

The nexus of poverty and housing insecurity: Developing a Household Housing Insecurity Index (HHII)

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Abstract

The Sustainable Development Goals (SDGs) recognise poverty as one of the biggest challenges to the achievement of global development. Poverty is featured among the top challenges of the 21st century, which include ecological collapse, climate change, war, chemicals in the environment, food, disease and delusional thinking. The World Bank in its 2020 report titled “reversals of fortunes” acknowledges the reversals that are being experienced due to the covid-19 pandemic on the progress made in achieving SGD1. The relevance of poverty in developmental discourse cannot be over emphasised. But the question remains, is the nature of poverty really understood beyond the modelling and economic terminology and policy jargon? This question arises based on the gaps that appear in the conceptualisation and measurement of poverty. Crucial components of the poverty question are either left out or blatantly underrepresented. One of the important imperatives in the fight against poverty which is housing insecurity is almost entirely unaccounted for. Housing is top of the Maslow’s hierarchy of needs together with food, water, health etcetera, however, in the seventeen SDGs driving the 2030 global Agenda, housing security does not feature. This huge gap in global recognition of the most basic need, and the trifling literature on the same, prompted the focus of my research interest and the subsequent development of the measure to be discussed in this presentation. I make use of the metaphor of an animal with multiple heads to demonstrate that poverty is multifaceted, or has many heads. I make reference to a number of papers which I wrote, some with colleagues over the past 5 years and to existing literature, howbeit small, explicating the significance of housing insecurity and the nexus between poverty and housing insecurity. The presentation starts by shedding light on poverty as it is conceptualised in literature, and beyond that, the shortfalls in the understanding and hence policy around poverty in general. The Household Housing Insecurity Index (HHII) is then introduced, conceptualised and then a case is made for a clear calculation of the HHII. The presentation ends with policy implications that include the proposition of housing as a mixed good requiring government involvement in its market for the achievement of maximum social benefit in South Africa and globally.

Key Words: Poverty, Housing insecurity, Household Housing Insecurity Index (HHII) Unified measure, SDGs, Global agenda 2030

1. Introduction

The global economy continuously revises the list of priorities as new ones keep emerging. Poverty remains one of the most important challenges decades after it was recognised as a global

problem (World Bank, 2020a). The Sustainable development goals (SDGs)¹ recognises poverty as the most important issue for global development (United Nations, 2015a, 2018; UNDESA, 2017). Poverty is featured among the top challenges of the 21st century, side by side with issues such as ecological collapse, climate change, war, chemicals in the environment, food, disease and delusional thinking (Corporate finance institute, 2021, UN, 2021). Before the Covid-19 pandemic, more than 700 million people were living below the \$1.9/day globally (United Nations: Global Impact, 2021). When the multidimensional poverty index measure is used, 1.3 billion people were considered to be poor in 2020 (UNDP, 2020:3). By 2018 there were already indications that the pace at which poverty was being reduced had slowed down (World Bank, 2018a). Although there is no data to show the extent of the current state of poverty, it is anticipated that the Covid-19 pandemic has actually worsened an already complicated situation by the number of people that are now falling back below the poverty line of \$1.9/day (World Bank, 2020). Although there were big strides achieved in the fight against poverty especially in Asia and South America in the late 20th Century and early 21st century (World Bank, 2016b, 2018b), Sub-Saharan Africa was still experiencing a worsening picture (World Bank, 2016a, 2018b). The World Bank in its 2020 report (*reversals of fortunes*) acknowledged the reversals that have been, and continue to be experienced on the progress made in achieving SGD1 (World Bank, 2020a). The data presented by the World Bank shows that there are huge reversals in gains emanating mainly due to lessened economic activities globally, spurred by complete lockdowns that were implemented in 2020. A number of countries experienced recessions and high levels of unemployment, pushing millions of households below the poverty line (Han, Meyer and Sullivan, 2020; World Bank, 2020b).

The relevance of poverty in developmental research cannot be over emphasised. The World Bank report of 2018 (World Bank, 2018b) acknowledged that the gains that were made over the past decade were skewed with situations in sub-Saharan Africa showing worsening numbers as Asia and South America were making substantial gains (World Bank, 2018b). The fact that some parts of the global economy were experiencing improvements whilst others were simultaneously worsening, points to a misalignment in approaches to dealing with poverty, or a failure in the prescriptions emanating from a deficit in the understanding of the scourge (OECD, 2015; Mdluli and Dunga, 2021). The OECD (2015:1) eloquently articulated the gap by pointing out that “*Uneven progress reflects a fundamental weakness in current approaches to measuring poverty, influencing the targets chosen and the policies adopted*” The studies that we have conducted over the years have sought to uncover the failures that exist in the approaches to poverty alleviation policies (Dunga, 2014, 2017; Meyer

¹ SDGs replaced the MDGs which also had poverty alleviation as the number one goal.

and Dunga, 2014; Dunga and Grobler, 2017; Dunga and Grobler, 2018; Mdluli and Dunga, 2021). There is enough literature that shows that poverty is dynamic and hence the approaches cannot be static (Baulch and Hoddinott, 2000; Cappellari and Jenkins, 2002; Glewwe and Gibson, 2006). We therefore adopted the metaphor of an animal with multiple heads to simplify and visualise poverty and its multiple dimensions. This was informed by the understanding of the multifacetedness of poverty and hence the multidimensional approach required to tackle it (Dunga, 2019).

Poverty is a multidimensional phenomenon which has different dimensions of deprivations that breed into further deprivations (Dunga and Grobler, 2017; Dunga and Grobler, 2018). The World Bank reports that when poor people are asked in participatory studies on what makes them feel poor, they indicate a wide range of deprivations. These include, *“not having enough to eat; having inadequate housing material; being sick; having limited or no formal education; having no work; and living in unsafe neighbourhoods”* (World bank, 2020:43). This definition from ordinary people is the most accurate conceptualisation of poverty, way beyond the income measure of \$1.90/day or any adjusted amounts akin to countries relative poverty lines. The animal with multiple heads metaphor is based on this understanding and it presents poverty in such a way that policies to deal with poverty have to be related and exhaustive of the many heads/dimensions as each live head may breed life into the other associated heads (Dunga and W. C. J. Grobler, 2017; Mdluli and Dunga, 2021). It is on this wise that the *‘head’* of housing insecurity emanated as a separate focus within the wider poverty discourse. This paper therefore shows how poverty in general and housing insecurity in particular should be espoused in the policies so as to achieve lasting victory in the poverty alleviation fight. Thus we attempt to answer the following questions: what is the nature of poverty? How is housing insecurity and poverty linked? How can housing insecurity be conceptualized? How is it/ how can it be measured?

The rest of the paper is organised as follows, section 2 presents the literature review, starting with poverty to draw a wider picture. In section 3, the conceptualisation of housing insecurity laying the basis for the case for a unified measure of housing insecurity is provided. Section 4 presents the nexus of poverty and housing insecurity. The fifth section lays out a case for the unified measure of housing insecurity and a presents a detailed presentation of the Household Housing Insecurity Index (HHII). This is the first attempt to put together a unified measure that is not context dependent, and if adopted will cover a huge gap in the literature globally (UN-HABITAT, 2016; Cox *et al.*, 2017; Dunga and Grobler, 2017; Dunga and Grobler, 2018). Then the last section

will be the policy recommendation linked to the nexus of housing insecurity and the unified measure of housing insecurity.

2. Literature review on poverty and housing insecurity

There is a great deal of works done by pioneers across disciplines that we can for granted. A number of measures that are used in economics like, Consumer price index, Gross domestic product, multidimensional poverty index (MPI) among others, make analysis of phenomena associated with these, easy and manageable. The absence of these measures would have made research very difficult. The poverty phenomenon is still undergoing great innovations. The MPI by the Oxford poverty and Human Development Initiative (OPHI) is one such great initiative. This is in recognition that poverty in its essence is not an income only issue. Dunga (2019)echoing the Multidimensional nature of poverty championed by OPHI at the University of Oxford, argued that poverty in its broader sense incorporates a number of dimensions, which separately need to be understood if the poverty puzzle is to be solved. This is in agreement to wider recognition in the literature regarding the nature of poverty (Walker, 2015; World Bank, 2016b, 2018b; Alkire *et al.*, 2020; UNDP, 2020).There is enough agreement in the literature (Shinn *et al.*, 1998; Goldrick-Rab, Broton and Eisenberg, 2015; Grobler, 2015; World Bank, 2016b, 2018b; Frey *et al.*, 2017; UNDESA, 2017; Dunga, 2019) that the fight against poverty is being won on one side and lost on the other fronts, especially when data from sub-Saharan Africa is considered (World Bank, 2016b, 2018b, 2020a; Mdluli and Dunga, 2021). While other parts of the world have realised great success in helping households cross the \$1.9 per day threshold², questions persist as to whether that is enough. In other parts of the world, sub-Saharan Africa in particular, people are crossing the poverty threshold downwards, meaning that, there are increasing numbers of households that are now below the \$1.9 poverty line (Alkire, 2009; Alkire & Housseini, 2014; Dunga, 2014a; The World Bank, 2018;Han, Meyer and Sullivan, 2020; World Bank, 2020). Thus the poverty question is not being answered properly decades after it became top of the global agenda (UN, 2015).

As alluded to already in the previous sections, the poverty question can only be answered if all the relevant imperatives are clearly understood and defined. The measures of poverty widely used have concentrated on income, and have left out many other aspects that cannot be quantified in money terms. Food insecurity is one aspect that received enough attention in both its conceptualization and measurement (Ma, Gee and Kushel, 2008; Goldrick-Rab, Broton and Eisenberg, 2015; Grobler, 2015; Dunga and Dunga, 2017; Dunga and Grobler, 2017; Grobler and Dunga, 2019).

² This is before the Covid-19 pandemic; the post covid-19 situation is unknown as the pandemic is still ongoing.

Other dimensions like health, education and employment are more easily quantified. However, based on the definition of poverty by ordinary people alluded to in the introduction, other dimensions are inadequate housing material and unsafe neighbourhoods, which both point to the housing insecurity dimension. Thus, there is one important dimension of poverty which is almost left out in the measures and that is housing insecurity. The Oxford Poverty and Human Development Initiative (OPHI) attempted to include an aspect of housing insecurity in their multidimensional measure of poverty (Alkire, 2009; Alkire & Foster, 2013; Alkire & Housseini, 2014). However just like food insecurity, housing insecurity needs to be understood and hence properly measured if any strides are to be made in the effort to end poverty. Thus a deliberate effort was taken in our research to focus on housing insecurity so as to cover the gap in the poverty discourse. Housing insecurity has not received enough attention in the literature compared to poverty in general (Sen, 1976; World Bank, 2016a, 2018b, 2020a; Mncayi and Dunga, 2017; Grobler and Dunga, 2019; Alkire *et al.*, 2020; UNDP, 2020) (Sen, 1976; World Bank, 2016a, 2018b, 2020a) or aspects of poverty like food insecurity, for example, whose analysis is ubiquitous in the literature, (Arene, 2010; Broton & Goldrick-Rab, 2018; Dunga & Grobler, 2017; Grobler, 2015; Institute, 2016). Thus, a wide knowledge and literature around poverty notwithstanding, there remains misgivings in the practical approach to dealing with its (poverty's) causes and hence a gaping failure to eradicate it. In 1976, Sen pointed out the two important problem with the measurement of poverty and it was based on the failure of its conceptualisation. He then in an attempt to solve the problem identified two axioms; the monotonicity and the transfer axiom (Sen, 1976). So many years after Sen's publication these problems persist and now made even more complex. One such problem emanating from the complexity of poverty remains its conceptualisations and no wonder the disregard of housing as an important and integral part of the poverty puzzle.

There has been an increasing recognition of the importance of housing and how poverty can never be dealt with without simultaneously dealing with housing insecurity (Broton & Goldrick-Rab, 2018; Rauh, Landrigan, & Claudio, 2008). However, it is argued in this paper that there still remains a gap both in the conceptualisation and in measuring housing insecurity and this is also evident in the literature (Becker cutts et al., 2011; Dunga & Grobler, 2017, 2018; Insights, 2018; Ling, 2008; Mncayi and Dunga, 2017). There is need to come up with a clear measure of housing insecurity that is unified and applicable to any context. This paper which puts together a series of papers takes the first step to present a proposal for a basic measure of housing insecurity, based on the existing scales that have been used in similar constructs like food insecurity and life satisfaction (Ballard, Kepple, & Cafiero, 2013; Broton & Goldrick-Rab, 2018; Drimie & Casale, 2009; Weiser et al., 2015).

We start by explaining the metaphor of poverty as an animal with several heads. The poverty animal derives its strength and life from the several heads that have access to the society and can bite directly into the wellbeing of a household (Chen, 2015; Dunga and Grobler, 2017; Frey *et al.*, 2017). Each head has enough ability to support the other heads if they are injured or reduced in strength. The only way to kill the animal is to cut all the heads at the same time.

The importance of cutting all the heads at the same time comes from the resurrecting power that any single live head possesses. If for example four out of the five heads are cut off and only one head remains, that one head has the ability to allow the other four heads to come back again as it is able to bring a source of life to the seemingly defeated heads or in this case, components of poverty. This is in line with the multidimensional understanding of poverty, now with emphasis on all the dimensions and how they are able to erode gains in the other dimensions if left behind. Thus, all heads have to be destroyed and the animal dies. This understanding of poverty is the only way that poverty can be dealt with at a global level.

The SDGs as outlined in the 2030 global agenda (United Nations, 2015b), are but parts of the same animal, at least the first three goals and the eleventh goal with the focus of housing insecurity within its meaning. The SDGs even failed to articulate the housing insecurity problem. Goal number 11 which reads *Make cities and human settlements inclusive, safe, resilient and sustainable* (United Nations, 2015b), attempted to include housing in the agenda. The failure to articulate the problem of housing insecurity was a result of the absence of a clear definition and understanding of the problem as is clearly acknowledged in the literature that there is a gap in the literature on clear conceptualization of housing insecurity (Krieger and Higgins, 2002; Cutts *et al.*, 2011; Cox *et al.*, 2017; Dunga, 2019). The housing insecurity issue is actually not the entire goal 11 but is just a target within the goal. It is captured in the first target which states that *‘By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums’* (United Nations, 2015b). Thus the first target in the eleventh goal produces the greater need as it appears as head on the poverty animal.

3. Literature on Housing insecurity

Although there is still no clear consensus on the unified conceptualisation of housing insecurity (Cutts *et al.*, 2011; Cox *et al.*, 2017; Dunga and Grobler, 2018; Mncayi and Dunga, 2017), there is considerable convergence in the understanding of a working definition and hence moving towards a unified conceptualization of what it entails.

We documented in the 2017 and 2019 papers (Mncayi and Dunga, 2017:124; Dunga, 2019:39) that housing insecurity can be defined as a state in which a household does not have secure, stable and affordable housing. It may also be defined as a state of homelessness in its severe sense (Dunga & Grobler, 2017; Ling, 2008; Mncayi and Dunga, 2017). Other studies (Cutts et al., 2011) have defined housing more broadly as to mean all aspects that threaten stability. For example, the Department of Health and Human Services (USA) has defined housing insecurity as high housing costs in proportion to the household income, poor housing quality, (of which quality may be a range of things including the material used, and the basic necessities that are expected to be in a basic house in a particular context) unstable neighbourhoods, overcrowding, or homelessness (Cutts *et al.*, 2011). How much space an individual needs, so as to draw a line of crowding is also important in this sense.

Furthermore, the U.S. Department of Housing and Urban Development defines the extreme position of housing insecurity which is homelessness as firstly an individual who has no fixed, regular and adequate night-time place or residence; secondly an individual who has a primary night-time residence, whether public or privately operated, designed to them on a temporary basis; and thirdly an individual who is residing in an institution where they resided for 90 days or less and who resided in an emergency shelter or place not meant for human habitation immediately before entering that institution. (U.S. Department of Housing and Urban Development, 2016). Now this is a very broad and highly contextualised definition which makes assumptions that there are institutional accommodations available to such homeless people. This may apply to the US and other developed countries but not really for developing countries. Mercado (2017) in a study on food security and housing insecurity among students acknowledged that there is no uniform definition of housing insecurity. He however adopted the definition by Goldrick-Rab et al. (2015) which describes housing insecurity to include housing conditions along a spectrum where homelessness is the extreme point and is defined by the McKinney-Vento Homeless Assistance Act Subtitle VII-B (Wong *et al.*, 2009; McKinney_Vento, 2015) as lacking a fixed, regular, and adequate night-time residence-represents the extreme form of housing insecurity and unaffordable housing, poor housing quality, crowding, sharing housing with others, and frequent moves are other dimensions.

The understanding of housing insecurity has been taken for granted for years, however when one attempts to measure the actual phenomenon, it is clear that not much has been done in coming up with a nuanced and agreeable definition and hence measure of housing insecurity (Dunga, 2019). The fact that the definition is mouthful and long is an indication that a measure will be

absent. In order to be able to measure a variable, it has to be clearly defined with clear demarcations of where it starts and where it ends. Numerous studies have cited the absence and the need for a clear definition of housing security or insecurity (Aubry, Klodawsky & Coulombe, 2012; Dunga & Grobler, 2017; Frederick, Chwalek, Hughes, Karabanow, & Kidd, 2014; Mncayi & Dunga, 2017; Mncayi & Mdluli, 2018). Frederick et al. (2014:965) notes that housing stability or security remains poorly defined and conceptualised and hence in their study they opted for an in-depth qualitative approach. In their study they defined housing stability as “*the extent to which an individual’s customary access to housing of reasonable quality is secure* (Frederick et al., 2014:965).” Thus, based on that definition, they would have a way of measuring the extent of housing stability. However, in their definition, there exist subjective terms such as ‘*quality and reasonable*’, which would lead to a subjective measure of housing insecurity that cannot be comparable across different settings.

Be that as it may, Frederick et al. (2014) makes a very big contribution in that they suggest an 8-dimension measure, which entail: 1. housing type; 2. recent housing history; 3. current housing tenure; 4. financial status, 5. standing in the legal system; 6. education and employment status; 7. harmful substance use; and 8. subjective assessments of housing satisfaction and stability. One would argue that these 8 dimensions whilst relevant to housing security, they measure a *broader area beyond housing security*. Aubry et al. (2012) pointed out that housing security or stability is basically defined as the opposite of housing insecurity. They argued that housing insecurity should be considered as a continuum, thus it is not at all a dichotomous construct with the presence or absence of security, and hence it does not have a binary choice (Aubry, Klodawsky, Coulombe, 2012; Dunga & Grobler, 2018; Frederick et al., 2014). This thus requires an understanding of where the continuum starts and ends, which is reasonably possible, since homelessness is clearly the extreme point on the right and a stable housing should be the starting point on the left. Questions will however be, what is a stable housing? Thus, where the work lays in determining stability and then move from there with the risks that pushes a household through the stages to the extreme position of homelessness.

Understanding that housing insecurity lays on a continuum is fairly easy compared to agreeing on the definition of the starting point. A number of studies have shown that the definition of the starting point or the cut-off point are not applied uniformly across different contexts or studies (Brown, Ridgway, Antony, & Rogers, 1991; Frederick et al., 2014). Thus, if definitions are not the same then the measures used will be different. Evidently, a number of papers that have used housing insecurity are not in economics or around poverty, but are prominently in psychology and health sciences especially where concern is on the relationship between housing or homelessness

and health (Aubry, Klodawsky & Coulombe, 2012; Brown et al., 1991; Frederick et al., 2014). Those in economics and poverty studies that have used housing insecurity have agreed of the absence of a unified measure and have also resorted to using different proxies that are not similar (Orwin, Scott, & Arieira, 2003; Stephens & Leishman, 2017; Mncayi & Dunga, 2017). There are studies that have used a single measure to determine housing security which were suited to the availability of data for the particular study or basically for lack of a better measure. Some (e.g. Brown et al., 1991; Dunga & Grobler, 2018; Frederick et al., 2014; Orwin et al., 2003; Mncayi & Dunga, 2017) have used income spent on housing or stability of the house, or material of floor even material used in the construction of the walls. Housing type has also been used as a single measure where the type of housing for example single roomed apartment, living in a shelter, jail or group home also foster care or a friend's house are all considered as different categories that signal housing insecurity or level of instability (Frederick et al., 2014:966; Cutts et al., (2011) applied the definition of housing insecurity by the US Department of Health and Human Services. They divided their sample into three mutually exclusive groups according to their housing insecurity status, where families with no more than one move in the previous year and no indication of crowding were the referent securely housed group. Thus in this measure, only crowding and stability were considered as the main determining factors of housing insecurity. They defined the two insecurely housed groups on the basis of crowding and multiple moves in the previous year (Cutts et al., 2011:1510). It is clear from the literature that there is a great need for a unified measure of housing insecurity that can be used in any country under any condition. This will not only solve the housing insecurity measurement issue, but will also help paint a clearer picture of poverty.

4. The nexus of poverty and housing insecurity: the multiple head metaphor

The multiple heads metaphor of poverty makes it clear to understand the interconnectedness of poverty and housing insecurity. Poverty has housing insecurity in it (World Bank, 2020a), As alluded to in the definition by ordinary people, one cannot deal with poverty if the housing question is still unanswered. The UNDP (2020) report shows that using the MPI housing becomes an important imperative. A study by Dunga and Grobler (2017) found that there is usually a trade-off between food and housing when households are faced with meagre resources and forced to choose one between the two competing needs (Dunga and W. Grobler, 2017). There is therefore no way of dealing with poverty without simultaneously dealing with these coexisting manifestations of poverty, especially housing and food security. This explains the importance of the MPI championed by the OPHI (OECD, 2015; Walker, 2015; OPHI, 2018; Alkire *et al.*, 2020; UNDP, 2020; Mdluli and Dunga, 2021).

The vicious cycle continues especially if housing is ignored as it is also connected to the deprivations. The literature shows a number of consequences linked to poor housing. There are direct negative consequences of poor unsafe housing on health especially for children (Cutts *et al.*, 2011; Dunga and Grobler, 2017; Broton and Goldrick-Rab, 2018; Mncayi and Dunga, 2017). There are also trade-offs between housing and food in low income households (Dunga and Grobler, 2017). The absence of proper housing can also be linked to poor health outcomes (Ma, Gee and Kushel, 2008; Pollack *et al.*, 2008). Poor housing is also associated with low educational achievement in children (Broton and Goldrick-Rab, 2018). There is therefore enough evidence that poverty cannot be dealt with if the housing insecurity question is not answered. It is also very clear that in order to understand the extent of the housing insecurity dimension, we need to be able to measure it.

5. A case for a unified measure of housing insecurity and a proposed Household Housing Insecurity Index (HHII)

The housing insecurity phenomenon is completely unclear due to the absence of a clear unified measure that can be applied across contexts and be able to compare situations based on a similar measure and benchmark. The OPHI using material of housing as a measure reports that in 2020 1.03 billion people had substandard housing materials. This cannot be considered the state of housing insecurity as it only uses one component of what constitutes housing insecurity. Thus the following section presents a detailed proposal of a new unified measure of housing insecurity that is based on the important parameters that help to identify the position of a household on the continuum. As pointed in Dunga (2019), the development of a housing insecurity index needs to recognise the fact that housing is not a housing structure only, in it, is a multifaceted construct that goes beyond having a structure or not having one. Although housing insecurity is manifested in a physical structure, its insecurity requires considering a number of factors. In this paper we propose a range of components that need to be considered and how much they should weigh in the index calculation. The components are household income, number of people in a household (crowding), ownership of the structure, material used, stability of the housing, security of the neighbourhood, facilities and quality, family demographics and dependency ratio. Below we give a detailed explanation of how each component should be measured and weighed in the index.

5.1 Household Income

Income of a household is important in determining the housing insecurity of a household. The fact that different households may require different sizes and quality of housing makes income

important as it shows the vulnerability of the household by showing the households ability or inability to afford the housing they choose to occupy. Thus, the percentage of income spent on housing could be considered, where anything above 30% of the household total income should start to indicate vulnerability. We propose a score of 1 to 10 where 1 is someone owning and not paying anything towards the house, and a 10 for a household that spends more than 50% of their income on a mortgage or rent. The scores between 2 and 9 will be mathematically determined to represent the percentage between 1% and 50%. Thus any percentage between 50% and 100% will still yield a score of 10. It is anticipated that occurrences of spending more than 50% on housing will be uncommon.

5.2 Crowding

Crowding is also considered an important aspect of housing insecurity (Cutts *et al.*, 2011; Mncayi and Dunga, 2017). The US Department of Health and Human Services has highlighted crowding in their definition of housing insecurity. They pointed out that crowding is negatively associated with health status especially among children (Cutts *et al.*, 2011:1508). The number of people per square metre can therefore be used to determine if the house is crowded or not. Other studies have used the number of people in a household to proxy overcrowding (Briggs, 2013; Cutts, Meyer & Black, 2011; Dunga & Grobler, 2017; Evance, 2006; Mncayi & Dunga, 2017), however the weakness in that proxy is that a 10 membered household may appear overcrowded, but if the size of the house is not included then it is not possible to determine whether the household is overcrowded or not. Thus an estimated number of people per square meter using the housing floor area could be more accurate. This measure therefore includes the calculation of the square meters covered by the house and divide it by the number of people in the house, without considering age. Then a score will be assigned based on the weight associated with the square meters available to each individual in the house. With a lower score indicating enough floor space available and a higher score indicating crowding in the house. We make provisions for studies that would find the process of measuring the square meters difficult or impossible (such as online surveys). Thus a simplification would be allowable where households could be asked to score themselves on a scale of 1 to 10 where 1 means there is enough space for everyone, and 10 means the house is crowded. This will be a subjective score and hence it may vary based on people's affluence, however, it would simplify the requirement of working with floor measurements which may not be easy for everyone.

5.3 Ownership of the structure

The ownership of the structure and the land it stands on may be taken for granted in countries where property ownership laws are clear. In countries where there are high numbers of people in informal settlements, this may have great implications in scoring the ownership component of the index. In South Africa for example, there is currently a debate on land ownership and there are cases where people build houses on plots that have no proper title deeds. This may also signal insecurity since the owners of the structures are not guarantee of not being pushed out by ‘red ants’³ at some point. Thus a score for ownership needs to be developed where a high score indicates high risk (no ownership and title deed) and a 1 indicates ownership with title deeds. This is very relevant for countries like South Africa, Kenya, India and other developing countries with high levels of informal settlements(GSDRC, 2016)

5.4 Material of the structure

The material used in the construction of the house is relevant especially for houses in informal settlements where there are no structural requirements nor certification. This will also be scored on a 1 to 10 scale where 1 indicates that the structure meets the certified structural requirements and a 10 indicates a shack. In a study conducted using general household survey data in South Africa (Dunga & Grobler, 2017; Mncayi & Dunga, 2017) we considered material used in the construction of the structure and it was important in classifying the different categories of houses, where cardboards, corrugated iron sheets when used in the wall were an indication that it was an informal housing opposed to brick and concrete.

5.5 Stability of the housing

The stability of the household housing status is captured by how many times a household has moved houses within 24 months. A study by Cutts et al., (2011) used number of movements and overcrowding as the only measures of housing insecurity. We consider the movement to indicate instability. This could be due to evictions or failure to afford the rentals or mortgage. In the case where a household has moved once in the past 2 years, it may not indicate a serious vulnerability, however, anything above 3 movements within a period of 2 years is a sign of vulnerability to

³ The security company that is used in South Africa to push out people from illegally occupied land

housing insecurity. Hence this will be scored on a scale of 0 to 5, where the actual count will be entered as a score.

5.6 Security of the neighbourhood

Households will also be required to score the security of the neighbourhood on a scale of 1 to 10, where 1 indicates high level of safety and security from crime, noise and break-ins, and 10 indicates a high risk of noise, crime and break-ins. The household can also include pollution in the score, especially for households in industrial areas and cities.

5.7 Facilities (Amenities) and quality

The quality of the house and the facilities like plumbing and electricity will also be included in the index. A score of 0 to 10 is used where a 0 means the household lacks nothing, and a 1 means they lack one thing and a 10 means they lack more than 10 basic things. The questionnaire will list the items or facilities that will be considered in the scoring. Some example may include, electricity, indoor plumbing, floor, geyser, built in kitchen facilities like a stove or cooker, etc. The rationale behind these is that for instance, a house that does not have electricity, is going to use other sources of lighting at night and these may pose all sorts of risks.

5.8 Family demographics and the dependency ratio

The other aspect which is crucial is the dependency ratio, or the likelihood of having extended family living in the household. This is a likelihood; it may not necessarily be present but due to the existing family structure, one should be able to provide a subjective score and how that may easily affect the security of the household in terms of income available for housing, or crowding due to extended family.

6. The calculation of the HHII

A combination of the 8 components outlined above creates a more comprehensive all-encompassing measure of household housing insecurity that transcends contextual idiosyncrasies and presents a quantifiable measure that can facilitate policy formulation.

The mathematical presentation will therefore take a form of an index as follows

$$HHII = f(HI, Cr, OW, Mt, Stb, Ngb, Fac, FDem)$$

Where HHII is the Household Housing Insecurity Index, HI is household income score, Cr is the household crowding score, Ow is the ownership score, Mt, is the material used score, Stb, is the stability of the household score, Ngb is the neighbourhood security score, Fac is the quality of facilities score and FDem, is the family demographics score.

Thus the score for household i would be calculated as

$$HHII = \sum (\Omega_i w_i) / \sum w_i$$

$$HHII_i = \sum \text{Weighted score}_i / \text{Sum of weights}$$

If the weight for income is represented by the Greek Letter Omega (Ω), then the expressions becomes

$$HHII_i = \Omega(HI) + \sum \Omega_{2..8}(\text{Component})_{2..8} / \sum w_i$$

Where Ω_i will vary based on the assigned weight of the index component from the 2nd to the 8th when income is the 1st.

The application of the index becomes simple once the data on all the eight components that are used in the index calculation are available. The final score calculated for a household therefore falls on a continuum where the lowest score represents a household that is housing secure and the highest a homeless individual/household.

7. Policy implication

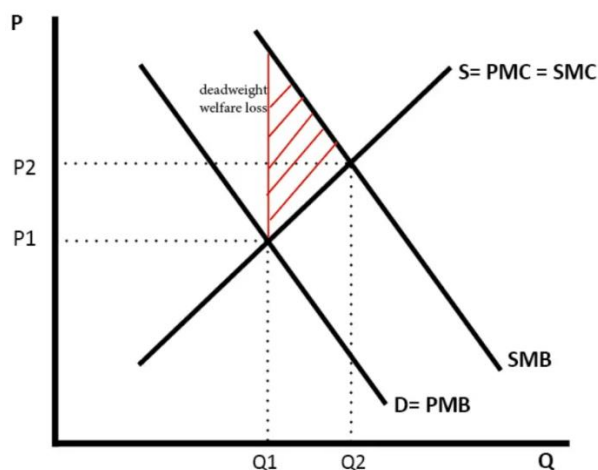
The absence of a clear measure of housing insecurity has over time created a vacuum in the understanding of this crucial component of the wider poverty discourse. Thus the introduction of a clear unified measure has far reaching implication in policy formulation that focuses on this specific deprivation. Ling (2008) in the Citizens for Public Justice (CPJ) report wrote for Canada that *'Canada's housing policy has been eroding over the years as support for a national housing program ended and annual spending by all levels of government declined since the early 1990s. Without a national housing strategy, the federal government deals with housing issues through a framework of crisis management and short-term solutions'* (Ling, 2008:1)

There is therefore a need to have a strategy that deals with core issues like income insecurity and housing affordability even for those that are seemingly above the poverty line. Affordable housing

cannot be left entirely to the private market. Just like health and education, these are mixed goods whose provision leads to public inefficiency as the social benefit is below optimal when left in the hands of the private market entirely.

The theoretical argument of government involvement in the housing market is rooted in the Social benefit theory. Housing just like education and health has positive externalities. Beyond the negative route that can easily be established in the absence of good housing or in housing insecurity, namely poor health, exposure to crime, trade-off with basics like food and education. The externality can be established also from the availability of housing security and its positive consequences, hence a higher social benefit. All goods that have a positive externality result in an inefficient provision if left entirely to the private market mechanism.

Thus in theory, the provision of housing follows the same understanding of having private benefit, and public benefit.



In this case, the social marginal benefit (SMB) of consumption is greater than the private marginal benefit (PMB). An obvious example would be education, which has numerous positive externalities.

In a free market, consumption will be at Q1 because demand = supply (private benefit = private cost)

However, this is socially inefficient because at Q1, social marginal cost (SMC) < social marginal benefit (SMB). Therefore, there is under-consumption of the positive externality.

Social efficiency would occur at Q2 where social cost = social benefit.

For example, in a free market without government intervention, there would be an under-consumption of housing just like in other mixed goods.

We argue therefore that for any meaningful intervention to take place there is a need for an issue need to be understood and quantified properly.

8. Conclusion

This paper has presented the nexus of poverty and housing insecurity with a detailed discussion of a multidimensional measure of housing insecurity. The contention being that, poverty remains a puzzle if the different aspects of its configuration are not clearly understood. Thus household housing insecurity builds up to the housing insecurity profile at the macro level, and only when the issue is properly understood and quantified will there be policies that are targeted enough to address the deprivation. It is argued that housing insecurity is an important head of the poverty animal, and can never be left out both in the conceptualization and measurement of poverty. It is further argued that housing should be considered as a mixed good with positive externalities when it is secure and negative externalities when it is insecure and that government intervention in that market is justified to achieve maximum social benefit.

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