks across Europe since 2000, attributed to privatization, redevelopment and lower activity in new housing developments, has significantly impacted the Central and Eastern European region, particularly

Poland and the Czech Republic, both of which inherited large numbers of publicly-owned flats post-1989 (Tsenkova, 2014) – without a share on the rental market cities cannot naturally influence the development of the market.

This article is divided into two main parts. The first main part discusses the definitions of affordable housing, its positives and negatives and how affordable housing compares to social housing. This part also underlines the perspectives of affordable housing policies and its division on short-term, long term, subjective and objective policies. The second main part focuses on research of different theoretical approaches in affordability measurement, trying to point out the best way to measure affordability, underlying not only the measurement method but also the understanding of the results, especially in international comparison. Based on this, the basics of policy theoretical concepts are further developed concluding that affordable housing policies should concentrate on rental housing.

2 HOUSING AFFORDABILITY AND ITS THEORETICAL FRAMEWORK

The United Nations Committee on Economic, Social and Culture Rights determines the right to adequate housing as a right of every person to live in a secure, peaceful and dignified home (OHCHR). While social housing and affordable housing share a common focus on affordability, they address different income groups. Social housing predominantly caters to those with very low to low incomes or individuals with challenging life circumstances, whereas affordable housing is targeted at moderate-income households that do not qualify for social housing yet struggle with housing affordability. Notably, affordable housing is also defined by a specific standard of living that is deemed essential for a certain socioeconomic segment.

2.1 DEFINING AFFORDABLE HOUSING

Affordable housing represents a defined standard of living that as a minimum standard should be available to a given social class of the population in reward for their contribution to the society and economy while allowing them to cover all other basic needs (Berto, 2020). Whitehead (2017) defines affordable housing as subsidized dwellings rented out at below pure market price and allocated admini-

stratively. Possible definitions of affordable housing are, for example:
"Affordable housing is associated with providing a certain standard of housing at a price or rent that, through the eyes of a third party (usually the public sector – government or municipality), does not burden households above a certain defined level." (Maclennan and Williams, 1990)

"Affordable housing is housing that comes from providers who are not motivated by profit and is allocated by the administration according to current needs." (Harloe, 2011)

"Housing that is appropriate for the needs of a range of low and moderate-income households; and priced so that households can meet other essential basic living costs." (Abelson, 2009)

Approaches to affordable housing can be divided into: (i) Relative – monitors changes in affordability over time; (ii) Subjective – examines whether households want to spend more on housing and what their preferences in housing are; (iii) Ratio – examines the ratio of rent to household disposable income and states a given hurdle, where above the hurdle the housing is considered unaffordable; (iv) Residual – examines the income that remains after the housing costs are paid and if this income is enough to cover other necessary expenditures (Stone, 2011).
When thinking about affordable housing, a few differences need to be distinguished.

- **Differences between the affordability of housing and availability of housing**, although the two are very much connected. The affordability question means whether the households can afford dignified housing; whereas the availability problem deals with whether there are enough housing units on the market with a given standard. If availability is low, the owners can ask for higher rents or higher sale prices, which decreases affordability; however, even if housing is more affordable thanks to public interventions, there will not be enough stock available on the market.

- **Differences between the affordability of rental housing and own housing**. The income and rental costs are the main variables in the case of rental housing, whereas, in the case of owner-occupied housing, the costs include mortgage instalments, opportunity costs of investment in some other asset, and maintenance of the housing unit. Both types of housing react differently to changes in the economy and impact the households. Affordable housing policies need to have a different focus on rental and owner-occupied housing.

- **The time aspect of housing affordability.** Two views need to be addressed by affordable housing policies. One is the view of unaffordability of housing for the population – in the last decades housing has been less affordable in general; however, the unaffordability of housing for an individual household can have short- to mid-term time perspective, as the career growth and income growth of the household can cover the unaffordability gap.

2.2 IMPACTS OF AFFORDABLE HOUSING

Housing affordability is mainly influenced by few basic variables – housing costs (rents or costs related to house ownership), housing supply shortage, low-income levels (Abelson, 2009; Anacker, 2019) and legislative limitations to being able to afford bank financing. These variables are formed by several determinants interacting with other real estate markets outside the residential market. Affordable housing itself depends mainly on housing sector regulation, tax schemes and public sector support. Housing costs as well as disposable income and supply of apartments are influenced by the macroeconomic situation, mainly by interest rates for financial products and by the legislation predominantly focusing on the master planning and permitting process together with the affordability of bank financing. The commercial real estate market also plays an important role in housing affordability as the institutional residential rental segment is a complementary market for the institutional commercial real estate market. The less liquid or riskier the commercial real estate market is, the more investors are looking at the residential market which can be seen as a good diversification from the commercial one (the COVID-19 crisis proved that). Higher demand coming from institutional investors in the residential market may consume a significant part of the supply of new apartments and thus increase the price of the remaining ones making them less affordable for retail buyers.

The constrained availability of homeownership compels a surge in rental housing demand and the purchase of apartments in locations outside major cities

(Metcalf, 2018), as a substantial portion of overall housing requirements must be somehow fulfilled. Nevertheless, when escalated demand inflates rents, it adversely affects the feasibility of homeownership options. Elevated rental expenses diminish households' capacity to create savings for the requested down payment, while augmented rental income heightens demand for investment properties. Housing inaccessibility reverberates across various sectors like state and semi-state operations, healthcare and education, where standard salaries inadequately mirror the living expenses across divergent locations, spanning from capitals to regional centers.

The economic implications extend beyond the mere costs of home acquisition or rent, encompassing maintenance and utility expenditures, which are paramount in most households' regular expenses. Housing-associated energy consumption notably contributes to a society's ecological footprint. Simultaneously, dwellings hold significance as the daily nexus for families. Housing quality influences the mental and physical health of occupants. Thus, discussions on affordable housing must encompass households' subjective satisfaction and not just financial affordability, which should include not only housing costs but also the outlay of commuting and the associated opportunity costs. The form of housing also impacts housing flexibility and working mobility options. In many cities, urban housing does not mean just housing quality but also a correlation between quality-of-life dimensions such as security, environment and educational standards (Choudhury, 2015). Even if households are somehow able to cover high housing costs, negative externalities or imbalances in other markets can occur. For some population groups, exorbitant rents undermine the quality of life, curbing interest in lower-paying yet essential professions like healthcare and education, potentially driving migration towards more lucrative sectors with better housing costs-to-income ratio. Another effect may be a lower willingness to consume (as the high housing costs need to be compensated elsewhere in the household budget constraint), which in turn decreases public income from tax collection from goods consumption. Furthermore, it could defer personal milestones like partnership, starting a family or having children, which impacts demography and contributes to population aging. The economic uncertainty affects the worsening of human health. High housing costs lead also to lower savings, which can later increase the costs of public finance in different forms of social care. Diminished consumption causes broader economic implications, despite potential multiplier effects.

The positive nexus between affordable housing and physical as well as mental well-being is documented in academic literature. The overall conclusion is that stable housing conditions, achieved affordably, alleviate the stress of housing instability, leading to better living conditions, enhanced health and more time to concentrate on human well-being. The World Health Organization regards housing as a determinant of health (Rubin, 2018). Improved housing conditions support children's development and educational outcomes. Therefore, the costs of affordable housing initiatives need to be seen also in the light of potential savings in healthcare and social outlays plus societal advantages accrued from emotionally balanced individuals, and a better-educated population. This is concluded also by Lubell (2007), who regards affordable housing as a gateway to access neighbourhoods with opportunities and the positive effect of less overcrowded homes on human health. Enhanced health and education are key societal gains highlighted by Mueller and Tighe (2007). Rubin (2018) extends this linkage between affordable housing and population health, not merely limited to physical health but encompassing mental health aspects such as stress, sleep quality and the strain of lengthy commutes. Pollack (2010) performed a cross-sectional analysis of the data from the Los Angeles Neighbourhood Study. The study confirms the conclusions made by Lubell (2007) and it also examines the difference between homeowners and home-renters concluding that housing affordability has a stronger impact on the home-renters health than on homeowners. This relates to the bigger uncertainty of housing costs for home renters and their higher sensitivity to the market changes as described below.

Citizens looking for affordable housing must therefore look for a compromise most often in the quality of housing (Abelson, 2009) – the number of people sharing a given apartment or even a room – or in the distance from their workplace. Yet, the feasibility of attaining quality housing within budgetary constraints hinges on urban transport infrastructure and individual willingness to commute. Stutzer (2004) points out not only direct commuting costs but also indirect expenses of commuting and loss of time, recognizing the far-reaching impact on overall quality of life. Barros (2017) examines the indirect costs of commuting, attempting to quantify the worth of time expended during travel. This approach underscores people's readiness to invest to save time when commuting longer distances, though valuation diverges based on the quality of the means of commuting, distance and personal inclinations. A person commuting by train without the need to change between train lines working in a computer-work based job, having internet access on the train probably won't be stressed by commuting as they can work on the train on the way to work and back home. On the other hand, a person that needs to change train lines several times and works in a manual job cannot work effectively while commuting. We also mustn't forget the ESG aspects of commuting. Commuting creates pollution especially when commuting by car. Affordable housing with a lower commuting burden (either shorter distances or sustainable transport modes) is beneficial for the environment as well. According to Yeganeh (2019), people commuting need to have time to commute, especially in lower-income households where people often have second jobs and it is inconvenient for them to invest time in commuting; they also often have desk-based jobs, so they cannot use the time spent commuting to work. Such families often live in lower quality housing units closer to their workplace, as an affordable better quality house would mean commuting longer distances. Good transportation solutions can then increase the affordability of desired housing units and increase the living standards. Olanrewaju (2018) posits that diminished commuting costs and time catalyze community engagement, spurring localized spending, nurturing social networks and fostering communal well-being. Strategically well-established affordable housing developments also help to avoid segregation, either racial or income-based, as the lower-income households are not concentrated in the low-quality housing areas and thus reduce the creation of ghettos and related issues.

The creation of affordable housing thus resonates in society also due to its perceived negative aspects, such as the fear of depreciation of the existing real estate properties, increased crime rates, more traffic jams or overstretching the capacities of existing communal amenities like schools (Beadles, 2021). Those concerns are one of the factors influencing limited housing supply as the citizens often do not support or even reject new developments in their neighbourhoods (Metcalf, 2018). Contrary to popular fears, studies consistently reveal that well-conceived affordable housing complexes curtail crime by raising the social profile of residents. For the target demographic of affordable housing (lower and moderate-income households), crime isn't a prevalent concern. Instead, an augmented budget engenders a healthier lifestyle, and increased investment in children's activities is a safeguard against negative habits. Communal amenity sharing, though, remains a challenge, underscored by inadequately planned urbanization. Research by Yeganahe (2019) proved that in the case of sustainable, environmentally friendly affordable housing development the value of neighbouring properties, contrary to the general belief, benefits from the new sustainable developments.

3 MEASUREMENT OF HOUSING AFFORDABILITY

There is no universally agreed-upon understanding of housing affordability, how to measure it and what these measurements signify. For instance, Marck and Sedwick (2008) define households experiencing housing stress when their housing costs account for at least 30% of their income, while in the USA households with 30% or more housing costs of their income are referred to as housing costs burdened, and with a share of 50% or more as seriously cost burdened (Belsky, 2005). In the UK, a commonly adopted threshold is 35% (Reynolds, 2011), while within the EU, it is 40%. Assessing housing affordability against specific criteria, like the proportion of housing expenses relative to total household income or household size, yields objective indicators of affordability. However, this approach overlooks cultural disparities between countries or groups, as well as personal contentment with living standards, known as subjective housing affordability indicators (Sunega, 2016). Levels of objective affordability can be seen (Gan, 2009) as purchase affordability, repayment affordability and income affordability. Repayment affordability and income affordability are related to housing costs for both homeowners and home-renters. Purchase affordability (Gan, 2009) is the availability to get the funding for the home purchase. Repayment affordability as well as income affordability can be described by various price-to-income or rent-to-income metrics.

3.1 PRICE-TO-INCOME RATIO CONCEPTS

The simplest measure of objective housing affordability is a ratio of house prices to income (Abelson, 2009). This ratio is the basis for many regulatory definitions of affordable housing, such as the UK's emphasis on lower-income households, assessing affordability based on the "lower quartile house price to income ratio" (Nwuba, 2018). This metric using the median income level is recommended by the World Bank as a key housing indicator.

Nonetheless, this approach overlooks the financing costs associated with homeownership. Furthermore, it tends to disregard rental housing, a segment concerned more with public sector interventions and policies. For most homebuyers, the actual purchase price of an apartment might be less pertinent; instead, mortgage instalments and the required equity for purchase are of a greater significance. Thus, the decrease in mortgage interest rates can offset an apartment price increase in terms of repayment affordability, underscoring the interplay between interest rates and housing costs (Mazáček, 2023).

A more comprehensive approach involves measuring affordability via housing costs, encompassing both mortgage instalments and the time needed to accumulate sufficient equity for the purchase. For home renters' affordability measurement, rent shall be used as housing costs. However, even this measure does not show the relation to alternative costs of renting, and the running costs of housing, maintenance, the currently very important costs of energy consumptions as well as the costs of commuting if the household lives outside the city and the cost of time used for travelling. All these aspects together form the complexity of real housing costs. The Real Housing User Costs developed by Abelson (2009) seem to be a suitable concept for comparing the affordability of housing and work well not only for homeowners but also for home-renters. The real housing costs concept includes all costs related to housing, i.e. mortgage instalments based on real interest rates (nominal interest rates decreased by inflation), maintenance costs reflected in depreciation of housing units, travel costs for commuting to work and the change in property value over time, which is driven only by inflation and thus reflected in the real interest rate-based mortgage instalments. On the other hand, this concept seems very data-heavy to use in practice – especially for presenting the opportunity costs and travel costs. The link between property value and inflation is more theoretical, as the property value growth correlates with inflation and interest rates differently in different countries and in different time horizons

– Taylor (2007), as well as Anari (2002), present the correlation of real estate values and inflation in the long run but conclude that the relation is inelastic in the short run. Comparing the housing costs to income also brings the question of which income the housing costs shall be compared to. As suggested by Abelson (2009), the best way is to define household income as the disposable income of households and to use the median household's income, not the average.

The distinction between understanding housing as a consumption asset versus an investment asset (Benetton, 2023) further influences affordability measurement. Treating mortgage instalments as savings, not just recurrent costs (Abelson, 2009), introduces an investment facet to affordability assessments, while considering housing as a consumption asset blurs the distinction between owned and rented housing in terms of utility.

3.2 PRICE-TO-INCOME RATIOS AND THE CONCEPT OF HOUSING AS AN INVESTMENT ASSET

Certain literature delves into the capital gain aspect of homeownership, emphasizing wealth accumulation through debt repayment and appreciating home value. Gan and Hill (2009) suggest that rising housing prices typically translate to augmented wealth, potentially neutralizing unaffordability across the population. However, this perspective primarily applies to housing purchased as an investment for rental or resale, rather than as a primary residence. Individuals investing in their own homes for habitation often do not consider capital gains during their ownership period, as they live in those housing units and the wealth gains can only materialize upon sale. Households will be extremely risk-averse if they should put their own housing units where they live at risk. The potential wealth effect for the households from owning a house comes in two aspects: first, a subjective safety of having their own place to live as described below – for lower costs over time than renting; and secondly, in the intrageneration wealth transfers (Sunega, 2018), where a significant part of homes purchases is financed from intrageneration wealth transfers and the next generation can benefit from the value appreciation of the housing unit owned by their parents. We can expect that the household generation that owns their housing unit for living does not directly benefit during the holding period from the value increase of their home (either a value increase in time or an increase through debt repayment); however, the household generation will see the value increase as part of their savings, as the housing unit can be sold, for example, as part of their retirement plan or passed on to the next household generation. The household living in their own housing unit thus needs to put aside a lower percentage of their income as savings, as home ownership generates some savings for the future. Value appreciation of housing units has a negligible impact on monthly mortgage instalments, or the initial equity investment at the time of purchase.

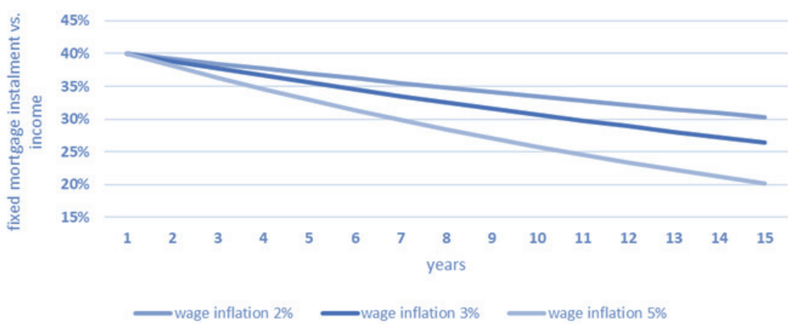
3.3 RENTER HOUSING AND OWNERS-OCCUPIED HOUSING AFFORDABILITY

While renters experience rapid and direct responses to affordability challenges due to annual rent adjustments, homeowners are relatively insulated due to mortgage terms, particularly fixed interest rates over extended periods. This differential responsiveness calls for a greater emphasis on rent-to-income ratios when formulating housing affordability policies for renters. This topic is very often omitted in the academic literature and affordable housing policies. Rental housing reflects the current situation on the rental market where tenants are paying the market rent (that can be discounted for several individual reasons based on the relationship between tenants and owners); however, in the case of owner-occupied housing in many countries the households take the mortgage with the fixed interest rate for 10 or even more years, which makes most of their housing costs fixed during the time of the loan repayments while their salaries increase due to inflation. For young buyers their career path generally improves over time, so the household income reflects both inflation and career path, which means that inflation alone is not a good enough indicator to represent the development of a household's financial burden. Furthermore, not only the mortgage interest rate is fixed but also the debt amount is fixed so most of their housing costs will represent a decreasing portion of the household budget over time, and in the long term their loan to value will decrease.

3.4 TIME HORIZON IN HOUSING AFFORDABILITY

When discussing the measures of affordable housing, it is important to emphasize pure nominal cash flow and the nominal burden of household income due to housing costs. The household budget is affected at present by the nominal expenses. Throughout a family's lifetime, there can be periods when income is lower, especially when a child is born, and the family relies solely on a single salary, savings and public financial support for mothers. Thus, it's crucial not to view housing affordability from a one-time perspective. When discussing the affordability of home purchases, a longer-term perspective is necessary. Figure 1 below illustrates the ratio of fixed mortgage instalments to salary that increases by 2%, 3% and 5% p.a. over time. Own housing unaffordability hits only the new buyers, and only rarely the existing owners – this is also supported in Gan (2009). On the other hand, in the case of rental housing, if rents exceed affordability thresholds, most renters are likely to face rent increases soon, given that rents are adjusted annually. Consequently, the rental market needs greater protection against affordability fluctuations compared to the homeowners market. As most of the population facing affordability challenges are renters, the focus on the rent-to-income ratio becomes more important when discussing housing affordability policies.

Fig. 1» Mortgage instalment as a percentage of growing household income



Source: own calculation

3.5. LIMITATIONS OF GENERAL EVIDENCE FOR PRICE-TO-INCOME RATIOS

The general limit for affordable housing measurements resulting from price-to--income ratios or rent-to-income ratios is a misinterpretation and it treats the results only as arbitrary numbers. These measures also do not account for other associated costs that households must cover. The broader the data used, the more biased and less applicable they become when applied to specific population groups or different locations. The problem is that price-to-income or rent-to--income ratios need to consider various factors such as cultural norms, living standards and national housing standards. The influence of cultural differences, lifestyle and social relationships on housing preferences and behaviour has been highlighted by studies such as Rapoport (2000).

Fig.2» Share of total number of households living in rental housing

Source: own analysis based on data from Eurostat and Deloitte

Figure 2 displays the share of households living in rental housing across various European countries in relation to the number of business centres in each nation. Southern European countries exhibit a lower percentage of rental households than Western European nations. In Central Europe, there is a strong preference for owner-occupied housing, although this is gradually changing. Western European countries have the highest proportion of rental housing, with Germany leading in Europe. The correlation between the number of business centres in a country and the percentage of households in rental housing is evident, suggesting that more business centres often lead to more frequent job-related relocations and less preference for property ownership (for example, Germany has a total of 15 business centres). The fact that mobility requirements are having positive effects on renting is concluded also in Schulz (2014).

Applying any price-to-income thresholds at the European level (for example the 40% hurdle) completely ignores the cultural and life-standard and preferences differences between countries. In Prague, the average share of rent to gross income is around 60% of an individual's average income (Hrubý, 2020), i.e. around 33% in the case of a two-member household (if both members earn the same amount). In Denmark, this share is 36% and in Malta it is only 12%; however, Denmark is one of the countries with the highest quality of life.

Fig.3» Share of housing costs in a households' disposable income

Source: own analysis based on data from Eurostat and Deloitte

Figure 3 presents the percentage of housing costs in the households' disposable income. Generally, the figure demonstrates that the higher the disposable income, the higher the portion of the income spent to cover the housing costs. This observation contradicts the notion of a fixed percentage of income that should be allocated to housing. The premise of a 40% maximum ratio of housing costs can be applied only to certain income groups and specific lifestyles, not as an average across a country or continent. Higher-income households allocate more to housing, children's education etc., as they seek an improved standard of living. The housing cost ratio rises more rapidly with increasing disposable income. This trend has been noted in Choudhury (2015), suggesting that in areas with higher housing prices, household income is also higher. Kenny and Reinke (2011) found that populations with higher education levels spend more on housing, which can drive housing prices up. Therefore, comparing housing affordability based on the same criteria between countries can lead to incorrect conclusions. It is more suitable to assess housing availability within a single state or city over time, considering demographic changes.

Figure 4 below shows the development of housing costs as a percentage of the income. In almost every location there is a well-paid part of the population that spends more than any given threshold of their income on housing because they have decided to do so, and there will be a small part of the population that earns a significant amount per month and housing costs (even for luxurious housing) represent a minimal share of their income. The measure of affordable housing shall concentrate on groups 1 and 2, partly on group 3 as described in Figure 4.

Fig.4» Development of housing costs as a percentage of income

Source: own analysis

SEGMENT 1:	SEGMENT 2:	530-SEGMENT 3:	SEGMENT 4:
Costs of housing increasing for low-income households is related to decreasing other costs or lowering living standards. Such households often compromise on other expenses, such as food or healthcare to afford housing,	**The declining sahre of housing costs on the household's income** in the first stage applies to the households that compromise a lot on other spendings such as food or healthcare to be able to pay their housing expenses. As their income increases, these households can allocate more to other essential needs while keeping housing costs stable, resulting in a decreasing percentage of housing costs on the household income.	**The increasing share of housing costs on the household income** can have two reasons: 1) the housing costs have the form of a Giffen asset, so the housing situation is definitely not comfortable but the household can cover other basic needs, which means that any additional income will be invested into housing costs, so with increasing income the housing costs are increasing and thus its share of the income is increasing as well. 2) The housing costs have the form of a luxury asset. The household is satisfied in all the other aspects including savings and they just want to have a better standard of living, although such a standard is not necessarily needed.	**The declining curve** represents the situation of just a few households, whose income is so high that all needs are satisfied, also the housing standard is fully satisfied so any other additional income earned is invested elsewhere or saved, so the share of housing costs on the total household income is decreasing. Any affordable housing policies need to focus just on stage 1 and part 1 of stage 2.

To explain why some European countries have high housing costs compared to household income, we must consider not only cultural and lifestyle differences but also the perception of housing as a necessary commodity versus a luxury asset. We cannot compare the share of housing costs in income for individual countries or different population groups with different living standards.

3.6 RESIDUAL INCOME PERSPECTIVE IN HOUSING AFFORDABILITY MEASUREMENT

The utilization of price-to-income ratios fails to capture the nuanced nature of household spending on housing. Some households want to or have to prioritize housing standards and allocate more resources to this aspect, while others do the opposite. Affordable housing means that the household can afford their other basic needs (Padley, 2018). This concept is called Minimum Income Standards, so there must be a residual income that can be spent on other necessities after the housing costs are paid. The problem is how to define the necessary costs – they should not ensure a mere survival, but also provide the ability to integrate and make use of opportunities in society. However, to define what expenditure the household needs to cover what's necessary in addition to housing costs might be difficult, especially on the aggregated level, as each household has different needs. To deduct just the common basic needs, especially cost of food, healthcare and reasonable savings at different levels for renters and for home-owners is possible also on the aggregated level and gives a much better understanding of the housing affordability changes in time, which also gives a deeper insight into whether there is a need for urgent action by the public authorities or whether the effort should focus more on a long-term solution. The ratio between nominal housing costs and the median disposable household income seems to be the best solution to measure affordability, but after the deduction of other necessary life expenditures; the same is generally concluded in Ben-Shahar (2019), who derives an endogenous measure based on the hedonic index on micro-data on Israeli households, comparing typical housing consumption in a bundle of households stratified by demographic and locational characteristics. This approach is valuable in academic research but too complex and complicated for policymakers, whose approach needs to be more general as demonstrated above.

Tab. 1: »Affordable housing measurements summary table

Affordability measurement	Description
Basic Price-to-income ratio	Apartment price divided by the household income
Basic Rent-to-income ratio	Apartment rent divided by the household income
Price to income ratio including financing costs	Monthly mortgage instalment divided by household income
Real housing using costs to income	Housing costs representing the sum of mortgage instalment (using real interest rates), maintenance costs, housing unit depreciation, value of time commuting to work, opportunity costs) divided by household income
Housing costs to Residual Income	Housing costs divided by the income remaining after the other necessary life expenditures are paid
Nominal Housing costs to Adjusted residual income	Housing costs including nominal mortgage instalment or rent, utilities costs, maintenance cost, costs of commuting divided by the income decreased by taxes, healthcare expenditures, food expenditures, reasonable rate of savings

Housing costs-to-income indicators are generally the most suitable indicators for measuring housing affordability. However, for affordable housing decisions and policies, those ratios shall focus more on rent-to-income indicators, as the rental population is more seriously hit by rent increases as an outcome of changes in the market and economy, while the home-owning population keeps part of their housing costs fixed in the form of mortgage instalments. The income that housing costs are compared to needs to be netted by the deduction of other necessary living expenses – food costs, healthcare expenses, childcare and education. Especially lower-income households are much more burdened by the changes in other expenditures while housing costs remain the same. For example, the inflation of food costs in the EU in 2023 reached almost 18% (Statista) which impacted significantly housing affordability for lower-income households. Housing costs that are used for the comparison need to include all housing costs including finance costs, maintenance and utilities that, due to the change in energy prices in 2022, represent a bigger portion of housing costs and are not generally included in rent-to-income ratios. To define the affordability for given income groups, this approach allows for the calculation of the affordable housing costs and thus can help decide which policies shall be implemented to achieve those affordable housing costs for given groups of households.

4 CONCEPTS OF AFFORDABLE HOUSING POLICIES

In metropolitan environments the rental housing market can be characterized as being close to monopolistic competition (Emmi, 1990). The orthodox economic approach suggests that households will only be paid what aligns with their financial capacity (Padley, 2018; Abelson, 2009). However, limitations arise as some households may exceed their affordable threshold, particularly lower-income households that possess limited alternatives. Such scenarios compel compromises in other consumption domains, potentially generating societal repercussions. Abelson (2009) describes on the example of the Australian market how low housing affordability is not a sign of market imperfections, where the problem is the low household income that is difficult to increase. Abelson (2009) underlines that we cannot mix market efficiency with pure equity of markets. Market efficiency clearly says in its definition that we cannot find a better equilibrium in which someone can do better without someone else doing worse. Assuming minimal vacancy of housing units, the only way of improving the overall situation and utility of everyone in society is increasing the housing supply. In the case of other policies, the improved well-being of housing for certain groups will have a negative impact on housing costs or quality for another population group; however, looking not only at the housing market but on society and economy as a whole, such group can benefit from positive externalities of affordable housing policies such as less crime, better health or more employees in public services.
Within Europe, we can divide affordable and social housing policies into two basic categories. The first is the universal approach when the state guarantees housing (in some form) to all. The residual approach, on the contrary, is without such a guarantee, but the public sector is trying to correct the imperfections of the free market in the area of affordable housing (Berto, 2020).

Affordable housing in high-level form mostly has one of the following forms (Anacker 2019; Abelson 2009):

a. Housing cost limitations through regulation or additional taxes
b. Supporting supply by less restriction on the land use and planning process
c. Supporting demand – making existing housing stock more affordable for the population, subsidising the low-income households in privately owned or rented housing
d. Supporting construction or refurbishments of current stock that are more sustainable, ESG compliant, and thus the operational costs of housing are lower
e. Changing not-preferred housing locations into affordable and preferred housing locations – this means mainly the construction of new infrastructure and public transport solutions, subsidizing for land development or urban infrastructure
f. Modifying or abandoning negative gearing provisions

The majority of studies are focused on the affordability of own housing in the nominal price rather than the affordability of rental housing or taking into consideration the real prices of housing (Abelson, 2009). The affordable housing policies shall focus primarily on the rental housing segment, for the following reasons:

a. No equity is needed for rental housing for the downpayment and there are no barriers to enter the market on the demand side compared to the own-housing market. For lower income to moderate-income households, it is very difficult to create enough savings to be able to pay the equity part of housing.
b. Also as described above, on the rental market almost all market participants on the demand side are very quickly hit by the changes in the market or the economy, while on the owner-occupied market, only the new buyers are hit, whereas the existing owner households are hit much less by any changes thanks to the fixed mortgage instalments.
c. Any affordable housing policy focusing on the own-occupied housing

market shall focus on the supply support and/or on the support of access to financing including the financing support for downpayments for the housing units. Affordable housing policies shall not focus on targeting any discounts on the purchase price of housing for the defined income groups of the population. If someone is in a situation where housing is not affordable, this means that the current situation may change in the future – discounted housing unit ownership is a life-long benefit compared to possibly limited-time unaffordability.

The focus on rental housing as a target for affordable housing policies is also underlined in other academic literature such as Do (2006) or Newman (2018). Any type of affordable housing policy needs to distinguish between a long-term strategy and immediate actions that might be put in place to respond to market shocks (like the energy costs increase in 2022). The author strongly believes that acute interventions of the public sector into housing affordability can be restrictive and even costly for the public segment if they are devised as short-term solutions. However, the longer-term strategic policies should be more supportive than restrictive and, importantly, they shall be cost neutral for the public sector, meaning they- shall not create any costs or they shall create costs that are at the same time an investment , thus earning the public sector a financial return from the housing segment without the cross-section to theoretical savings coming from the positive effect of the affordable housing on the economy and society.

5 CONCLUSION

There is still much research to be done to fully understand affordable housing. This includes finding common ways to measure and define it, so that we can create more complex policies. Researchers should also focus on making affordable housing policies that work well over time and are as cost-neutral for the public sector as possible. To achieve this, we need to look closely at the positive effects of affordable housing and their economic quantification that allows for the evaluation of potential cost neutrality for the public sector in the long term. Affordable housing policies should also primarily concentrate on the rental segment and secondly on the improvements of financing and availability in the home-owners segment.

Although affordable housing is now one of the most timely topics in public sector policies, a unified definition of affordable housing is missing as are the advanced unified measurements of housing affordability. The most suitable and relatively easy to calculate is the housing costs-to-income ratio. Housing costs shall include all costs related to housing including utilities costs, maintenance and financial costs, if applicable. The income shall be represented by the household median disposable income adjusted by the necessary life expenses such as food expenses and healthcare expenses. When discussing affordable housing policies, one should distinguish between immediate affordability issues where the relatively quick short-term deep involvement of the public sector might be right and the longer-term affordability issues where more strategic policy needs to be implemented. To examine the immediate affordability issues, the rent-to-income ratio (median income adjusted by the necessary life expenses) should be used, as the renters are more complexly hit by changes in the market that lead to declined affordability than the homeowners. When measuring housing affordability, cultural as well as income differences need to be reflected and the affordability issues cannot be averaged across countries or even continents. Each nation and culture is specific, therefore, in case of affordability measurements it is more beneficial to review the affordability progress over time than to simply make a comparison between countries as the higher a household's income at a certain level, the bigger the portion they spend on housing.

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