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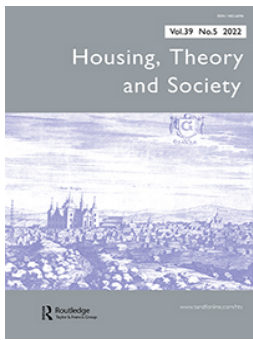
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A Capability Approach to Evaluating well-being and Equality in Housing: Clear Conceptual Difference but Unclear Practical Difference?

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ABSTRACT

This study empirically examines the difference of the capability approach to evaluating well-being and equality in housing, with data from the Netherlands. Conventionally, well-being/inequality in housing have been evaluated by measures of economic/material means for housing or satisfaction. In theory, these evaluation approaches overlook some important normative concerns, and applying the capability approach – evaluating the capabilities to reside in ways a person values – can compensate for such weakness. However, its practical difference appears as yet contested. This study reviews the sources of such contesting views, and clarifies them by comparing the capability-oriented and conventional measures of housing deprivation in terms of their identification of deprived groups that welfare policies are supposed to address. The results showed that the overlap between the deprived groups was rather limited, revealing blind spots in the current welfare policies for housing and the informational benefits of capability-oriented evaluation. This study adds implications for measurement methods.

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Housing inequality; well-being in housing; evaluation approach; capability approach; multidimensional measurements

Introduction

Evaluating the housing situations of people, such as well-being, deprivation and inequality in housing, is an essential task of housing policies. This information guides policymakers' value judgements about target groups, necessary interventions and budget allocations, and policy outcomes. Such evaluation practice is conventionally grounded on measures of economic and material means for housing (e.g. household income and attributes of dwellings), or satisfaction-oriented measures (e.g. fulfilments of determinants of housing satisfaction). However, from a theoretical perspective of Sen's capability approach (CA) (Sen 1980), this evaluation approach overlooks some important normative concerns, such as the unequal abilities of individuals to convert economic means to actual achievements in housing, adaptive housing preferences of deprived people and non-monetary/material values such as the human right to adequate housing and meaningful ways of living; therefore, the conventional evaluation practices create gaps in the information of how

well a person is actually residing (Kimhur 2020; Foye 2021). To compensate for these weaknesses, evaluation practices can incorporate the CA's proposal for alternative informational bases (i.e. people's capabilities and functionings), such as evaluating the capabilities (real opportunities and abilities) to reside in ways people have reason to value and pursue their suitable housing options, in short, the capabilities for housing (Kimhur 2020) – note that, the concept of “housing” here is considered an act of residing instead of a dwelling unit or an act of its provision, and this concept is applied throughout this article.

Conceptually speaking, the conventional evaluation practices have weaknesses, and the capability-oriented evaluation has clear advantages in addressing the normative concerns overlooked by the conventional evaluations. What remains unclear is whether such conceptual weaknesses and advantages are also empirically significant. As diagnosed in theory, have the current evaluation practices indeed created significant informational gaps in housing policy discussion? If well-being in housing and housing inequality are evaluated by people's capabilities for housing, will there be substantive informational benefits for policymakers, leading to notably different policy decisions? This study examines these questions with data from the Netherlands.

In discussing overall well-being and poverty, the difference of capability-oriented measurements has been examined extensively, and it is now widely acknowledged. However, whether this is also the case for the narrowed-down level of the housing domain yet requires further empirical clarification. In housing research, some qualitative studies have applied the CA as a framework to analyse housing issues of interest, such as homelessness, and showed that the approach can provide a new perspective on those issues (e.g. Irving 2021; Tanekenov, Fitzpatrick, and Johnsen 2018; Watts and Blenkinsopp 2021). Nevertheless, when we extend our interest to its application to measurements, such as measuring housing deprivation and inequality in terms of the capabilities for housing – aside from the question of whether this is actually measurable – some contesting views arise regarding its practical difference and informational benefits. As to be discussed in the next section, empirical evidence often indicates that conventional measures of economic means for housing or housing satisfaction may largely represent the deprivation of basic capabilities for housing. In addition, when speculating a practical shape of the capability argument for *reflecting what people value* in evaluation, in the housing context, it seems there is little difference from the existing research that assesses determinants of residential satisfaction.

This article first reviews the sources of contesting views on the practical difference of the CA to evaluating well-being/inequality in housing. The article then presents a study that clarifies those views. The study compares the conventional and capability-oriented approaches to evaluating housing deprivation in terms of their identification of deprived groups that housing welfare policies are supposed to address. For the comparison, the study selects the indicators commonly used in housing welfare policies and research (i.e. household income and housing satisfaction) and indicators of basic capabilities for housing (i.e. living in adequate housing as a basic functioning of people to reside (housing functioning), and financial literacy as a basic ability for housing). Using these indicators, the study identifies deprived groups, analyses the extent of their overlap, and draws implications for the practical difference and the influence on housing welfare policies. This study utilizes micro-datasets of two surveys in 2011 on the LISS (Longitudinal Internet Studies for the Social Sciences) panel in the Netherlands by CentERdata (Tilburg University), and register data from Statistics Netherlands (CBS).

Three Contesting Views on Practical Differences

Contesting Views on Measures of Economic Means for Housing

The foremost argument of the CA is that means-oriented evaluations – such as income and commodity possessions – fail to reflect conversion gaps between means and ends (i.e. actual well-being achievements) as well as inequalities in conversion efficacy among individuals. From this perspective, the primary focus of housing welfare policy should not be providing *means* for housing, such as housing benefits and dwelling units, or providing such housing services based on income levels; the focus should rather be *real opportunities for housing* (i.e. capabilities for housing) or *the end states of housing* achieved by such capabilities (i.e. housing functionings).

Few housing scholars would question that determinants of well-being/inequality in housing are multidimensional, and economic means are only one dimension of those determinants. However, this recognition is not necessarily transformed into non-economic evaluations in housing policy discussions. In housing welfare policies, such as housing benefits and social/public housing provisions, a means test has long been the key, and often the sole instrument to identify target groups, with an implicit assumption that information on multiple socioeconomic disadvantages can be summarized into an income-based measure. Such measures have been a crucial guide for governments to set policy goals and allocate budgets for welfare in housing. Therefore, the CA's criticism over the means-oriented evaluation can be a wake-up call for housing policymakers.

Meanwhile, the relevance of criticism of means-oriented evaluation is empirically challenged. In housing research, there is substantive evidence that there is a clear positive relationship between income poverty/inequality and deprivation in the basic end state of housing – i.e. deprivation in basic housing adequacy (among others, see Dewilde and Lancee 2013; Dewilde 2021; Eurostat 2018; Haffner, Lennartz, and Dol 2012; Stephens et al. 2010; Ulman and Ćwiek 2020). This empirical challenge adds a question of whether the problem of neglect of the means-to-ends conversion gaps would be marginal in the housing context, especially considering that housing is capital-intensive and the most expensive basic good for individuals, unlike other basic goods. Economic means may play a much more significant role in achieving the basic end state of housing than in achieving other basic goods and human functionings. Considering the empirical evidence and the distinctive features of housing, *would the current measures of economic means not largely represent deprivations of the capabilities for housing and related conversion factors?*

Contesting Views on Measures of Housing Satisfaction

Another basis of Sen's proposal for the CA was that the utility-oriented evaluation (e.g. measures of desire/preference fulfilments, satisfaction, and happiness) neglects non-utility concerns such as human rights and meaningful lives (Sen 1992), and underestimates welfare problems because the oppressed and deprived people tend to "adjust . . . expectations and desire to what they unambitiously see as feasible" (Sen 1999, 63). Applying this argument to housing, measures of housing satisfaction can mislead housing welfare judgements to disregard some important moral issues associated with housing, such as the right to adequate housing.

What does the empirical evidence to date tell about this conceptual weakness of housing satisfaction measures? Studies on housing satisfaction and dwelling quality have shown that the correlation between the two is not always clear, but this observation generally applied to cases above the minimum standards of housing adequacy (e.g. Amérigo and Aragonés 1990; Galster 1985; Jansen 2013). For the cases below the minimum standards, such as with insufficient space, inadequate heating, and lack of basic amenities, the results have repeatedly shown an unambiguous relationship between a low level of housing satisfaction and poor dwelling conditions (e.g. Diaz-Serrano 2006; Balestra and Sultan 2013; Coates, Anand, and Norris 2015). These observations raise doubts about whether the problem of adaptive preference and the inconsistency between housing satisfaction and the human right to living in adequate housing would be significant; it may be marginal in reality, unlike in Sen's critical argument.

Aside from this empirical doubt, certain conceptual ambiguities raise another contesting view. Sen (1999, 18) proposes evaluating the "capabilities of persons to lead the kind of lives *they value* – and *they have reason to value*" (emphasis by author). When applying this proposal to housing, the concern about *what people value* can be related to the concern about *subjective residential values and preferences*, such as a sense of belonging and close distance to work (e.g. Coates, Anand, and Norris 2015; Clapham, Foye, and Christian 2018), of which practical shape may be similar to evaluating determinants of housing satisfaction. In addition, when we speculate how the concept "capabilities for housing" can be operationalized, it seems reasonable to assume that, if a person has the capabilities, they would be able to realize their valued way of residing, and if those values were fulfilled, they would then report higher satisfaction with housing; therefore, the level of capabilities for housing may ultimately be indicated by the level of housing satisfaction. Despite the conceptual novelty of the capabilities for housing, *is it not all about housing satisfaction and its determinants in the end?*

Contesting Views on Measures of Housing Adequacy

The capability concept pertains to the *potential* of people to achieve the kinds of lives they value, but such potentials are difficult to measure. Alternatively, in poverty and well-being measurements, researchers have evaluated the achieved state of living (i.e. achieved functionings, such as being healthy and being educated) as a proxy of the potential. In these practices, housing adequacy – as an indicator of the basic functioning of living in adequate housing – is frequently measured as a proxy of a person's potential to live in adequate housing (i.e. a proxy of basic capability for housing) (e.g. Alkire, Kanagaratnam, and Suppa 2020; Arndt and Volkert 2007). This indirect measurement approach works on the pragmatic assumption that people would choose to avoid deprivation of basic functionings when it is feasible to do so and, therefore, measuring their deprivations could be reasonable proxies for basic capabilities. Here, the evaluation focuses on *basic* capabilities because such focus makes it feasible to reach an agreement on a list of important capabilities to measure (Sen 1992).

Reflecting on the lessons from poverty and well-being research, measurements of capabilities for housing may come down to measurements of basic housing functionings, such as basic standards of adequate housing. This line of reasoning naturally raises the question of, *how will this differ from a composite indicator of adequate housing that has*

long been evaluated in the housing field?¹ Moreover, as previously described, several lines of evidence suggest that deprivation in basic housing adequacy is strongly correlated with a low level of household income and housing satisfaction; therefore, from the policymakers' perspective, there may be little benefit to expanding the informational bases of their value judgements.

Meanwhile, the CA differentiates "the state of beings and doings" and "real opportunities to be and do"; therefore, there should be a difference between measures of "living in adequate housing" and "real opportunities to live in adequate housing" (e.g. abilities and enabling environments to live in adequate housing). However, this conceptual difference has not yet been empirically examined. *In measurements, would there be a significant difference between living in an adequate housing and having the ability to live in one?*

Research Design

Empirical Strategy

To resolve the contesting views above, an ideal study would be measuring a person's total capability for housing, and comparing the result with a measure of economic means for housing (a summary of multiple socioeconomic disadvantages limiting access to adequate housing) and a measure of housing satisfaction (a summary of fulfilments of personal residential values and achievements). For such a study, there must first be substantive research on types of important capabilities for housing, and housing surveys collecting data on those capabilities. However, substantive works on these subjects are yet to be accumulated. An exploratory strategy is necessary by making use of the already available data, while the empirical constraints change. This study designed the exploratory strategy as follows.

First, the study focuses on testing to what extent the conventional evaluation approaches are limited in reflecting the normative considerations that the CA enables, such as the concerns about means-to-ends conversion gaps, inequality in conversion efficacy, adaptive preferences of deprived groups, and direct attention to human beings and moral values. Through this, the study explores the expected difference that the CA application can make in measurements of well-being in housing and housing inequality.

Second, in comparing the evaluation approaches, the study examines how similarly or differently they identify who is in a deprived housing situation and. If the conceptual differences between the approaches are relevant, a capability-oriented evaluation should lead to substantially different value judgements on whom the housing welfare policy should concern, creating differences in policy decisions.

Third, the study compares only some distinguished capabilities for housing, although there would be multiple capabilities subject to be examined. This empirical strategy follows Sen's (1999, 82) suggestion that one alternative practical approach to incorporating capability consideration into evaluation is the "comparison of some particular capability chosen as the focus, without looking for completeness of coverage [because] such comparisons can be quite illuminating . . . in evaluative exercises", as he has shown in his work (1985, 1999). In addition, "[h]aving more of each relevant functioning or capability is a clear improvement" (Sen 1992, 46), and therefore, this study perceived that comparing a

particular capability or functioning for housing can offer reliable information for policy discussion.

Forth, when selecting indicators of distinguished capabilities, the study selects both a functioning-oriented indicator that concerns the valued state of residing (e.g. living in adequate housing) and a potential-oriented indicator that concerns the real opportunities to achieve the valued state of residing (e.g. an ability to live in adequate housing). This is to explore the informational benefits of differentiating the concepts of “housing functionings” and “capabilities to achieve the housing functionings”.

Lastly, the study selects the indicators most commonly used in housing welfare policies and research to test whether the conventional evaluation practices have created a significant blind spot in housing welfare judgements, as discussed in theory. An exception was a potential-oriented indicator. Conceptually, this indicator should reflect basic abilities or enabling/empowering conditions that expand a person’s potential to lead/achieve their valued ways of residing. However, there is yet little empirical ground for selecting such indicators and measuring them. For this potential-oriented indicator, the study employs a two-stage approach to selecting capabilities suggested by Robeyns (2005); that is, defining the ideal indicator and evaluating the second-best level of that indicator while the empirical constraints change over time.

Methods

As described above, the study chooses one indicator of each evaluation approach and compares their identification of deprived persons that housing welfare policies are supposed to address – in short, comparing target-group identifications. The study analyses whether the person identified as deprived in the housing situation by one indicator is also identified as deprived by other indicators, and observe the percentage of their overlap. Tables 1 and 2 illustrate the base method, which adapted the methods used in a few studies of disjuncture among different dimensional measures of poverty (e.g. Cornia and Stewart 1993; Ruggeri–Laderchi 2008; Alkire and Roche 2011).

Table 1 is to examine the extent to which the four measures simultaneously identify a person as deprived, hence the extent of in/commensurability of their information. A high proportion of the cases of Person 1 and Person 2 – those identified as non-deprived or deprived consistently by all measures – implies that different evaluation approaches may lead to roughly equivalent value judgements in housing welfare policies.

Table 1. Method to test the commensurability of measures of well-being in housing.

	Basic economic means for housing	Satisfaction with housing	Basic housing functioning	Basic ability for housing	Number of measures jointly identifying as deprived
Person 1	Non-deprived	Non-deprived	Non-deprived	Non-deprived	0
Person 2	Deprived	Deprived	Deprived	Deprived	4
Person 3	Non-deprived	Non-deprived	Non-deprived	Deprived	1
Person 4	Deprived	Deprived	Deprived	Non-deprived	3
Person 5	Deprived	Non-deprived	Deprived	Deprived	3
Person <i>i</i>	...	...	...	...	<i>n</i>

While [Table 1](#) is to offer a brief overview, [Table 2](#) is to dissect this overview through pairwise comparisons; it analyses the extent of discrepancy between the capability-oriented evaluation and economic means/satisfaction-oriented evaluation of deprivation in housing (case categories II and III). This analysis was designed to gauge the relevance of the conversion issue, adaptive preferences, and deprivations in non-monetary/utility issues when making value judgements on needed policy actions, which would evidence the practical differences that a capability-oriented evaluation can make in the housing field. When the discrepancy appears non-negligible, the study further explores inequalities in conversion efficacy between economic means for housing and the basic end state of housing (basic housing functioning) ([Table 3](#)).

Why the Method of target-group Identification Comparison?

Ultimately, the method described above is about testing the redundancy of information about the deprivation of basic capabilities for housing. To check such redundancy, a study can employ a statistical correlation analysis that examines whether there is a high correlation between deprivation of capability for housing and other deprivations (i.e. insufficient income for housing and dissatisfaction with housing, in this study), or employ a regression analysis to investigate whether the former deprivation is predictable or representable by the latter. Instead of these sophisticated statistical modelling methods, this study adopted a method that directly compares the counts of deprived persons and their overlaps. Three reasons were considered for this choice.

First, some doubts about the benefits of applying the CA are raised by ample evidence of close relationships between economic means, housing satisfaction and the basic functioning of living in adequate housing; this evidence is primarily built on statistical

Table 2. Method to compare evaluation approaches to housing deprivation.

Measure 1	Non-deprived		Deprived	
Measure 2	Non-deprived	Deprived	Non-deprived	Deprived
Case category	I (overlap)	II (mismatch)	III (mismatch)	IV (overlap)

Table 3. Method for assessing inequality in conversion efficacy.

Subgroups of population (e.g. household type; ethnic background)	Non-deprived of means	Non-deprived of ends	Assessment of difference in conversion rates among subgroups
	non-deprived of means (M)	non-deprived of means (M) and non-deprived of ends (E)	(E/M) – 1 = 0
Ideal score			
By household type	M_s %	E_s %	$(E_s / M_s) - 1$
• Single (s)	M_m %	E_m %	$(E_m / M_m) - 1$
• Multi-person (m)	M_p %	E_p %	$(E_p / M_p) - 1$
• Single parent (p)			
By ...	...	...	...
By ...	...	...	...

correlation and regression analysis. To revisit the existing findings from a different angle, the study selected an assessment of their association based on direct counting.

Second, this counting-based assessment enables an intuitive value judgment. Whereas purely statistical measures of associations tend to conceal implicit welfare judgements (Chaudhuri and Ravallion 1994), the analysis of overlaps between targeting measurements can offer straightforward implications for value judgements (Ruggeri-Laderchi 2008). In addition, this direct assessment of association can check the potential delusion of correlation efficiency analysis (Alkire et al. 2015).

Finally, the purpose of this study is to investigate the practical relevance of theoretical discussion about evaluation approaches to housing policy. A concern for policymakers is effectively targeting the population groups in need. The counts of deprived persons and their comparison can provide direct implications for this concern.

Data Selection

The datasets were selected based on the following criteria: (i) the feasibility of computing indicators that best align with the conceptual ground of each evaluation approach; and (ii) the linkability between the variables of those indicators. The second criterion was critical because the analysis of Tables 1 and 2 required connecting the data of each person for the four indicators, but a single survey rarely provided all the data needed. Three linkable micro-datasets in the year 2011 were selected: register data from Statistics Netherlands and two surveys on housing and financial literacy from the LISS panel. The study sample comprised 8,704 individuals across 3,863 households.

Indicators and Deprivation cut-offs

Primary criteria for selecting indicators were whether the indicators were commonly used for housing welfare judgements and whether they conceptually aligned with the underlying ideas of each evaluation approach to be compared. An exception was an indicator of basic ability for housing; only the second criterion was applied for its selection. Table 4 presents the selected indicators and the deprivation cut-offs.

Table 4. Selected indicators and deprivation cut-offs.

Evaluation approach	Indicators	Household members are deprived if:
Economic means-oriented	Sufficient income for adequate housing	Taxable household income is less than or equal to 33,614 euros per year per household (the social housing eligibility threshold in 2011)
Satisfaction-oriented	Dwelling satisfaction	The satisfaction level is a score of 6 or lower than 6 (out of the 11-point scale)
Functioning-oriented: basic housing functionings	Living in adequate housing (housing adequacy)	One of the following conditions is met: - the number of rooms is less than the sufficiently required number: one for a single household, one per couple, one per pair of children under 10 years of age, one per person for the rest, and one shared living room; and - leaking roof, damp walls/floors, rotten window frames/floors, too dark, too noisy, or inadequate heating,
Potential-oriented: basic abilities for housing	Basic financial literacy	Either the head of household or the spouse incorrectly answered the two survey questions that test basic knowledge of compound interest and inflation ^[1]

Note: [1] For the financial literacy test questions, see Table A1 in the appendix.

As an exemplary indicator of basic economic means for housing, income eligibility for social housing was selected since it is an essential indicator for housing welfare policies in many countries and carries the assumption that the CA critically questions. This indicator is built on an implicit assumption that information on multiple socioeconomic disadvantages limiting access to adequate housing can be reduced to a measure of household income. The income threshold for housing services is a kind of poverty line in the housing sector, under which households are considered to have insufficient income to live in (or access) adequate housing and, therefore, in need of public assistance. The deprivation cut-off was set at the income threshold for social housing in the Netherlands.

The indicator of dwelling satisfaction referred to a study of dissatisfaction cut-offs in the Netherlands that suggests the Dutch population is likely to consider a value of six or lower (out of an 11-point scale) to represent dissatisfaction (Beuningen, Houwen, and Moonen 2014).

As an indicator of basic functioning for housing, housing adequacy was selected because it is the most commonly used indicator to assess housing deprivation and is considered a basic human functioning in the CA in line with arguments for the human right to adequate housing. In addition, it is the common source of the contesting views on the informational benefits of applying the CA. This study defined an indicator of housing adequacy by reflecting the norm of habitability in the definition of adequate housing in OHCHR (2009), and a need for adjusting the standard adequate space for the advanced economies in Europe (Haffner 2015).

To select an indicator of basic ability for housing, the study defined a number of sub-criteria by scrutinizing what could be a reasonable approach to selecting the indicator when studies and data are limited.² Reflected on the underlying ideas of the CA, the criteria were set as follows: (i) does the indicator directly focus on human beings and non-monetary/material matters, and does it entail the concern about the potential of people to achieve what they value or the enablement of people to choose?; (ii) is there substantive evidence of the indicator's relevance to housing? (iii) does it entail concerns on ethics and rights, and thereby, would its importance be agreeable? (iv) does the indicator identify a non-negligible proportion of the population as deprived (thus, could it be a policy concern)? This condition follows the argument of Ruggeri-Laderchi (2008) for the practical value of focusing on non-negligible aspects of capability deprivation; and (v) is the indicator's data linkable to other survey data?

Examining question (i), housing literacy was considered one of the ideal indicators (Kimhur 2022), as an ability to comprehend a range of housing topics, such as entitled rights, housing and real estate policies (and their changes), the possible ramification of rent contract terms, housing markets, and financial programmes, as well as the ability to interpret how variations of those subjects can affect one's own housing situations and rights. Having a good understanding of these subjects is important to make suitable housing choices. The importance of this ability is highlighted by cases of non-take-ups of housing benefits/allowances. According to Eurofound (2015), such non-take-ups ranges from 20% (e.g. the UK in 2013–2014 and the Netherlands in 2008–2009) to 70% (e.g. the Czech Republic in 2010), and their causes pertain to misperceptions of the benefits, lack of ability to navigate the system, and a lack of information about entitlement and application procedures.

Unfortunately, substantive surveys on housing literacy were not found. Thus, as a second-best guess of housing literacy, this study selected an indicator of financial literacy out of the already available data. At the empirical level, multiple studies have shown that financial literacy is closely related to housing issues, such as housing wealth (Lusardi and Mitchell 2007; Lusardi, Michaud, and Mitchell 2017) and the likelihood of taking out risky mortgages and mortgage delinquency that increases housing insecurity (van Ooijen and van Rooij 2014; Zahirovic–Herbert, Gibler, and Chatterjee 2016). The normative value of financial literacy is discussed in connection with capability considerations (Lubis 2018; Sherraden 2013; Storch and Susan 2016); at the conceptual level, financial literacy has a direct focus on people’s abilities, and entails a moral concern about informed decision-making and financial inclusion. It is concerned with the “ability to discern financial choices, [...] plan for the future, and respond competently to life events that affect everyday financial decisions” (Vitt et al. 2000, xii). Housing requires a person to manage large sums of money over the life course; such ability to plan for the future and life events can be essential, as observed in the example of interest-only mortgage holders. It was observed that people with low financial literacy were more likely to use an interest-only mortgage (Seay, Preece, and Le 2017; a study with the 2009 data). When this mortgage product was introduced in the 2000s, it was concerned “whether and to what extent borrowers fully understand the implications of taking out such a mortgage, and whether they have a clear understanding of how they will repay the capital sum” (Scanlon, Lunde, and Whitehead 2008, 114). Twenty years after its introduction, it is reported in the Netherlands that many borrowers reaching the end of an interest-only mortgage term were not fully aware of its consequences, and about 23,000 to 46,000 elderly households have neither an adequate repayment strategy nor enough equity to release, hence facing the risk of having no place to live (van Prooijen 2018; Julen 2018; Waterval 2019).

Unit of Analysis

The individual was set as the unit of analysis since the household-level analysis can conceal the scale of the deprived population. The analysis first identified which household was deprived (i.e. household as the unit of identification), allocated the same value to the household members (i.e. individual as the unit of analysis; applying the assumption that the members share dis/advantages), and assessed deprivation at the individual level.

Results and Discussion

Test 1: Correlations and Commensurability of Measures

Before discussing the results of a comparison of target-group identifications, let us first grasp a general picture of deprivations for each of the four indicators and their correlations. Table 5 shows, deprivation rates for each indicator appeared similar, ranging from 21% to 30%, except for dissatisfaction with dwellings. Then, when the study analyses their associations, as Table 6 shows, it is clear that all measures have positive correlations. The result particularly highlights that dwelling satisfaction and housing adequacy are strongly associated. A subsequent inquiry here is whether the deprivation of basic capability for housing would be predictable by the conventional measures. Looking at Figure 1.

Table 5. Deprivation rates for each indicator.

	Means-oriented measure	Satisfaction-oriented measure	Measures of basic capabilities for housing	
			Functioning-oriented	Potential-oriented
	Sufficient income for adequate housing	Dwelling satisfaction	Living in adequate housing	Basic financial literacy
Non-deprived	77.0%	88.6 % (70.6%) ^[1]	78.7%	70.3%
Deprived	23.0%	11.4% (29.4%) ^[1]	21.3%	29.7%

Note: [1] the incidence rates when the average score of 8 is applied as the cut-off (i.e. 0–7 = deprived, 8–10 = not deprived)

Table 6. Correlations between the compared measures of well-being in housing.

	(1)	(2)	(3)	(4)
	Income	Dwelling satisfaction	Housing adequacy	Financial literacy
Income	1.00			
Dwelling satisfaction	0.093**	1.00		
Housing adequacy	0.189**	0.312**	1.00	
Financial literacy	0.229**	0.027*	0.104**	1.00

Note: Spearman's rank-order correlation; ** $p < 0.01$; * $p < 0.05$.

(1) income refers to taxable household income; (2) dwelling satisfaction is at 11-scale (3) the ordinal values of housing adequacy refer to the number of deprived dwelling conditions (maximum 7); (4) the ordinal values of financial literacy refer to the number of correct answers (maximum 4).

It seems clear that, statistically, those having low-income are highly likely to live in inadequate housing and have low financial literacy, and those living in inadequate housing are likely to report dissatisfaction with their dwelling. It also shows relationships between low financial literacy and other deprivations.

A question shared by the three contesting views is whether capability-oriented measures of well-being/inequality in housing would be commensurable with the conventional measures, and hence there would be little informational benefits from capability-oriented measures. According to the statistical associations in [Table 6](#) and [Figure 1](#), information on deprivation of basic capabilities for housing (either functioning or ability) appears reducible to that of economic means for housing or housing satisfaction; thus, there may be few additional advantages of capability-oriented evaluation for policymakers. However, the comparison of target-group identification ([Table 1](#)) provides a quite different picture, as described below.

As illustrated in [Table 7](#), the four indicators identify the expected target groups substantially differently. The proportion of the population that at least three indicators jointly identify as the target group is only about 6% (column 1). The results with a lowered cut-off for each indicator show a similar pattern (column 2). When this result is dissected into pairwise comparisons ([Table 8](#)), we can observe an even sharper contrast to the pairwise statistical correlations in [Table 6](#) and [Figure 1](#). Unlike the strong statistical correlations between the indicators, their joint target-

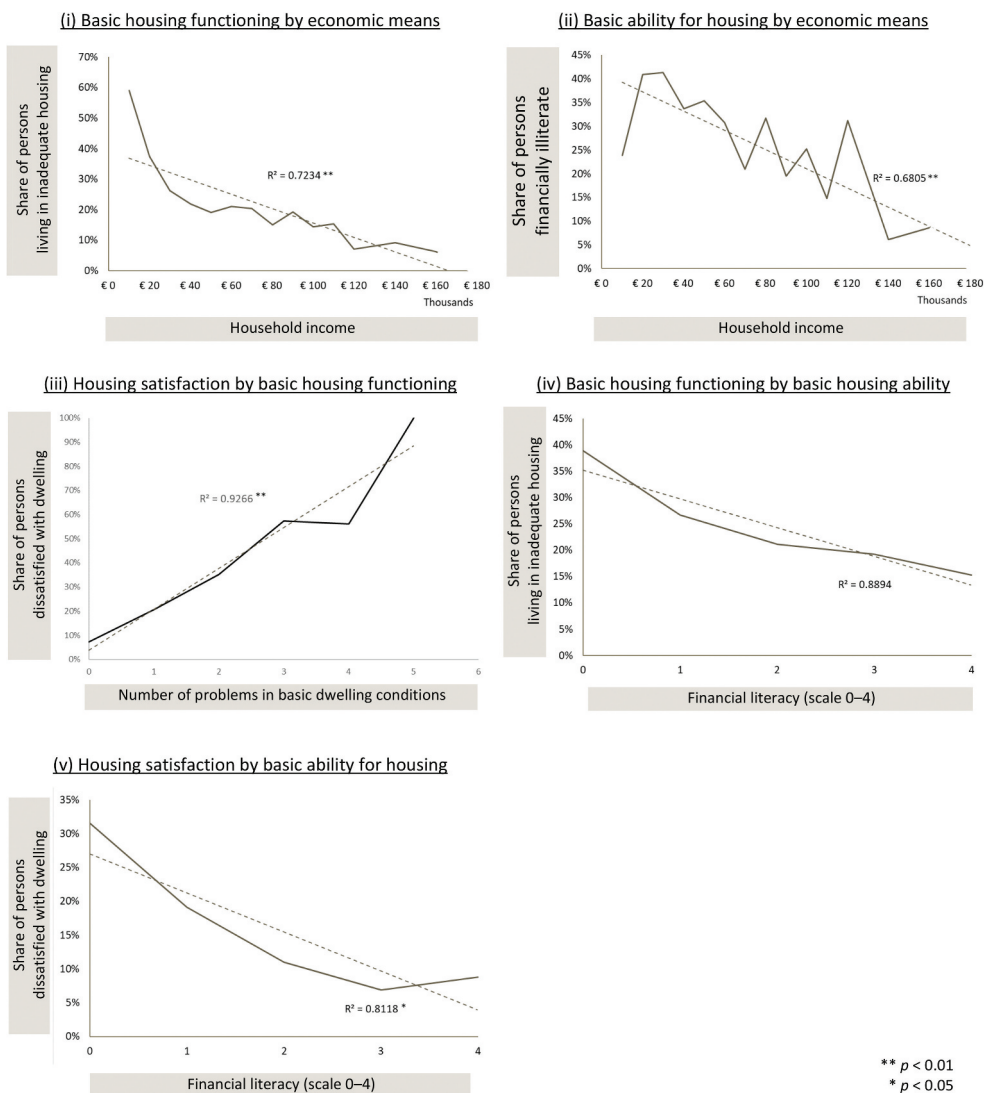


Figure 1. Predictability of the deprivation of basic capabilities for housing by income and of dwelling dissatisfaction by basic capabilities for housing.

identifications range only between 4% and 9%. Interestingly, housing adequacy and dwelling satisfaction have the highest statistical correlation, but their target identifications overlap at one of the lowest rates.

A crucial task of housing welfare policies is effectively targeting the groups in need of public support. Contrary to the implications of the statistical correlations, this counting-based assessment rather indicates that the income-based or satisfaction-based measures have a risk of missing a non-negligible portion of the population that the housing policy needs to concern. The next section further investigates the underlying implications of this general overview.

Table 7. Degree of consistency in identification of deprived persons: a test of in/commensurability.

Number of measures jointly identifying a person as deprived	(1) With the cut-offs set for the study	(2) With lowered cut-offs for a robust check
0 (identified as non-deprived by all four measures)	44.6 %	53.1 %
1 (identified as deprived by one measure)	33.2 %	29.9 %
2 (identified as deprived by two measures)	15.9 %	13.1 %
3 (identified as deprived by three measures)	5.3 %	3.4 %
4 (identified as deprived by all four measures)	0.9 %	0.5 %
Total	100.0	100.0

Note: The lowered cut-offs applied for the robust check (column 2) were set as follows: housing is inadequate if *two or more problems* of dwelling conditions exist; members of households are financially illiterate only if *both* the household head and spouse incorrectly answered the two survey questions; members of households are dissatisfied with their dwelling when the satisfaction level is *5 or lower*. No changes to the income threshold as it follows the current social housing policy of the study country.

Table 8. Pairwise comparisons of target group identifications.

	Sufficient income for adequate housing	Dwelling satisfaction	Living in adequate housing	Basic financial literacy
Study population deprived by each measure	23%	11% (6%)	21% (9%)	30% (19%)
Percentage of population simultaneously identified in the column and row measures				
Sufficient income for adequate housing	23%	–		
Dwelling satisfaction	11% (6%)	3.9% (2.2%)	–	
Living in adequate housing	21% (9%)	7.6% (3.2%)	5.7% (2.0%)	–
Basic financial literacy	30% (19%)	9.1% (6.9%)	4.7% (2.1%)	7.5% (2.4%)

Note: Figures in parenthesis: the percentage of population jointly identified with lowered cut-offs (applied the same rule in Table 7).

Test 2: Weaknesses of the Current Evaluation Approaches

As described earlier, it is uncertain whether gaps between means for housing and ends of housing achievements would be a substantive issue, and thus whether the conventional evaluation practices indeed cause a significant blind spot in welfare judgements about housing. A straightforward method to examine this question is to observe the overlap between deprivations in income for adequate housing (means) and the state of living in adequate housing (ends). Figure 2 shows the degree of their overlap. Contrary to expectations, the overlap is only about 37% (case IV). The discrepancy between basic means for housing and basic housing ends appears not negligible, implying that housing welfare judgements based on the level of economic means may substantially underestimate the public actions needed. For the remaining 63% (case III), causes of living in inadequate housing are likely due to something other than insufficient income. The possible explanations would be diverse, including external constraints (e.g. limited housing choices for some middle-income groups (Jonkman and Janssen-Jansen 2015) and lack of proper maintenance by lessors), personal strategic choices to live in a small flat, different personal expense priorities, varying levels of acceptance of housing inadequacy, and so forth. The causes of the discrepancy could not be determined with the current dataset of this study.

■ Non-deprived  and Deprived 
measured by *Sufficient Income for Adequate Housing & Living in Adequate Housing*

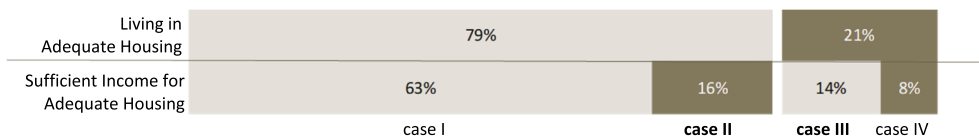


Figure 2. Degree of overlap between deprived groups: basic economic means and housing functioning. Note: see [Table B1](#) in the appendix for detailed figures.

Still, a clear policy implication was that, to ensure people live in adequate housing, more tailored policy interventions are required, not limited to financial subsidies.

To examine the contesting view on housing satisfaction measures, target identifications by dwelling dissatisfaction and housing inadequacy were compared. What stands out in [Figure 3](#) is that, among those living in inadequate housing (cases III and IV), about 75% (case III) reported they were satisfied with their dwelling. The same analysis for the more deprived cases (i.e. having problems with two or more dwelling conditions) also showed a high discrepancy (above 65%). This result suggests a possible delusion of the strong correlations between housing inadequacy and low housing satisfaction, and supports the conceptual argument about the limitations of satisfaction measures. The considerable mismatch between the two measures may simply be attributed to the heterogeneity in residential values and preferences among individuals. If this was the case, a sizable proportion of cases who live in adequate housing but report dissatisfaction (case II in [Figure 3](#)) would be expected, but such cases represented only 7% of the sample, which was very marginal compared to the 75% mismatch rate in the opposite situation (case III). Thus, the considerable mismatch may rather indicate the adaptive preferences of the deprived groups, or other kinds of deficiency, such as low awareness of the importance of housing adequacy for their well-being. It is limited here in providing any definitive conclusion, but the clear finding is that the housing welfare judgements based on satisfaction measures have a high chance of underestimating housing problems, such as the insufficient realization of the right to adequate housing.

Finally, financial literacy was compared with other measures. Earlier, we observed the statistical correlations between financial illiteracy and housing inadequacy ([Table 6](#) and [Figure 1](#)). However, the target identification analysis shows ([Figure 4](#)) a substantial discrepancy between the measures.

■ Non-deprived  and Deprived 
measured by *Living in Adequate Housing & Dwelling Satisfaction*

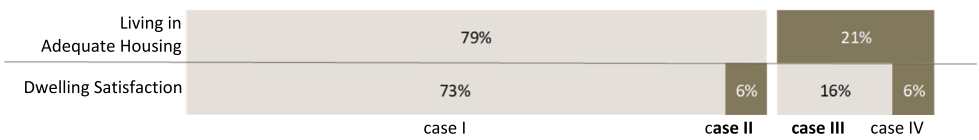


Figure 3. Degree of overlap between deprived groups: housing satisfaction and basic housing functioning. Note: see [Table B1](#) in the appendix for detailed figures.

If we employ the pragmatic assumption that people prioritize utilizing their available abilities for achieving basic human functionings, one may expect a relatively low discrepancy between having basic financial literacy and living in adequate housing. However, [Figure 4](#) shows that among those deprived of adequate housing, over 60% were non-deprived of basic financial literacy (case III), and about 30% among non-deprived of housing adequacy were deprived of basic financial literacy (case II). Meanwhile, this high discrepancy can be an expected result because necessary basic abilities for housing are multiple and their actual utilization is a matter of personal choice. Additionally, financial literacy is a proxy for basic housing literacy, and the factors that influence the state of living in adequate housing are undoubtedly numerous.

From this test, the findings regarding the potential-oriented evaluation are somewhat limited. Nevertheless, two meaningful implications can be drawn for future studies on operationalizing the capability concept. First, measuring basic housing functionings as proxies of basic capabilities for housing needs careful examination before adopting the pragmatic assumption made in poverty and well-being measurements. Second, if we are concerned with morally sensitive matters, such as financial inclusion and abilities to make informed decisions, value judgements based on the current evaluation approaches would be significantly limited in reflecting those issues – as observed in [Figures 5 and 6](#), unlike the implication of the strong statistical correlations between their measures and financial literacy ([Figure 1](#)).

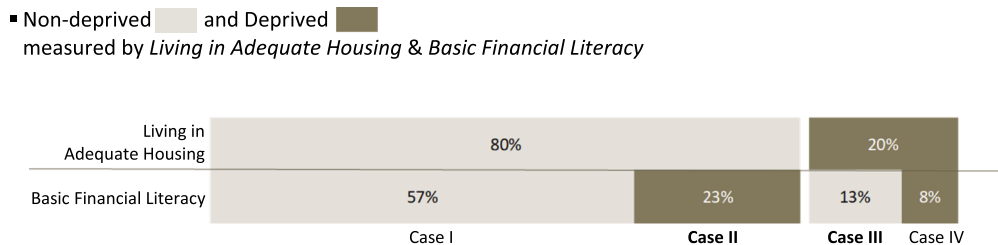


Figure 4. Degree of overlap between deprived groups: basic housing functioning and ability for housing. Note: see [Table B1](#) in the appendix for detailed figures.

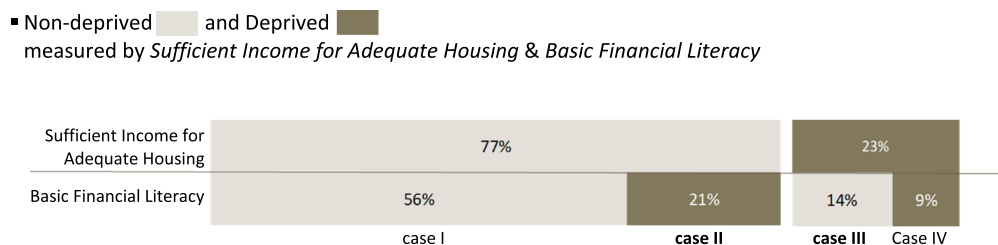


Figure 5. Degree of overlap between deprived groups: basic economic means and ability for housing.

■ Non-deprived  and Deprived 
measured by *Dwelling Satisfaction & Basic Financial Literacy*

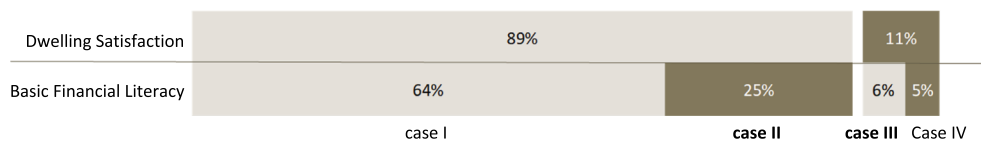


Figure 6. Degree of overlap between deprived groups: housing satisfaction and basic ability for housing. Note: see [Table B1](#) in the appendix for detailed figures.

Test 3: Inequality in Conversion Efficacy

The test above revealed a notable mismatch between sufficient income for housing and basic housing functioning. This result suggests that housing welfare policies may need to seriously consider the conversion issue in shaping policy actions. The study extended its scope to observe differences in conversion efficacy among subgroups. Within the purpose of this article, this analysis set out to observe the relevance of the conceptual discussion about conversion gaps in the housing context; research on the factors causing such conversion gaps is reserved for future work.

As illustrated in [Table 3](#), this third test was designed to compare the percentage of the population of each subgroup that had a discrepancy between possession of basic means and achievements of basic housing ends, to examine conversion inequalities between subgroups and policy implications. The results are summarized in [Figure 7](#). The numbers in the graphs indicate the percentage of people who are non-deprived of income for adequate housing (possessing sufficient economic means) but who are deprived of housing adequacy (deprived of a basic housing functioning). By setting the ideal score as zero (i.e. all subgroup members have no discrepancy between means and ends), the

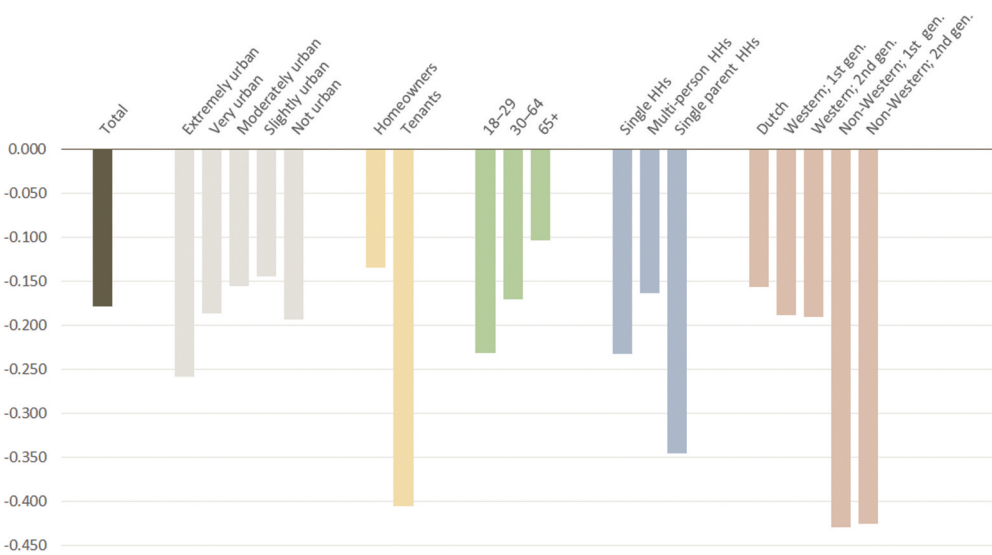


Figure 7. Conversion efficacy by subgroups: from basic economic means to basic housing functioning. Note: see [Table B2](#) in the appendix for detailed figures.

distance from zero indicates the conversion efficacy score; thus, a longer bar means that a group has a lower conversion efficacy. [Figure 7](#) clearly shows that tenants, youth, single-parent households, and people from non-Western backgrounds have the lowest conversion efficacy among the compared groups. These results suggest that, to live in adequate housing, they experience more kinds of non-monetary constraints, or the same non-monetary constraints affect them more profoundly.

Test 4: Differences in Multidimensional Measurements

The results showed that the compared measures inform the expected target group of housing welfare policies substantially differently. These findings provide some initial evidence that the compared measures are likely incommensurable and suggest that each measure could be an independently important source of information for housing welfare judgements. Indeed, a starting ground for Sen's proposal for the CA was the imperfect nature of means-oriented and utility-oriented evaluation approaches (Comim 2018). Measures of satisfaction and economic resources are also valuable sources of information for social welfare judgements but not simply as a homogeneous magnitude of all plural features of our lives (Sen 2009). Thus, economic means for adequate housing, capabilities for housing and satisfaction with housing could all be important factors that shape individual well-being in housing, of which relations would be too heterogeneous to be statistically modelled in the linear frame of *from means to capabilities to functionings and to satisfaction*, since how individuals combine and make use of these factors is extremely diverse in reality.

Overall, these findings come down to an implication that multidimensional measurements are crucial for making housing policies effective. In practice, however, evaluation with multiple indicators is not a novel idea, and depending on one's perspective, it is similar to evaluating multidimensional determinants of housing satisfaction. How would the multidimensional measurement in the CA differ from the current practices, apart from asking for additional variables that reflect the capabilities for housing?

If we put forward the proposition that all four measures compared in this study could be independently important features of individual housing situations (as Sen argues regarding plural features of our lives), and thus all be components of a multidimensional evaluation, the test results in [Table 7](#) indicate that individuals have different levels of simultaneous deprivations in their well-being in housing, implying a degree of inequality in housing. On this basis, this study extended the test to investigate the degree of simultaneous deprivations per person across: sufficient income for housing, dwelling satisfaction (subjective well-being in housing), housing adequacy, and financial literacy.

Using [Table 1](#) as a basis, which was adapted from a frame of multidimensional poverty analysis (Alkire and Roche 2011), the study counted the number of simultaneous deprivations that each person had and disaggregated the results by subgroups. [Figure 8](#) illustrates the percentage of people deprived of none, one, two, or three or more features of housing situations. From this analysis, we can observe which groups experience more joint deprivations compared to others, implying inequalities among subgroups and the need for multidimensional policy actions for them. Among the study population, it appears that the most deprived were those in extremely urban areas, tenants, young people, single-parent households, and groups from non-Western backgrounds. These

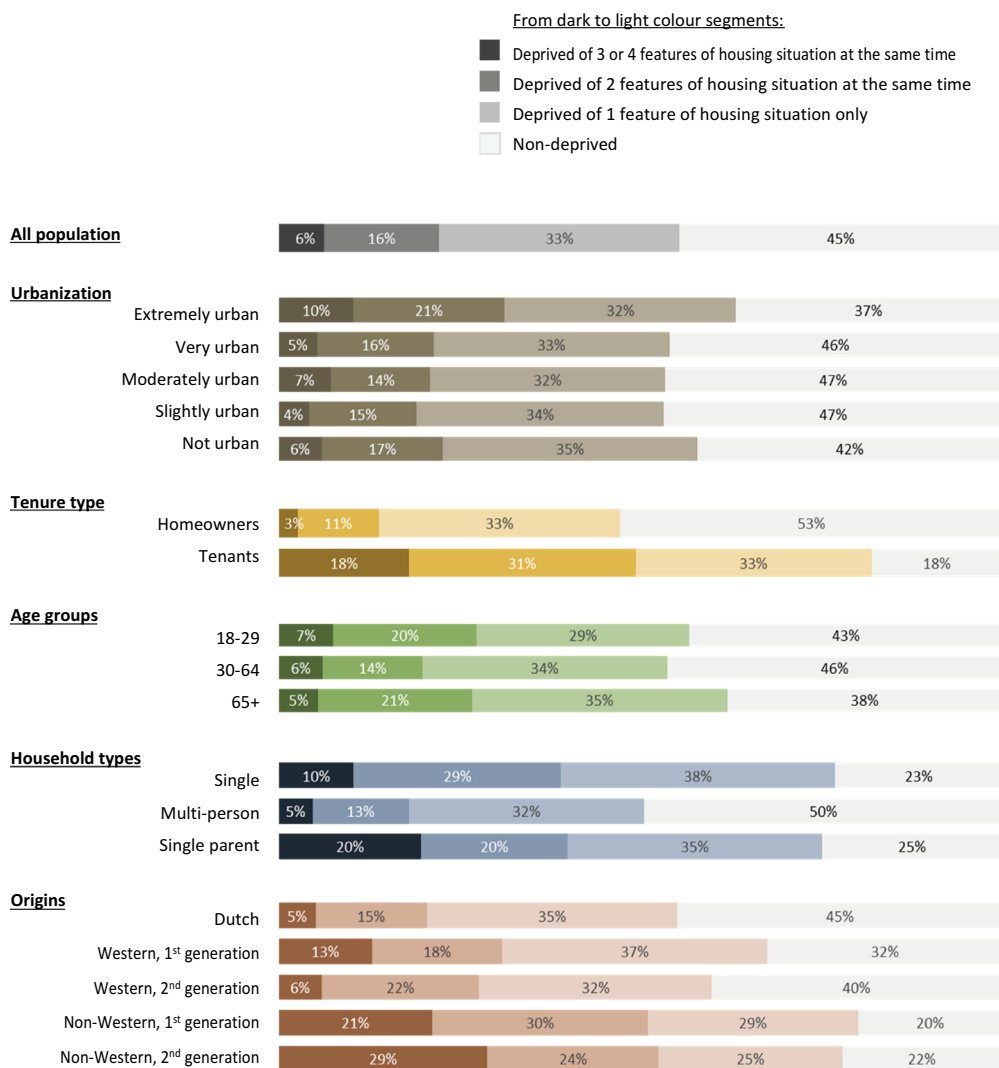


Figure 8. Different degrees of simultaneous deprivations in housing situation among subgroups. Note: see Table B3 in the appendix for detailed figures.

groups had the lowest proportion of non-deprived individuals in all four aspects of housing situations, and the highest proportion of deprived individuals in three or four aspects. Interestingly, these groups also had the lowest conversion efficacy, as observed in Figure 7. They experienced not only multiple deprivations in housing situations but also more disadvantages in converting economic means to basic housing ends.

In measuring housing issues multidimensionally, the most common method is a dashboard approach in the format of Table 5. This approach, however, does not tell us whether those deprived of each indicator are generally the same people or not, and who experience simultaneous deprivations at which degree of intensity (Alkire et al. 2015). Distinguished features of multidimensional measurements in the CA could refer not only to evaluating plural features of well-being in housing, but also to reflecting the

different intensity of joint possessions (or deprivations) of those features, since more simultaneous possessions of those features imply a person has more diverse combinations of means, abilities and/or functionings to utilize for choosing their valued way of residing, and hence more capability for housing.

Conclusions

When measuring well-being in housing and housing inequality, in theory, applying the CA has clear advantages in addressing the normative concerns overlooked by the conventional evaluation approaches. However, its practical difference has been unclear in the housing field. This study reviewed sources of such uncertainty and, for their clarification, compared the conventional and capability-oriented evaluation of housing deprivation in terms of the identification of deprived groups that housing welfare policies are supposed to concern. The results showed that non-negligible proportions of the study population were: (i) living in inadequate housing (deprived of basic housing functioning) despite household income above the eligible threshold for housing welfare services (non-deprived in economic means for adequate housing), implying some conversion gaps; (ii) satisfied with their housing despite its inadequacy, implying possible inconsistencies of satisfaction-based measures with a sphere of the human right to adequate housing; and (iii) financially illiterate (deprived of basic ability for housing or lacking enablement of informed decision-making) despite household income above the threshold (non-deprived in economic means) and satisfied with housing, implying risks of overlooking the former issue when housing welfare policies are formed only on the informational basis of the latter. Furthermore, the results revealed clear inequality among the studied population in conversion efficacy from economic means to the basic functioning of living in adequate housing. Tenants, youth, single-parent households, and people from non-Western backgrounds appeared to have a low conversion efficacy. Individuals with this conversion gap are likely to be outside of current housing welfare policy targets.

The results empirically supported the theoretical advantages of incorporating capability considerations into measurements of well-being/inequality in housing, especially to compensate for possible informational gaps in the conventional evaluation practices. In welfare policies for housing, significant blind spots may have been present in addressing the housing problems associated with non-monetary issues, reflecting inequalities in conversion efficacy, and considering the adaptive preferences of the deprived. Welfare policies for basic housing services define their target groups largely by household income levels. This study demonstrated that this practice can substantially undermine the housing problems and underestimate population groups in need of societal support to improve their housing situation. The findings imply that housing policies need to seriously reconsider their informational bases, and design more diverse and tailored programmes beyond subsidies and social housing provisions that focus on low-income households. Value judgements in housing policy may refer to housing/residential satisfaction to reflect varied values and meanings of home among individuals, but increasing the satisfaction should not be the ultimate goal of housing policy, as this can be inconsistent with moral concerns.

The findings suggest that basic economic means for housing, basic capability and functioning for housing, and satisfaction with housing could all be valuable sources of information for judging basic welfare in housing, as a vector of multiple features of individual housing situation. Taken together, multidimensional measurements become

crucial. Related to this implication, another uncertainty was the difference between the CA to multidimensional measurements and the current practice in the housing field, apart from adding new indicators of capabilities for housing. As shown in the study, the answer can differ depending on measurement methods; this study explored the difference between the dashboard approach and the joint-deprivation-counting approach and its implications for understanding the capabilities for housing. Further studies on this difference are recommended for an operationalization of the CA to evaluate well-being/inequality in housing. Additionally, when evaluation practice is to serve the needs of policy-makers and inform public debate, it should consider incorporating a counting-based assessment into the analysis to provide more explicit implications for value judgments, and to check the potential delusions; as shown in this study, the overlap between deprived groups for four indicators was rather limited than many would have expected from the results of statistical correlations and regression analysis.

The purpose of this study was to clarify uncertainty about the practical difference a capability-oriented evaluation can make in the housing sector. Therefore, it neither seeks to claim which specific indicators of capabilities for housing should be measured nor propose how capability ideas should be operationalized. Instead, this study aimed to lay the groundwork for future research into the operationalization of the capability concept to evaluate well-being/equality in housing.

This article showed what tangible benefits for housing policy discussion can be expected from an application of the CA, and clarified some ambiguous theoretical ideas through empirical tests. To gain further insights into policy implications, future research can investigate why substantial mismatches between the identification of deprived groups are observed, which would indicate the conversion factors that housing policy needs to address.

Notes

1. It is worth noting that, in general, indicators of adequate housing have only partially reflected the elements of adequate housing that the UN has promoted (OHCHR 2009).
2. A lack of relevant data would be a critical challenge when operationalizing the concept of capability for housing. A similar challenge has existed for poverty/well-being measurements because existing surveys were not specifically designed to collect data on functionings or capabilities. This has forced researchers to work with second-best surveys (Robeyns 2006). This approach may also need to be taken in housing research while expanding the database.

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Appendix A. Survey questionnaires on financial literacy

Table A1. Survey questionnaires on financial literacy

Question 1. Suppose you have 100 euros on a savings account and the interest is 2% per year. How much do you think you will have on the savings account after five years, assuming that you leave all your money in this savings account: more than 102 euros, exactly 102 euros, less than 102 euros?

- 1 more than 102 euros
- 2 exactly 102 euros
- 3 less than 102 euros
- 4 I don't know
- 5 now
- 5 I would rather not say

Question 2. Suppose that the interest on your savings account is 1% per year and that inflation amounts to 2% per year. After 1 year, would you be able to buy more, exactly the same, or less than you could today with the money in that account?

- 1 more than today
- 2 exactly the same as today
- 3 less than today
- 4 I don't know
- 5 now
- 5 I would rather not say

Question 3. A share in a company usually offers a more certain return than an investment fund that only invests in shares.

- 1 true
- 2 not true
- 3 I don't know
- 4 now
- 4 I would rather not say

Question 4.

If the interest rate goes up, what should happen to bond prices?

- 1 they should increase
- 2 they should decrease
- 3 they should stay the same
- 4 none of the above
- 5 I don't know
- 6 now
- 6 I would rather not say

Source: CentERdata, Tilburg University, Netherlands, 2011

Note: For the indicator design in this article, respondents who correctly answered Question 1 and Question 2 were considered to have basic financial literacy.

Table B2. Counting-based assessment of inequality in conversion efficacy among subgroups.

	(1)	(2)	(3) <i>From basic economic means for housing to basic housing functioning</i>
	Have sufficient income for adequate housing	Have sufficient income for adequate housing <i>and</i> living in adequate housing	Conversion efficacy gaps = (2)/(1) – 1
Ideal score (i.e. no discrepancy)	–	–	0.000
Total	76.15 %	62.55 %	–0.179
Urbanization			
Extremely urban	69.77 %	51.70 %	–0.259
Very urban	76.80 %	62.45 %	–0.187
Moderately urban	75.79 %	63.98 %	–0.156
Slightly urban	78.02 %	66.69 %	–0.145
Not urban	77.84 %	62.77 %	–0.194
Tenure type			
Homeowners	83.73 %	72.42 %	–0.135
Tenants	51.66 %	30.71 %	–0.405
Age group (years)			
18–29	79.51 %	61.05 %	–0.232
30–64	80.04 %	66.38 %	–0.171
65+	52.21 %	46.77 %	–0.104
Household type			
Single household	40.80 %	31.30 %	–0.233
Multi-person household	83.34 %	69.69 %	–0.164
Single parent household	57.48 %	37.61 %	–0.346
Origins			
Dutch background	74.20 %	62.53 %	–0.157
Western background; 1st generation	65.84 %	53.42 %	–0.189
Western background; 2nd generation	74.01 %	59.91 %	–0.190
Non-Western background; 1st generation	66.67 %	38.02 %	–0.430
Non-Western background; 2nd generation	62.67 %	36.00 %	–0.426

Table B3. Degrees of simultaneous deprivations in housing situation by subgroups (%).

	(1)	(2)	(3)	(4)	(5)
	Number of simultaneous deprivations				
	None	One	Two	Three (Three +)	Four
Total	44.63	33.22	15.92	5.32	0.91
Urbanization					
Extremely urban	36.75	31.98	20.90	8.98	1.40
Very urban	45.91	32.65	16.10	4.64	0.71
Moderately urban	46.55	32.48	13.72	6.11	1.14
Slightly urban	46.69	34.24	14.82	3.38	0.86
Not urban	42.05	35.21	16.80	5.33	0.60
Tenure type					
Homeowners	52.81	33.38	11.21	2.45	0.15
Tenants	17.96	32.70	31.30	14.67	3.37
Age group (years)					
18–29	43.25	29.49	19.79	6.82	0.66
30–64	46.34	33.86	13.77	5.12	0.91
65+	38.02	35.32	21.26	4.59	0.81
Household type					
Single household	23.16	37.89	28.68	9.21	1.05
Multi-person household	49.57	32.48	13.34	4.12	0.49
Single parent household	24.86	35.26	20.23	13.58	6.07
Origins					
Dutch background	44.86	34.63	15.39	5.13 ^[1]	-
Western background; 1st generation	32.37	36.69	17.99	12.95 ^[1]	-
Western background; 2nd generation	40.10	32.18	21.78	5.94 ^[1]	-
Non-Western background; 1st generation	19.86	29.08	29.79	21.28 ^[1]	-
Non-Western background; 2nd generation	22.03	25.42	23.73	28.73 ^[1]	-

[1] The observations in Columns 4 and 5 were combined into “Three +” because the number of observations in Column 4 was very low so that the households and individuals had risks to be recognized