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Housing and Happiness: an empirical study

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Statement of contribution

Chapter 8 was co-authored with Prof. David Clapham and Dr. Tommaso Gabrieli. Their contribution included guidance and insight of both theoretical and empirical nature. The development of the conceptual framework, the formation of the hypotheses, and all the empirical work was carried out by myself. Approximately 90 percent of the chapter can be attributed to me. Both co-authors agree with the above statement.

Declaration: I confirm that this is my own work and the use of all materials from other sources has been properly and fully acknowledge

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Abstract

This thesis empirically examines the relationship between housing and happiness, and in particular, how this relationship is affected by adaptation and social status. Standard economic theory assumes housing preferences are constructed independently of past experience and social context. Using fixed effect regressions on the British Household Panel Study (BHPS) and the German Socio Economic Panel Study (GSOEP), this thesis challenges this assumption.

Chapter 2 outlines why happiness is important. Chapter 3 traces the role of happiness in economics over time, showing the limitations of choice behaviour as a measure of happiness. Chapter 4 advances an alternative way of measuring happiness adopted in this thesis; subjective judgements. Chapter 5 reviews the literature on housing and happiness, adaptation and social status.

The next three empirical chapters represent the main contribution of this thesis. In terms of adaptation, Chapter 6 shows that moving to "larger accommodation" increases housing satisfaction, but this uplift diminishes post-move. Chapter 7 demonstrates that current space preferences are affected by the level of living space experienced in the previous year.

In terms of social comparisons, Chapter 7 also demonstrates that space preferences are affected by regional and national levels of living space, implying house size is a positional good. Chapter 8 conceptualises home-ownership (in the UK) as a social norm and positional good, and demonstrates that, consistent with this hypothesis, a strengthening of relevant others' home-ownership values is associated with increases (decreases) in the happiness of home-owners (renters), while an increase in relevant others' home-ownership rates decreases the life satisfaction of owners.

Chapter 9 discusses the main empirical findings and concludes by operationalising Sen's capabilities approach as a means to translating the empirical finding into some housing policy recommendations.

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1. INTRODUCTION

This thesis is concerned with empirically examining the relationship between housing and happiness. This relationship has typically been assumed by standard economic theory (and beyond) to take the following form: individuals have certain preferences – preference for a garden, or detached home- which when met, leads to an increase in happiness. The objective of policy should therefore be to satisfy these preferences insofar as possible – through maximising incomes, increasing the supply of housing etc. – thus producing the greatest happiness for the greatest number. The fact that this logic sounds like common sense is tribute to its intuitive appeal and influence on public discourse. Through explicitly examining the relationship between housing and happiness, the main contribution of this thesis is to complicate this logic; first (and foremost) through demonstrating that individuals are concerned about their *relative* as well as absolute housing conditions, and second through showing that individuals *adapt* over time to changes in living conditions.

If individuals were rational happiness maximisers, there would be no need to explicitly examine this relationship between housing and happiness, as we could simply assume that an individual's choices optimised their happiness; what individuals prefer, also makes them happier. It is now well established though, that individuals are not always capable of maximising their happiness, nor are they necessarily motivated to do so. As humans, we are subject to an array of biases which impair our ability to make the 'optimal' decisions. Furthermore, people are motivated to pursue values other than their own happiness. That people take the time and effort to vote (often in the knowledge that their vote will have no effect on the outcome) indicates that they are not purely self-serving egotists as standard economic theory would have us believe (Boudon, 2003).

In Chapter 3, I show that the founders of modern economics recognised this flaw. Francis Edgeworth (1881: 104), for instance, argued that "the concrete nineteenth century man is for the most part an impure egoist, a mixed utilitarian". For them, people's decisions (or choice behaviour) were an imperfect indicator of their happiness, but could act as a stepping stone to the ultimate goal (envisioned most notably by Jeremy Bentham) of measuring happiness directly. Over the following two centuries, however, economists increasingly lost hope in the idea that happiness could be measured, while gaining faith in the (false) assumption that individuals were rational happiness maximisers. I argue that this shift in mainstream economic opinion was a mistake.

In Chapter 4, I argue that happiness can, in fact, be measured, or at least approximated. In this thesis, I rely on subjective indicators of happiness. That is, I assume happiness can be measured

by asking people how happy they are. In Chapter 4, I discuss the various obstacles that one faces in defending this assumption, and conclude that while these are problematic, they are not insurmountable. One particular problem involves defining happiness. The minimum requirement of any definition of happiness is that it should "ring true" with popular and considered conceptions of happiness. Otherwise, we cease to be talking about happiness, but are instead talking about something else. Different people, however, understand happiness in different ways. For some, it is meaning and purpose; for others, the presence of positive affect (e.g. joy) and the absence of negative affect (e.g. pain). The crucial point that Chapter 4 aims to emphasise, is that because these definitions of happiness are correlated (i.e. an individual who is happy according to one definition is also likely to be happy according to another), we do not need to agree on one definition in order to approximate the effect of different variables, such as housing, on happiness.

In Chapter 5, I review the existing empirical literature on housing and happiness. Housing is a multi-dimensional good, meeting needs for shelter, physical security, self-identity and social status. Each of these dimensions affect happiness in different ways. Furthermore, the importance of these dimensions will differ depending on the socio-demographic group in question. I hypothesise in particular, that the importance of housing as source of social status and self-identity will differ according to both gender and tenure. Chapter 5 then goes onto review the literature on adaptation and social comparisons, thus setting the scene for the empirical chapters that follow.

The major original contribution of this thesis, starting from Chapter 6 onwards, is to highlight the role of adaptation and social context in the relationship between housing and happiness. According to standard economic theory, individual preferences are independent of social context and past experience. In this thesis, I provide considerable evidence to suggest this is not the case. To do so, I draw heavily on the literature relating to the Easterlin Paradox. In 1974, Richard Easterlin found quite astonishingly that in developed nations, national rises in GDP/capita over time have not translated into increases in self-reported happiness. This contradicts standard economic theory, which states that an increase in national income per capita should allow more people to meet more preferences, thus increasing societal levels of happiness. Two theories have been advanced to explain this phenomenon; both of which contradict standard economic theory.

First, according to adaptation, an increase in income may lead to an initial increase in happiness, but as individuals adapt, this initial increase diminishes over time. The second explanation is related to social status. Beyond a certain income, people are not concerned with being rich, but with the social status associated with being richer than (or, as rich as) other people. Therefore, if

everyone's income rises together, then the national stock of social status will, by definition, remain the same, and so will average levels of happiness.

The idea that being a home-owner, or having a big house, carries social status, and this social status has a positive impact on individual happiness has strong intuitive appeal. So too, does the idea that someone living in a mansion will expect a higher level of living space than someone living in homeless shelter. Yet standard economic theory rejects these arguments. The main contribution of this thesis, and Chapters 6 to 8 in particular, is to demonstrate that our housing preferences (in relation to house size and housing tenure) are affected both by our past experience and by the people we interact with; our 'relevant others'.

A short note on data. All the empirical work is based on panel data from the UK (British Household Panel Study - BHPS) and Germany (German Socio-Economic Panel Study – GSOEP). Panel data is useful as it allows us to look at how changes in an individual's housing conditions from one year to the next relate to changes in their happiness from one year to the next. In other words, it means we can look at the effect of 'within individual changes', allowing us to control for those variables which do not vary over time such as (a certain proportion of) personality. I chose UK and Germany for several reasons, but mostly because of these datasets, which are the two most extensive socio-economics panel datasets in the world.

In Chapters 6 and 7, I test for the effect of social comparisons and adaptation in the relationship between house size and happiness. In terms of adaptation, Chapter 6 shows that while moving to "larger accommodation" leads to an initial uplift in housing satisfaction (and life satisfaction in the case of German men), this uplift diminishes over the following years post-move. Similarly, Chapter 7 demonstrates that the level of living space that an individual considers adequate depends on the level of living space they experienced the previous year: an individual who upsized to a certain house is less likely to report a shortage of space than an individual who downsized to the same sized house. Taken together, these findings support the aspiration spiral theory of adaptation; experiencing higher levels of living space leads 'upsizers' to consciously ratchet their space preferences upwards, meaning their post-move increase in housing satisfaction/happiness diminishes over time.

In Chapter 7, I also demonstrate that the level of living space an individual considers adequate depends on the level of space their 'relevant others' have. The idea that individuals are concerned about the size of their house relative to other people has been recognised by many prominent economists including Karl Marx and Robert Frank. Yet few housing economists have empirically examined the effect of status on housing market behaviour, or the policy

implications that flow from understanding housing as a *positional good*. The primary contribution of this thesis, above all else, is to address this deficiency in the literature.

Social context is important because it determines an individual's status in society. Across the social sciences, it is overwhelmingly accepted that people are concerned with their status or social rank. One determinant of status is relative wealth. Relative wealth signifies one's ability (Frank, 2013) and power over others (Csikszentmihalyi and Rochberg-Halton, 1981). As the largest and most expensive physical object that individuals consume, the house is a highly visible (and effective) indicator of one's relative wealth. In this thesis, I therefore argue that house size is likely to be a positional good, defined by Robert Frank (1985) as a good whose utility depends strongly on the consumption of others. Consistent with this argument, Chapter 7 demonstrates that if levels of living space increase among people in the same region and the same country, then an individual who stays in the same house is more likely to report a shortage of space. Individuals are not only concerned with having more space, but with having more space than (or as much space as) other people.

In Chapter 8, I turn from house size to housing tenure. In addition to relative wealth, one's social status is also affected by the extent to which one 'acts normal'. Getting married, being heterosexual and being employed are all *social norms.* Societies maintain social norms through imposing negative sanctions (e.g. ostracisation or shame) on those who deviate, and/or positive sanctions on those who conform (e.g. inclusion or pride). In the UK, for instance, there are various derogatory terms (e.g. 'spinster', 'scrounger') that society uses to denigrate those who deviate. In Chapter 8, I argue that home-ownership is both a social norm and a positional good. Home-ownership signals one is 'normal', as well as signalling that one is of a higher relative wealth than renters. As such, the relationship between housing tenure and happiness not only depends on the home-ownership consumption of others, as implied by the positional good theory, but also the importance that relevant others attach to home-ownership; the higher the degree of importance that one's friends and family attach to being a home-owner, the greater the sanctions associated with deviating from (or conforming to) the social norm of home-ownership. The findings from Chapter 8 support this argument. Running fixed effects regressions on three waves of the British Household Panel Study, I find that a strengthening of relevant others' home-ownership values is associated with increases (decreases) in the happiness of home-owners (renters), while an increase in relevant others' home-ownership consumption decreases the life satisfaction of owners (but has no effect for renters).

I then use Chapter 9 to discuss the most pertinent findings from the previous three empirical chapters. A note here about how the thesis is structured. The three empirical chapters were not written in the order that they are presented, which has led to some apparent inconsistencies. For

example, the methodology in Chapter 8 was not designed in light of the findings from Chapter 7, as they were written in reverse order. Furthermore, the three empirical chapters originally took the form of three stand-alone empirical papers. In order to integrate these three chapters, and understand how their findings relate to each other, I discuss all of the most pertinent empirical findings together in Chapter 9. To avoid repetition, I therefore limit the discussion in the each of the three empirical chapters to those findings which are only of specific relevance to the chapter in question.

As noted, the main contribution of this thesis is to examine social comparisons and adaptation in the context of the relationship between housing and happiness. The discussion and conclusion in chapter 9 is therefore centred on these two phenomena. In terms of social comparisons, I argue that if house size is a positional good, then increasing the supply of housing is likely to have a weaker effect on societal levels of happiness than standard economic theory predicts because individual happiness depends on relative as well as absolute house size. If house size is a positional good, it is also likely to be subject to a positional arms race, whereby, in order to 'keep up with the Jones', individuals spend increasing proportions of their income on those goods which determine their social status; positional goods. Robert Frank argues in the US context, that 'positional arms races' have been accelerated by rising levels of income inequality. With a greater share of the income, the rich build bigger to increase their social status. In doing so, they increase the cost of adequate for those with slightly smaller incomes, who travel in overlapping social circles. The near-rich respond by building bigger houses as well, which shifts the frame of reference for others just below them, and so on, all the way down the income ladder. If an individual want to compete in the positional arms race and maintain their social status, they will either need to incur higher levels of debt, or spend less on those non-positional goods which do little to determine one's social status, such as commuting longer distances.

In a similar vein, if a substantial proportion of the effect of home-ownership on happiness operates *through* social status (as opposed to security, identity or control) then the case for increasing home-ownership rates is weaker, as for every home-owner that benefits from being 'normal', other renters pay the price for being 'abnormal'. Similarly, for every home-buyer that benefits from an increase in status, others pay the price in the form of lower status. In studying the relationship between housing and happiness, it is important that we understand the extent to which this relationship operates *through* social status.

Similarly, researchers must not simply assume that the effect of housing on happiness stays constant over time. Individuals adapt, and they adapt to some things more than others. Stutzer and Frey (2008) find that people who commute longer distances report lower levels of life satisfaction. One explanation for this 'commuting paradox' is that individuals trade-off a longer

commute for a larger/better house (perhaps in order to maintain their social status) but while they adapt to the larger house, they do not adapt to the longer commute. This thesis' findings support this explanation.

I conclude this thesis by translating my findings into policy recommendations. If happiness were the only thing that mattered, as utilitarianism – the official philosophy of welfare economics – indicates, then this would be a relatively simple task. However, as the following chapter argues, there are other self-evident goods (e.g. liberty and equality) which individuals value, and have good reason to value. Therefore, while understanding the relationship between housing and happiness is of great importance, happiness is not the sole criterion on which the efficacy of housing policy should be judged. Thus one major limitation of this thesis is that it *only* examines the effect of housing on happiness.

To address this limitation, I use the capabilities approach as a lens through which to translate the findings of this thesis into some tentative policy recommendations. The capability approach accounts for the plurality of self-evident goods by defining justice in terms of the effective freedoms that people have to pursue those objectives they have reason to value; their capabilities. While the capabilities approach represents a more holistic and palatable idea of justice than any alternative, it is notoriously difficult to operationalise, leading John Rawls (1999: 13) to label it "an unworkable idea". One of the main obstacles lies in specifying a list of capabilities, and deciding on the weights that should be attached to various capabilities. In the following chapter, I outline how research into the determinants of happiness – such as this thesis – can be used to inform the specification of capabilities and their respective weightings, and can thus go some way to overcoming this obstacle. I then use this conceptual framework in the concluding chapter to consider what a more just housing policy may look like in the context of this thesis' empirical findings on housing, happiness, adaptation and social status.

A final note on terminology. As Angner (2005) notes, the task of research into happiness is complicated by the fact that many psychologists and economists are remarkably unclear on what they mean by terms like "happiness", "welfare", "well-being", or "subjective well-being", and frequently use them interchangeably. In this thesis, I opt for the term happiness, as it makes clear that I am referring to a broadly defined psychological state. Other terms are, in my opinion, either too narrow or too vague. Too narrow in the case of "subjective well-being" which, as Chapter 4 discusses, refers to a particular conception of happiness, which this thesis seeks to move beyond; and too broad in the case of "well-being" which is often used to refer to something other than a psychological state (e.g. as preference fulfilment, opulence, or free choice – Gasper 2007a)

1.1. Research design

Over the course of the three or so years of undertaking this thesis, the research design – that is, the research questions asked, and the methods adopted to answer them – shifted and turned as potential avenues for research were explored and obstacles encountered. In this section, I want to briefly discuss, in something resembling chronological order, how I arrived at the thesis the reader finds in front of them, in the hope of shining a light on some of these avenues and obstacles, and providing some insight into why the thesis takes on the form that it does.

In the initial research proposal for this thesis- written way back in April 2013- my primary research questions were "*Is there a significant relationship between housing tenure and levels of reported happiness in the UK? If so, how and why is there such a relationship?*". Thus, upon starting this PhD, my research was focussed squarely on the effect of *tenure* on happiness. In terms of research design, my intention was to use quantitative research methods on a range of different national datasets, with an emphasis on the UK in particular. Since that point, the thesis has become broader in terms of content – incorporating theories of adaptation and social status, for instance – but narrower in terms of the data and methodology used, which is limited to fixed effects analysis of two national panel datasets.

This narrowing down of data and methodology can, I think, be largely attributed to an appreciation of the difficulties of attributing causality in 'happiness economics' research, and a deeper understanding of econometrics more generally (as discussed in Section 6.3.). As I delved into the 'happiness economics' literature, I realised that the vast majority of high quality publications adopted fixed effect regression models, looking at how changes in an individual's independent variables (e.g. income) from one year to the next, were related to changes in that same individual's happiness from one year to the next. The primary attraction of this methodology, as became clear through studying econometrics, is that it allows us to control for those time-invariant *unobservables* (e.g. personality) which would otherwise be likely to confound our results. However, to use fixed effect models, we need data on the same individuals over time; panel data (or 'longitudinal data'). The British Household Panel Study (BHPS) and German Socio-Economic Panel (GSOEP) are two of only a handful of national panel datasets with housing variables, and sufficiently large sample sizes, and it is primarily for these reasons (and those listed in section 5.7.) that the methodology of this thesis is limited to fixed effect regressions on these two datatsets.

At the same time as narrowing down the data and methodology, I also broadened out the scope of the thesis in terms of the literature reviewed and the research questions posed. Initially, I had intended to focus on the effect of housing tenure alone, but within a few months of starting the

thesis, it became clear that several other studies had already examined this relationship (e.g. Zumbro, 2014), and that other aspects of housing had received comparatively less attention in the 'happiness economics' literature (e.g. house size). I therefore decided quite early on to examine several different aspects of the broad relationship between housing and happiness.

The first aspect I decided to examine was the relationship between house size and happiness (what is now Chapter 6). It was through this paper that my interest in adaptation and social status really grew, as it became clear that the effect of size of living space on happiness, for a particular individual, would depend on the level of space that that individual's relevant others had, and the level of space that that individual had experienced in the past. Understanding how these two topics, or phenomena, influence the relationship between housing and happiness was the primary motivation for the remainder of the thesis.

From here, the thesis took a detour. In the above paper, it emerged that the relationship between size of living space and happiness differed according to gender, which prompted me to consider in more detail how and why the importance of housing (as a life domain) to happiness may differ between men and women. This detour is evident in section 5.2. , in which I develop three theoretical pathways through which housing may become more important to women than men. I did seek to test these three pathways empirically (through using the "importance of housing" variable in Table 1) but the data was old (1990-1998) and did not allow for a very rigorous empirical strategy, so I did not end up pursuing this line of research any further

Instead, I turned my attention back to social status and adaptation. First, in terms of the relationship between housing tenure and happiness, which I hypothesised to be mediated by social status; and second, in terms of how individual space (or 'house size') preferences depend on both the level of living space an individual has experienced in the past, and on the level of living space among relevant others. Together with Chapters 6 and 7, these represent the main (empirical) contribution of this thesis.

A more minor (theoretical) contribution of this thesis is to operationalise Sen's capabilities approach in the context of housing. It was only in the last 6 months of writing the thesis (from June 2016) that I decided to introduce the capabilities approach. Until then, the thesis had only been concerned with happiness. However, through my reading of Sen (and *Idea of Justice*, in particular), I came to realise that utilitarianism was severely limited as an idea (or 'theory') of justice, and that there was a danger that this thesis' findings would be interpreted through a utilitarian lens – even if only implicitly. I therefore decided to bookend the thesis with a discussion about why happiness was one of several self-evident goods (Chapter 2), and a section (Section 9.3.) about how the capabilities approach might be operationalised to translate findings

on the relationship between housing and happiness into a more just housing policy, given this plurality of self-evident goods to which this thesis now turns.

2. HAPPINESS AND THE CAPABILITIES APPROACH

2.1. The problems with utilitarianism

> "No morality could easily accept some of the apparent consequences of utilitarianism. And yet no attractive morality could avoid giving happiness and misery a central place." Johnathan Glover, 1990: 4.

To make policy recommendations – as this thesis later seeks to do- we must adopt a particular idea, or theory, of justice. That is, we must define *progress*. For utilitarians, progress is measured by happiness, and happiness alone: an act is to be judged moral or immoral based on whether it makes society more or less happy. In this chapter, I argue that while happiness is of fundamental importance, and therefore deserves to be the focus of this thesis, it cannot be directly equated to justice or progress, as there are other goods, such as equality and liberty, that should be valued not only as a means to happiness but also *in themselves*

Perhaps due to its simplicity, utilitarianism has been adopted as the "official" philosophy of welfare economics (Sen, 2009). Even if few economists today openly admit to being utilitarian, utilitarian assumptions underlie many policy prescriptions. For example, the "Golden Rules" used by macro-economists are implicitly utilitarian (Atkinson, 1999). In its most basic formulation, utilitarianism holds that the best moral action is the one that maximizes utility, and an act is to be judged moral or immoral based on whether it made society more or less happy. John Stuart Mill (1861), who was Jeremy Bentham's tutee, described (Bentham's) utilitarianism as;

> "The creed which accepts as the foundation of morals, Utility, or the Greatest-Happiness Principle, holds that actions are right in proportion as they tend to promote happiness, wrong as they tend to produce the reverse of happiness. By happiness is intended pleasure, and the absence of pain; by unhappiness, pain, and the privation of pleasure."

One of the most prominent modern day utilitarians is the economist, Richard Layard. In his book, "Happiness", he states that "(Bentham) proposed that all laws and all actions should aim at producing the greatest possible happiness.... I believe that Bentham's idea was right and that we should fearlessly adopt it and apply it to our lives" (Layard 2005: 111-112). Later on, Layard specifies that the principle holds not only in private life but also for public policy (Layard 2005: 115). Andrew Oswald (1997), another major economist, makes a similar point when he writes: "The relevance of economic performance is that it may be a means to an end. That end is ... the enrichment of mankind's feeling of well-being. Economic things matter only

in so far as they make people happier" (Oswald 1997: 1815). In making the above statements, Layard and Oswald both subscribe to utilitarianism.

Part of the attraction of utilitarianism is that it claims to replace seemingly arbitrary rules with a morality with a single coherent basis. Happiness is the only thing that is good in itself. Unhappiness is the only thing that is bad in itself. If Roman spectators derived enough pleasure from seeing Christians thrown to the lions in the Coliseum, then this violent practice would be morally justified. Utilitarianism, however, is a flawed philosophy for several reasons. In this thesis, I only summarise the main criticisms, but these are detailed more comprehensively by Sen (1979) and Williams (1973).

Richard Layard justifies utilitarianism on the basis that "Happiness is that ultimate goal because, unlike all other goals, it is self-evidently good" (2005: 113). But as Sen (2009) notes, the claim that nothing else matters – not liberty, not equality, not fraternity – may not resonate with the way people think about what is self-evidently good. It would not have resonated with leaders of the French revolution ("Liberté, égalité, fraternité"), nor would it resonate with libertarians (e.g. Robert Nozick) or economic egalitarians (e.g Ronald Dworkin) who are exclusively concerned with liberty and economic equality, respectively. People have good reason to be interested in many other things apart from happiness such as the freedoms that they enjoy, the rights that are fulfilled (rather than violated), and the actual opportunities in society that are available to them (Sen, 2009).

Some of the unacceptable features of utilitarianism can be traced to its general character as a form of consequentialism (Williams, 1973). Consequentialist philosophies hold that the morality of acts should be judged right or wrong only according to their consequences (which in the case of utilitarianism, is happiness). They contrast with deontological philosophies - epitomised by the call of Ferdinand I, the Holy Roman Emperor, to 'Let justice be done, though the world will perish' - which concentrate entirely on processes, including individual duties and responsibilities. The problem with consequentialist philosophies is that they do not allow for the fact that certain acts may be fundamentally moral or immoral, regardless of their consequences. This neglect applies strongly to freedoms, including both positive freedoms (e.g. the freedom to have an education, the freedom to be housed), and negative freedoms which demand the absence of intrusive interference by others, including the state (e.g. right to personal liberties, including life).

Making moral judgements purely on the basis of happiness can also be deeply unfair to those who are persistently deprived. As this thesis will demonstrate, people adapt to changes in life circumstances, and people base their expectations on those around them. But if the homeless

adapt to their life on the streets - and Biswas-Diener and Diener (2001) present evidence to suggest that in some contexts, this may be the case - then does this relieve a relatively affluent society from any responsibility to offer these people homes? And if those living in vastly over-crowded and unhealthy housing conditions judge their housing adequate because their family, friends and neighbours are living in similar conditions, then is such a state of affairs just when other parts of society are residing in lavish mansions? Any theory of justice that answers 'yes' to these questions – as utilitarianism does- would not appear to account for the goods that individuals value, and have reason to value. To overlook disadvantage merely because people are able to build a little joy in their lives is hardly an attractive way to understand social justice.

Once we accept that happiness is not the only self-evident good, then it becomes (humanly) impossible to construct a transcendental theory of justice. In other words, it is impossible to define a state of affairs which is *most* just because different self-evident goods clash. Sen (2009) illustrates the problem with an example where you have to decide which of the three children – Anne, Bob and Carla- should get the flute. Anne claims the flute on the grounds that she is the only one of the three who knows how to play it. Bob speaks up, and argues that he should have the flute, as he is the poorest of the three, and has no toys of his own. In an alternative scenario, it is Carla who speaks up. She points out that she has been working diligently for months to make the flute, with her own labour (the others confirm this), and 'just then', she complains, 'these expropriators came along to try to grab the flute away from me'. Hearing all three arguments, a libertarian would give the flute to Carlo, citing a person's right to have what they produced themselves. An economic egalitarian would give it to Bob, so as to reduce the gap in people's means. A utilitarian would likely give it to Anne, as she is the only one who can play the flute. The crucial point is that all three claims have serious arguments in favour of them. They all point to a different type of impartial and non-arbitrary reason. We may not be able to identify, without some arbitrariness, any of the alternative arguments that should be the one to invariably prevail. As Adam Phillips (2006) summarises, "because there is never only one good that we seek, there will always be conflict"

Just because we cannot define a perfectly just society does not mean we cannot argue one society, or state of affairs, is more just than others. One does not need to know what a perfectly just society would look like to assert that the abolition of slavery made for a more just society, or that Sweden is a more just society than Saudi Arabia. While there is no one thing the good life is bound to be, to paraphrase John Gray (2002), there are many things it is not.

2.2. Happiness and the capability approach

To account for the plurality of values, or 'information spaces', that judgements of progress should be based on, Sen and Nussbaum have advanced the capabilities (or capability) approach.

The core claim of the capability approach is that judgements about justice or equality, or the level of development of a community or country, should not focus primarily on resources (like welfare economics does), or on people's mental states (as utilitarianism does), but rather on the effective opportunities that people have to lead the lives they have reason to value – their capabilities (Robeyns, 2006). In the remainder of this chapter, I outline different variants of the capability approach, before homing in on Amartya Sen's approach. In the concluding chapter of this thesis, I then attempt to operationalise Sen's capability approach, to translate the empirical findings of this thesis on the determinants of happiness into some tentative policy recommendations.

The capability approach makes a distinction between people's *functionings* (the actions or experiences that people have reason to value) and their *capabilities* (their effective opportunities to achieve these functionings). It is generally thought that policy should focus on enhancing people's capabilities, so as to provide a range of possible ways of life, and avoid imposing a particular notion of the good life on an individual.

The capability approach comes in a variety of forms (see Robeyns, 2006 for review), partly because of the wide scope of the approach, and partly because the approach is radically underspecified. Therefore, it is better understood as a paradigm rather than one coherent idea of justice. One key challenge associated with adopting the capabilities approach lies in deciding on a valid set of functionings that people should be given the capabilities to achieve: which lives do individuals value, and have reason to value? At this juncture, the two main versions of the capabilities approach – Sen vs Nussbaum – diverge.

Nussbaum draws on the work of Aristotle to devise a "humble and open-ended" list of capabilities which she groups under ten "central human capabilities" which are moral entitlements of every human being (e.g. Nussbaum, 2001). On the other hand, Sen and others object to drawing up an exact list of capabilities, on the basis that specification and weighting of various capabilities should be left to the ethical and political considerations of each society based on public reasoning (Sen, 1993, 2004).

It is Sen's more liberal approach that I want to adapt for the purpose of this thesis. Although Sen refrains from explicitly drawing up a list of capabilities; implicitly, he is less liberal recognising that there are *basic capabilities* – being healthy, well-nourished and educated - which should be universal (education is considered a basic capability here partly because reasoning and self-scrutiny are a prerequisite for autonomous happiness assessment) (e.g., Anand and Sen, 2000: 85). Sen justifies taking this step by contending that such basic capabilities would always get

democratic support, so guaranteeing them will not conflict with people's wants, but this is not what history tells us (Gasper, 2007b). Thus, most interpretations of the capability approach, including Sen's, start with a basic set of centrally important functionings and the corresponding basic capabilities.

Beyond these basic capabilities the specification of capabilities becomes more complicated. Amartya Sen has never explained how functioning/capabilities should be selected, beyond stating in general terms that some democratic process and public reasoning should be involved (Robeyns, 2005). Robeyns (2003) has gone further in devising some procedural criteria for the selection of capabilities through public reasoning[1] which have been operationalised in a variety of contexts.

However, there are many limitations associated with relying only on public reasoning as a means for specifying capabilities. For instance, there is little secondary data on what people value (Robeyns, 2005), and those surveys which do ask people what they value, tend not to fulfil Robeyns's procedural criteria, making them susceptible to a range of biases. Measuring capabilities is also likely to be a resource intensive process given that one has to measure all the options potentially open to an individual i.e. all hypothetical states of the world. Then there is the issue of weighting. While partial orderings might suffice in some cases, the more relevant and useful comparisons will involve trade-offs between different dimensions, an issue which has been mostly overlooked in the literature (Binder, 2014). As Amartya Sen (2005: vii) himself has recently confirmed, "there are widespread doubts about the possibility of making actual empirical use of this richer but more complex procedure."

Happiness in Sen's capability approach

While public reasoning should be the primary means of deciding on functionings, there are ways in which happiness research can be used as a secondary information space for addressing some of the limitations above.

Using happiness as an information space is consistent with the philosophical outlook of the capability approach. The capabilities approach is founded on the idea of value pluralism; that

[1]These criteria are: explicit formulation (the list should be made explicit, discussed and defended); methodological justification (the method that generated the list should be clarified, scrutinized and defended); different levels of generality (if a selection aims at an empirical application or is intended to lead to implementable policy proposals, then the list should be drawn up in at least two stages, whereby each stage will generate a list at a different level, ranging from the level of ideal theory to more pragmatic lists); and exhaustion and non-reduction (no important capabilities should be left out)

there are several values which may be equally correct and fundamental, and yet in conflict with each other. One of these values is happiness, which Sen (2008: 26) views as important functioning/capability;

> "Happiness cannot be the only thing that we have reason to value, nor the only metric for measuring other things that we value, but on its own, happiness is an important human functioning. The capability to be happy is, similarly, a major aspect of the freedom that we have good reason to treasure. The perspective of happiness illuminates one critically important element of human living."

Sen goes on to recognise happiness as a 'momentous functioning' that 'has importance on its own' (Sen, 1984: 513; 1985a: 200).

If we understand 'being happy' as a basic and universal human functioning (in the same category as nourishment, education and health) then because all or most other functionings are likely to affect happiness (Veenhoven, 2010) this is tantamount to adopting happiness as one informational space for specifying valued functionings. Adopting happiness as a secondary informational space could address several of the limitations with public discussion, as outlined above.

One of key debates surrounding the theoretical specification of the capability approach concerns the weighting of different capabilities and the trade-offs between them (Robeyns, 2005). Happiness research could help here, in providing a meaningful informational space for determining weights. We know, for example, that the negative effect of unemployment on happiness is large, while – as this thesis demonstrates - the positive effect of moving to larger accommodation is comparatively smaller. On this basis, we could reasonably attach greater weight to the capability of employment than the capability of having a large house, and prioritise the former over the latter. This point has been made by Binder (2014) and Schokkaert (2007: 423).

The weight attached to a particular capability/functioning is also likely to vary between individuals. People have different abilities and values and this makes it likely that they will weight somewhat differently the various dimensions in which life is lived. It was argued above, for instance, that housing may be more important as a life domain for men than women. Research examining how the effect of a particular functioning/capability on happiness differs according to age, gender ethnicity etc. can help us devise different capability weights for different people.

Binder (2014) goes even further in proposing that happiness should be the *only* informational space for specifying capabilities. Assessment of welfare, he argues, should be based on "Subjective Well-being Capabilities" (SWC); the substantive opportunity of individuals to achieve happiness. Binder notes "At the core of this framework is the value judgement of hedonism and this allows us to solve the list selection problem by selecting as happiness-relevant functionings all these doings and beings that empirically increase individuals' subjective well-being." While Binder's approach improves on utilitarianism by recognising the importance of human agency, it still fails to account for the fact that there are certain objectives which individuals have good reason to value but which do not make them happier. Education, for example, has no effect on happiness in either the short or long term (Veenhoven, 2010) but, as Sen has consistently (and correctly) argued, that does not mean that individuals do not have good reason to value it.

Thus, I only argue here for happiness to be used as a secondary informational space in specifying capabilities. Where public reasoning and happiness are consistent, we should prioritise those capabilities which have positive effects on happiness, as a capability which empowers an individual to achieve their stated goal and raises happiness, is preferable to one which has a negative effect on happiness. However, where the two informational spaces conflict (e.g. where individuals say they value the right to protest but protest does not make them happier), we should prioritise public reasoning (e.g. consider the right to protest as a capability).

Another way in which happiness research can inform the capability approach is in illuminating individual objectives that public discussion may be unable to identify. As Sen (2008: p 28) notes, a person's happiness is strongly related to the achievement of their objectives;

> "we must take note of the fact that the achievement of other things that we do value (and have reason to value) very often influences our sense of happiness— generated by that fulfilment. It is natural to take pleasure in our success in achieving what we are trying to achieve. Similarly, on the negative side, our failure to get what we value can be a source of disappointment. So happiness and frustration relate, respectively, to our success and failure to achieve the fulfilment of our objectives—no matter what these objectives are."

Happiness research can be particularly valuable in identifying those objectives which individuals have, but which they are either not willing to admit, or are not themselves aware of. In this thesis, for example, I show that people are concerned with their relative level of living

space. People, however, are unlikely to report such 'envious' preferences in public discussion. People may even turn a blind eye to the influential role that social status plays in driving and shaping their own preferences. The tendency of human beings to overlook the 'darker' side of their nature means there is likely to be a gap between people's *stated* preferences and their *actual* preferences. Happiness research can be of great evidential value in identifying instances where the objectives that an individual says they value (e.g. bigger house) may differ from the objectives that an individual actually values (e.g. bigger house than other people).

Before concluding this chapter, it is perhaps worth referring to the objective-subjective continuum in the context of Sen's capability approach. This continuum is commonly used to position different 'quality of life' studies according to whether they use (mostly) subjective measurements (e.g. happiness) or objective measurements (e.g. income). While the continnum performs a valuable function in provoking debate about what things policymakers should value (and measure), I would argue that it is too simple to draw out the differences between different ideas or theories of justice; an inherently complex good.

Nevertheless, if we wanted to position Sen's capabilities approach on the objective-subjective continuum, in its most popular form, then the first question we would want to ask is; does the approach use (mostly) objective or subjective indicators/measurements? The answer here would be that – with the exception of the 'non-negotiable' basic capabilities of education (objective), health (objective and subjective?), nourishment (objective) and, as I understand, happiness (subjective) – the capabilities that should be measured (in evaluating quality of life) depend on the functionings that a particular community has good reason to value (hence the emphasis on democratic reasoning). Therefore, whether the capabilities, the indicators used to measure quality of life, should be mostly objective ('income, leisure time') or subjective (e.g. sense of meaning, absence of anxiety) depends on the community in question.

The key limitation of the objective-subjective continuum, as it is typically operationalised, is that it tends to concentrate only on the subjectivity/objectivity of the *outcomes*; those measurements which are used to measure quality of life. The argument of Sen (and others) is that it is also important for policymakers to consider the *processes* used to arrive at a particular set of outcomes. Who decided that income or happiness was an important indicator of social justice? Was it the community in question? Or was it policymakers?

In terms of processes, Sen's capabilities approach is most certainly towards the subjective end of the continuum, as it requires debate and public discussion for the capabilities to be decided

on from the bottom-up. Other sets of measurements (such as the ONS's four indicators of happiness) are subjective in nature (only the individual themselves can decide how happy they are) but have been arrived at using '*objective'* processes (academics and policymakers deciding what happiness is) and imposed from the top down. In short, if we must, we can roughly think of Sen's capability approach as incorporating objective and subjective *outcomes* which are arrived at using mostly subjective *processes.* However, through shoehorning Sen's capability approach into subjective-objective continuums, we risk losing a lot of the nuance and elegance that the approach brings to conceptualising justice.

To summarise this chapter, happiness is a self-evident good that individuals clearly value, and have good reason to value. It is therefore vital that policymakers and researchers understand the determinants of happiness. In many cases, however, the pursuit of happiness will conflict with the pursuit of other self-evident goods that individuals have reason to value. In these cases, we need an idea of justice that accounts for the plurality of goods. It was to this end that I introduced the capabilities approach, and discussed how research into the determinants of happiness (like this thesis) can be used as a secondary informational space in the specification and weighting of capabilities.

Ideally, we would use the above theoretical framework (with happiness as a secondary information space) throughout to translate *all* of this thesis' finding into policy recommendations, and the capabilities approach would take a more central place in this thesis. We would not talk about policies to increase societal levels of happiness, but instead talk only about policies to increase/improve capabilities. Unfortunately, such an approach is unfeasible in the context of this thesis. The main reason is a lack of information. The capabilities approach is (rightly) grounded in several informational spaces, of which happiness is only one. In specifying (and weighting) capabilities, we also need to know which capabilities/functionings members of society value, not just which capabilities/functioning make them happier. The capabilities approach is also radically under-specified, meaning that the same empirical finding could be translated into different policy implications depending on where one places happiness in the capability approach, and how one interprets the approach more generally.

In translating the findings of this thesis into policy recommendations, I therefore seek to strike a balance between clarity and comprehensiveness. For the sake of comprehensiveness, I use the final section of this thesis to consider what a more *just* housing policy may look like using the capability approach framework outlined above. But until then, for clarity's sake, I want to set aside the capabilities approach and consider the relationship between housing and happiness in its own right. To this end, the next chapter focusses on the history of happiness (and utility) in

economic theory; while Chapter 4 scrutinises the subjective measures of happiness that form the basis for this thesis' empirical work.

3. UTILITY AND HAPPINESS[2]

3.1. Brief history of utility

One purpose of this thesis is to challenge the assumption that individuals are rational happiness maximisers. Although this assumption now forms one of the central planks of standard economic theory, it is actually a relatively recent notion in economics. The following section briefly traces how adopting this assumption over time concealed any need to measure happiness directly. Through looking at some of the key concepts of this thesis – namely happiness, choice, and utility - from a historical perspective, I demonstrate that, far from being a radical new movement, 'happiness economics' is better characterised as a return to the founding principles of modern economics.

For many neo-classical economists of the late 19th and early 20th century - such as Edgeworth, Jevons and Wicksteed – happiness was viewed as a mental state which could someday be measured, and equated to welfare (Read, 2007). However, with the 'marginalist revolution' of the 1870's and then the 'ordinalist revolution' of the 1930's, welfare economics became increasingly separated from this Benthamite goal (Cooter and Rappoport, 1984). Instead of measuring happiness directly, economists gradually adopted choice behaviour as a proxy for happiness, on the assumption that individuals act to maximise their own happiness.

This shift was instigated by Lionel Robbins and others who argued that interpersonal comparisons of happiness have no scientific basis. 'Every mind is inscrutable to every other mind' W.S. Jevons (1871: 211) argued, 'and no common denominator of feeling is possible'. Because happiness could not be measured, or even approximated, one would have to rely on using choice behaviour as a proxy for happiness (Jevons, 1871, I: 17);

> "A unit of pleasure or pain is difficult even to conceive; but it is the amount of these feelings which is continually prompting us to buying and selling, borrowing and lending, labouring and resting, producing and consuming; and it is from the quantitative effects of the feelings that we must estimate their comparative amounts."

Marshall (1920 Book III, Ch. III) was explicit about the potential flaws of using *choices* as a measurement for *happiness*:

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[2] Parts of Chapter 3 have been used for the paper *The Concept of Well-being in Housing Research* by Clapham, D., Foye, C. and Christian, J., which is currently under review at *Housing, Theory and Society*

> "It cannot be too much insisted that to measure directly, or per se, either desires or the satisfaction which results from their fulfilment is impossible, if not inconceivable. If we could, we should have two accounts to make up, one of desires, and the other of realized satisfactions. And the two might differ considerably. ... But as neither of them is possible, we fall back on the measurement which economics supplies, of the motive or moving force to action: and we make it serve, with all its faults, both for the desires which prompt activities and for the satisfactions that result from them"

While Francis Edgeworth (1881: 104) similarly felt that "the concrete nineteenth century man is for the most part an impure egoist, a mixed utilitarian".

Although total happiness could not be measured, it increasingly became accepted that marginal happiness could be accurately inferred from an individual's choice behaviour. It was not possible to claim that one person was happier than another, but it was possible to claim that a person was happier in one state than another. The marginalist revolution –due in large part to the economists cited above –based its account of individual decision making on what Stigler (1950) calls the 'fundamental principle of marginal utility theory:' As Gossen, often regarded as the first to elaborate a general theory of marginal utility, put it,

> 'Man maximizes his total life pleasure if he distributes his entire money income ... among the various enjoyments ... so that the last atom of money spent on each single pleasure yields the same amount of pleasure (cited in Georgescu-Roegen, 1968: 244).

With the ordinal revolution of the 1930's, economists abandoned the idea of measuring happiness altogether, even marginal happiness. This 'ordinal revolution' was initiated by Pareto. In his Manual, Pareto showed that, under the assumption that individuals can rank combinations of goods, happiness can be expressed by indices that represent the preference ranking of the individual. If the individual prefers one combination of goods over another, the former must have a larger welfare (or happiness) index. In this ordinal approach, happiness is seen as a real valued (numerical) representation of a person's choice behaviour, i.e. what the person chooses from each subset of alternatives (or would choose, if choices were to arise). The ordinal utility function, therefore, represents a complete departure from Benthamite utilitarianism (Read, 2007). Moreover, there is no suggestion (as was found in the words of Jevon, Marshall and Edgeworth) that ordinal utility is a halfway house to eventual cardinality once the science of happiness measurement has developed sufficiently (Read, 2007). Instead, there is complete investment here in the assumption that individuals are perfectly rational at maximising their own happiness. Adopting this assumption did much to exclude psychological and sociological

concepts from economics. Furthermore, it provided logical support for using GDP as the main indicator of societal happiness. Because individual preferences are set at the level which maximises happiness, and the degree to which preferences are fulfilled is determined primarily by an individual's budget constraint, which is determined by her income and prevailing prices, then it makes sense to use national income as a proxy for national happiness.

In sum, since Bentham conceived of modern utilitarianism, economists have gradually adopted the assumption that individuals are rational happiness maximisers, leading them to use choice behaviour as an indicator of happiness. However, developments in behavioural economics and 'happiness economics'-to be discussed- have since discredited this strong assumption.

3.2. The problems with using choices as an indicator of happiness

There are two problems with using people's choices, or revealed preferences, as an indicator of their happiness. There is already a wealth of literature documenting both problems, so I only want to touch upon them here.

First, individuals are often incapable of maximising their own happiness. For choices to be an accurate reflection of happiness, individuals would need to be perfectly rational, have perfect recall and foresight, and have access to all information. It has now been well acknowledged that individuals exhibit many cognitive biases and often make bad, or seemingly illogical, economic decisions. In the words of Simon (e.g. 1982), individuals display "bounded" rationality. For instance, it is well known that individuals favour the avoidance of losses over the acquisition of gains (Kahneman & Tversky, 1979); and that there are strong endowment effects, whereby individuals tend to place higher values on the objects that they own than ones they do not (Kahneman et al., 1990; Thaler, 1980). In Chapter 5, I discuss these various biases in relation to the housing market and standard economic theory.

Second, as the founders of modern economics recognised, even if individuals were always capable of maximising their happiness, they would not always choose to do so. As the capabilities approach recognises, people's choices are guided by a number of motives, of which their happiness is only one. For example, the effect of a single vote on turnout for any election is so small that rational self-interested actors should not vote. Many attempts have been made to reconcile this behaviour with standard economic theory (e.g. Ferejohn & Fiorina 1974; Schuessler, 2000) but none have succeeded in fully explain this "paradox" (Boudon, 2003). Other "paradoxes" include the 'ultimatum game', whereby individuals reject an 'unfair' allocation of money in favour of receiving no money at all (e.g. Thaler, 1988).

At this point, a rational choice theorist – i.e. someone who believes individuals are only ever motivated to pursue their own interests- may argue that even if an individual does not always act to maximise their own happiness, they always act to advance their own interests (e.g. satisfying their own individual life goals) and are still self-interested rational actors. However, expanding the definition of 'rational' in this way leads to a theory that is difficult to test or falsify, and is therefore remarkably mute. It is possible to define a person's interests in such a way that no matter what he does, he can be seen to be furthering his own interests in every isolated act of choice. If you are observed to choose x, rejecting y, you are declared to have "revealed" a preference for x over y, and your personal utility is then defined as simply a numerical representation of this "preference". "If you are consistent" Sen (1977) notes "then no matter whether you are a single minded egoist or a raving altruist or a class conscious militant, you will appear to be maximising your own utility in this enchanted world of definitions".

For the two reasons above, choices or 'revealed preferences' are an imperfect indicator of happiness. The section below outlines the alternative indicator adopted in this thesis. In short, you can measure happiness simply by asking people how happy they are.

4. MEASURING HAPPINESS[3]

4.1. Brief history of subjective happiness measures

While happiness measures (often referred to as subjective well-being measures) can be traced back to the 1920's and 30's, they did not gain currency as a large-scale measure until the 1960's, as an unintended by-product of the social indicator movement (Angner, 2005). The social indicators movement arose as a reaction to the widespread use of economic measures of happiness (Carley 1981, 1) and in its place sought to find "a broader and more sensitive set of measures that will provide a fuller description of people's lives" (Campbell 1976, 118). They encouraged the collection of objective quality of life indicators (e.g. life expectancy, level of education, quality of housing), a vision which later materialised in the Human Development Index (Anger, 2005). Several members of the movement, however, also felt it was necessary to assess people's happiness *directly*, namely Gurin et al. (1960), Bradburn and Caplovitz (1965), Cantril (1965), Andrews and Withey (1976). Each of these studies differed in their definition and measurement of happiness (Angner, 2005) but together they did much to popularise the notion that happiness could, and should, be measured. As Angner (2005), summarises "it was the influence of the social indicator movement that cemented the idea that (average) subjective well-being could serve as a macro level indicator of quality of life, comparable to the standard economic indicators."

Developments in psychology have since validated such self-reports. Studies led by Richard Davidson among other psychologists have shown that when people experience positive feelings, there is more positive feeling in the left front of the brain, and when they experience negative feelings, there is more activity in the right front of the brain. Furthermore, people whose left side is more active report more positive feelings and memories than right siders, smile more, and are more likely to be judged happy by their friends (see Davidson et al., 2003, 2000). In one experiment Coghill et al. (2003) applied a hot pad to people's legs. The subjective reports of pain were highly correlated with objective brain activity. Subjective judgements of happiness are preferable to objective indicators, first, because they are less resource intensive to administer, and second because they respect individual sovereignty, avoiding charges of paternalism. Thus, there is widespread agreement that happiness is best understood as a subjective concept that is concerned with the feelings, or mental states, of individuals. This is

[3] Parts of Chapter 4 have been used for the paper *The Concept of Well-being in Housing Research* by Clapham, D., Foye, C. and Christian, J., which is currently under review at *Housing, Theory and Society*

how I have broadly defined happiness up until this point. However, beyond this definition, theories or measurements of happiness diverge.

4.2. Theories of happiness

Happiness is first and foremost a folk psychological concept employed by ordinary people. The minimum requirement of any theory/measurement of happiness is that it should resonate, or "ring true", with popular and considered conceptions of happiness (Haybron, 2008). Put more formally, it should have "descriptive adequacy," (Sumner, 1996). Otherwise we cease to be talking about happiness, but are instead talking about something else. It is generally accepted – both by scholars and, I would assert, by the population as a whole – that happiness is a psychological, mental or emotional state. This, however, begs the question of which emotions are to be considered constituents of happiness. Happiness could be understood as a transient emotion (synonymous with joy); as an experience of fulfilment and accomplishment (thus characterized by a cognitive evaluation); as a long-term process of meaning making and identity development through actualization of potentials and pursuit of subjectively relevant goals. Indeed, happiness/unhappiness could arguably involve any of the emotions below (Haybron, 2008);

Happiness: being in high spirits, exuberant, joyful, elated, contented, at ease, confident, "in the zone", purposeful, satisfied with one's life

Unhappiness: being depressed, despondent, stressed or anxious, angry, fearful, lonely, listless, insecure, pain, dissatisfied with one's life.

Before we explore the diverging theories of happiness, it is worth putting their differences into perspective. As the list of emotions above illustrates, happiness is a highly abstract, highly personal and highly complex emotion. It is therefore unlikely that researchers, and the public as a whole, will ever agree on a specific definition of happiness. Because of these differences of opinion, which are surely insoluble, this thesis does not subscribe to one particular theory of happiness. The inherent ambiguity surrounding the concept of happiness (Delle Fave et al., 2011) should not, however, stop researchers from measuring happiness and using these measurements as an indicator of progress. Even if we cannot agree exactly what the different dimensions of happiness are, the empirical evidence reviewed below clearly indicates that they are moderately/strongly correlated, so an individual who is happy according to one definition is also likely to be happy according to another definition (Kashdan et al., 2008).

Much of the empirical literature, particularly in economics, has adopted life satisfaction as a single metric of happiness. Van Praag et al. (2003) theorise that life satisfaction judgements are a function of different domain satisfaction judgements, including housing. While life satisfaction may be a component of happiness in its own right, few would argue that it can be directly equated to happiness. For example, a husband who cares for his terminally ill wife may be thoroughly depressed and bored but at the same time feel a sense of meaning and fulfilment, and may therefore be satisfied with his life. Are we really to consider him happy? The narrowness of life satisfaction is the reason why most theories define happiness more broadly.

Perhaps the most popular theory of happiness is the subjective well-being theory, which generally defines happiness as consisting of three components; life satisfaction, high frequencies of positive affect (joy, elation, contentment, pride, affection, ecstasy), low frequencies of negative affect (guilt, shame, anxiety, stress, sadness, depression) (Diener 2000; Pavot and Diener 2008). Note though some definitions omit negative affect (e.g. Della Fave et al. 2011). While these components are correlated, they are also distinct (Lucas et al.,1996; Luhmann et al. 2012; Zou et al., 2013). Thus according to subjective well-being theory, happiness is not one single continuum but three and by only looking at one component, we only gain a partial understanding of happiness.

Among diverging theories of happiness, a distinction is often drawn between the *hedonic* theory of happiness – or subjective well-being- and other *eudaimonic* theories of happiness which do not rely on an explicit affective component, but instead incorporate other emotions or states such as meaning, purpose, autonomy, self-acceptance, being curious, vitality, taking part in activities that make one feel alive (Deci & Ryan, 2000; Keyes et al., 2002; Maltby et al., 2005; Seligman, 2002; Vittersø, 2003, 2004; Waterman, 1993,2007; Waterman et al., 2008). This binary distinction, however, is problematic for several reasons.

First, eudaimonic theories of today bear little resemblance to Artistole's original theory of Eudaimonia. For Aristotle, eudaimonia was not a mental state but a process of fulfilling one's virtuous potentials.Modern eudaimonic theories, in contrast, are generally subjectivist. That is, they allow the individual themselves to judge whether they have autonomy, purpose, meaning etc. This is an important distinction that the hedonic/eudaimonic dichotomy blurs. Second, even among these modern 'eudaimonic theories' of happiness, there is so much variation in the definition and measurement of eudaimonia that it is not clear what researchers mean when they refer to Eudaimonic theories of happiness (Kashdan et al., 2006). Third, and most crucially, the empirical evidence generally suggests that hedonic and eudaimonic happiness are far from being distinct psychological concepts (see Kashdan et al., 2006 for review). For example, the

correlations between latent factors of subjective well-being and eudaimonia are often larger than correlations among the components of subjective well-being. (Watson, 2000; Lucas et al., 1996). Furthermore, there is considerable *conceptual* overlap between some of the defining features of eudaimonia and subjective well-being (Kashdan et al., 2006). Life satisfaction, for instance, can be viewed as overlapping with the abstract meaning-imbued nature of eudaimonia. Therefore, it is a mistake to view eudaimonic components as distinct from (or more meaningful than) the hedonic components of positive affect, negative affect and life satisfaction. Nevertheless, there is clear merit in many so called 'eudaimonic' theories of happiness, and the idea that happiness involves more than the three dimensions of subjective well-being. There is good reason to believe that autonomy, environmental mastery and purpose, for example, are themselves constituents of happiness.

Ultimately, there are always going to be differences in how people define happiness and is seems unlikely there will ever be one theory which reconciles these differences. Griffin points us to the following case. At the very end of his life, Freud, ill and in pain, refused drugs except aspirin. 'I prefer,' he said, 'to think in torment than not to be able to think clearly.' Can we find a single feeling or mental state present in both of Freud's option in virtue of which he ranked them as he did? (Griffin 1986, 8; Parfit 1984, 493). The price we pay for accepting that happiness is an inherently ambiguous concept, is that we cannot precisely rank every individual in terms of their happiness. Nor can we consistently state whether an individual (such as Freud in the case above) is happier in one state than another.

This ambiguity should not, however, impede us in examining the determinants of happiness. There are many cases where we can assert that one individual is happier than another without agreeing on a specific definition of happiness. Surely, according to any reasonable definition of happiness, the average person is going to be happier on the day they marry their spouse than the day they bury their spouse. Indeed, the empirical evidence suggests that different definitions of happiness are moderately/strongly correlated, so an individual who is 'happy' according to one definition is also likely to be happy according to another definition (Kashdan et al., 2006). For example, flow is more likely to occur when people are experiencing positive emotions (Csikszentmihalyi & Wong, 1991); feeling autonomy is associated with increases in subjective well-being (hedonic well-being) (Sheldon and Niemiec, 2006); feeling positive affect predisposes individuals to reporting more meaning in life (King et al., 2006; Hicks & King, 2007); life events have a similar effect on happiness, whether it is measured using life satisfaction, or GHQ Caseness (an indicator more akin to psychological well-being) (Clark and Georgellis, 2013).

In this thesis, I view happiness as consisting of a wide range of emotions including, but not limited to; positive affect, negative affect, life satisfaction, meaning, flow, life satisfaction, self-confidence, purposiveness, absence of anxiety, autonomy and calm. But because these different hypothesised components of happiness are closely related, we do not need to decide on one theory/measurement to approximate the determinants of happiness.

4.3. Indicators of happiness used in this thesis

Because I rely on secondary data (and in particular, national panel datasets that have large enough samples to robustly test the hypotheses of interest), I am restricted to two indicators of happiness; life satisfaction and the General Health Questionnaire (GHQ)

Life satisfaction

Life satisfaction is measured by asking respondents how dissatisfied or satisfied they are with their lives (overall), with responses on a numerical scale. Life satisfaction indicators have been found to be *reliable* and *valid.* They are reliable in that they yield similar scores when administered in the same condition. For example, correlations between different scales are in the moderate-to-high range (Diener et al., 1985; Pavot and Diener 1993). Furthermore, life satisfaction scores are quite stable over time[4] (Fujita and Diener, 2005). Life satisfaction indicators are also *valid:* they reflect thoughtful and reasonable evaluations people make of their lives. When reports on the estimated life satisfaction of target participants are collected from family and friends, they show moderate correlations with the targets' self-reports (e.g. Schneider and Schimmack, 2009; Zou et al., 2013). Life satisfaction judgments also converge with the number of good versus bad life events that people can recall in timed periods (Pavot et al., 1991). Moreover, the U-shaped pattern of life satisfaction across the adult lifespan found in many highly industrialized nations, is mirrored by the use of antidepressant medications, which peaks in the late 40's (Blanchflower and Oswald 2012). Life satisfaction scores also predict future behaviour: Chang and Sanna (2001) found that life satisfaction predicted suicidal ideation; Moum (1996) found that reports of subjective well-being predicted later suicide; and Diener and Chan (2011) found life satisfaction scores to predict health and longevity.

This thesis has two uses for life satisfaction scales. First, as a *direct* measurement of life satisfaction. If being satisfied with one's life partly constitutes happiness, as proposed by the subjective well-being approach, then these measurements allow us to directly measure this part

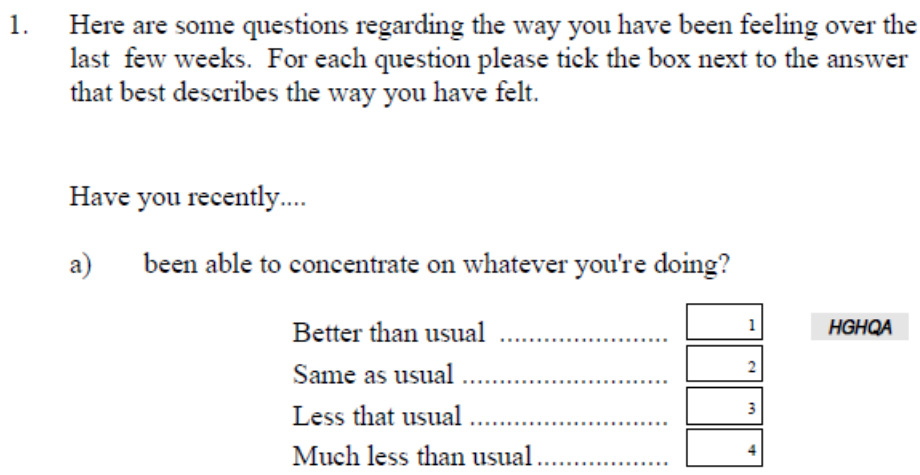
[4] Multi item scales are more stable over time than single item scales (Michalos and Kahlke, 2010; Schimmack and Oishi, 2005).

of happiness. Second, because life satisfaction scores are moderately correlated with positive affect, negative affect, self-esteem (Zou et al., 2012; Luhmann et al., 2012) and most likely other hypothesised components of happiness too, we can reasonably argue for life satisfaction as an *indirect* measurement of these constructs, and a reasonable proxy for happiness as defined more broadly. Life satisfaction scores also benefit from being widely used, meaning we can compare the magnitude of the effects uncovered in this thesis with those reported in other papers.

General Health Questionnaire (GHQ)

The GHQ was originally developed as a first-stage screening tool to identify those in need of psychiatric care (Goldberg and Williams, 1988) but has since been adopted as a measure of happiness (partly due to its availability within large secondary datasets). The GHQ is constructed from the responses to twelve questions (6 positive and 6 negative worded items) where individuals are asked how often they are experiencing certain feelings (e.g. depression, strain, happiness) compared to their 'usual' state. The first question (in the BHPS) is reproduced as Figure 1 below;

Figure 1: Example of question in BHPS General Health Questionnaire (GHQ)



1. Here are some questions regarding the way you have been feeling over the last few weeks. For each question please tick the box next to the answer that best describes the way you have felt.

Have you recently....

a) been able to concentrate on whatever you're doing?

Better than usual	1	HGHQA
Same as usual	2	
Less that usual	3	
Much less than usual	4	

The next eleven questions follow the same structure, asking the respondent how often they have: b) "lost much sleep over worry?"; c) "felt that you were playing a useful part in things"; d) "felt capable of making decisions about things"; e) "felt constantly under strain" ; f) "felt you couldn't overcome your difficulties" ; g) "been able to enjoy your normal day-to-day activities"

h) “been able to face up to problems” ; i) “been losing confidence in yourself”; j) “been thinking of yourself as a worthless person” ; k) “been feeling reasonably happy, all things considered”.

Both the positive and negative questions of the GHQ caseness include aspects of feeling or affect; functionings (such as, ‘lost much sleep over worry’); and evaluation (such as, thinking of oneself as worthless). It is not clear whether GHQ-caseness is best considered a single concept, or multiple concepts combined. Some studies have found that responses from the GHQ-12 separate into two (positive/negative) or three (anxiety/social dysfunction/loss of confidence) factors (Graetz, 1991). However, other studies have found that responses fit a single factor model reasonably well once measurement error is accounted for (Hankins, 2008; Smith et al., 2013).

Housing satisfaction

Although housing satisfaction is not a component of happiness itself (it is difficult to argue that being satisfied with one’s house is a self-evident good) it is likely to mediate, at least in part, the relationship between housing and happiness; housing conditions affect housing satisfaction which, in turn, affects life satisfaction and happiness. This is the implicit logic behind papers which look at the determinants of housing satisfaction. These studies, however, do not generally look at whether the variables that affect housing satisfaction, also affect life satisfaction or other indicators of happiness. The extent to which housing satisfaction mediates the relationship between housing and happiness is therefore far from clear. There are a couple of exceptions. Fujiwara and HACT (2013) found most housing variables to impact life satisfaction through housing satisfaction, but this finding could be biased by measurement error[5]. Nakazato et al. (2011) found moving house to have a positive initial impact on housing satisfaction but no effect on life satisfaction. Despite the lack of empirical evidence, it still seems intuitive that a significant proportion of the effect of housing on happiness operates through housing satisfaction and it is on this basis that I adopt housing satisfaction as an indicator of happiness.

The arguments advanced so far in this thesis can be summarised as follows. Happiness is one good (among others) which society should seek to maximise. While an individual’s choices do offer us an insight into her happiness, they lack precision as an indicator because people are not always capable of maximising their happiness, nor are they necessarily motivated to do so. Given these limitations, there is good reason to measure people’s happiness directly. Before we measure happiness though, we must define it. While it is unlikely that society will ever

[5] More specifically, by regressing life satisfaction onto housing satisfaction, Fujiwara and HACT risks the possibility that the error component of housing satisfaction is correlated with the error component of life satisfaction.

converge on one definition of happiness, the fact that an individual who is happy according to one definition is also likely to be happy according to another definition, means we can approximate someone's happiness without deciding on one single definition. Better still, we can account for the ambiguous and multi-dimensional nature of happiness by adopting several indicators, which is the approach I follow in this thesis when examining the relationship between housing and happiness.

5. HOUSING AND HAPPINESS: A REVIEW[6]

In this chapter, I review the existing empirical evidence on housing and happiness, adaptation and social status as a prelude to the empirical chapters which follow. But before reviewing those studies which explicitly examine the relationship between housing and happiness, I first want to revisit the aforementioned criticisms of standard economic theory; this time in the context of housing. To this end, the following section discusses why housing choices are an inaccurate proxy for happiness, and why standard economic theory is an imperfect theoretical framework for analysing the relationship between housing and happiness.

5.1. Standard economic theory in housing economics

Standard economic theory is the most common theoretical framework used to analyse the relationship between housing and happiness. As noted already, standard economic theory is characterised by the assumption that all economic actors are selfish egoists, driven to maximise their utility/happiness subject to constraints. Thus according to standard economic theory, there is no need to empirically examine the relationship between housing and happiness, as we can simply assume that individuals act to maximise their happiness. When combined with assumption of equilibrium, and the absence of severe information problem, the rational utility maximising individual represents one of the central tenets of neo-classical approach (Watkins and McMaster, 2011).

It should be noted from the outset that few (if any) housing economists apply neoclassical theory wholesale to analyses of the housing market. For example, it is now generally accepted that the housing market involves a large number of individual relationships, all of which are likely to be complex and involve asymmetric information; and that housing is a long-lasting, immovable and indivisible asset meaning it cannot be freely transformed to meet changing demands. Both examples violate the neo-classical assumption that markets are characterised by symmetric information and perfect competition (e.g. Whitehead, 2012). To characterise all housing economists as free market fundamentalists would be to erect a straw man.

However, some assumptions of neo-classical economic theory have been subject to more scrutiny than others. The assumption of the rational utility maximising individual has been subject to much less scrutiny in the housing economics literature. This assumption- let's call it

[6] Parts of Chapter 5 have been used for the paper *The Concept of Well-being in Housing Research* by Clapham, D., Foye, C. and Christian, J., which is currently under review at *Housing, Theory and Society*

the *homo economicus* assumption- states that individual preference functions are stable, predictable and exogenously determined. Thus, preferences are assumed to be constructed independent of social context and past experience.

Within housing economics, there are only a few studies which have directly challenged the *homo economicus* assumption. First, there are those studies which question the *capacity* of individuals to make decisions which maximise their utility. Standard economic theory assumes individuals are able to predict the utility that different choices will deliver, and construct their preferences on this basis. As Marsh and Gibb (2011) put it;

> "(Standard economic theory) typically assumes that the decision maker is in a position enumerate the range of options or prospects available at the choice point, assess the utility they will deliver, and assign probabilities to various possible future states of the world. The theory therefore assumes that decision makers can typically cope with considerable informational and cognitive demands."

The empirical evidence, by contrast, has shown individuals to systematically make decisions that are not rational. These biases are discussed in a more general context by Wilkinson (2008). In this section, I only look at those biases which have been observed in the housing market.

First, there are context or framing effects. When faced with considerable informational and high cognitive demands (e.g. deciding which house to buy), individual preferences and decisions in the housing market have been found to be influenced by contextual factors which, according to standard economic theory, should be irrelevant. Using the US Panel Study of Income Dynamics, Simonsohn and Loewenstein (2006) found that movers arriving from more expensive cities would initially rent pricier apartments than those arriving from cheaper cities. Because households are likely to experience some uncertainty about how much they want to spend in housing, they are prone to draw on salient cues; in this case, the amount of money they spent in their previous city. In other words, exposure to high (or low) prices in the old city makes prices in the new city seem cheaper (or more expensive). Simonsohn and Loewenstein also found that as people stayed in their new city, and 'got used to' the new prices, they readjusted their housing expenditures thus countering the initial context effect.

Second, individuals are loss averse. According to standard economic theory, individuals should care equally about monetary losses and monetary gains. Loss aversion theory, in contrast, indicates that "the displeasure from a monetary loss is greater than the pleasure from a same-sized gain" Rabin (1998:14). Genesove and Mayer (2001) were the first to demonstrate nominal

loss aversion in the housing market, finding that because homeowners are reluctant to realize nominal losses, they set higher list prices and therefore spend longer time on the market. See also Engelhart (2003). In terms of happiness, loss aversion theory implies that the effect of house prices decreases on happiness will be larger than the effect of house price increases.

Third, projection bias: people irrationally exaggerate the degree to which their future tastes will resemble their current tastes. In terms of housing, individuals mistakenly project their current housing preferences into the future, ignoring the fact that their preferences may change in the intervening period. Using transaction data from 4 million house sales, Busse et al. (2012) found that the hedonic value that a swimming pool and central air add to a house is higher when the house goes under contract in the summertime, compared to the wintertime, implying that in the summer individuals over-estimate the importance of a swimming pool and central air to their happiness.

Through demonstrating context effects, loss aversion bias, and projection bias, the studies above (along with a host of other studies from outside the housing studies discipline) have undermined the assumption that individuals are perfectly capable of maximising their own happiness when making (housing) choices. This has two major implications for this thesis, which are related to the two aspects (or 'purposes') of standard economic theory.

The first implication relates to the *normative* aspect of economics; the branch of economics (usually termed 'welfare economics') which makes judgements about what *should* happen. The studies above demonstrate one of the reasons why standard economic theory is deficient as a normative theory of justice/progress: it (incorrectly) assumes individuals are rational happiness maximisers, when, in fact, individuals frequently act in ways that are 'irrational'. The studies above therefore highlight the need for us to empirically examine the relationship between housing and happiness, as this thesis does, rather than assuming choice behaviour is a perfect proxy for happiness. This is the key implication for the purpose of this thesis.

The second implication relates to the positive aspect of standard economic theory: the (main) branch of economics which seeks to predict and explain human behaviour. For this positive branch of economics, the studies above pose the question of what to do with standard economic theory when faced with these 'biases'? Should we modify and/or add to it, so that it can be reconciled with how humans actually behave and more accurately predict and explain human behaviour? Or has it been so fundamentally undermined that it is now irrelevant? I do not want to delve into these questions in too much detail, as it risks distracting from this thesis' main critique of standard economic theory as a *normative* theory of justice. Nevertheless, in Chapter 9, this thesis does develop some hypotheses for how adaptation and social comparison phenomena might contribute to our understanding of housing market behaviour, so it is perhaps

worth being explicit at this stage about my own views regarding 'what to do about standard economic theory' as a *positive* theory of human behaviour.

Standard economic theory - as demonstrated above and below – is unrealistic as a positive theory of human behaviour. This, however, does not mean we should dispose of it altogether when trying to explain and predict human behaviour in the housing market. We can think of two (related) arguments for the relevance of standard economic theory when modelling housing market behaviour.

First, standard economic theory, on its own, can still be a good predictor of housing market behaviour despite the various 'biases' outlined above. As Gibb (2009) notes, mainstream economics (with its heavy reliance on standard economic theory) has " built up a formidable body of generally accepted models, methods, findings and stylized facts about the housing market".

Second, where actual behaviour diverges from standard economic theory, then it maybe possible to adapt standard economic theory to partly account for these biases. This is the approach of the *new* behavioural economics[7] which, while broadly accepting the conception of rationality expressed in standard economic theory, is concerned with finding deviations from the neoclassical model of behaviour that may be used to enhance the power of those models in predicting and explaining human behaviour (Sent, 2004).

> "At the core of behavioral economics is the conviction that increasing the realism of the psychological underpinnings of economic analysis will improve economics on its own terms …. This conviction does not imply a wholesale rejection of the neoclassical approach to economics based on utility maximization, equilibrium, and efficiency. "(Camerer and Loewenstein 2004, 3)

Even if it is not possible to formally adapt standard economic theory to account for these biases (it would be humanly impossible, for example, to fully account for the social construction of housing preferences, given the complexity, dynamism and intangibility of this process) then standard economic theory may still be useful in providing a partial explanation for human behaviour, which can be combined with insights from other disciplines to provide a more compete explanation for human behaviour. In this thesis, I do not therefore argue against the *use* of standard economic theory as a *positive* theory for explaining and predicting human

[7] See Dunning (2017) for discussion on the theoretical differences between *new* behavioural economics and the *old* behavioural economics in the context of the housing search.

behaviour. Rather it is the *sole reliance* on standard economic theory as a positive theory that is the problem.

5.2. Relationship between housing and happiness

Physical aspects of housing

At the most basic level of analysis, the physical aspects of housing are likely to increase happiness through meeting the basic human need for a sheltered, warm and hygienic environment in which to socialise, eat, sleep and to be alone. Probably because of their tangible nature and their pertinence to public health, most of the quantitative literature has focussed on the effect of these objective and measurable housing characteristics on happiness. The most robust of these studies is by Cattaneo et al. (2010). They compared the physical health and happiness of individuals who resided in one region in Mexico where dirt floors were replaced by concrete floors, with residents of similar demographics in a neighbouring region where dirt floors were not replaced. They identified a positive effect of the concrete floors on the health of children, and the happiness of adults (lower scores on depression and perceived stress scales). Their study is an exemplar of empirical rigour for several reasons. First, the quasi-experimental design of their study, and the comprehensive set of robustness checks, go a long way to ruling out concerns of endogeneity. Second, they use multiple indicators of happiness (and health). Third, they test for alternative pathways through which the change in flooring could have influenced happiness.

In the UK context, Fujiwara and HACT (2013) used the British Household Panel Study to examine the effect of changes in housing variables (as reported by the respondent) on changes in life satisfaction and frequency of feeling happy. Using fixed effect regressions, Fujiwara and HACT (2013) found that, in ranked order, neighbour noise, damp, poor lighting, no garden, condensation, rot, and local vandalism all had significant negative impacts on life satisfaction. Pevalin et al. (2008) conducted a similar study on the BHPS and found a similar set of variables to have an impact on physical and mental health (using General Health Questionnaire). One limitation of Fujiwara and HACT and Pevalin et al. is that their findings could be driven by reverse causality bias. For example, an individual may be more likely to report neighbour noise as a housing problem when they are in a depressed state of mind.

Psycho-social aspects of housing

Housing is not simply a bundle of physical characteristics but, as Clapham (2010) puts it, "a setting for family and community life, an element of and a springboard for a desired and valued

lifestyle, a key constituent of self-esteem and status, and an important arena for autonomy and control." The distinction between the 'soft' and 'hard' aspects of housing mirrors that between 'house' and 'home'. As Dovey (1985, p33) notes,

> "Although a house is an object, part of the environment, home is best conceived of as a kind of relationship between people and their environment. It is an emotionally based and meaningful relationship between dwellers and dwelling places."

Various attempts have been made – from various academic disciplines- to categorise these psycho-social aspects, or 'meanings' of home (e.g. Somerville, 1997; Despres, 1991). Broadly speaking, there are three meanings of home that are commonly referred to; privacy and autonomy ('home as haven'); identity; and social status.

First, in the Western context at least, one major need that individuals use housing to meet is that for privacy and autonomy/independence. By virtue of its physical detachment and security from the public realm, the home can be a place where people can retreat, relax, be themselves and think for themselves away from public gaze. At a time when life is more publicised, some argue that a retreat from the scrutiny and demands of the modern world is especially valuable (Somerville, 1997).

Second, home can meet the need for identity. As Arendt put it;

> "The things of the world have the function of stabilising human life, and their objectivity lies in the fact that…men, their ever changing notwithstanding, can retrieve their sameness, that is, their identity by being related to the same chair and the same table. In other words, against the subjectivity of men stands the objectivity of the man-made world rather than the sublime indifference of an untouched nature…Without a world between men and nature, there is eternal movement but no objectivity." (Arendt, 1958: 137)

Sixsmith and Sixsmith (1991) found home to constitute much of the substance of a person's memories while Gurney (1996) described home as a "psychic warehouse" in which memories are added in layers and stored. Only with time can the objects of home mould our personality and then become part of our personality (Csikszentmihalyi and Rochberg Halton, 1981), causing one to become attached to their home (Gurney, 1990:15; Giuliani, 1991:141-142; Sixsmith and Sixsmith, 1991). In terms of happiness, Csikszentmihalyi and Rochberg-Halton (1981) proposed that by acting as a self-affirming base, home frees us to concentrate our psychic energy on cultivating other aspects of self, ultimately leading to self-actualisation and mental health.

The style and design of one's home not only represents a reflection of personality but also a projection of public image (to paraphrase Craik, 1989). There are many determinants of social status; material wealth, intelligence, good looks, sporting prowess, cultural/artistic tastes to name but a few. Because of its physical and visible nature, housing signals one's strengths/weaknesses in these various facets, thus influencing one's social status. Décor/paintings can be used to signal cultural taste; bookshelves/degree certificates to signal intelligence; sporting trophies to signal sporting prowess; family photos to signal harmonious familial relationships. The idea of housing as a status symbol forms the basis for much of this thesis, so I do not explore it any further in this chapter.

These three psycho-social components-identity, control and status- are sometimes bundled together and termed 'ontological security', which Giddens (1991: 92) defines as;

> "The confidence that most human beings have in the continuity of their self-identity and in the constancy of their social and material environments. Basic to a feeling of ontological security is a sense of the reliability of persons and things."

It is not difficult to see from the quotation above that ontological security is a vague concept. Ontological security is "difficult to define, even more difficult to operationalise" (Saunders, 1989); "a fantasy of the academic" (Franklin, 1986); and "sightings are rare" (Gurney, 1996). It is also ambiguous, with different authors defining it in different ways. Saunders understands it as incorporating prestige (or status), protection and autonomy (Hiscock, 2001). Giddens (1991) similarly describes 'shame' as a threat to ontological security. Gurney (1996), in contrast, excludes prestige in defining ontological security, while Dupuis and Thorns (1998) view the ontological security that the home provides in terms of constancy, control, identity and a spatial context for the day to day routines of human existence. Given this ambiguity, there seems little value in merging the more distal psycho-social components of identity, status, privacy, autonomy, into one amorphous overarching concept of 'ontological security'. This is particularly true when we consider that each component could be associated with different policy implications. If, for instance, home-ownership enhances an individual's sense of autonomy, then this would support the expansion of home-ownership, but if it only enhanced their social status (or prestige) then the policy implication is not clear because the status that an owner gains is likely to come at the expense of others (see Chapter 8). It therefore makes sense to distinguish between these different psycho-social components insofar as possible.

Tenure

A longstanding debate among sociologists and psychologists concerns whether home-ownership enhances the psycho-social benefits (or 'ontological security') of home (Hiscock, 2001). At the forefront of the case for home-ownership has been Peter Saunders, who argues that home-owners are likely to derive more identity, autonomy, security and status from their homes than renters. This argument is rooted in the practical differences between owning and renting. Simply by virtue of owning their own homes, home-owners can modify their homes more than renters; have more freedom in deciding how long to stay in their homes for (provided they are financially secure); and face stronger incentives to maximise their house value, as their economic situation is tied in with that of their home. Furthermore, the transaction costs associated with moving housing within the rental sector are, in the UK at least, much lower than those associated with moving within the home-ownership tenure, meaning owners are likely to be less geographically mobile.

Based on over 500 interviews with owners and social renters in three English towns, Saunders argued that owners "are more likely than tenants to express a sense of self and belonging through their houses." (Saunders 1989: 187); and more likely to feel attached to their homes; and derive more prestige from their homes. Saunders, however, has been widely criticised on several grounds such as making sweeping conclusions from a small number of cases (Clapham, 1991); overlooking contrasting evidence on the experiences of council housing tenants (Forrest, 1991); paying little attention to the family (Gurney, 1996); ignoring financial motives in home ownership (Kingston, 1992); and for being selective in his use of evidence (Clapham, 2005).

In terms of happiness, Zumbro (2014) considers four 'pathways' through which home-ownership may have a positive effect, all of which have been touched on above. First, becoming a home-owner could allow an individual greater autonomy to mark out their territory and express their identity (Saunders, 1990; Elsinga & Hoekstra,2005). Second, homeownership can offer greater security (or autonomy), as home-owners cannot be involuntarily moved from their home by a landlord. Third, becoming a home-owner increases an individual's social status or prestige (see Chapter 8). Forth, because owners have stronger incentives to maximise their house value than renters, owners are likely to keep their homes in better condition than renters (Galster, 1983; Gatzlaff et al., 1998; Shilling et al., 1991; Iwata & Yamaga, 2008).

That said, the empirical evidence on the relationship between home-ownership and happiness is mixed. Using cross-sectional data and propensity score matching to attempt to control for selection effects, Manturuk (2012) found that perceived sense of control mediated a positive

effect of homeownership on mental health. Also in the US context, Rohe and colleagues (Rohe and Basolo, 1997; Rohe and Stegman, 1994) conducted a study of two groups, homebuyers and renters, in Baltimore. Both after one and a half years, and three years, homebuyers reported a statistically significant increase in their life satisfaction despite the purchased properties being in relatively less desirable neighbourhoods. Similarly, Stillman & Liang (2010), Cheng et al. (2014) and Ruprah (2010) all found home-ownership to have a positive effect on happiness.

Other studies, however, have found no effect of tenure on happiness. Popham et al. (2012) examined the mental health of individuals before and after they exercised the right to buy (i.e. changed tenure but not home) and found no evidence that becoming a homeowner reduced psychological distress. Baker et al. (2013) also found no causal effect when examining the Australian national panel dataset (HILDA). See also Bucchianeri (2009). The absence of any clear home-ownership effect may be due to the increased financial pressures, both immediately and in the long term, that offset any positive effects associated with becoming a home-owner. Taylor et al. (2007) used the BHPS and found that having housing payment problems and entering mortgage arrears had a negative effect on mental health (GHQ), and this effect was stronger among home-owners than tenants, and was independent of financial hardship more generally. Similarly, Bentley et al. (2016) found that the mental health of low income home-owners in the BHPS decreased when their housing costs became unaffordable (i.e. took up more than 30 percent of gross household income). However, this finding did not translate in the Australian context, where Mason et al. (2013) found the negative effect of unaffordable housing costs on mental health to be limited to *private renters*. Zumbro (2014) examined the German Socio-Economic Panel Study and, using fixed effects regressions, found becoming a home-owner to be positively associated with life satisfaction for homeowners with a low-financial burden, but negatively associated with life satisfaction for homeowners with a high-financial burden, implying that financial security moderates the effect of home-ownership on happiness. Overall, the evidence suggests that if there is a positive effect of home-ownership on happiness, it depends on the owner being financially secure.

Tenure and gender differences in the importance of housing

It may also be that the relationship between housing and happiness is *moderated* by tenure. That is to say, the effect of housing on happiness may be stronger for owners than renters. Global satisfaction (GS), or "utility" is often posited as a function of different domain satisfaction judgements and other characteristics. It is expressed by van Praag et al. (2003) using the following equation;

$$GS = GS(DS_1, DS_2, \dots, DS_j, Z)$$

Where DS_j represent individual domain satisfactions, one of which is housing, and Z is a vector of explanatory variables. Each of these different domain satisfactions will have different weights. Therefore, utility will depend not only on how satisfied an individual is with their housing but also the relative importance of housing to their utility when compared with other life domains.

There are two related reasons why housing may be a more important life domain for owners than renters. First, the economic well-being of home-owners is positively related to their house value, which is not the case for renters. Second, and most pertinent to this thesis, housing may be more important as a source of self-identity and *social status* for owners than renters. Because owners have a greater incentive to personalise their homes, through DIY for instance, the home is likely to be a more accurate reflection of their tastes, memories, and wealth. Saunders (1989), for instance, argued that for owners, decorating was a source of pride and self-worth whereas for renters, maintenance was done only grudgingly. Through the personalisation process, home not only becomes more important in affirming an individual's identity, it also becomes more important in expressing an individual's identity to *others.* It follows that if housing is a greater source of self-affirmation for owners than renters, then it should also be more important as a source of social status.

The vast majority of the literature on the psycho-social aspects of home-ownership is situated in the Anglophonic context, where home-ownership is dominant. However, in Germany, nearly 50% of households rent their homes, including many middle-income German families (Scanlon and Whitehead, 2015). Furthermore, the German private rental sector is more secure, with leases generally granted on an indefinite basis, and landlords only able to evict for specified reasons (Scanlon and Whitehead, 2015) Thus renting in Germany has many of the characteristics of owner-occupation in the UK. For this reason, we would expect any tenure gap in the importance of housing as a source of self-affirmation and social status that exists in the UK to be narrower in the German context.

Even still, in the German context, there is some suggestive evidence that this tenure gap exists. When I use the GSOEP to regress the 'importance of housing[8]' on tenure, controlling for a range of other socio-demographic variables, home-owners are found to attach greater importance to housing than renters: see Table 1 below. It is not clear whether this effect is

[8] Respondents are asked "**How important is your (Wohnung) accommodation to your satisfaction?"** 1991, 1994, 1995 and 1998. The four possible responses were; "Very Important", "Important", "Less Important" and "Very Unimportant", ranging from 1 to 4. To make the dependent variable binary I collapsed it so that it equals 1 if response is "Very Important"; and equals 0, otherwise.

causal or compositional; does owning increase the importance of one's home, or do people who attach more importance to housing choose to become home-owners? In either case, there is a strong argument that housing tenure moderates the relationship between housing and happiness.

Another possible moderator of the relationship between housing and happiness is gender. Table 1 above also shows that in the German context, housing is more important to women than it is for men. This echoes Della Guista et al. (2011) who, using principal component factor analysis on the BHPS, found that housing satisfaction matters more to female life satisfaction than male life satisfaction. I propose that this gender difference has emerged through three pathways; values, housework and personality.

First, values. The female gender stereotype-in the Western context at least- is defined, to a large part, by the maintenance of socially harmonious and aesthetically presentable home environment. "Woman" Massey (1994: 10) contends "stands as metaphor for nature…for what has been lost (left behind), and that place called home is frequently personified by, and partakes of the same characteristics as those assigned to, Woman/Mother/lover." Because of this association, women are likely to define themselves, and be defined by society, in terms of the aesthetics and atmosphere of their home. As one of Gurney's (1999) respondents put it; *"I think a home is more important to the wife insofar as you feel it reflects either good or bad things about you."*

The fact that women are socialised to identify with the home is likely, in itself, to make housing a more important life domain for women than men. It is also likely to drive women to spend more caring for the home. In the German context, women spend more time on housework than men (Cooke, 2004), even when both have the same employment status (Jurges, 2005). Furthermore, gender differences in housework appear to be driven by gender values. In a comparison of 15 European countries, Gimenez et al. (2007) found that the degree of specialisation between spouses is higher when gender-related norms are traditional. See also Breen and Cooke (2005). Through investing time and effort into the maintenance of a presentable home environment, housing is likely to take on an even higher importance for women. Thus the female gender stereotype socialises women to assume the aesthetics and atmosphere of the home as her responsibility, which is manifested in a skewed distribution of housework, which in turn strengthens women's attachment to the home.

Table 1 : The importance of housing in GSOEP (Pooled Logit model)

	Importance of housing
MALE	-0.264***
	-0.0373
IN_EDUCATION	-0.229***
	-0.0598
PART_TIME	-0.0863
	-0.057
NOT_EMPLOYED	-0.00106
	-0.04
AGE	0.00259
	-0.00169
HH_PERSONS	0.0122
	-0.0252
HH_CHILDREN	-0.021
	-0.0285
LOG_HH_INCOME	-0.287***
	-0.0407
WINTER	0.127***
	-0.0319
MARRIED	0.550***
	-0.0551
WIDOWED	0.152
	-0.106
DIVORCED	0.242***
	-0.0876
SEPARATED	-0.0135
	-0.133
OWNER	0.200***
	-0.0449
MOVED_HOUSE	0.233***
	-0.05
OBSERVATIONS	21,863

Note 1: I only show variables of note above. All variables are listed in Appendix 1

Note 2: The numbers below the variable coefficients (which are in bold in this table) are standard errors. This is the same for all regression tables in this thesis

The final pathway through which gender differences in the importance of housing to happiness may emerge is personality. Following Bakan (1966), psychologists generally refer to gender differences in personality in terms of the duality of agency (masculinity) vs communion (femininity). Feminine traits include benevolence, trustworthiness, friendliness and empathy (Abele and Wojciszke, 2007). Masculine traits include being active, decisive, self-confident, and efficient are useful in the perspective of the self as they help to attain one's goals. Gender differences in personality have also been examined in terms of the Big Five traits (Weisberg et al., 2011; Costa et al., 2001; Abele and Wojciszke, 2007, Feingold, 1994).

Gender differences in personality may cause men and women to value objects for different reasons. Csikszentmihalyi and Rochberg-Halton (1981) found men tended to value objects in terms of the personal self, and women in terms of the social self ('signs of ties that bind the family together'). As an object, the house is no exception. Literature on gender and the meaning of home shows that men are more likely to see the home in terms of exchange value, status and achievement, while women are more likely than men to associate the home with family (Seeley et al., 1956; Rainwater, 1966). Gurney's ethnographic research (1990) similarly found that, for women, the meaning of home was inherently intertwined with significant life events in the social sphere. Similarly, women describe home in much more subjective terms (in relation to social self) while men adopt more objective terms (Gutmann, 1965; Carlson, 1971). Because of their agentic personalities, we would expect males to view home in more objective terms, attaching greater importance to economic status. In contrast, women have more communal personalities, and will therefore see the home in more subjective terms, attaching greater importance to the home as a source of identity, and in particular, as a physical affirmation of their social selves.

Summarising, housing is a complex good which is likely to affect happiness in many ways; as a physical form of shelter, as a place socialising and privacy, and as a source of self-identity and social status. The strength and nature of each of these pathways will also differ according to various socio-demographic variables, two of which are likely to be gender and tenure.

5.3. Standard economic theory, adaptation and social comparisons

By assuming that individuals are perfectly capable of maximising their happiness, standard economic theory, for a long time, effectively papered over any need to empirically examine, or theorise the relationship between housing and happiness. As this assumption has been gradually undermined though – both from outside and inside the (housing) economics discipline- the need

to understand this relationship has become ever-more difficult to ignore, and the research reviewed above is to be credited for not doing so. In this thesis though, I am concerned with testing an additional assumption of standard economic theory which has been subject to less scrutiny in the housing economics literature. According to standard economic theory, individuals have certain preferences (or needs) which, insofar as a distinction can be drawn, can either be physical or psycho-social in nature. By meeting these preferences, housing increases an individual's happiness. According to standard economic theory, these preferences are determined exogenously, and independent of social context and past experience. In this thesis, I present evidence to suggest that is not the case. Before discussing adaptation and social comparison effects in the context of housing and beyond, it is worth first discussing the 'Easterlin Paradox' which gave rise to much of the research on these two phenomena.

Central to standard economic theory is the assumption that demand for every good or service is insatiable. Many great economists of the past found this assumption hard to believe (Ackerman, 1997). John Maynard Keyes, to name just one, speculated in "Economic Possibilities for our Grandchildren" (1930) that material wants would be satisfied within a century meaning gains in productivity could be translated into more time off work. 85 years later, there is no indication of Keynes vision being realised. Instead of funding lower working hours, increases in productivity have been used to fund greater consumption. This could be interpreted as support for standard economic theory: as the insatiable individual consumes more and more, striving for an ever higher indifference curve, they become happier and happier. This is not the case.

In one of the most cited papers in modern economics, Easterlin (1974) found that, while income was positively related to happiness in cross-sectional analyses, gross national product was unrelated to happiness over time. Since Easterlin (1974), a more complex picture has emerged of the relationship between income and happiness (see Clark et al., 2008). Nevertheless, it remains the case that in most developed nations, happiness has not risen with GDP per capita (see Easterlin, 2005). Two theories are generally advanced to explain this paradox.

First, adaptation. There is now a substantial body of evidence that income preferences (or the welfare function) rise with income experienced. This *preference drift effect* (Van Praag et al., 1971) may explain the Easterlin Paradox. An increase in income initially increases happiness, but as income *preferences* rise with experience, the original uplift in happiness will diminish over time.

A second explanation for the Easterlin Paradox is that beyond a certain point, individuals derive happiness not from income itself, but from the status associated with income. In the cross section, those with high relative income have higher status and consequently, higher happiness.

Over time though, the supply of status will, by definition, remain unchanged, and so will happiness. This has been referred to as the 'comparison income' or 'relative utility' effect. I will refer to this phenomenon as the *'social comparison effect'.* The purpose of this thesis is to explore these two effects in the context of the relationship between housing and happiness.

5.4. Adaptation theories

According to standard economic theory, preferences are constructed independent of past experience That is to say, income preferences should not be affected by income experienced e.g. an increase in one's income should have the same effect on one's happiness after a day as after a year. Some of the earliest work challenging this assumption came from the Leydn group. They showed-for about 20 European countries- that a $1 increase in the income of a household leads to a 60 cents increase (within about 2 years) in what people consider to be an 'excellent', 'good', 'sufficient' and 'bad' income (for review, see Van Praag and Frijters, 1999). When applied to happiness, preference drift is generally referred to as *adaptation:* an increase in income leads to an initial increase in happiness, but as income preferences rise with income experienced, this uplift diminishes. According to both adaptation and preference drift, individuals evaluate their current experiences, in part, through comparing it to their past experiences (Kahneman and Tversky, 1979).

Frederick and Loewenstein (1999) provide an in-depth discussion of adaptation and suggest that whilst considerable adaptation seems to take place in some domains (e.g. income), it does not appear to in others (e.g. noise, cosmetic surgery and food). Recent longitudinal evidence suggests that, although it can take a while, individuals appear to fully adapt to marriage, divorce, widowhood and the birth of a child (Clark, Diener, Georgellis, & Lucas, 2008) but not necessarily to unemployment (Clark, Diener, Georgellis, & Lucas, 2008; Lucas et al., 2004).

Individuals do seem to (partially) adapt to improvements in housing conditions. Using Australian Panel Data, Frijters et al. (2011) found a positive effect of moving house (for any reason) on life satisfaction but this effect lasted for six months only. Nakazato et al. (2011) and Findlay and Nowok (2012), using the GSOEP and BHPS respectively, both found that moving house led to an initial increase in housing satisfaction, but this uplift diminished over time. The exception is Nowok et al. (2011). Again using the BHPS, they found that moving house (for any reason) was preceded by a period when individuals experienced a decline in life satisfaction. Moving house brought life satisfaction back to initial levels where they remained for the next 5 years (and perhaps beyond). Their findings are therefore more consistent with standard economic theory.

Commuting, in contrast, is one area in which people do not seem to adapt. Commuting is the daily activity that generates the lowest level of positive affect, as well as a relatively high level of negative affect; see Kahneman et al. (2004). People who commute longer report lower levels of life satisfaction and this relationship holds when fixed effects are introduced i.e. increases in an individual's commute time lead to decreases in their life satisfaction (Stutzer and Frey, 2008). One explanation for this 'commuting paradox' is that, in deciding where to live, individuals may systematically err in making the trade-off between commute time and size/quality of living space. Specifically, they may over-estimate the extent to which they adapt to changes in commute time and/or underestimate the extent to which they adapt to changes in housing conditions.

Understanding whether adaptation occurs in this context, or not, has major implications for public policy. In the UK, for instance, a/the key priority of housing policy is to meet the aggregate demand for living space. The means to this end are much debated. As noted, there are widely held doubts as to whether the free market can deliver. The end itself, however is rarely questioned in the housing economics literature. Aggregate demand is assumed to be at the level which maximises societal levels of happiness. But if individuals adapt to changes in living space, then increasing levels of living space will have a weaker, or shorter lived, effect on societal levels of happiness than standard economic theory would have us believe. Similarly, if public policy is to maximise happiness then it should invest in (or encourage individuals to consume) more of those goods that they do not adapt to and less of those goods they do adapt to e.g. live in smaller houses with shorter commutes. I discuss the policy implications of adaptation to changes in size of living space in Chapter 9.

According to adaptation theories, individual evaluate their current situation (in terms of income or living space) in the context of their past experience. According to social comparison theories, to which we now turn, individuals also evaluate their current situation in the context of what other people have. While adaptation theories challenge the assumption that preferences are constructed independent of past experience, social comparison theories challenge the assumption that preferences are constructed independent of social context.

5.5. Social Comparison Theories

Across the social sciences, it is generally accepted that people are concerned with their status or social rank. There is substantial evidence that status matters to educational outcomes (e.g. Chua and Rubenfeld, 2014; Hoff and Pandey, 2004), suicide rates (Daly et al., 2013), health (for review, see Wilkinson and Pickett, 2006) and, as will be demonstrated, happiness. There are many determinants of social status e.g. employment grade, education, and cultural tastes

(Bourdieu, 1984). In this thesis, I am concerned with two of the most widely documented determinants; relative income and 'being normal'.

Relative income

With high relative income comes power over other people (Csikszentmihalyi and Rochberg-Halton, 1981) and control of one's environment. Furthermore, relative income is a good indicator of those abilities which are valued in society (Frank, 2013). Relative income is therefore a key determinant of one's social status and, in turn, one's happiness. Besides the Easterlin Paradox (1974), there is now an abundance of empirical evidence indicating that the income of one's relevant others, or reference group (those people to whom we compare ourselves), is negatively related to happiness, conditional on own absolute income. Studies vary in how they define one's relevant others: Ferrer-i-Carbonell (2005) define them as people of a similar age, education and side of the country; for McBride (2001) it is those who are between five years younger and five years older than her; Blanchflower and Oswald (2004) define it as average income by state; for Luttmer (2004), it is one's neighbourhood. Importantly though, all find relevant others' income to take on a negative coefficient. See Clark et al. (2008) for review of literature on relative income and happiness. The causal chain advanced to explain the relationship between relative income and happiness consists of two links; first, relative income influences social status and second, social status influences happiness. I will return to the first link later but, for now, let's concentrate on the second; how does social status influence happiness?

To understand the mechanisms through which status affects happiness, it helps to distinguish between two types of social status. First, there is an individual's actual social status or social rank, which I refer to as objective social status. Then there is subjective social status, defined as "a person's *belief* about his location in a status order". (Davis, 1956). The former is determined by an individual's relevant others; the latter by the individual themselves. These two forms of status are likely to be highly correlated so most studies, including this thesis, do not empirically distinguish between them.

The first mechanism is psychological and therefore depends on an individual *subjective* social status. Individuals who feel they are low status are likely to experience envy, as typified by John Stuart Mill's (reported) observation that "men do not desire to be rich, but richer than other men.". However, while envy is likely to play a role - why else is "man shall not covet" one of the ten commandments? – Frank argues that shame is the major psychological cost associated with low status. It is not just, Frank contends, that we envy our peers with larger houses and faster cars. It is more that we unconsciously adjust our consumption norms and thus feel

‘‘relatively deprived.’’. Even if you do not envy the Jones’s large house, you will come to see a bigger house as ‘normal’. Adam Smith recognised this when defining the ‘necessaries’ in life in *Wealth of Nations* (1776: 351-2)

> “By necessaries I understand not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without. A linen shirt, for example, is, strictly speaking, not a necessary of life. The Greeks and Romans lived, I suppose, very comfortably though they had no linen. But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty which, it is presumed, nobody can well fall into without extreme bad conduct. Custom, in the same manner, has rendered leather shoes a necessary of life in England. The poorest creditable person of either sex would be ashamed to appear in public without them.”

It is important for researchers to appreciate that invidious social comparisons can take the form of both envy *and* shame. This applies to qualitative researchers in particular, who are better positioned to distinguish between the two. Batty and Flint (2013), for example, draw on qualitative research to argue that people living in deprived areas generally tend not to compare their circumstances with that of others and, if they do, focus on those around them rather than those above them in the status hierarchy. However, they limit their definition of social comparisons to envy. Thus when one respondent notes *“I don’t really compare with anyone. I’ve never thought of it in that way.”,* the authors argue that this perspective (among others of a similar sentiment) does “fundamentally challenge the centrality, or even existence, of a comparative drive or the pervasive presence of forms of status anxiety based on an assessment of subjective economic welfare which is directly linked to a sense of self-esteem and social worth”. It certainly challenges the idea that individuals are envious, but if this individual was unable to afford carpet on their floor, a bed for their bedroom, or other consumption goods considered ‘normal’ among their friends and family, then would they be similarly indifferent about the views of others? Because Batty and Flint (2013) conceptualise social comparisons only in terms of envy, they potentially overlook the role of shame in driving individuals to a ‘normal’ level of consumption.

Whether it is through envy or shame, there is little doubt that low status is associated with psychological costs. Much of the psychological research in this area has looked at low status affects levels of cortisol in the body. When we are stressed, cortisol is released by the brain to prepare us psychologically for dealing with potential threats. Dickerson and Kemeny (2004)

reviewed 208 studies in which people's level of cortisol was measured after being exposed to some situation or task designed to be stressful. They found that social evaluative threats – e.g. scoring worse than someone else or failing in a task in front of an audience – were the stressors that had the most powerful effect;

> "tasks that included a social-evaluative threat (such as threats to self-esteem or social status), in which others could negatively judge performance, particularly when the outcome of the performance was uncontrollable, provoked larger and more reliable cortisol changes than stressors without these particular threats" (p. 377)

The envy/shame that an individual experiences will depend on their subjective social status, which in turn will depend on whom they compare themselves to, or whose opinion they care about; their 'subjective relevant others'. Some attempts have been made to define this group of by asking people whose opinion they care about. In Wave 3 of the European Social Survey (ESS), the two most important stated groups of relevant others for income were work colleagues (36%) and friends (15%). Japanese respondents also cite work colleagues and friends as the two most important groups of relevant others, but with their relative importance inverted (42% and 20%, respectively) (Clark, 2013). Mostly, however, it is the researcher herself who imposes some particular group of relevant others on the sample. This is the approach I adopt in Chapters 7 and 8.

The second mechanism through which social status affects happiness is material and therefore depends on an individual's objective social status. How an individual is ranked by the society around them will influence their access to resources. Objective social status may therefore be viewed and desired as an intermediate good; a non-monetary currency. Weiss and Fershtman (1998: 802) elaborate on this point;

> "A person of high status expects to be treated favorably by other individuals with whom he might engage in social and economic interactions. This favorable treatment can take many forms: transfer of market goods, transfer of non-market goods (through marriage, for instance), transfer of authority (letting the high status person be the leader), modified behavior (such as deference or cooperation) and symbolic acts (such as showing respect).Because of these social rewards, each individual seeks to increase his social status through group affiliation, investments in assets (including human and social capital) and an appropriate choice of actions."

Thus subjective status is desirable so as to avoid shame/envy, while objective status is desirable as a means to achieving other resources (instrumental value)[9]. To capture this range of mechanisms through which status affects happiness, I define 'relevant others' very broadly as those persons an individual interacts with, seeks the respect of, or compares themselves to; a group which is likely to encompass an individual's friends, family, work colleagues and neighbours among others.

In sum, social status matters to happiness for two reasons. First, low (subjective) social status is associated with a sense of shame (and/or envy) while high status is potentially associated with pride and confidence. Second, low (objective) social status is associated with denial to social resources, which in turn, is likely to be detrimental to individual happiness. Both mechanisms are likely to play some role in explaining why the income of other people is negatively related to individual happiness. They do not, however, explain the first link of the causal chain; how is relative income translated into social status?

Positional good theory

For society to award an individual status in proportion to their relative income/wealth, they must know how much that individual is worth. Because income/wealth is not itself visible, it has to be signalled through other means. The most effective way of signalling wealth/income is through consumption. Some goods are more effective at signalling wealth than others. Cars, houses, and clothes are all highly visible and therefore likely to be effective signals of wealth (e.g. Heffetz, 2011). However, as consumption of these goods increases in society, the relative wealth they signal, and status that they carry decreases. Frank (1985, 2013) defines these as positional goods; goods whose utility depends strongly on the consumption of others. In other words, the consumption of positional goods carries negative externalities.

If positional concerns are stronger for some things than for others then society could, in theory, be happier if it invested less on positional goods and more on non-positional goods (Frank, 2004). Evidence about what goods are more positional than others is therefore essential for correct policy recommendations (Besharov, 2002). Several hypotheses have been advanced to determine which goods are positional and which are not. One hypothesis, as advanced above, is that the more visible a good, the more likely it is to be positional. On the basis of a detailed telephone survey, Heffetz (2004) assigned a visibility index, or "vindex," to more than thirty categories of expenditure recorded by the Consumer Expenditure Survey. Categories with the

[9] Some lab based experiments have attempted to isolate the instrumental value of status. For example, Glaeser et al. (2000) measure trust through trust game experiments and show that individuals with characteristics believed to be correlated with high status systematically realize higher gains (see Heffetz and Frank (2008) for review of similar studies).

highest vindex values included cars, jewellery, and clothing; those with the lowest visibility included car insurance, life insurance, and household utilities. Heffetz (2004) found that the more visible a good is, the more likely it is to be positional.

In a similar vein, some have argued that leisure time and vacation time are non-positional goods (Frank, 1985; Frank and Sunstein, 2001), implying that if society worked fewer hours, and therefore had lower incomes, then we would all be happier. Solnick and Hemenway (1998, 2005; Solnick et al., 2007) have conducted several surveys in which they ask participants to choose between two hypothetical states of the world; a "positional" state, where the respondent had more than others, and an "absolute" state, where both parties have more than in the positional state, but the respondent now has less than others. Response patterns in these surveys consistently reveal leisure to be highly valued by most individuals regardless of context. That is, individuals are concerned with absolute, rather than relative, levels of leisure time.

As a highly visible good, housing should, in theory, represent an ideal means of signalling one's relative wealth. Indeed, the hypothesis that housing is positional has been advanced by many economists, including Robert Frank and Karl Marx. While there is some informal recognition in the housing economics literature that housing is positional – (O'Sullivan and Gibb, 2003, p2)- for instance, note that "Demand for 'housing' in the real world ... reflects the fact that housing is in part at least a 'positional good'") the idea of housing as a positional good, and the concept of social status more generally, remains a relatively alien concept in the discipline. Duncan Maclennan (1982) noted that "Although social scientists, and particularly sociologists, have long recognised that individuals make group decisions and that goods may impact status, with status increasing with price per se, economists have made little attempt to analyse such potentially important characteristics of housing", and much the same observation could be made today. There is (to my knowledge) only one empirical study that has explicitly examined the positionality of *overall* housing consumption. Alpizar et al. (2005) asked 325 students in Costa Rica to choose between two hypothetical states of the world, in a methodology similar to Solnick and Hemenway. Their findings suggested that about half of the utility gain of additional expenditures on housing may be due to increased relative consumption, implying that housing expenditure is highly positional.

In this thesis, I examine the positionality of house *size* in particular. Are individuals solely concerned with having a large house, as implied by standard economic theory? Or are they also concerned with having a larger house than other people, as implied by the positional good theory? As Chapters 6 and 7 demonstrate, understanding the positional nature of house size is vital if housing and planning policy is to maximise societal happiness.

In the section above, I have attempted to demonstrate two things, first, how social status affects happiness both directly (shame/envy/pride) and indirectly (access to/denial of resource); and second, how relative income affects social status through the consumption of positional goods. Social status, however, is not only determined by relative income, but also by other factors such as cultural tastes, education, and most pertinently of all, 'being (or acting) normal'

Being 'normal' (Social norm theory)

Heterosexuality, getting married, having children and shaking hands are all part of 'being normal' or 'acting normal' in Western society. These behaviours are not only normal in the sense of being statistical regularities, but normal in the 'oughtness' that society attaches to them; people *should* be heterosexual, *should* be married and *should* have children. In more formal terms, these are not only descriptive norms but also *injunctive norms, accepted rules or normative principles*. This is what I mean when I talk about social norms.

Different disciplines – psychology, sociology, and economics - have defined and conceptualised social norms in different ways. This stems from the different perspective that these disciplines take in explaining behaviour, beliefs and desires more generally (Brennan et al., 2013). Indeed, Eric Posner admits that his own definition of the "norm" is arbitrary, a defect that he argues is shared by all writing on the subject (1996: 1699). Hechter and Opp are more positive. They identify three characteristics of social norm which generally hold across the disciplines.

First, they should be statistical, or behavioural regularities. Second, there should be a sense of oughtness to do with them. This oughtness relies on "some standard of value that is taken without further justification as valid by the individual or group in question" (Williams 1968, 205). For example, in Western societies it is taken for granted that individuals ought to only have one wife. Because of the 'oughtness' society attaches to social norms, deviating from them-through being homosexual, remaining single etc.- will result in a loss of social status. This leads us to the third criterion. For an act to be a social norm, there should be sanctions associated with conforming or deviating. Conforming to a social norm may bring a sense of pride (e.g. marriage) while deviating may bring a sense of shame (e.g. divorce); both of which depend on an individual's subjective social status. In the social norm literature, these are referred to as *internal sanctions*, referring to the fact that individuals internalise these norms (i.e. they themselves come to believe that it is morally right to conform). Additionally, conforming may allow access to social resources, or social capital, while deviating may result in ostracisation. These sanctions are imposed by other people, as opposed to the individual themselves, and will therefore depend on an individual's objective social status. These are

commonly referred to as *external sanctions*, and will be imposed regardless of whether the individual believes in the norm or not.

Although much of the literature on social norms comes from psychology and sociology, the concept is gaining traction in economics. George Akerlof (1980), for instance, argues that there are, in effect, norms in place governing relations between employers and employees that lead employers to pay wages above market rates and retain existing employees through 'bad times'. Akerlof's theoretical model holds that the strength of the sanctions associated with deviating from a social norm will depend on, among other things, the strength or 'oughtness' of the social norm among relevant others. Adapting Akerlof's model, Clark (2003) hypothesised that the negative effect of unemployment on happiness would be moderated by the unemployment rate among one's relevant others. Consistent with this hypothesis, he found the magnitude of the 'unemployment effect' to be larger if one's partner is also unemployed, and if there are more unemployed adults in the household. Furthermore, the magnitude of the unemployment effect was larger in regions with lower levels of unemployment. Clark (2003) used British data but there have been similar findings in the German (Clark et al., 2010) and Australian (Shields et al., 2008) contexts. In Chapter 8 of this thesis, I conceptualise home-ownership as a social norm and positional good, and argue that individuals derive social status and happiness through both 'being normal' and signalling a high relative wealth. In the next section, I summarise the main objectives of this thesis and set out the empirical chapters in this context.

5.6. Summary

In sum, according to standard economic theory, the relationship between housing and happiness is quite simple. Individuals have housing preferences – for a certain house size, décor, tenure etc. – which when met lead to an increase in happiness. Because people are rational utility maximisers, we can assume that these preferences are set at the level which maximises happiness. The sole focus of housing policy should therefore be to meet these preferences insofar as possible- to increase the average size of living space, to expand home-ownership- thus maximising societal levels of happiness. In the chapters above, I have outlined three flaws with this logic which variously motivate, inform and limit this thesis.

The first flaw motivates the methodology adopted in this thesis. If individuals always acted to maximise their happiness, there would be no need to explicitly 'measure' happiness, and examine its determinants, as we could simply look at people's revealed preferences. However, as the founders of modern economics would have recognised, individuals are susceptible to all sorts of biases, which limit their ability to predict the effect of different housing characteristics on their happiness. When trading off between a larger house and a shorter commute; or a flat

with poor light and a house with damp; individuals will not always make the decision that maximises their happiness. It is therefore important that we empirically examine the effect of housing on happiness, as the following chapters seek to do.

The contribution of the following chapters – and indeed, the main contribution of this thesis- is to illuminate the second flaw of this logic; that far from being stable, predictable and exogenously determined, individual preferences depend both on an individual's past experience and their social context. In Chapters 5 and 6, I demonstrate that the level of living space an individual considers adequate will depend on the level of living space they experienced in the past, and the level of living space that their relevant others have. Chapter 7 provides evidence to suggest that housing tenure preferences are also likely to be driven by social status. Taken together, both chapters imply that a substantial proportion of the effect of house size and tenure on happiness is mediated by social status. Meeting society's preferences for more living space and higher rates of home-ownership will therefore have a smaller effect on societal happiness than standard economic theory, and the logic stated above, predicts.

Finally, the third flaw of this logic exposes a limitation of this thesis. Happiness is a self-evident good that individuals value and have good reason to value. Examining its relationship with happiness therefore deserves to be the key focus of this thesis. However, as I argued in Chapter 2, there are other self-evident goods which individuals value, and have good reason to value, and which may conflict with the pursuit of happiness. In these instances of conflict, we need an idea of justice that accounts for the plurality of self-evident goods. It was to this end that I introduced the capabilities approach, and outlined how research into the determinants of happiness could be used to inform the specification and weighting of capabilities. In the concluding chapter of this thesis, I use this conceptual framework to tentatively translate the finding of this thesis into some policy recommendations.

5.7. A note on data

Throughout this thesis, I rely on two datasets; the British Household Panel Study (BHPS) and the German Socio-Economic Panel Study (GSOEP). Both datasets followed a nationally representative sample of households, interviewing the same people every year. Both are widely used in the social science literature, and in the study of the determinants of happiness. I choose these datasets for several reasons;

- They are panel datasets which allows us to control for fixed effects e.g. to look at how changes in one individual's happiness from one year to the next relate to changes in their housing conditions from one year to the next.

- They are nationally representative samples which allows us, in some cases, to generalise the findings to the population as a whole
- They are designed carefully to avoid attrition bias. For a detailed discussion of the BHPS sampling, representatives, weighting and imputation procedures, Lynn (2006). For same on GSOEP, see Haisken-DeNew and Frick (2005)
- Both datasets contain data on happiness and housing, as well as a rich set of socio-economic variables.
- I had free access to both datasets (in contrast to HILDA, the Australian Panel Dataset, which is not free).
- Given the tenure differences (see above) between Germany and UK, these two countries make for an interesting comparison.

British Household Panel Study (BHPS)

In autumn 1991, the BHPS interviewed a nationally representative sample of 5,500 private households, comprising approximately 10,000 full adult (aged 16 or above) interviews. Additional samples of 1,500 households in each of Scotland and Wales were added to the main sample in 1999, and in 2001 a sample of 2,000 households was added in Northern Ireland, making the panel suitable for UK-wide research. By 2008, the sample had expanded to 9000 households. The BHPS has the most extensive set of housing variables of all the national panel datasets. In terms of happiness, it contains mental health (GHQ) indicators in every wave. Life satisfaction was included every year from 1996 onwards, apart from 2001, when life satisfaction was excluded.

From 2008 onwards the BHPS sample was subsumed into the (larger) Understanding Society sample. Because of logistical issues, it is time consuming to merge the BHPS sample before and after this event. Furthermore, many of the key housing variables (e.g. subjective shortage of space; value attached to becoming a home-owner) were discontinued when the BHPS sample was merged with Understanding Society. For both of these reasons, this thesis only looks at the BHPS from 1991 to 2008.

German Socio-Economic Panel Study (GSOEP)

The first wave of the GSOEP was conducted in 1984, and consisted of approximately 9000 individuals from 4500 households. As early as June 1990, the SOEP expanded to include East Germany. After several booster samples – both targeted and random (see Table 2 below) – the sample size had expanded, by 2011, to approximately 12000 adults from 9000 households. The GSOEP contains fewer variables relating to housing problems, but has better data on size of living space. Life satisfaction was included in every year from the start.

Table 2 – GSOEP Sample details (sourced from Haisken-DeNew and Frick, 2005)

Name/ Value	Label	Start Year	House-holds	Persons	Description
A/1	German West	1984	4,528	9,076	Head is either German or other nationality than those in Sample B
B/2	"Foreigner" West	1984	1,393	3,169	Head is either Turkish, Italian, Spanish, Greek or from the former Yugoslavia
C/3	Germans East	1990	2,179	4,453	Head was a citizen of the GDR (expansion of survey territory)
D/4	84-93 Immigrant (West)	1994/1995	522	1,078	At least one household member has moved to Germany after 1989 (expansion of survey population)
E/5	Refreshment 1998	1998	1,056	1,910	Random sample covering all existing subsamples (total population)
F/6	ISOEP 2000	2000	6,043	10,880	InnovationRandom sample covering all existing subsamples (total population)
G/7	High Income	2002	1,224	2,671	Monthly net household income is more than 4.500 Euro (7.500 DM)
H/8	Refreshment 2006	2006	1,506	2,616	Random sample covering all existing subsamples (total population)
I/9	"Incentive"	2009	1,531	2,509	Random sample covering all existing subsamples (total population); since 2011 part of SOEP Innovation Sample
J/10	Refreshment 2011	2011	3,136	5,161	Random sample covering all existing subsamples (total population)

The data used in this thesis were extracted using the Add-On package PanelWhiz v4.0 (Oct 2012) for Stata. PanelWhiz was written by Dr. John P. Haisken-DeNew (john@panelwhiz.eu). The PanelWhiz generated DO file to retrieve the BHPS data used here and any Panelwhiz Plugins are available upon request. Any data or computational errors in this thesis are my own. Haisken-DeNew and Hahn (2010) describe PanelWhiz in detail.

Note 1: for all regression results in this thesis: *p-value<0.1; **p-value<0.05; *** p-value<0.01

Note 2: for all regression results in this thesis: the numbers underneath the variable coefficients (i.e. the numbers in bold in Table 1) are standard errors

5.8. UK vs Germany

For the first two empirical chapters – which look at how social comparisons and adaptation affect the relationship between size of living space and happiness - I use both datasets from Germany and UK, and compare the findings from the two different national contexts. As discussed in the previous Section (5.8.), the choice of Germany as a comparison was mainly motivated by data. Alongside the British Household Panel Study (BHPS), the German Socio-Economic Panel (GSOEP) is one of the most detailed, rigorously conducted and longest running national panel datasets in the world. For these reasons, 'happiness economists' commonly alternate between the two datasets when testing, and re-testing hypotheses (see the reference list of Andrew Clark or Andrew Oswald, for instance).

Using Germany for comparison could be problematic, as both countries differ in many respects; labour market structure, income inequality and culture to name just a few. In this thesis, however, it is only worth focussing on those national differences which are likely to lead to divergences in the hypotheses advanced in these first two chapters; and in this respect, the differences seem minimal. In both national contexts, *relative* income is important to happiness; in Germany (Ferrer-i-Carbonell, 2005; D'Ambrosio and Frick, 2007); and in the UK (Boyce et al., 2010; Clark and Oswald, 1996[10]). Thus there is no reason to suggest that the effect of social status on happiness will differ between these two countries, nor that income is any more important as a determinant of social status is UK than Germany. Similarly, there is no evidence to indicate that the adaptation process will differ between the two countries– with individuals adapting similarly to life events and income in both UK (Clark and Georgellis, 2013) and Germany (Lucas et al., 2008); and no evidence that gender differences in the meaning of home will vary between UK and Germany e.g. as shown above, in both UK and Germany, women spend more time doing housework than men, and apparently attach greater importance to housing as a life domain.

The only apparent differences between Germany and UK, which we have *a priori* reason to believe will lead to differences in the hypotheses advanced, are to do with the housing market. As noted above there are significant differences between UK and Germany both in the nature, and socio-demographic composition, of housing tenures. In Germany, the private rental sector is much larger than in UK, and bears much more resemblance to home-ownership in terms of tenure security. Consequently, as noted above, the difference in social status that owners and renters derive from their house may be larger in the UK than Germany; implying that while in the UK, social comparisons may affect the space preferences of owners more than renters, this tenure difference may not exist in the German context. Furthermore, one could speculate that because there are more renters in Germany than UK, and renters do not have the same economic attachment to their home as home-owners, housing will matter less as a status symbol in Germany than the UK, but this is conjecture at best.

There are several other differences between the UK and German housing markets which are perhaps worth mentioning. One distinctive feature of the German housing market, as compared to the UK market, is the large number of (small) rented flats in the major urban areas (Clark et al., 1997). Also, levels of residential mobility are higher in the UK than Germany but only slightly (Sanchez and Andrews, 2011).

In sum, there is insufficient empirical evidence for us to hypothesise *a priori* that the hypotheses advanced in Chapters 6 and 7, in terms of the relationship between size of living space and

[10] Note that their findings relate to *job* satisfaction, but the logic still holds.

happiness, will differ substantially between the UK and Germany. The hypotheses formulated in the following two chapters are therefore predicted to apply similarly in both UK and Germany. This is the same approach as that adopted by other quantitative researchers examining the relationship between housing and happiness. For instance, when Nakazato et al. (2011) examine adaptation to improvements in living conditions in Germany, they do not discuss the national context in any detail, despite drawing on empirical evidence from other countries.

6. SIZE OF LIVING SPACE AND HAPPINESS[11]

6.1. Introduction

The relationship between size of living space and happiness is commonly assumed to be positive. "Number of rooms per person" was used as an indicator of quality of life in both the OECD "Better Life Index" (2011) and the "European Quality of Life Survey" (2012). Concern has arisen because size of living space *is* important to people. Individuals who report a shortage of space are more likely to state a preference to move (Fujiwara and HACT, 2013), and a shortage of space is the main reason for people in new homes wanting to make changes, or considering moving home (RIBA, 2011). Furthermore, size of living space, both internal and external, is one of the most influential determinants of house price (e.g. Cheshire et al., 2014: 80).

There is quantitative evidence supporting an *association* between space and happiness (e.g. Reynolds, 2005) but a striking absence of quantitative evidence supporting a *causal* relationship. Using the British Household Panel Study (BHPS), both Pevalin et al. (2008), and Fujiwara and HACT (2013), found housing problems to be detrimental to happiness, yet neither found subjectively reported "shortage of space" to have an impact. This absence represents the rationale for examining the *magnitude* and *direction* of this relationship.

Shrinking of living spaces in the UK is generally attributed to the growing cost of developable land (Evans, 1991). However, Tunstall (2015) and Dorling (2014) both argue that inequality also plays a role. Since the 1980's distribution of living space has become increasingly unequal. This could explain why the average new home has decreased in size. To test whether a more equal distribution of housing would make for a happier society, we must examine the *shape* of the relationship between space and happiness. If an extra room brings more happiness to an individual in a 1-bedroom house than a 5-bedroom house, there is a utilitarian justification for a more equal distribution of space.

If there is a significant relationship between housing and happiness, then it is also important to understand *how* this relationship occurs (i.e. the mediator). The most obvious explanation is that more living space allows individuals to come together and be apart as they like, facilitating both sociability and privacy, and thus increasing happiness. The alternative explanation is that individuals derive happiness not from *absolute* size of living space but the *social status* that comes with having high *relative* levels of living space: individual happiness depends not on

[11] A reduced version of this chapter (using only BHPS data) has been published; Foye, C. (2016). The Relationship Between Size of Living Space and Subjective Well-Being. *Journal of Happiness Studies*, 1-35.

having more space, but having more space than other people. As we will see, both pathways are associated with very different policy implication.

The value of size of living space as a metric of social happiness also depends on the *dynamic* relationship between size of living space and happiness. Standard economic theory implies that any increase in happiness caused by an increase in living space should be sustained over time. In contrast, adaptation theories variously imply that changes in living space lead to an initial impact on happiness but that as individuals adapt, their happiness reverts to its previous level. Adaptation theories thus imply that space is a less important metric of societal happiness, as it has only a temporary effect on happiness. Taken together these diverse bodies of literature motivate the following research questions;

> "What is the relationship between size of living space and happiness in terms of *magnitude*, *direction* and *shape*?"
>
> "Does the relationship differ *over time*?"

6.2. Literature Review and Theory

There are two main pathways through which size of living space could affect happiness. The first pathway, lifestyle, is consistent with standard economic theory. The second pathway, social status, is not.

Pathway 1: Lifestyle

Having more living space facilitates more activities and values. In the UK, for example, having friends round, sitting in peace and quiet and eating as a family are all activities limited by lack of space (RIBA, 2011). Shelter conducted a survey of 505 households in accommodation deemed to be 'overcrowded'. Their findings revealed the importance of space in providing personal privacy, reducing depression, anxiety and stress, giving children room to play and ensuring a good night's sleep. Three quarters of respondents (77%) in this survey saw space as playing a key role in determining the quality of family relationships. CABE's 2009 study of resident satisfaction within private homes in southern England similarly focused on family life, emphasising the role of space in allowing people to come together, and to be apart when they wish (see Carmona et al., 2010, for review of evidence on the relationship between space and social outcomes)

If living space impacts happiness through lifestyle, then this pathway should have diminishing marginal utility: an increase from 1 room per person to 2 rooms per person is likely to facilitate

more activities and values than an increase from 2 rooms per person to 3 rooms per person. This non-linearity is likely to be accentuated by the illiquid nature of the housing market, meaning that some individuals – particularly at the top of the space distribution - are likely to be stuck in a house that is larger than what they want (e.g. older people whose families have left home). Thus, as we move up the space distribution, the costs of extra living space are increasingly likely to offset, or even outweigh, the benefits. These costs are financial; space costs money. But they are also likely to be physical (a larger house will take more time to maintain); and potentially psychological, as in the case of the Ghates in V.S. Naipaul's portrait of India;

> "Mr Ghate was a high senior official. He had grown up in the mill area, in one room in a chattel, though it was open to him, as a man of position, to live in better accommodation in a better area. He had tried to do that some years before, but it had ended badly. His wife had suffered in the comparative seclusion and spaciousness of the self-contained apartment they had moved to. This was more than moodiness, she had become seriously disturbed. Mr Ghate had moved back to a chattel, to the two rooms he had now, back to the sense of a surrounding crowd and the sounds of life all around him, and he was happy again" (p. 60)

In this case, the increased space (and new surroundings) added options for the Ghates in terms of facilitating more activities, but took away the option of experiencing a vibrant home life.

Pathway 2: Status

> "A house may be large or small; as long as the neighbouring houses are likewise small, it satisfies all social requirements for a residence. But let there arise next to the little house a palace, and the little house shrinks to a hut" (Marx and Engels, 1845)

A second, and less considered, pathway through which size of living space is likely to affect happiness is status. According to standard economic theory, individual preferences are constructed asocially, meaning the happiness that an individual derives from a certain level of living space should be independent of the levels of living space among their relevant others (friends, family, countrymen etc.). Contrary to this assumption, there is - as noted in Chapter 5- strong evidence that individual happiness depends not only on being rich but being richer than other people (e.g. Luttmer 2004; Ferrer-i-Carbonell, 2005), implying that relative income affects social status, which in turns affects happiness.

For society to award an individual status in proportion to their relative income/wealth, they must know how much that individual is worth. Because income/wealth is not itself visible, it has to be signalled through other means. The most effective way of signalling wealth/income is

through consumption. A house is the largest and most expensive physical object most individuals consume, and size is one of the main determinants of house value. The size of one's house therefore represents a highly effective means of signalling one's wealth. However, because status is determined by *relative* wealth, what matters is not house size *per se* but *relative* house size. As average levels of living space increase, the relative wealth that a certain house size signals – and, by extension, the status that it carries- will decrease. This logic led Karl Marx (see above) and Robert Frank among others, to hypothesise house size as a positional good; a good whose utility depends strongly on the consumption of others (Frank, 1985, 2013). There have, however, been only a handful of studies testing this hypothesis. These studies have adopted one of two methodologies; survey-experimental methods, and revealed preference methods using house prices.

Survey experimental methods ask respondents to choose between two states of the world; a "positional" state, where the respondent has more than others, and an "absolute" state, where both parties have more than in the positional state, but the respondent now has less than others. Solnick and Hemenway (2005) use a sample of 226, mostly friends of Harvard faculty staff, and find 30 percent to choose the positional option for house size. Solnick et al. (2007) conduct a similar study on 90 college students and graduates in Beijing, and find 50 percent to choose the positional option.

The weakness of the survey experimental method is obvious: people may (deliberately) misreport their preferences (Bertrand and Mullainathan, 2001). To address this limitation, Leguizamon (2010) looked at *revealed* preferences. Specifically, she examined housing sales from Ohio, and found that an increase in average house size of the eight nearest neighbours and the largest houses in the district had a negative effect on predicted house price. Also using Ohio data, Leguizamon and Ross (2012) found that an increase in the average house size of the nearest neighbours decreased predicted house price, but this relative effect was small compared to the effect of absolute house size.

Overall, the evidence thus suggest that size of living space affects happiness through two pathways; i) facilitating activities and values (lifestyle), ii) increasing one's social status. It is important to distinguish between the two pathways, as both are associated with very different policy implications. If size of living space impacts happiness through lifestyle, then an increase in average levels of living space should facilitate more household activities, and therefore increase societal happiness. If, on the other hand, individuals derive happiness not from having more space *in itself*, but from having more space than other people, then increasing the supply of space will have a weaker effect on social happiness than standard economic theory predicts because of the negative externalities it brings - by increasing my house size, I decrease your

happiness. So how do we distinguish between these pathways? In Chapter 7, I devise a more sophisticated methodology to test for the status pathway but there are a couple of clues that we can potentially glean from this study.

First, through the *shape* of the relationship. If living space influences happiness through lifestyle, then it should have diminishing marginal effect. Intuitively, one would expect the relationship between size of living space and status to be more linear. For a single person, moving from a 2-bedroom flat to a 3-bedroom flat is unlikely to facilitate many more activities but it will deliver status by virtue of the higher property value.

Another way is through looking at how the relationship differs between *gender*. If the status pathway is dominant, then, given that housing arguably means more as a symbol of economic status to than women (Seeley et al., 1956; Rainwater, 1966; Gutmann, 1965; Carlson, 1971), we would expect the effect of space on happiness to be larger for men than women. If, on the other hand, the lifestyle pathway, is dominant, then we might expect the reverse (i.e. space to have a larger effect on the happiness of women), as housing, in general, is more important as a life domain to women than men.

Based on the literature reviewed in Chapter 5, one could also hypothesise tenure differences in the two pathways. Testing for these though is difficult in the context of this study, because the homes of owners and renters are also likely to be very physically different. If, for instance, we found a stronger relationship between size of living space and happiness among owners than renters, then it may be because the owners' rooms are larger, or better designed, than renters' rooms; as opposed to any tenure difference in the meaning of home. For this reason, I only test for gender as a moderator in this chapter. Thus, based on the literature and theory reviewed above, we can advance the following hypotheses;

H1: *Size of living space will be positively related to happiness and housing satisfaction*

H2: If size of living space influences happiness (and housing satisfaction) through the lifestyle pathway then it will have diminishing marginal effect

H3: If size of living space influences happiness (and housing satisfaction) through the status pathway then it will have a more linear effect, and will be stronger for men than women.

Adaptation

According to standard economic theory, any increase in happiness in the year after an increase in living space should be sustained over time, *ceteris paribus*. However, several studies have

found that increases in housing and life satisfaction associated with moving house diminish over time, (Frijters et al., 2009; Nakazato et al., 2011; Findlay and Nowok, 2012). The post-move downward trajectories of housing satisfaction and happiness are consistent with adaptation theory (or set point theory), which contends that individuals have stable levels of happiness shaped by genetics and personality. Deviations from the set-points may occur but their effects are usually transitory. However, as Nakazato et al. (2011) point out, adaptation theory is limited as it does not explain *why* these effects are transitory. There are two explanations – as follows- for why the increase in *housing satisfaction* after an improvement in living conditions is not sustained.

First, according to the aspiration spiral theory (Stutzer, 2004), after improving their living conditions, individuals could simply shift their expectations upwards; "*now I have a 3-bedroom house, I want a 4-bedroom house."* (Nakazato et al., 2011). Housing satisfaction judgements are generally thought to be constructed by individuals according to how their current housing situation relates to their preferred housing situation (Galster and Hesser, 1981). For alternative theories of housing satisfaction, see Jansen (2014). According to this logic, an increase in living space will initially close the gap between one's preferred housing situation and reality, leading to an initial increase in housing satisfaction. But over time this gap will re-emerge causing any uplift in housing satisfaction to diminish. While housing preferences can be influenced by "relevant others" (Vera-Toscano and Ateca-Amestoy, 2008), theoretically the aspiration spiral theory need not involve social comparisons.

The second explanation for the post-move decrease in housing satisfaction is *distinction bias* (Hsee and Zhang, 2004). In the year after moving to larger accommodation, individuals view their new house in direct comparison to their old house in a *joint evaluation,* so space is particularly salient. Over time, however, the new house will be viewed in isolation in a *separate evaluation.* Because space is not a naturally salient housing characteristic (i.e. it is not intrusive or unpredictable), its salience will decrease, and housing satisfaction judgements will diminish accordingly.

Housing satisfaction is not an indicator of happiness itself. But according to the theoretical model of Van Praag et al. (2003), life satisfaction (and by extension, happiness) judgements are a function of different domain satisfaction judgements. Thus housing conditions affect housing satisfaction, which in turn affects happiness. Because happiness is a function of housing satisfaction, it should take a similar (although smoother) trajectory over time i.e. decrease before the move; increase in the year after the move; and decrease thereafter.

However, it may be that space influences happiness independent of housing satisfaction. According to the hedonic treadmill theory, novel stimuli are more likely to lead to positive/negative affect as they are more likely to draw attention (Schimmack 2001; Wilson and Gilbert 2008). Initially more space will lead to an increase in positive affect, which will be reflected in higher experiential and evaluative happiness (Schimmack et al., 2002b). Over time, however, the novelty will wear off and happiness will return to its previous levels. The hedonic treadmill theory does not predict adaptation in housing satisfaction judgements as these should not be influenced by positive/negative affect (Nakazato et al. 2011).

Alternatively, the influence of housing satisfaction judgements on happiness may change throughout the moving process. It is in the interest of an individual's happiness to place more emphasis on those life domains that most satisfy them. This is formally demonstrated by Bradford and Dolan (2010), in what they define as the *global adaptive utility model.* According to their model, the importance of housing should increase when levels of housing satisfaction increase, and decrease when housing satisfaction decreases. Therefore, decreases in housing satisfaction should have little influence on life satisfaction (and happiness) judgements. Contrastingly, increases in housing satisfaction should be amplified in life satisfaction (and happiness) judgements. Based on the adaptation literature reviewed above, we can formally advance the following hypotheses;

H4: According to standard economic theory, any increase in happiness (or housing satisfaction) associated with moving to "larger accommodation" will be sustained over time

H5: According to the hedonic treadmill theory, any post-move increase in happiness will diminish over time but any increase in housing satisfaction will be sustained

H6: According to the aspiration spiral theory and distinction bias theory, any post-move increase in housing satisfaction or happiness will diminish over time.

Summarising, the existing literature predicts that size of living space will be positively related to happiness and housing satisfaction. The lifestyle pathway implies the relationship will have diminishing marginal utility, whereas the status pathway implies a more linear relationship. The literature on gender suggests that if the status pathway is dominant, space should have a larger impact on men's happiness. In terms of the dynamic relationship, distinction bias and aspiration spiral theory both imply that any increase in housing satisfaction associated with moving to larger accommodation will diminish post-move. According to Van Praag et al. (2003), happiness should take a similar, although smoother, trajectory to housing satisfaction. In contrast, the global adaptive utility model and the hedonic treadmill theory both imply that

happiness will take a different trajectory to housing satisfaction. It is therefore important that we look at the effect of space on happiness and housing satisfaction, separately.

6.3. Data and Methodology

There are two parts to the analysis. The first uses fixed effect regressions to identify how changes in number of rooms per person affects housing satisfaction and happiness. The second examines the dynamic housing satisfaction and happiness of those individuals who move to subjectively larger accommodation. The analysis draws on two datasets in full (including booster samples); the German Socio-Economic Panel Study (GSOEP) which ran from 1984-2013 and the British Household Panel Study which ran from 1991-2008. More details are provided on both datasets in Section 5.7.

In the BHPS, we use two indicators to approximate happiness. First, life satisfaction, which is measured using responses to the question of "*How dissatisfied or satisfied are you with your life overall?",* with responses on a scale of 1-7 where 1 signifies completely dissatisfied and 7 signifies completely satisfied. Second, the General Health Questionnaire (GHQ), which asks individuals (via a self-completion questionnaire) how often they are experiencing certain feelings in relation to their usual state. We use the Caseness version of the GHQ score, which counts the number of questions for which the response is in one of the two 'low happiness' categories. Higher scores therefore indicate lower levels of happiness. For ease of interpretation, the scales are reversed (i.e.12=0….,0=12) after which the majority of respondents record a score of 12. Clark and Georgellis (2013) found trajectories of GHQ and life satisfaction to be very similar after life events (e.g. widowhood, marriage, unemployment). Housing satisfaction is evaluated using responses to the question; "*How dissatisfied or satisfied are you with.....Your house/flat"*, with responses again on a scale of 1-7. In the GSOEP, both life satisfaction and housing satisfaction are on an eleven point scale of 0-10, where 0 signifies completely dissatisfied and 10 signifies completely satisfied. The GSOEP does not contain any indicators of mental health.

Throughout this thesis, I rely heavily on using fixed effect regression models. Whereas a standard ordinary least squares (OLS) regression looks simply at the effect of changes in an independent variable (e.g. house size) on the dependent variable (e.g. housing satisfaction); a fixed effects OLS examines the relationship between *within-individual* changes in the independent variable and *within-individual* changes in the dependent variable. For example, in the case of this chapter, it examines the relationship between changes in a certain respondent's size of living space from one wave (or year) to the next, and changes in that same respondent's housing satisfaction from one wave to the next. The key quality of a fixed effects methodology

is that, by only looking at within-individual changes in dependent/independent variables, it effectively controls for all *time-invariant* variables, including those which are unobservable. Therefore, all variables that do not vary within an individual over time are controlled for (and excluded) from the regression analysis. This makes it very appealing for examining the determinants of happiness, as there are certain variables – most notably personality, and how an individual interprets the life satisfaction scale - which are likely to be highly influential on happiness but difficult to observe. Through using fixed effect regressions, we can control for the portion of these variables which is time invariant. In doing so, we mitigate the risk of omitted variables bias. It is for this reason that the fixed effect model is the 'default' methodology when examining the determinants of happiness using panel data.

There is however one limitation and two weaknesses of fixed effect models. The limitation is that they do not control for *time-variant* unobservables. Therefore, if an individual's personality changes from one wave to the next, then this could lead to omitted variables bias, as it would not be automatically controlled for in the model. The first drawback is that by only looking at the effect of variation in a variable *within* an individual, we ignore variation in a variable *between* individuals. If we were dealing with small sample sizes, then this would be a major drawback as it could seriously undermine our ability to find statistically significant results. However, in the case of this thesis, it is only a minor drawback, as we are dealing with very large datasets (BHPS and GSOEP), meaning that, in most cases, there is sufficient within-individual variation in the dependent/independent variables to achieve statistically significant (and robust) results. The second drawback is that, because fixed effect regressions control for all time-invariant variables by excluding them, we cannot examine the effect of time-invariant variables. Therefore, we cannot identify the independent effect of gender, for example, on happiness, as it is (almost always) constant over time (i.e. time-invariant). Again, this was viewed as a price worth paying for the ability to control for all time-invariant unobservables.

Adopting fixed effect (OLS) regression, also allows us to the 'vce (robust)' option in STATA, which ensures that the standard errors in the regression results are adjusted for (and therefore robust to) both serial correlation and heteroscedasticity. Consequently, for most of the regressions in this thesis, there is no need to run these two residual diagnostic tests. That said, using this option does not exclude the possibility of (multi-) collinearity distorting the variable coefficients. Therefore, throughout this thesis, I am vigilant to any signs of multi-collinearity (and specifically, instances where the coefficients on the variables of interest were 'paradoxical' - of a large magnitude but statistically insignificant) and explicitly address the problem when it occurs.

Returning to the methodology of this chapter in particular, for **part one** of the analysis, which is concerned with examining the *magnitude, direction* and *shape* of the relationship, a fixed effects model is adopted, and the different indicators of happiness and housing satisfaction are rotated as dependent variables, and separate regressions are run for males and females, and for the BHPS and GSOEP. In the BHPS, space is measured using rooms per person (number of rooms excluding kitchen and bathrooms / household size). We assume that, on average, when an individual reports an increase (or decrease) in rooms per person, this represents an increase (or decrease) in overall living space. The descriptive statistics support this case. Of those indviduals who report moving for larger accommodation (5 year sample), 83 percent report an increase in number of rooms, and only 6 percent report a decrease. Nevertheless, rooms per person is only likely to provide a partial reflection of changes in the size of livng space. To address this limitation, I also use the GSOEP, which measures size of living space in metres squared using (self-reported) responses to the question*, "How large is the total living area of this dwelling?"*. Again, I divide this answer by the number of people in the household (including children), to give the 'metres per person'.

Number of persons in the household is also controlled for separately throughout the analysis. Therefore, the coefficients on space per person indicate the effect of size of living space, keeping household size constant. Other control variables include variables that have been found to influence happiness in the past; housing and environmental variables besides space e.g. damp; and hypothesised costs associated with larger accommodation, such as time spent commuting and doing housework.

Furthermore, in the BHPS, I am also able to control for some 'neighbourhood effects'. If we were to find a positive relationship between rooms per person and happiness, it could be argued that this relationship is actually driven by neighbourhood effects i.e. increases (or decreases) in living space are associated with moving to a better (or worse) area- in terms of crime rates, schools, green areas etc.- and it is these neighbourhood variables which explain the positive relationship between size of living space and happiness. By including multiple deprivation statistics at the lower level super output area (SOA) - each of which contain approximately 1500 people according to figures from 2004 (ODPM, 2004) – we can control for these potentially confounding neighbourhood effects. Because these statistics are not comparable across UK nations, part one of the analysis is limited to England. Equivalent statistics were not accessible for the GSOEP. All control variables are listed and categorised in Appendix A for BHPS, and Appendix B for GSOEP, and descriptive statistics for the sample as a whole are provided in Appendix C for the BHPS, and Appendix D for the GSOEP.

In order to test for a linear relationship, all models were first tested with only 'rooms per person' (BHPS) or 'metres per person (GSOEP). Then a quadratic interaction term was introduced (e.g. rooms per person squared) to test for diminishing marginal utility. Results from the two specifications (with and without interaction term) were then compared by examining the coefficient on the space per person variable. If this coefficient was more statistically significant with the quadratic term, than without, or the quadratic term itself was statistically significant, the relationship was deemed non-linear. I run all part one regressions separately for men and women to test whether the relationship differs according to gender.

Part two of the analysis examines the *dynamic* aspect of the relationship. More specifically, it assesses the movement over time of happiness and housing satisfaction for individuals who move house and cite "larger accommodation" as their reason for moving. This yields a smaller sample size than part one that is less representative of the population, because only certain types of individuals can, or want to, move to larger accommodation. The benefits are threefold. First, we can track the housing satisfaction and happiness for movers over time. Second, the context surrounding the change in living space is more uniform, meaning we can more accurately identify spurious influences on happiness. Third, we can test whether the effects of space on happiness are asymmetrical. In part one, the positive effect of an increase on the happiness for someone who chose it may be offset by the negative effect of an increase in space on the happiness of someone who did not choose it (e.g. older person living in a house that is too large them). By looking only at the former group we may uncover a positive effect that is hidden in part one.

In part two, a series of appropriate 'year relative to move dummies' are included in a fixed-effects regression to examine how the time relative to a move affects housing satisfaction and happiness. This model has been used extensively for different life events (e.g. Clark and Georgellis, 2013; Nowok et al., 2011). A broadly similar set of controls is used with a few exceptions (see Appendix A)[12]. When GHQ was used as a dependent variable in part two, the results suggested multi-collinearity. Age was identified as the source[13]. The same occurred when using life and housing satisfaction in the GSOEP. Therefore, *all* part two regressions using both the BHPS and GSOEP are conducted without age as a control. By dropping age as a

[12] In terms of the 'neighbourhood effects' variables, because all of the sample moved house *within* nation states, it does not matter (for the interpretation of the coefficients of interest) that multiple deprivation statistics are not comparable *across* nation states. Therefore, in the second part of the analysis, individuals from throughout UK are included. Neighbourhood effects are controlled for, but only those which are available across UK (see Appendix A).

[13] More specifically, the coefficients on the year relative to move variables were of a very large magnitude with very high standard errors. When age (and age square) were removed from the regression specification, the year relative to move variable coefficients fell back to a more reasonable magnitude, indicating that the age (and age sq) variable was collinear with the year relative to move dummy variables.

control variable, we introduce the risk that age could be driving the effect that we attribute to 'year relative to move', but this is a price worth paying to ensure the variable coefficients are not inflated.

To maximise sample size, and the length of time over which adaptation is tested for, two overlapping samples are selected. To be included in either sample, an individual must have been observed in the same property 1-2 and 0-1 years before the move and have been observed in a different property 0-1 years after the move. When BHPS respondents reported a change of address, they were asked: "*Did you move for reasons that were wholly or partly to do with your own job, or employment opportunities?"* Next, all movers were asked; "*What were your (other) main reasons for moving?"* to which they could reply with up to two reasons. For an individual to be included in either of the BHPS samples, their *first* reason 0-1 years after moving had to be "*Larger Accommodation*" (only 20 percent of respondents gave a second reason or cited employment reasons). If an individual observation was missing or unknown in any of the periods >2 years post-move (as was the case for approximately 10 percent of individuals in the 5-year sample and 20 percent of the 7-year sample), it was *reasonably assumed* that they had not moved provided they fulfilled two criteria; they reported being in the same lower layer SOA (about 80 percent of moves in both samples were across lower layer SOA's) and they reported being in a broadly similar type of accommodation. To be included in the first (larger) 5-year sample, they must have been observed in, or *reasonably assumed* to have been in, the same larger property in 2 out of 3 of the years post-move. To be included in the second (smaller) 7-year sample, they must have been observed in, or *reasonably assumed* to have been in, the same larger property in 4 out of 5 of the years post-move. If individuals moved numerous times (in the BHPS) for larger accommodation, only their most recent move for larger accommodation is selected.

For both BHPS samples (5 year and 7 year) the vast majority (>75 percent) of the sample are mortgage holders while 10-15 percent are public renters. There are very few private renters, presumably because the selection criteria require immobility before and after the move. For both samples, the median age is 33/34 and the mean household income is approximately £30,000, which makes it significantly older (+10 years) and wealthier (+£7000) than the BHPS sample as a whole. For the 5-year sample, the median distance moved was 1.3 km and 77 percent of moves were less than 5 km, so on average moving is unlikely to have involved the disruption of social networks beyond those situated within the neighbourhood.

For the GSOEP, I adopt stricter inclusion criteria. When GSOEP respondents reported a change of address, they were asked *"What were the most important reasons that led to this change, that*

is, to your move to a new home or out of an existing household?" (English translation) to which they could respond with up to three reasons. To be included in either GSOEP sample, their *only* stated reasons must have been "*Previous dwelling too small*". This excludes all individuals who gave any of the other reasons for moving. Additionally, they must have been observed in the same smaller property in the 2 years pre-move, and have been observed in the same larger property in *all* of the years post-move. Both GSOEP samples are significantly *younger* than the population as a whole (-6/8years the population average of 45 years) but there is no meaningful difference in terms of income.

On the 5 year samples, the model below is adopted;

$$\ddot{H}_{it} = \ddot{\beta X}_{it} + \theta_{-1}M_{-1,it} + \theta_0 M_{0,it} + \theta_1 M_{1,it} + \theta_2 M_{2,it} + \ddot{\varepsilon}_{it} \quad (1)$$

Here, $\ddot{H}_{it}$ stands for deviations from the individual mean of housing satisfaction or happiness for a particular individual, i, at a certain time, t. X is a vector of control variables listed in Appendix A. Most importantly, there are four dummy variables indicating the year relative to moving house in which the individual is observed. Thus $M_{-1,it}$, is a dummy variable which takes on the value of 1 if the individual is observed up to 1 year before the move, and 0 if it is not. The other three duration dummy variables operate in the same way. In all cases, the omitted dummy variable and thus the reference category for all individuals is 1-2 years before the move ($M_{-2,it}$). On the 7-year sample, the same regression model is used, the only difference being an extra two dummy duration variables $\theta_3 M_{3,it}$ and $\theta_4 M_{4,it}$.

Although there is no evidence to suggest that the adaptation process will differ according to gender, there is evidence to suggest (see literature review) that the *initial* effect of moving to larger accommodation could be stronger for men, or for women. Therefore, I initially run the part two regressions on the samples as a whole, before splitting the samples according to gender.

6.4. Results

Part One

A fixed effects regression is concerned with *within individual* changes; the changes in the value of a (dependent/independent) variable that the same individual reports from one year to the next. The results in Table 3 (BHPS) and Table 4 (GSOEP) thus show the relationship between *within individual* changes in individual living space and *within individual* changes in housing satisfaction, life satisfaction and GHQ Caseness. The samples are split according to gender. In

interpreting the coefficients for both parts one and two, a one tail t-test is used for coefficients whose sign is consistent with prior hypotheses ($p<0.1$), while a two tail t-test is used for coefficients whose sign is the opposite of that hypothesised or where no hypotheses exist ($p<0.05$). This is the approach I adopt throughout this thesis.

Before focussing in on the variable coefficients, I first want to make a point about the (pseudo) R-squared values. These values indicate the percentage of variation in the dependent variable (which, in this thesis, is generally happiness) that can be explained by variation in the independent variables. So a high r-squared (i.e. close to 1) indicates the model is a 'good fit' and that the independent variables, taken together, are good a predicting the dependent variable. To those unfamiliar with the 'happiness economics' literature, the r-squared values in regressions of this thesis may seem worryingly small. For example, the independent variables in Column 3 of Table 3, only explain 3.6% of the within-individual variation in men's life satisfaction, the dependent variable, meaning that the other 96.4% is explained by time-variant unobservables. When looking at these low r-squared scores, we should, however, bear in mind that only about 8% to 20% of individual variation in individual happiness depends on objective variables (Kahneman et al., 1999). Therefore, while the low r-squared scores are far from ideal, they are quite consistent with the 'happiness economics' literature and should not be seen as casting doubt on the robustness of this thesis' findings.

Space aside, only a few housing variables influence happiness in the BHPS (Table 3) or GSOEP (Table 4). It is worth briefly considering the magnitude of these effects, so that we can contextualise the more pertinent findings that follow (in terms of house size in this chapter, and social status in Chapter 7). A word of warning though; we should not attach too much weight to these 'peripheral findings' as the methodology adopted in this chapter has been specifically designed to isolate (insofar as possible) the effect of size of living space (on happiness), *not* the effect of damp, neighbour noise, or other control variables. Thus, the coefficients on all of these other control variables are likely to be affected by various biases (e.g. omitted variables bias, reverse causality bias) which we cannot possibly hope to fully account for in the limited space of this thesis. In short, the coefficients on the control variables, discussed in the two paragraphs below, should be viewed as tentative.

Looking first at the BHPS (Table 3), poor light and rot both have a negative effect on male GHQ Caseness: when male respondents reported a lack of natural light, this was associated with a -.18 ($p<0.05$) decrease in their GHQ caseness, while the (self-reported) presence of rot, was associated with a -.12 ($p<0.1$) decrease in male GHQ caseness. Damp walls, by contrast, only appear to have a negative effect on the happiness of *women*: when female BHPS respondents

reported damp walls, this was associated with a -.075 ($p<0.05$) decrease in their life satisfaction and a -.22 ($p<0.05$) decrease in their GHQ caseness. Number of people in household similarly had a negative impact on the happiness of women but not men. An increase in the household size of one person was associated with a -.044 ($p<0.05$) decrease in women's life satisfaction, and a -.082 ($p<0.1$) decrease in GHQ caseness (this decrease maybe due to the decline in living space). Interestingly, moving house (for any reason, not just 'larger accommodation) has a positive effect on the life satisfaction of men (.082, $p<0.05$) and women (.077, $p<0.05$), which is consistent with the various theories of adaptation. While there are a host of other housing variables which have a significant effect on housing satisfaction – namely, housing costs, house value, having a garden, condensation, poor heating, street noise, and neighbour noise – none of these variables have a significant effect on the happiness of men or women.

Turning to the GSOEP (Table 4), we can again see the number of people in the household is negatively related to life satisfaction – an increase in one person is associated with a decrease in life satisfaction of -.038 ($p<0.05$) for men, and -.048 ($p<0.01$) for women.. Having a balcony and having a garden are both associated with increases in life satisfaction. Having a balcony is correlated with a .064 ($p<0.01$) increase in life satisfaction for men, and a .056 ($p<0.01$) increase in life satisfaction for women, while having a garden is associated with increases in life satisfaction of a similar, albeit slightly smaller, magnitude; .043 for men ($p<0.05$) and .042 for women ($p<0.05$). Finally, rent costs and house age are both positively associated with life satisfaction for men and women.

The effect magnitudes detailed above may seem quite low. For example, how meaningful is the -.0.075 point decrease in BHPS women's life satisfaction associated with damp walls when life satisfaction is on a 7-point scale? And what about the corresponding -.22 decrease in GHQ caseness? However, to judge how 'substantial' or 'meaningful' the effect magnitudes of the main variables of interest are, we need to view them in the context of other life events and variables. Individual life satisfaction judgements, for example, are known to vary little over time. Becoming a widow- which has the largest negative effect on life satisfaction of all the life events (Clark and Georgellis, 2013; Clark et al, 2008) - only has a -.56 ($p<0.01$) effect on the life satisfaction of women, and a -0.4 ($p<0.01$) effect on men in the BHPS (Clark and Georgellis, 2013). In the GSOEP (which uses an 11-point scale of life satisfaction), widowhood has a -1.012 ($p<0.01$) effect on the life satisfaction of both men and women (Clark et al, 2008). Therefore, while the effect of a housing variable on life satisfaction maybe 'small', we can only judge how 'meaningful' it is by comparing it to other life events and variables. The same applies to GHQ caseness which is varies more over time (e.g. widowhood has a much larger negative effect on GHQ caseness than life satisfaction; -2.72 for men, and -3.38 for women –

Clark and Georgellis, 2013). To this end, when I present this thesis' results on the housing determinants of happiness, I evaluate the effect magnitudes by comparing them to each other, and other variables.

Returning to the main variables of interest, the relationship between size of living space and **housing satisfaction** is consistent across gender and across both datasets. In both GSOEP and BHPS, and for both males and females, rooms per person is positively related to housing satisfaction, but with diminishing marginal effect. Up to a certain point space has a positive effect on housing satisfaction but then the effect wears off. In the BHPS, this point is 3.9 rooms per person for males and 3.6 for females. Similarly, in the GSOEP, it is 141 metres per person for men and 129 for women (bear in mind that the average room size in the GSOEP is 25m2, excluding rooms under 6m2). The (consistent) non-linear shape of the relationship suggests that size of living space impacts housing satisfaction through the lifestyle pathway.

The results on size of living space and **happiness** are more complex. In both datasets, the relationship between size of living space and happiness is gendered. For BHPS women, space has no effect on life satisfaction, and when we introduce a quadratic term space has, in fact, a *negative* effect on GHQ caseness. For men in the BHPS, space is positively and linearly related to both aspects of happiness, but the relationships are weak. For a single man, an increase in the number of rooms from 1 to 2 (excluding kitchens and bathrooms) increases life satisfaction by 0.043 ($p<0.05$). Compared to the effect of major life events, this effect is small. For instance, in the year after marriage, BHPS men experience an increase in life satisfaction of 0.235 ($p <0.01$) (Clark and Georgellis, 2013), while Fujiwara and HACT (2013) found that damp and neighbour noise were associated with a decrease in life satisfaction of 0.05. Turning to GHQ Caseness, an increase in one room per person leads to an increase in male GHQ Caseness of 0.11 ($p<0.05$), which is approximately half of that reported by males in the year after marriage (0.21; $p <0.1$) (Clark and Georgellis, 2013). Note that excluding the 'neighbourhood effects' variables from the regressions in Table 3 makes no meaningful difference to the coefficients of interest, implying that these neighbourhood effects do not confound the relationship between size of living space and happiness. In sum, the BHPS findings suggest that although space influences housing satisfaction through lifestyle, it may influence happiness through social status.

In the GSOEP, which has a more accurate indicator of living space (metres squared), the relationship between size of living space and life satisfaction is also gendered but this time it is only *women* who report a positive relationship between size of living space and life satisfaction. Moreover, the relationship is not linear but has diminishing marginal effect. To put the effect magnitudes into context, an increase in one metre per person from 32m2 to 33m2 (the median

metres per person is 32.5m2) would lead to an increase in a GSOEP women's life satisfaction of 0.0012, while an increase in one *room* per person (from 32m2 to 57m2) would lead to a 0.02 increase in women's life satisfaction. Thus again, we can see that the magnitude of the effect of size of living space on life satisfaction is small compared to other life events.

As noted above, one of the major weaknesses of the part one analysis is that it looks at the effect of changes in living space *in the aggregate*, and therefore does not differentiate between the different ways of bringing about a change in living space (e.g. moving house, having an extension, change in the number of people in the household). This is problematic because each of these different life ways of changing living space are themselves likely to be associated with different stressors and changes in lifestyle, which, if not controlled for, could confound the results presented above. To what extent is the absence of a positive relationship between size of living space and happiness for BHPS women attributable to the stress associated with having an extension, or the feelings of loneliness and loss associated with a child leaving home, or the loss of identity associated with moving house? Because part one does not distinguish between the different ways of changing living space, it is difficult to know what exactly is driving the observed relationships between size of living space and happiness. Although Part 2 of the analysis does not eliminate this problem, it does mitigate it by looking specifically at one driver of changes in living space- moving to 'larger accommodation' – on happiness, thus reducing the number of potentially confounding variables.

Table 3: The relationship between size of living space, housing satisfaction and happiness (BHPS)

VARIABLES	HOUSING_SAT		LIFE_SAT		GHQ_CASENESS	
	Men	Women	Men	Women	Men	Women
ROOMS_PP	0.544***	0.464***	0.0431**	0.014	0.110**	-0.319**
	-0.076	-0.075	-0.019	-0.020	-0.052	-0.138
ROOMS_PP_SQ	-0.0747***	-0.0591***				0.0450*
	-0.012	-0.013				-0.024
MOVER	0.350***	0.349***	0.0822***	0.0772***	0.076	0.078
	-0.033	-0.032	-0.024	-0.024	-0.057	-0.067
HOUSEHOLD SIZE	0.036	-0.002	-0.013	-0.0438**	0.001	-0.0820*
	-0.026	-0.024	-0.019	-0.017	-0.046	-0.046
HOUSE_VALUE	2.04e-07***	1.52e-07**	4.94E-09	4.27E-08	4.36E-08	9.65E-08
	0	0	0	0	0	0
HOUSING_COSTS	0.00022***	0.000321***	2.74E-05	-1.57E-05	-6.92E-05	-9.59E-05
	-4.63E-05	-5.38E-05	-3.97E-05	-3.71E-05	-1.00E-04	-0.00013
GARDEN	0.164***	0.173***	0.0323	0.0519	-0.0728	0.0277
	-0.056	-0.057	-0.0394	-0.0429	-0.0917	-0.106
NEIGHBOUR_NOISE	-0.144***	-0.200***	-0.00549	-0.0374	-0.0631	-0.0776
	-0.0328	-0.0327	-0.0259	-0.0244	-0.0606	-0.0669
STREET_NOISE	-0.0804***	-0.137***	-0.0169	-0.0363	-0.0329	-0.0803
	-0.0282	-0.0286	-0.0217	-0.0222	-0.0526	-0.0576
NO_LIGHT	-0.154***	-0.172***	-0.0321	-0.0494	-0.179**	-0.0513
	-0.0447	-0.044	-0.0327	-0.0354	-0.0779	-0.0885
POOR_HEATING	-0.0922	-0.209***	0.011	-0.0264	-0.0404	-0.044
	-0.0621	-0.0569	-0.0488	-0.0441	-0.107	-0.111
CONDENSATION	-0.0685**	-0.104***	-0.0143	-0.0124	-0.0165	0.00565
	-0.0319	-0.0325	-0.0249	-0.0249	-0.0601	-0.0677
DAMP_WALLS	-0.221***	-0.219***	-0.00651	-0.0750**	0.0533	-0.216**
	-0.0388	-0.0409	-0.0296	-0.0311	-0.077	-0.0844
ROT	-0.131***	-0.197***	-0.0302	0.000245	-0.123*	0.0376
	-0.0406	-0.0407	-0.029	-0.0299	-0.0742	-0.0871
OBSERVATIONS	25,905	29,050	25,888	28,939	28,862	32,343
R-SQUARED	0.064	0.071	0.036	0.028	0.055	0.042
NUMBER OF PID	5,460	5,862	5,467	5,861	5,551	5,944

Table 4: The relationship between size of living space, housing satisfaction and happiness in GSOEP

	HOUSING SAT		LIFE SAT	
VARIABLES	Men	Women	Men	Women
METRES_PP	0.0206***	0.0247***	8.11E-05	0.00215*
	-2.42E-03	-0.00233	-0.00113	-0.00115
METRES_PP_SQUARE	-7.33e-05***	-9.56e-05***	-5.96E-06	-1.53e-05**
	-1.50E-05	-1.45E-05	-6.00E-06	-6.22E-06
HH_PERSONS	-0.00594	-0.0106	-0.0379**	-0.0482***
	-0.0163	-0.0158	-0.0152	-0.0142
COMMUTE	6.54E-05	-0.000560**	-1.82E-05	-0.000363*
	-0.00013	-0.00029	-0.00011	-0.00022
RENT_COST	8.93e-05***	0.000148***	3.04e-05**	6.14e-05***
	-1.33E-05	-1.35E-05	-1.24E-05	-1.21E-05
MORTGAGE_COST	-1.30E-06	4.59E-07	-1.12E-07	4.29E-07
	-1.12E-06	-1.01E-06	-6.88E-07	-9.21E-07
HOUSEWORK	-0.0115*	-0.0057	-0.0247***	0.0104**
	-0.00668	-0.00452	-0.00638	-0.00412
GARDEN	0.177***	0.161***	0.0428**	0.0424**
	-0.0261	-0.0257	-0.0196	-0.0189
BASEMENT	0.161***	0.180***	-0.0072	0.0258
	-0.0356	-0.0343	-0.0287	-0.0264
BALCONY	0.322***	0.288***	0.0639***	0.0559***
	-0.0271	-0.0276	-0.0198	-0.0191
OWNER	0.484***	0.415***	0.0411	0.0113
	-0.0332	-0.0331	-0.0256	-0.0255
SMALL_HOUSE	-0.0617	0.831***	-0.0694	0.147*
	-0.119	-0.125	-0.0834	-0.0869
ROWHOUSE	-0.198	0.726***	-0.0926	0.147*
	-0.124	-0.126	-0.0863	-0.0887
LOWAPARTMENT	-0.204	0.568***	-0.0177	0.137
	-0.124	-0.124	-0.0864	-0.086
MED_APART	-0.394***	0.462***	-0.0617	0.146*
	-0.125	-0.121	-0.0868	-0.0835
HIGH_APART	-0.553***	0.392***	-0.0914	0.112
	0	0	0	0

HIGH_RISE	-0.864***		-0.0241	
	0		0	
HOUSE_AGE	0.200***	0.206***	0.0158**	0.0110*
	-0.0097	-0.00987	-0.0066	-0.00627
HH_CHILDREN	0.0227	-0.00258	0.0188	0.0256*
	-0.0186	-0.0186	-0.0161	-0.0154
FARM_HOUSE		0.730***		0.171
		-0.173		-0.112
OBSERVATIONS	122,407	136,863	123,227	137,929
R-SQUARED	0.067	0.065	0.062	0.055
NUMBER OF PID	23,515	25,182	23,604	25,288

Part Two

Part two tracked the housing satisfaction and happiness of individuals before and after moving to subjectively larger accommodation. The descriptive statistics of the 5 year and 7 year samples can be seen below in Table 5 (BHPS) and Table 6 (GSOEP).

Table 5: BHPS descriptive statistics for part two analysis

	Number of observations in sample		Median Rooms per person		% Reporting Space Shortage	
	5 year	7 year	5 year	7 year	5 year	7 year
1-2 years pre-move (M-2)	978	638	1.4	1.33	52	54
0-1 years pre-move (M-1)	978	638	1.25	1.25	66	68
0-1 years post-move (M0)	978	638	1.63	1.63	8	8
1-2 years post-move (M1)	901	602	1.63	1.63	12	12
2-3 years post-move (M2)	775	613	1.6	1.5	16	17
3-4 years post-move (M3)	0	587	N/A	1.5	N/A	20
4-5 years post-move (M4)	0	515	N/A	1.5	N/A	19

In line with the BHPS sample requirements (that all individuals must be observed in the 2 years pre-move and first year post-move) the number of observations stays constant in the first 3 years before decreasing thereafter. The median rooms per person for the *whole* BHPS sample is 1.66 so, as can be seen in Table 5, individuals upsize to accommodation that is approximately the

population average. Individuals also move to a *better* neighbourhood (median multiple deprivation score for 5-year sample in M-1= 15.3; M0=11.9). The move clearly has the intended effect initially, with the proportion of respondents reporting a shortage of space dropping from 66 to 8 percent (5-year sample).

Over the next 4 years, however, the proportion reporting a shortage of space more than doubles (see 7-year sample), and the same pattern is visible in the GSOEP (for which sample sizes remain constant throughout, as individuals are required to have been observed in all 5/7 years). This post-move *increase* in the proportion of people reporting a space shortage is likely to be partly due to the post-move *decrease* in space per person. In both the BHPS and the GSOEP, we can see that levels of living space per person decrease post-move, which is driven by growth in household size (as opposed to declines in the overall size of living space)[14]: it may be that some of these movers are upsizing in anticipation of having more children. However, this post-move decline in objective space per person seems too small to explain the very substantial increase in the proportion of people reporting a space shortage. The aspiration spiral theory offers an additional (and in my view, more plausible) explanation for why this post-move increase in the percentage of people reporting a space shortage: through experiencing greater levels of living space these upsizers shift their space preferences upwards over time, leading a greater proportion of them to report space shortages.

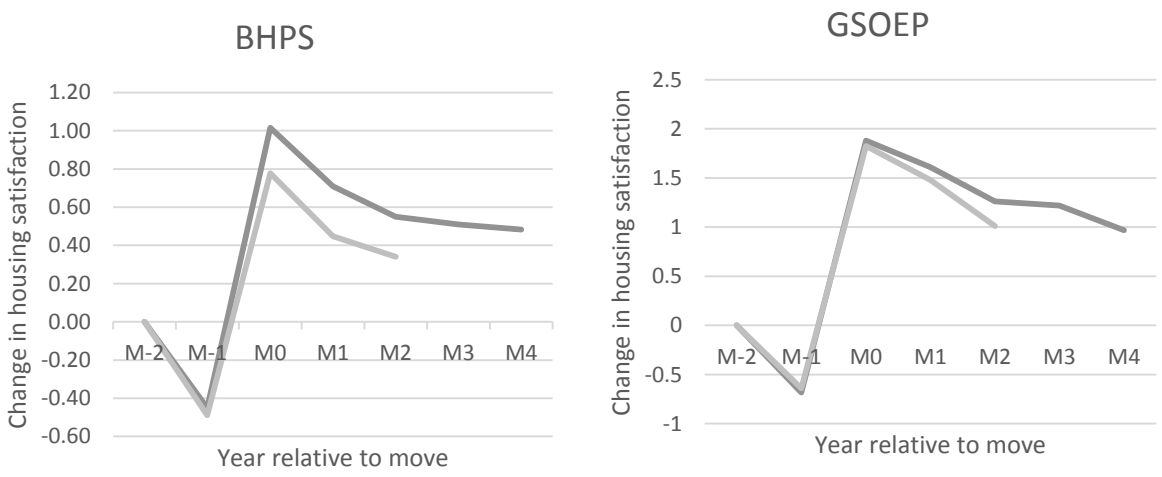
Table 6: GSOEP descriptive statistics for part two analysis

	Number of observations in sample		Mean metres per person		% Reporting Space Shortage	
	5 year	7 year	5 year	7 year	5 year	7 year
1-2 years pre-move (M-2)	1235	788	23.5	23.2	64	65
0-1 years pre-move (M-1)	1235	788	22.6	23.4	74	73
0-1 years post-move (M0)	1235	788	32	32.4	8	6
1-2 years post-move (M1)	1235	788	31.1	31.6	11	9
2-3 years post-move (M2)	1235	788	31	31.4	18	14
3-4 years post-move (M3)	0	788	N/A	31.2	N/A	22
4-5 years post-move (M4)	0	788	N/A	31.1	N/A	20

[14] For example, in the BHPS 5 year sample the average number of people in the household increases from 3.25 in M0 to 3.39 in M2, while the number of rooms in the household actually increases slightly in the same period. The same occurs in the GSOEP 5-year sample.

In both datasets, findings for **housing satisfaction** are concurrent with adaptation: see Figure 2 below for BHPS (left panel) and GSOEP (right panel); and for corresponding regression coefficients, see Table 7 (BHPS) and Table 8 (GSOEP). In the year before the move (M-1), individuals report a decrease in housing satisfaction, prompting them to move to larger accommodation. In the year after the move (M0), housing satisfaction rises considerably, and is significantly higher than in the reference year (M-2). In the following years, however, increases in housing satisfaction diminish. In the BHPS, post-move increases in housing satisfaction (relative to M-1) diminish by about 30 percent over the next 3 years (5-year sample) before levelling out[15] (see 7-year sample). In the GSOEP, the initial post move uplift in housing satisfaction diminishes by approximately 35 percent over the full (post-move) course of both samples. It is worth highlighting that despite adaptation, levels of housing satisfaction are still much higher 4-5 years after the move than they were 1-2 years before. In terms of housing satisfaction, there were no apparent gender differences in the adaptation process. Therefore, I only show results for the sample as a whole.

Figure 2: The effect of moving for 'larger accommodation' on housing satisfaction over time sample (lighter line=5-year sample; darker line=7-year sample)



Like in part one, gender differences in the effect on living space only emerge when we look at **happiness** as a dependent variable; for these results see Tables 7 and 8 (GSOEP), and Tables 9 and 10 (BHPS). When we split the samples according to gender, there emerge two interesting findings. First and foremost, when men in the GSOEP 5 and 7 year samples move to larger accommodation (see column 2 of Tables 7 and 8), they report an increase in life satisfaction of

[15] It could be that those individuals who dropped out of the sample post-move were less satisfied with their accommodation than those who stayed, leading to post-move upward attrition bias. Nevertheless, when samples were limited to individuals who had stayed in their pre/post move accommodation for all the years relative to move (7/7 and 5/5 years), the same pattern of results was observed.

.26 (p<0.05) and .33 (p<0.05) respectively in the year of the move (M0); sizeable effects when one considers that getting married increases the life satisfaction of men by 0.31 (p<0.01). This effect is not sustained post-move, which is consistent with the various adaptation theories. Second, women in the BHPS 5-year sample (Table 7, Column 3) report a substantial (-0.24) and statistically significant (p<0.05) *decrease* in life satisfaction 2-3 years after moving to larger accommodation. This could be due to a loss of security/identity associated with a change in home/neighbourhood, which would be consistent with the empirical evidence discussed in Section 5.2., showing that women view the home in more subjective terms than men (Gutmann, 1965; Carlson, 1971), and value objects more in terms of the social self (Csikszentmihalyi and Rochberg-Halton,1981; Seeley et al., 1956; Rainwater, 1966).

To summarise the results from part two, moving to larger accommodation leads to an increase in housing satisfaction that is partially sustained over the 5 years post-move. The effect on happiness, and more specifically, life satisfaction is again gendered. Men in the GSOEP samples experience an initial post-move increase in life satisfaction which is large but only lasts for one year. For women, there is no positive effect (there may even be a delayed negative effect).

Table 7: The effect of moving for 'larger accommodation' on housing satisfaction, and happiness over time – BHPS 5-year sample

VARIABLES	HOUSING SAT	LIFE_SAT		GHQ_CASENESS	
		Males	Females	Males	Females
YEARMOVEM1 (M − 1)	−0.489***	−0.021	−0.00904	−0.068	−0.145
	−0.0762	−0.0792	−0.0739	−0.196	−0.22
YEARMOVE0 (M0)	0.777***	0.0359	0.0733	0.0813	−0.155
	−0.0973	−0.11	−0.0929	−0.275	−0.256
YEARMOVE1 (M1)	0.448***	−0.102	−0.175*	0.203	−0.282
	−0.107	−0.12	−0.104	−0.302	−0.302
YEARMOVE2 (M2)	0.338***	−0.195	−0.235**	0.22	−0.0797
	−0.116	−0.131	−0.119	−0.366	−0.348
OBSERVATIONS	2531	1145	1382	1275	1543
R-SQUARED	0.319	0.097	0.099	0.069	0.062
NUMBER OF PID	831	380	451	381	452

Table 8: The effect of moving for 'larger accommodation' on housing satisfaction, and happiness over time – BHPS 7-year sample

	HOUSING SAT	LIFE SAT	GHQ CASENESS
YEARMOVEM1	−0.454***	0.0208	−0.227
(M − 1)	−0.111	−0.0795	−0.213
YEARMOVE0 (M0)	1.016***	0.126	0.0223
	−0.128	−0.096	−0.268
YEARMOVE1 (M1)	0.709***	−0.12	−0.0421
	−0.131	−0.101	−0.296
YEARMOVE2 (M2)	0.550***	−0.167	−0.05
	−0.141	−0.112	−0.309
YEARMOVE3 (M3)	0.509***	−0.0881	−0.14
	−0.135	−0.121	−0.323
YEARMOVE4 (M4)	0.482***	−0.242*	−0.287
	−0.146	−0.128	−0.358
OBSERVATIONS	2249	2244	2578
R-SQUARED	0.299	0.072	0.058
NUMBER OF PID	613	613	614

Table 9: The effect of moving for 'larger accommodation' on housing satisfaction, and life satisfaction – GSOEP 5-year sample

VARIABLES	**HOUSING SAT**		**LIFE SAT**	
		Men	Women	
YEARMOVEM1	-0.641***		0.112	0.0072
	-0.106		-0.126	-0.123
YEARMOVE0	1.824***	0.257**		-0.0263
	-0.124		-0.126	-0.126
YEARMOVE1	1.480***		0.148	-0.0432
	-0.147		-0.136	-0.15
YEARMOVE2	1.011***		0.0269	-0.217
	-0.167		-0.147	-0.157
OBSERVATIONS	2,645		1,254	1,414
R-SQUARED	0.389		0.137	0.086
NUMBER OF PID	809		383	428

Table 10: The effect of moving for 'larger accommodation' on housing satisfaction, and life satisfaction – GSOEP 7-year sample

VARIABLES	**HOUSING_SAT**	**LIFE_SAT**	
		Men	Women
YEARMOVEM1	-0.684***	0.24	0.161
	-0.128	-0.15	-0.156
YEARMOVE0	1.880***	0.327**	0.088
	-0.137	-0.163	-0.16
YEARMOVE1	1.611***	0.245	0.0953
	-0.161	-0.183	-0.177
YEARMOVE2	1.262***	0.13	-0.115
	-0.176	-0.177	-0.186
YEARMOVE3	1.218***	0.0701	-0.126
	-0.199	-0.205	-0.197
YEARMOVE4	0.969***	-0.0697	-0.135
	-0.213	-0.206	-0.205
OBSERVATIONS	2,390	1,084	1,320
R-SQUARED	0.346	0.162	0.061
NUMBER OF PID	533	244	289

6.5. Review of findings

The most predictable- and easily explained- finding from this chapter is that from part one, showing that for both males and females in both UK and Germany, size of living space is positively related to housing satisfaction until a certain point when the relationship tails off. More complex are the findings on size of living space and **happiness**. Generally speaking, the relationship seems to be stronger for men than women. In both parts of the BHPS analysis and part two of the GSOEP analysis, size of living space only has a positive (linear) effect on the happiness of men thereby implying that size of living space affects happiness through signalling economic status which is more important to men than women. This pattern of results is turned on its head however in part one of the GSOEP analysis, where size of living space has a positive (non-linear) effect on life satisfaction but only for *women.*

It is unclear why the part one findings on happiness conflict, but we can offer two (mutually exclusive) explanations. The first is consistent with the status pathway. Size of living space has a linear effect on the happiness of men but not women in BHPS part one, because men attach greater importance to the economic status that house size signals; hence it is only men who report a post-move increase in life satisfaction in part two. This explanation implies that the GSOEP part one findings (showing a stronger relationship for women) are spurious.

The alternative explanation is that, consistent with the lifestyle pathway, size of living space is actually more important to women's life satisfaction (perhaps due to the higher importance they attach to housing as a life domain), but because moving house carries greater psychological costs for women, they do not report a post-move increase in happiness as a result of moving to larger accommodation. It could be that the relative unfamiliarity of the new house and immediate neighbourhood results in a loss of social/personal identity, which is particularly detrimental to the happiness of women, who tend to view the home in more social terms. This would also explain why GSOEP women report a decrease in life satisfaction 2-3 years post-move, but would *not* explain the BHPS part one findings, showing size of living space to have only a positive effect on the happiness of men. Both explanations, it should be noted, cast doubt on the veracity of the part one findings which, as I have already noted, could be driven by a host of confounding variables (e.g. stress associated with having an extension).

In terms of the dynamic relationship between housing and happiness, the evidence clearly indicates that individuals adapt to increases in living space. Moving to "larger accommodation" has a large initial positive effect on housing satisfaction but this uplift partly diminishes over time. Similarly, for GSOEP men, upsizing initially has a sizeable positive effect on life satisfaction but this uplift disappears after the first year post-move. It is not clear, however, which adaptation theory is at work. The fact that housing satisfaction judgements exhibit adaptation is consistent with both aspiration spiral theory ("*now I have a 3-bedroom house, I want a 4-bedroom house."*) and distinction bias theory (over time individuals change from making joint evaluation to separate evaluation) but not, as Nakazato et al. (2011) note, the hedonic treadmill theory. Finally, that the life satisfaction judgements of GSOEP men (and, in fact, the happiness of *all* part two samples) follow a smoother trajectory than the respective housing satisfaction judgements is consistent with the model of Van Praag et al. (2003), which states that life satisfaction judgements are a function of different domain satisfaction judgements.

Finally, it is worth briefly reviewing the *magnitudes* of the different observed effects. In part one, the relationship between size of living space and happiness was generally very weak (e.g. for BHPS men, an increase of one room per person is associated with a 0.04 increase in life

satisfaction), whereas in part two, the effect of moving to larger accommodation was (when statistically significant) of a relatively large magnitude (e.g. for men in the GSOEP 7-year sample, moving to larger accommodation was associated with a 0.33 increase in life satisfaction). As noted, this difference in magnitudes between parts one and two is likely to be attributable (at least in part) to the fact that the part one sample estimates the effect of size of living space on the happiness of everyone - including those who do not want more space- whereas part two only estimates the effect only on those people who made a conscious decision to move to larger accommodation, and for whom space shortages were likely to be particularly salient/important.

Due to its exploratory nature, this chapter raises many questions for future research. If a large component of the relationship between housing and happiness operates independent of housing satisfaction judgements, as our findings suggest, then where is the value in measuring housing satisfaction? Future psychological research should address this issue by looking at the effect of housing factors on housing satisfaction and happiness, respectively. This chapter has also limited its scope to adults. The effect of space on children (through educational performance and status) may be stronger, and apply across both genders (Solari and Mare, 2012). Moreover, this chapter has only looked at happiness at the individual level. Future research should examine happiness at the collective/household level, where interactions between the different actors in the household are likely to moderate the relationship (Hagan et al. 1996).

The fixed effects methodology adopted by this chapter, together with the rich set of control variables, nevertheless provides us with the best insight to date into the causal relationship between size of living space and happiness. However, there remains a risk of reverse causality: males may become happier and therefore buy a larger house (or build an extension), rather than the reverse relationship as I have proposed. Future research could resolve this issue by looking for cases where individuals are randomly assigned increases (or decreases) in living space.

For policymakers though, perhaps the most urgent questions following on from this research concern status and adaptation. Standard economic theory is based on the assumption that preferences are constructed independent of one's social context and past experience. A higher supply of housing will lower the cost of living space, meaning the average individual can afford more space, thus making for a happier society. In short, more is better. However, if individuals adapt to changes in living space, then the effect of increasing average levels of living space on societal happiness will be shorter lived than standard economic theory predicts. Similarly, if size of living space affects happiness through social status, then increases in average levels of living space will have a more limited impact on societal happiness than predicted by standard

economic theory, because individuals are not only concerned with having more living space but having more living space than other people. In order to understand the effect of increasing average levels of living space on societal happiness, we must better understand the role of social comparisons and adaptation in the relationship between size of living space and happiness. The next chapter is designed to address these key questions.

7. EFFECT OF ADAPTATION AND SOCIAL COMPARISONS ON SIZE OF LIVING SPACE PREFERENCES

7.1. Introduction

The central argument of this thesis is that, contrary to standard economic theory, housing preferences are affected by adaptation and social comparisons. In the previous chapter, I examined the adaptation process in terms of housing satisfaction and happiness, and showed that levels of housing satisfaction (and in some instances, life satisfaction) increase initially after moving to larger accommodation but decrease thereafter. Whereas the previous chapter tested for adaptation by looking at how people's housing satisfaction and happiness changed over time, this chapter tests for adaptation by looking directly at how people's space preferences (and specifically, the level of living space people consider adequate) are affected by past experience.

The major original contribution of this chapter though is to test for the effect of social comparisons on space preferences; what I refer to as the 'social comparison effect'. In the previous chapter, I hypothesised that size of living space was likely to influence happiness through two pathways; lifestyle and social status. However, due to the methodology adopted, I was unable to isolate the social status pathway. Through looking directly at how space preferences are affected by the level of space that one's relevant others' consume, this chapter goes a long way to addressing this limitation.

Like in the previous chapter, I start by outlining the conventional logic that more space is better. Consistent with this logic, I demonstrate that increases in living space over time *are* associated with decreases in the proportion of people reporting a space shortage. There is no 'space paradox' akin to the Easterlin paradox. This, however, does not preclude the possibility that adaptation (or the 'preference drift effect') and social comparison effects apply to evaluations of living space. On this basis, I detail both effects and test for them, using fixed effect regressions on the German Socio Economic Panel Study (GSOEP) and the British Household Panel Study (BHPS). To conclude, I review the main findings.

7.2. Literature Review

As noted, the relationship between size of living space and happiness can be thought of as operating through two pathways; lifestyle and status. According to conventional wisdom, the size of living space one occupies is important because it determines what one can do within the home. Additional space can reduce stress by permitting segregation of different household activities; providing privacy; and preventing inhabitants from experiencing a sense of

claustrophobia (Carmona et al., 2010). On this basis, increasing levels of living space should satisfy more people's preferences for living space, thus making for a happier society. In terms of standard utility theory, a greater supply of space should allow the insatiable consumer to reach a higher indifference curve, thus increasing their happiness.

The initial evidence, presented below, supports this conventional wisdom. Figures 3-6 show how size of living space is related to the percentage of people reporting a space shortage in Germany and the UK, both at one point in time (Figures 3 and 5), and over time (Figures 4 and 6).

Figure 3 : Cross-Sectional analysis of relationship between space decile and % reporting space shortage in Germany, 2012

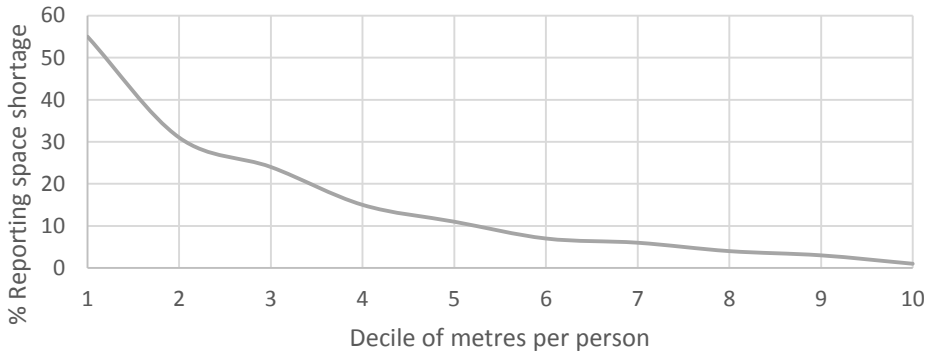


Figure 4: Relationship between median metres per person (left axis) and % reporting space shortage (right axis) over time in Germany

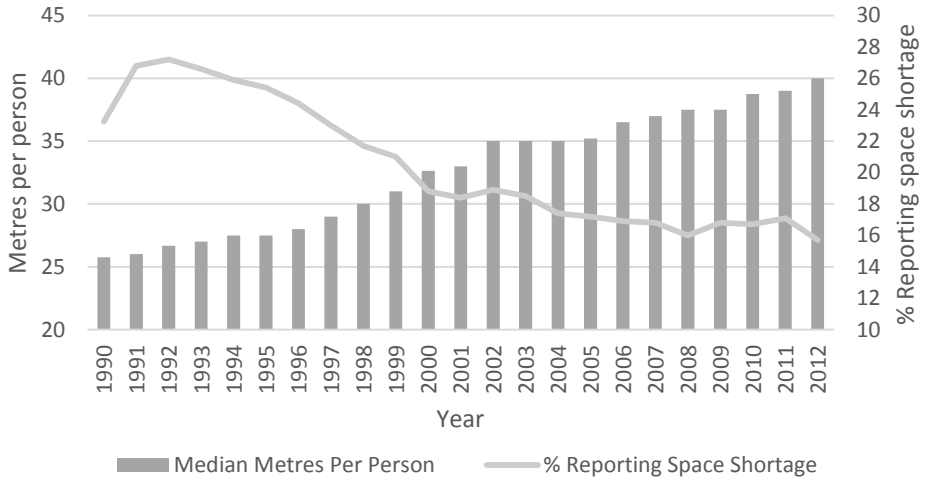


Figure 5: Cross-Sectional analysis of relationship between rooms per person and % reporting space shortage in UK, 2008

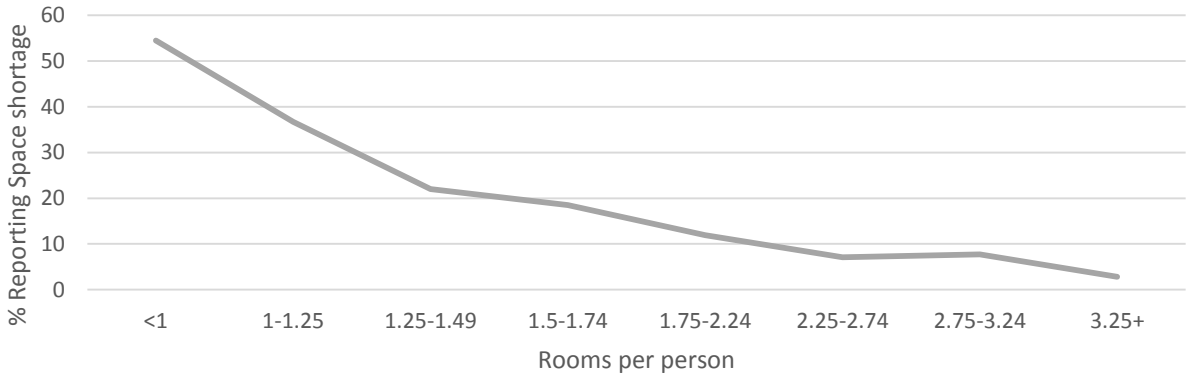
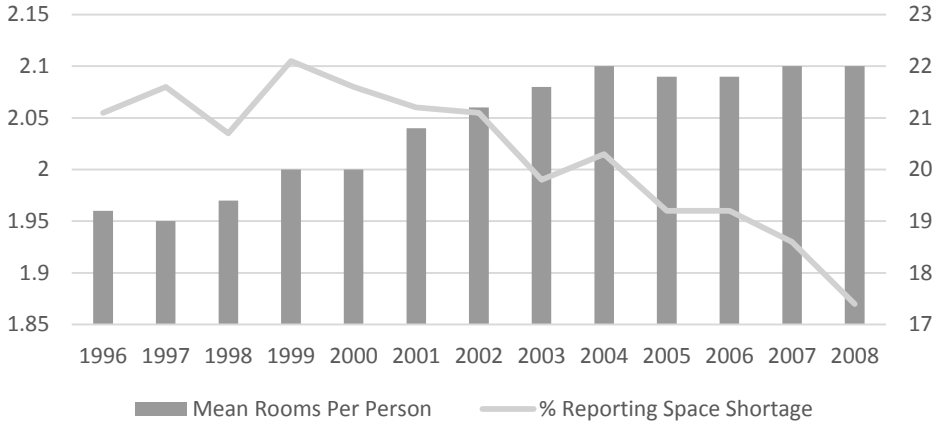


Figure 6: Relationship between mean rooms per person (left axis) and % reporting space shortage (right axis) over time in UK



In the cross sectional analyses, for both Germany (Figure 3) and UK (Figure 5), those people with higher levels of living space are less likely to report a shortage of space. This is what we would expect to find in any case. The pertinent point, as shown in Figure 4 (Germany) and Figure 6 (UK), is that this negative relationship holds in the longitudinal analysis. As average levels of living space increase over time, the proportion of people reporting a shortage of space decreases. There is no 'space paradox' akin to the 'Easterlin Paradox'[16].

[16] Note that according to both subjective and objective indicators, levels of living space in the UK have increased between 1996-2008. This does not seem to square with the argument that average living spaces in the UK are getting

The initial evidence presented supports standard economic theory, suggesting that absolute levels of living space matter to people, and individuals do not entirely adapt to increases in living space. There are two reasons to probe further. First, the relationship may be spurious: decreases in the proportion of people reporting a space shortage may not be driven by increases in levels of living space, but by changes in other variables such as household structure. Second, even if we assume the above relationship is *not* spurious, there remains the possibility that *relative* levels of space are also important and/or that individuals *partially* adapt to changes in living space. Indeed, consistent with this interpretation, the effect of space is larger in the cross sectional analysis than in the longitudinal analysis[17]. The remainder of this chapter is therefore devoted to exploring the direct effect of social comparisons and preference drift on space preferences. I have already discussed the theory and evidence behind the social comparison effect and preference drift effect in previous chapters so the literature review below is only brief.

Social Comparison Effect

As noted in the previous chapters, it is accepted across the social sciences that people are concerned with their status. There is substantial evidence that status matters to a range of social outcomes including happiness. One determinant of status is relative wealth which, though not visible, can be signalled through consumption of positional goods. Part of the happiness that individuals derive from these positional goods can be attributed to the status they carry.

House size is one of the most commonly cited examples of a positional good (e.g. Frank, 2013, Marx and Engel, 1845), and there are major policy implications that flow from understanding house size as a positional good. Most notably, if house size is a positional good, then increasing absolute levels of living space will have a much weaker effect on social happiness than standard economic theory predicts, as individuals are not only concerned with their absolute house size, but also their relative house size. And yet, there are few empirical studies that have examined its positional nature. As noted, existing empirical studies on house size as a positional good have been based on two types of methodologies: survey-experimental methods, and revealed preference methods using house prices. In this chapter, I adopt a slightly different methodology. Through examining the effect of relevant others living space on the likelihood of an individual

smaller (e.g. Evans and Hartwich, 2005). For a nuanced discussion of how size of living spaces have changed over time, see this post by Neal Hudson *http://www.savills.co.uk/research_articles/186866/188035-0*

[17] In the GSOEP, an increase in metres per person from 25.75 to 40 between 1991-2012 caused the proportion of people reporting a shortage of space to decrease by 7.75 percentage points. In the cross-sectional analysis (2012), the difference in the proportion reporting a shortage of space between those with 25.75 (+/- 0.5) metres per person and 40 (+/- 0.5) metres per person was 17.7 percentage points.

reporting a shortage of space, this chapter examines the effect of social comparisons on space preferences more directly.

Preference Drift Effect

In the previous chapter, I discussed how an individual's (space) preferences may not only be influenced by one's relevant others, but also by that individual's own past experiences. Moving to larger accommodation leads to an initial increase in housing satisfaction, but as individuals experience their larger accommodation over time, levels of housing satisfaction decrease post-move. This pattern of results could be explained by either of the adaptation theories advanced in the previous chapter - aspiration spiral theory or distinction bias. Because this chapter tests for a preference drift effect, rather than adaptation in happiness/housing satisfaction judgements, we must briefly revisit each of these adaptation theories to develop a new set of hypotheses.

According to the aspiration spiral theory (Stutzer, 2004), experiencing a higher level of living space should cause an individual to shift space preferences upwards, implying a positive relationship between past (experienced) size of living space and the likelihood of an individual reporting a shortage of living space. The *distinction bias* theory (Hsee and Zhang, 2004), in contrast, does not predict any preference drift effect. It predicts that after an increase in living space (e.g. extension or moving to larger accommodation), an individual will initially view their new (larger) space in comparison to their old (smaller) space in a *joint evaluation* but over time they will come to view their new space in isolation in a *separate evaluation*. This shift in evaluations will decrease the *salience* of living space, and will weaken the effect that space preferences have on housing/life satisfaction judgements but it should *not* affect the space preferences themselves. In moving from a joint evaluation to separate evaluation, space should become less important to an individual's housing/life satisfaction, but the level of living space that an individual considers adequate should not change. Thus the distinction bias theory predicts adaptation in housing/life satisfaction judgements but does not predict a preference drift effect. Before conducting the analysis, it is perhaps worth explicitly stating the main hypotheses in brief;

H1: Absolute levels of living space will be negatively related to the likelihood of a respondent reporting a shortage of living space

H2: According to the positional good theory, the level of living space consumed by 'relevant others' will be positively related to the likelihood of a respondent reporting a shortage of space.

H3: According to the aspiration spiral theory of adaptation, the level of living space that a respondent experienced in the previous year will be positively related to the likelihood of them reporting a space shortage in the current year

7.3. Data and Methodology

The analysis proceeds in three stages. The first stage examines the relationship between individual living space, and the likelihood of an individual reporting a space shortage. For each individual *i*, likelihood of reporting a shortage of space, *S*, at time *t* is modelled as a function the amount of living space they occupy *M*, and a range of socio-demographic control variables *C*. I adopt a fixed effects framework, which effectively controls for an unobservable factor, αi, which is constant over time but specific to each individual, such as time-invariant housing characteristics.

$$S_{it} = f(M_{it} + C_{it} + \alpha_i) \text{ (1)}$$

We would expect the effect of M_{it} to be negative; the more space someone has the less likely they are to report a space shortage.

The second stage of the analysis tests for preference drift. Specifically, it examines whether the likelihood of an individual reporting a space shortage is affected by the lagged living space, M_{it-1}, i.e. the amount of living space an individual occupied in the previous year.

$$S_{it} = f(M_{it} + M_{it-1} + C_{it} + \alpha_i) \text{ (2)}$$

If there is a preference drift effect, we would expect the effect of M_{it-1} to be positive; an individual who upsized to their current size of living space is less likely to report a space shortage than an individual who has downsized to accommodation of the same size.

In the third stage of the analysis, I test for the social comparison effect by including three R_{it} variables, one for each group of relevant others (or 'reference groups'). If house size is a positional good, and individuals are concerned with having more space than other people, then we would expect there to be a positive coefficient on at least one of the three R_{it} coefficients, indicating that the more space one's group of relevant others has, the more likely an individual is to consider their own living space inadequate.

$$S_{it} = f(M_{it} + R_{it} + C_{it} + \alpha_i) \text{ (3)}$$

Throughout this chapter, I again use data from the German Socio-Economic Panel Study (GSOEP) and British Household Panel Study (BHPS). Both the BHPS and GSOEP ask respondents whether their living space is adequate or not. In the BHPS, respondents are presented with a series of housing problems, and asked which ones they are experiencing. One of these problems is *"shortage of space"*. If the individual responds *"yes"* ("*no*") then the dependent variable takes on a value of 1 (0). This question was only asked in the BHPS from 1996 onwards so the BHPS sample is limited to 1996-2008. For the GSOEP, I derive the binary dependent variable using responses to the question *"What do you think about the total size of your dwelling? For the size of your household, is it…"* to which respondents must choose from five options; *"much too small"; "a bit too small"; "just right"; "a bit too large"; "much too large"*. If an individual responds *"much too small"* or "*a bit too small"* then the dependent variable (reported space shortage) takes on a value of 1. If they respond otherwise, the dependent variable takes on a value of 0[18]. To maintain consistency with the BHPS, I limit the sample time span of the GSOEP to 2000-2012.

Because I adopt a fixed effects logit model, an individual's response must have varied over time if they are to be included in the sample. If, in the BHPS for instance, an individual reports "*no*" in every year (1996-2008), they will be excluded from the sample. I set two additional inclusion criteria. In both datasets, the above questions on space shortages were only asked in the *household* questionnaire but there is only one household questionnaire per household. I therefore limit the sample, in the case of both datasets, to those individuals who filled out (or who were the main contributors to) the household questionnaire.

Second, I limit the sample to those individuals who have stayed in the same house. Individuals who moved house in the sample timeframe are only included up to the interview wave prior to moving. I do this for two reasons. First, to minimise risk of omitted variables bias: individuals may move to a house that is objectively smaller, but feels more spacious. The resulting bias could hide any preference drift effect. Second, to minimise risk of self-selection bias: individuals who come to feel their living space is inadequate may be more likely to move to a region with higher absolute levels of living space and this bias, rather than the social comparison effect, could explain any positive relationship between regional levels of living space and the likelihood of reporting a shortage of space. By looking only at individuals who stayed in the same house, we reduce the risk of both biases. However, in doing so, we also eliminate a large degree of within-individual variation in size of living space, as moving house

[18] I considered using an ordinal logit with three categories ("much too small"; "a bit too small" and 'any other response') but this would require us to assume that respondents were consistent in making a distinction between "much too small" and "a bit too small". This seemed like an unnecessary assumption to make, given that there is no apparent shortage of variation in the dependent variable (see 'Results' section).

is one of the main ways in which individuals change their living space from one year to the next, the others being renovations/extension to existing house, and a change in the number of people in household. This does not undermine our tests for the social comparison effect. To test this effect, we only rely on within individual variation in *relevant others'* levels of living space. However, it will limit our ability to identify any preference drift effect. When testing for the preference drift effect, I therefore run the regressions both including and excluding those movers i.e. both before and after imposing the second inclusion criterion.

In terms of the independent variables, the size of living space that an individual occupies, *M*, and the average size of living space that the individual's relevant others occupy, *R*, are both derived from responses to the same household questionnaire, using the same methodology as in the previous chapter. For the BHPS, I use responses to the question *"How many rooms are there here, including bedrooms but excluding kitchens, bathrooms, and any rooms you may let or sublet?"*. For the GSOEP, I use responses to the question, *"How large is the total living area of this dwelling?"* where the answer is in metres squared. In the case of *M*, the size of the dwelling (in m2 or rooms) is divided by the number of people in the household (including children), to give the 'metres per person' or 'rooms per person'.

One major step in the methodology involves defining 'relevant others'. As noted in Chapter 5, to capture the range of mechanisms through which status affects happiness, I define 'relevant others' very broadly as those persons an individual interacts with, seeks the respect of, or compares themselves to. In this chapter, I test for the effect of three groups of relevant others. First, people in the same country. Second, people in the same region[19]. Third, people in the same 'cohort' which - following Ferrer-i-Carbonell (2005) - I define as those people of a similar age, education and side of the country[20]. For the GSOEP, these criteria yield 50 different groups of relevant others per wave, and for the BHPS, 30 different groups of relevant others per wave.

I decided upon these three groups of relevant others for several reasons. First, these three groups of relevant others make intuitive sense. It seems reasonable to argue that those persons an individual interacts with, seeks the respect of, or compares themselves to, will be drawn disproportionately from these three groups. Second, previous studies have found the income of these three groups to have a negative effect on individual happiness (e.g. Clark, 2003; Persky

[19] There are 19 regions in UK and 16 states in Germany

[20] For GSOEP, the sample is split into 5 age brackets (16-25; 25-34; 35-44; 45-65; 65+), to allow comparisons with Ferrer-i-Carbonell. For the BHPS, we use difference age brackets (21-30; 31-40; 41-50; 51-65; 65+) to allow comparisons with Foye et al (2016). In terms of education, the GSOEP sample is split according to the number of years spent in education (<10 yrs; 10 yrs; 11 yrs; 12yrs; 12+ years). For BHPS the sample is split into three education brackets (attended further education; has A-levels or GCSE's; has no GCSE's). The final criteria is side of the country. For BHPS, we split between North UK (North East, North West, Yorkshire and Humberside, Wales, Scotland, and Northern Ireland) vs South UK (London, South East, South West, East Midlands, and West Midlands). For GSOEP, East Germany vs West Germany.

and Tam, 1990; Ferrer-i-Carbonell, 2005). Despite the two reasons above, there is a degree of arbitrariness involved in delineating relevant others in the way that I do. The only way to get round this arbitrariness would be to find out who individuals compare their house size to and whose opinion they care about when it comes to having a house that is 'large enough'. Unfortunately, this information does not exist. There does exist a substantial literature on whom individuals interact with *physically* (the 'neighbourhood effects' literature) but, as noted in Chapter 5, physical social interactions represent only one way in which aspirations can be shaped, and external sanctions can be imposed. Other possible mechanisms include phone calls (e.g. with friends/family who moved to larger accommodation); TV shows (e.g. 'dream home' shows); 'Property porn' on the internet and magazines, and the list could go on. Furthermore, individuals may want to purchase a large house precisely so that they can interact with people who they consider to be of higher social status. Thus, it may be those people that an individual does *not* physically interact with – but *wants* to physically interact with- who have a disproportionately large influence on their house size aspirations. In sum, because the mechanisms through which sanctions (positive/negative; external/internal) can be imposed are so numerous and, in many cases, intangible, we must accept a degree of arbitrariness when delineating 'relevant others' in this thesis.

I use the same BHPS/GSOEP data to quantify the attributes of relevant others, as I do to run the regressions. Thus, in each of the three waves, every individual in the sample is both an individual in their own right (i.e. we are interested in what affects their preferences) as well as part of one group of 'relevant others' (i.e. according to our hypotheses, they affect other people's preferences). Note that the relevant others are assumed to be exogenous, which is standard in empirical work (Ferrer-i-Carbonell, 2005).

As well as controlling for all time invariant variables, αi, the comprehensive nature of the BHPS and GSOEP surveys allows us to control for a wide range of time variant variables, C_{it}, including age, income, employment status, marital status, and the age of the children in the household. The control variables, for both GSOEP and BHPS analysis, are listed in full in Appendix A. The descriptive statistics for these control variables are presented in Appendix B for the BHPS (full sample), and Appendix C for the GSOEP (full sample).

I run all the above regressions on the sample as a whole (after the inclusion criteria have been imposed). When testing for a social comparison effect, I split the sample according to; first, gender; and second, tenure. Based on the literature reviewed in Chapter 5, we can hypothesise that the space preferences of men and owners will be more affected by social comparisons than those of women and renters, as the latter two groups are more concerned with the economic

status that house size signals. Moreover, we can tentatively hypothesise that this 'tenure gap' in the social comparison effect will be larger in the UK than Germany (see Chapter 5, Section 5.8).

7.4. Results

To reiterate, the metric for living space is more accurate in the GSOEP (metres per person) than in the BHPS (rooms per person). Therefore, I apply greater weight to the GSOEP findings. All the coefficients below are displayed as odds ratios.

In the first stage of the analysis, (Column 1 in Tables 13 and 14), the statistically significant negative coefficients on space per person clearly indicate that the more space an individual possesses, the less likely they are to report a shortage of living space. In terms of the control variable coefficients (not shown), the results are broadly in line with what we would expect.

In both datasets, having moved recently decreases the likelihood of the respondent reporting a space shortage (BHPS: -44%, $p<0.01$; GSOEP -64%, $p<0.01$), which is consistent with the results in Chapter 6 showing an initial post-move uplift in housing satisfaction. In the BHPS, most of the self-reported 'housing problems' also substantially increase the likelihood of the respondent reporting a space shortage (in decreasing order of effect magnitude, all $p<0.01$: poor light +124%; cold +77%; neighbour noise +57%; condensation +65%; street noise +46%; damp walls +32%; vandalism and pollution +23%). Similarly, if, in the GSOEP, a respondent reported their house as in 'bad condition', 'very bad condition', or 'dilapidated', then they are also more likely to report a space shortage.

One area where the two sets of results do conflict is on the relationship between household age composition and likelihood of reporting a space shortage. In the BHPS, having a child 0-2 years old (keeping rooms per person constant) increases the likelihood of reporting a space shortage by 26% ($p<0.01$) but in the GSOEP, having a child aged 0-1, 2-4, 5-7, 8-10 or 16-18 (but not 11-12 or 12-15) all *decrease* the likelihood of that respondent reporting a space shortage, again keeping space per person constant.

In the second stage of the analysis, I test for the preference drift effect by including lagged space per person. For results, see Column 1 of Table 11 (GSOEP) and Table 12 (BHPS), and for results after movers have been excluded, see Column 2 of Table 11 (GSOEP) and Table 12 (BHPS). The coefficient on lagged space per person is insignificant in the GSOEP (see columns 1 and 2 of Table 11) and, in contradiction to preference drift theory, is *negative* in the BHPS (see columns 1 and 2 of Table 12). These initial results do not support the preference drift hypothesis.

One possibility is that preference drift only works one way. For example, upsizers may be more likely to report a space shortage after moving to larger accommodation, but downsizers may not be any less likely after moving to smaller accommodation. To test this alternative hypothesis, I included a set of dummy variables indicating whether the respondent had undergone an increase, or decrease in living space since the last interview wave. In the GSOEP it is also possible to distinguish between large changes (+/- >20%) and small changes (+/- <20%) in the level of living space.

When these dummy variables are included in the GSOEP analysis (Column 3 and 4 of Table 11) there emerges a preference drift effect in *both* directions. If an individual upsized by more than 20 percent to their current living space, they are about 23 percent less likely to report a space shortage ($p<0.01$), and if an individual upsized by less than 20 percent, they are about 6 percent less likely to report a space shortage ($p<0.1$) (see Column 3, Table 11), although this latter finding does not hold when we exclude movers (see Column 4, Table 11).

Inversely, if an individual *downsized* by less than 20 percent to their current living space, they are about 7 percent *more* likely to report a space shortage ($p<0.05$) (see Column 3, Table 11). When I exclude movers (see Column 4, Table 11) it is only those individuals who downsized by *more* than 20 percent, who are 14 percent more likely to report a space shortage.

In the BHPS, there is only evidence of an asymmetric preference drift effect with significant negative coefficient on 'upsized' ($p<0.01$), but no significant positive coefficient on 'downsized' (Column 3, Table 12). This finding holds when I exclude movers (Column 4, Table 12). Overall, the findings on preference drift effect differ depending on which model specification we adopt. When we include lagged space per person, there is no evidence of any preference drift effect. However, when instead we include dummy variables, there emerges a symmetric (GSOEP) or asymmetric (BHPS) preference drift effect.

In the third and final stage of the analysis, I test for the social comparison effect by including proxies for the average living space of the three specified groups of relevant others. For results, see Table 13 (GSOEP) and Table 14 (BHPS). Turning first to the GSOEP (Column 2, Table 13), there is a statistically significant and substantial coefficient on the living space of the national and regional groups, but not on the cohort group of relevant others. An increase in the level of living space at the regional level by one metre per person is associated with a 7 percent increase in the likelihood of a respondent in that region reporting a space shortage ($p<0.05$). The effect of the national group is larger still. If average levels of living space in Germany increased by one metre per person, a German -whose level of living space had remained the same- would be 13 percent more likely to report a shortage of living space ($p<0.05$). This effect is actually

larger than that of absolute levels of living space, implying that if an individual's living space increased in line with the national average, that individual would be *more* likely to report a shortage of space.

The findings in the BHPS are consistent with those in the GSOEP (see Column 2, Table 14). Due to the probable inaccuracy of rooms/person as a metric of space, we should not attach too much weight to these coefficient magnitudes. Nevertheless, an increase in regional levels of space by one room per person is associated with a 3.6 times increase in the likelihood of an individual reporting a space shortage ($p<0.01$). To test the effect of national group space levels, I initially used the UK *mean* space per person, as in the GSOEP, but this led to collinearity (results not shown). I therefore used the UK *median* space per person instead. An increase in the national median level of living space by one room per person is associated with a 1.8 times increase in the likelihood of an individual reporting a space shortage ($p<0.01$). There was no evidence that either of these social comparison effects – in the GSOEP or BHPS – were distorted by multi-collinearity.[21]

When the samples are split according to gender, there are social comparison effects for both genders, although men and women apparently differ in their relevant others. For results, see Columns 3 and 4 of Tables 13 and 14. In both GSOEP and BHPS, the national social comparison effect is only significant for women (see Column 4 of Tables 13 and 14); implying that only women compare their house size to people in the same country. When the GSOEP sample is split according to gender, the cohort group effect turns positive (and weak) for men (Column 3, Table 13), but turns *negative* for women (Column 4, Table 13). The cohort group effect remains insignificant for both genders in the BHPS (Columns 3 and 4, Table 14). The regional group results are inconsistent across the two samples: significant only for men in the GSOEP, and only for women in the BHPS ($p<0.05$).

In terms of tenure, there is no evidence from the German context that the social comparison effect is stronger for owners than renters, although the two do differ in their relevant others (see Columns 5 and 6, Table 13). As hypothesised, the tenure differences are clearer in the UK context (see Columns 5 and 6, Table 14), where there is a statistically significant regional social comparison effect for owners ($p<0.01$), but no significant social comparison effects for renters.

[21] Two observations, in particular, suggested that multi-collinearity was not a problem: i) the coefficients of interest (i.e. those on regional and national levels of living space) are not 'paradoxical', as we would expect to see in the case of multi-collinearity – they are of large magnitude but are also statistically significant, and ii) when those variables which are highly correlated with regional/national levels of living space were removed from the specification, there was no substantial drop in the coefficient magnitudes, as we would expect to see if multi-collinearity was a problem.

Note also that the *magnitude* of the regional social comparison effect is much smaller for renters in the BHPS (Column 6, Table 14), than owners (Column 5, Table 14), implying that this tenure difference is not simply because of the renters' sample size being smaller. This finding therefore supports the hypothesis that in the UK, housing is more of a positional good for owners than renters.

Table 11: GSOEP Results – Preference Drift

VARIABLES	**ORIGINAL**		**SPACE DUMMIES**	
	w/movers	w/o movers	w/ movers	w/o movers
METRES_PP	0.846***	0.842***	0.851***	0.847***
	-0.00189	-0.00581	-0.00188	-0.00599
METRES_PP_SQ	1.001***	1.001***	1.001***	1.001***
	-1.36E-05	-4.58E-05	-1.36E-05	-4.62E-05
PLUS > 20_PERCENT			0.768***	0.805***
			-0.0262	-0.061
PLUS < 20_PERCENT			0.944*	1.076
			-0.0305	-0.0641
MINUS < 20_PERCENT			1.024	1.142**
			-0.0307	-0.0639
MINUS > 20_PERCENT			1.074**	1.03
			-0.0339	-0.0697
LAG_METRES_PP	1.000	1.000		
	-0.00083	-0.00167		
OBSERVATIONS	105,749	21,780	105,749	21,780
NUMBER OF PID	9,617	3,126	9,617	3,126

Table 12: BHPS Results – Preference Drift

VARIABLES	**ORIGINAL**		**SPACE DUMMIES**	
	w/movers	w/o movers	w/ movers	w/o movers
ROOMS_PP	0.260***	0.342***	0.287***	0.390***
	-0.0112	-0.024	-0.0117	-0.0253
ROOMS_PP_SQ	1.018***	1.014***	1.017***	1.013***
	-0.00078	-0.00119	-0.00073	-0.00105
UPSIZE			0.804***	0.825***
			-0.0286	-0.0386
DOWNSIZE			0.957	1.008
			-0.0383	-0.0592
LAG_ROOMS_PP	0.947**	0.879***		
	-0.0252	-0.0427		
OBSERVATIONS	33,344	16,955	37,389	19,791
NUMBER OF PID	4,923	2,720	5,444	3,148

Table 13: GSOEP Results - Social Comparison Effect

	FULL SAMPLE (W/O MOVERS)		MALES	FEMALES	OWNERS	RENTERS
	Space Shortage					
METRES_PP	0.902***	0.901***	0.917***	0.884***	0.907***	0.894***
	-0.00358	-0.00375	-0.00486	-0.00578	-0.00512	-0.0058
COHORT_METRES_PP		1	1.018**	0.975**	0.999	1.001
		-0.00674	-0.00912	-0.0102	-0.0097	-0.00973
REG_METRES_PP		1.068**	1.080*	1.066	1.035	1.091**
		-0.03	-0.0428	-0.0431	-0.0427	-0.0432
NATIONAL_SPACE_PP		1.127**	1.016	1.249***	1.195*	1.084
		-0.0657	-0.0838	-0.104	-0.111	-0.0836
OBSERVATIONS	21,780	19,754	10,258	9,496	8,358	11,021
NUMBER OF PID	3,126	2,898	1,505	1,393	1,079	1,807

Table 14: BHPS Results – Social Comparison Effect

	FULL SAMPLE (W/O MOVERS)		MALES	FEMALES	OWNERS	RENTERS
	Space Shortage					
ROOMS_PP	0.404***	0.405***	0.342***	0.436***	0.378***	0.520***
	-0.0227	-0.0229	-0.034	-0.0305	-0.026	-0.0552
COHORT_ROOMS_PP		1.069	1.11	1.02	1.071	0.937
		-0.146	-0.256	-0.175	-0.17	-0.273
REG_ROOMS_PP		3.597***	3.699	3.173*	5.190***	1.376
		-1.761	-3.112	-1.923	-3.013	-1.327
MEDIAN_NAT_ROOMS_PP		1.629**	1.328	1.876**	1.539	1.519
		-0.38	-0.526	-0.546	-0.425	-0.7
OBSERVATIONS	19,791	19,554	6,947	12,607	14,103	5,035
NUMBER OF PID	3,148	3,113	1,167	1,946	2,207	895

7.5. Robustness checks

By using fixed effects, and limiting the analysis to people who have stayed in the same house, I control for all time *invariant* housing characteristics. I cannot however control for all time *variant* housing characteristics (although I do control for those listed in Appendix A). Individuals may make structural changes to their home that make the home feel more spacious without increasing the reported house size. To test for this potentially confounding effect, I included variables to capture whether structural changes/renovations were made to the home (see Appendix A for details of how variables were derived) but the coefficients of interest remained broadly the same for both datasets (see Appendix D for results when structural changes/renovations variables were included). Note that because we are checking the robustness of both the preference drift and social comparison effect, all the regressions in this section include in their specification: upsize/downsize dummy variables (not lagged space per person, as the results for this variable did not indicate any preference drift effect), and the three variables indicating the level of space at the national, regional and cohort levels. All robustness checks also use the sample without movers (i.e. after applying second inclusion criterion).

One other variable that could be mistaken for a social comparison effect is lifestyle: increases (or decreases) in the level of living space at the national/regional level may be correlated with an individual adopting a more 'home-centred' lifestyle, or one that requires a higher (or lower) level of living space. This could be driving the social comparison effects. In the GSOEP, respondents were asked five times over 2000-2012, whether or not they had friends round for dinner at least once a month, one of the activities RIBA (2011) found to be limited by a lack of space. When I adopted the full specification using only these five waves, the only statistically significant social comparison effect was that on national levels of living space (Appendix E, Column 1). When I added the proxy for individual lifestyle the national social comparison effect was unchanged (Appendix E, Column 2). Thus, changes in individual lifestyle do not appear to be driving the *national* social comparison effect.

Alternatively, increases (or decreases) in the level of living space at the national/regional level may be correlated with transitions to a more 'home-centred' lifestyle, which an individual cannot match precisely because they have insufficient living space. To test this possibility, I calculated the proportion of people in the same nation who reported having friends round for dinner at least once a month, and used this a proxy for the 'home-centredness' of national lifestyles. When I include this proxy (using the same five waves as the previous robustness check) the coefficient on national levels of living space actually increases in magnitude

(Appendix E, Column 3). This suggests that changes in *national* lifestyles are not driving the *national* social comparison effect.

Another activity RIBA (2011) found to be limited by a lack of space was eating together as a family. In the BHPS, *youth* (11-16 years old) respondents were asked how many times over the last week they had eaten an evening meal altogether with their family. I calculated the proportion of youth (at the national/regional level) who gave a response of more than "none" and used this as an alternative proxy for regional lifestyles. The youth sample size declines significantly from 2005, so I limit this part of the analysis to 1996-2005. Even in this period, the annual youth sample size is small, ranging from 701 to 1179, meaning many of the regional relevant others' cell sizes are very small (<20). With this reduced sample, only the *regional* social comparison effect is statistically significant (Appendix F, Column 1). Nevertheless, when the proxy for regional lifestyles is introduced, there is no meaningful change in the regional social comparison effect (Appendix F, Column 2), suggesting that changes in lifestyle at the *regional* level are not driving this *regional* social comparison effect.

7.6. Review of findings

These last two chapters have been centred on what ought to be one of the key questions in housing and planning policy: to what extent do (or would) increases in average levels of living space translate into increases in societal happiness?

While Chapter 6 addressed these questions through looking directly at happiness, this chapter looked at individual space preferences. I started again by outlining the relationship between size of living space and happiness according to standard economic theory, whereby individuals have preferences for a certain amount of living space, which are constructed asocially and independent of past experiences, and which when satisfied, result in an increase in happiness. The descriptive results presented in graphs 1-4 supported this logic, showing that as average size of living space increased in both the UK and Germany, the proportion of people reporting a space shortage decreased, implying an increase in societal happiness.

However, the regression results presented in this chapter cast doubt on this logic. They demonstrated that individual space preferences are both affected by the level of space possessed by people in the same region and country (social comparison effect), and by the level of living space experienced in the past (preference drift), implying that societal space preferences should increase with societal levels of living space increase, meaning the proportion of people reporting a space shortage should only increase slightly, if at all, over time.

There are, as already noted, two ways of reconciling these findings. First, the descriptive results presented in graphs 1-4 could be spurious. The decline in the proportion of people reporting a space shortage over time may be driven by factors other than increases in living space, such as people adopting less home-centred lifestyles. Alternatively, it may be that increasing societal levels of living space does satisfy space preferences, but this relationship is weakened, though not eliminated, by the social comparison and preference drift effects, which would explain why the relationship is stronger at one point in time than over time. Given that the regression results are more rigorous than the descriptive results, it is the former that I concentrate on when discussing the preference drift effect and social comparison effect below.

Preference drift effect and adaptation

In Chapter 5, I showed that – in both the UK and German contexts- moving to larger accommodation leads to an initial increase in housing satisfaction, but this uplift dissipates over time. The findings in this chapter tell a similar story. People who have recently experienced an increase in living space, let's call them 'upsizers', seem to base their space preferences on the lower levels of living space they experienced in the past, and are therefore less likely to report a shortage of space than someone whose size of living space has remained constant. The implication is that as these upsizers spend more time in their current (larger) living space, their space preferences increase and, consistent with the findings in the previous chapter, the initial uplift in housing satisfaction diminishes.

Taking the findings from Chapters 6 and 7 together, the aspiration spiral theory seems to be the most likely explanation for adaptation to increases in living space; experiencing higher levels of living space leads upsizers to consciously ratchet their space preferences upwards, causing their post-move increase in housing/life satisfaction to diminish over time. Alternative adaptation theories do not seem to square with our findings. According to the hedonic treadmill theory, housing satisfaction judgements should not exhibit adaptation as in Chapter 6, while distinction bias theory implies that the post-move downward trajectory in upsizers' housing satisfaction should be due to space becoming less salient, *not* because individuals increase their space preferences as this chapter's findings imply.

Social Comparison Effect: House size as a Positional Good

In deciding what level of living space is adequate, the level of living space consumed by people in i) the same region, and ii) the same country, is highly influential in both the German and British contexts. More research, and particularly qualitative research, is needed to explore how

these social comparison effects come about. Potential mechanisms include the media and direct interactions with other people's homes.

In Chapter 5, I hypothesised that the importance of housing as a symbol of economic status would depend on an individual's gender and housing tenure and, more specifically, that social comparisons would have a stronger effect on the space preferences of men and home-owners than women and renters. While men and women apparently differ in their groups of relevant others, I could find no clear evidence that the strength of the social comparison effect depends on gender. The results on tenure were more supportive. There was no clear difference between owners and renters in Germany, but in the UK, where difference in security of tenure and socio-demographic composition are more stark, the social comparison effect was limited to owners. Taken together, these results are consistent with the notion that house size (and perhaps housing in general) is more of a positional good for owners than renters.

In this chapter we have focussed on the positionality of house size but other housing characteristics are also likely to determine an individual's status. One's housing tenure is also likely to be associated with social status. The next chapter is devoted to conceptualising and examining the relationship between housing tenure, social status, and happiness.

8. HOME OWNERSHIP AS A SOCIAL NORM AND POSITIONAL GOOD: HAPPINESS EVIDENCE FROM PANEL DATA[22]

8.1. Introduction

When compared to renting, home-ownership is associated with positive outcomes at the individual level. There is quantitative evidence that home-owners have higher life satisfaction (e.g. Zumbro, 2014), mental health (Manturuk, 2012), and ontological security (e.g. Saunders, 1990); and that children of home-owning parents do better at school (e.g. Haurin et al., 2002; Green and White, 1997).[23]

As noted in Chapter 5, the literature typically attributes this *tenure gap* to three *absolute* benefits of home-ownership: first, people have a natural possessive instinct and a desire to mark out their own territory which home-ownership fulfils (e.g. Saunders, 1990); second, home-ownership improves living conditions because home-owners have a greater financial stake in their home than renters (Galster, 1983); third, homeownership can offer greater security, as home-owners cannot be involuntarily moved from their home by a landlord. Some sociologists (e.g. Saunders, 1990) contend that this preserves the 'ontological security' of home-owners. These three absolute benefits have arguably influenced governments to make expanding rates of home-ownership a key policy goal. For example, a press release from the U.S. Department of Housing and Urban Development (2000) cited the tenure gap in educational outcomes as justification for policies supporting home-ownership (Harkness and Newman, 2003). Similarly, UK policy documents have invoked the absolute benefits in justifying policies to expand home-ownership (see Gurney, 1999).

In this chapter, we contend that the tenure gap may actually be attributable, at least in part, to the *relative* benefits of home-ownership. In short, home-owners may be happier, better educated and healthier partly because of the social status that comes with home-ownership. As I discussed in chapter 5, the study of the relative benefits of consumption has emerged as a key area of research across the social sciences.[24] Given that housing is the largest form of consumption, it is striking that so little attention has been devoted to examining the importance of *relative* housing conditions. To facilitate a thorough theoretical and empirical study, we limit our scope to the relative benefits of housing *tenure* in terms of *happiness*. Note also that, because of data

[22] This chapter is currently under review at *Urban Studies*.
[23] See Dietz and Haurin (2003) for (economics focussed) review on social benefits of home-ownership.
[24] For example, Easterlin (1974) is one of the most cited paper in modern economics (4154 citations) and *The Spirit Level* by Wilkinson and Pickett (2006) was recently estimated to have sold 300,000 copies (http://inequality.org/spirit-level-level/ accessed on 16/12/2015).

limitations[25], we are only able to conduct this study using the BHPS. Our focus in this paper is therefore limited to the UK.

We test for two types of relative benefits. First, we follow previous authors in conceptualising home-ownership as a *social norm*: home-owners benefit from being considered 'normal' by society, versus renters who are considered 'abnormal'. We hypothesise that if home-ownership is a social norm, then the magnitude of the relative benefits of home-ownership should be positively related to the home-ownership *values* of relevant others: the stronger the social norm of home-ownership among one's friends and family, the happier home-owners will be, and the less happy renters will be.

To our knowledge, we are the first to additionally conceptualise home-ownership as a *positional good.* Home-owners not only benefit from being 'normal', but also through being considered to have higher relative wealth, and in turn, higher status than renters. If home-ownership is a positional good, then we hypothesise that the happiness of owners (and renters) should be negatively related to the home-ownership *consumption (*i.e. home-ownership rates) of relevant others. When home-ownership is expanded, this reduces the wealth that home-ownership (and renting) signals, thereby decreasing the status and happiness of the original home-owner (or renter).

The crucial point about these *relative* benefits-as opposed to absolute benefits- is that they necessarily come attached with relative costs. By conforming to the social norm, home-buyers benefit from being 'normal', but it comes at the expense of renters who are increasingly 'abnormal'. By signalling their wealth, home-buyers benefit from increased status, but because status is an inherently relative concept, this comes at the expense of others whose status necessarily decreases. Therefore, if the tenure gap in outcomes is partly due to the relative benefits of home-ownership, then expanding rates of home-ownership will have a weaker effect on societal happiness than standard economic theory predicts. Understanding the extent to which tenure gap in outcomes is attributable to the *absolute* versus the *relative* benefits is vital because the policy implications of the two logics are very different.

The chapter is structured as follows. First, we conceptualise home-ownership as a social norm, and develop our first hypothesis. Next, we additionally conceptualise home-ownership as a positional good, and form hypothesis two. We then outline the data and methodology before

[25] Specifically, there is no question in the BHPS asking respondents how important it is to own their own homes, and therefore no (reasonable) way of proxying for the 'home-ownership values' of relevant others.

presenting and discussing our results. We conclude with policy implications and an agenda for future research into the relative benefits of home-ownership and housing more generally.

8.2. Literature Review and Theoretical Framework

Home-Ownership as a Social Norm

Of the three chapters that have formally conceptualised and tested the relative benefits of home-ownership, all have adopted a social norm framework (Gurney, 1999; Cohen et al., 2009; Knight, 2002). As noted in Chapter 5, there is no standard definition of a 'social norm' but definitions tend to imply three distinct elements (Hechter and Opp, 2001): they should be behavioural regularities; there should be a sense of 'oughtness' with them; and there should be sanctions associated with conforming or deviating. Sanctions can be rewards or punishments. Significantly, according to the economic model of Akerlof (1980), the strength of the sanctions associated with conforming/not conforming will be in proportion to the strength of 'oughtness' among one's 'relevant others'. As noted, in this thesis I define 'relevant others' very broadly as those persons an individual interacts with, seeks the respect of, or compares themselves to; a group which is likely to encompass an individual's friends, family, work colleagues and neighbours. Homans (1974: 150) recognises the influential role this group plays in enforcing social norms: "If a group can offer much in the way of friendships to its members, it can exert much control over them, since it can deprive them of much if they don't conform".

So is home-ownership a social norm in the UK? It is certainly a behavioural regularity. Despite recent declines, in 2013-14, 65 percent of households owned their own homes (English Housing Survey, 2015). Furthermore, there is a sense of oughtness to do with home-ownership. Becoming a home-owner has been variously described as a 'rite of passage' (Dupuis and Thorns, 1998) and a 'badge of citizenship' (Murie, 1998). Gurney (1999) examined the language used in landmark housing policy documents, and among homeowners in Bristol, to identify three discrete discourses which normalise home-ownership. First, the dwellings of home-owners are imbued with the warmth and security of `home' whilst renters' dwellings are described in colder terms. Second, home ownership is associated with a set of values that constitute a 'good citizen'. Third, homeownership is viewed as meeting a deep and natural desire for independent control of one's living environment. This third discourse is likely to be age dependent (Knight, 2002). For students and unmarried young adults, renting is likely to be considered 'normal' but beyond a certain point– Knight suggests the age of 30- renting privately becomes a deviation from schedule and

'abnormal'. All three discourses work together to cast home-ownership as 'normal' and renting as 'abnormal'. The norm against social rental is likely to be stronger still. Not only are social renters on the wrong side of Gurney's three discourses, but they are also perceived as being dependent on the state (e.g. Robinson, 2013).

As noted in Chapter 5, the strength of the sanctions associated with (not) conforming will depend on the strength or 'oughtness' of the social norm among relevant others. To illustrate, take 1950's Britain. There were social norms against both homosexuality and holding your knife and fork in the wrong hand but the strength of the social norm-and the sanctions involved – were much greater in the case of the former than the latter. Similarly, the norm in favour of home-ownership – and the sanctions associated with renting or owning- will vary in strength between different groups of relevant others. Consistent with this logic, Cohen et. al (2009) conducted a longitudinal study of 919 low-moderate income renters in the USA, and found the home-ownership values of 'important others' to be associated with stronger homeownership intentions. Respondents were more likely to intend to buy a home if they thought 'important others' were of the opinion that the respondent *should* buy a home. Furthermore, stronger home-ownership intentions were associated with a higher likelihood of becoming a home-owner in the future.

As discussed, sanctions can be rewards or punishments, and can be imposed directly or indirectly. If a renter's relevant others regularly discuss the merits of home-ownership or the disadvantages of renting then the renter may internalise this discourse, and feel a sense of shame for being 'abnormal'. Inversely, an owner may feel a sense of pride and confidence (see Gurney, 1999). These are referred to as internal sanctions. Relevant others could also affect an individual's happiness directly through granting admiration or deference to owners, or through withholding respect from renters. These are defined as external sanctions. External sanctions could also be more material. A person of high rank can expect to be treated favourably by other individuals with whom he might engage in social and economic interactions (Hirsch, 2005; Frank, 2013).

For the sanctions above to exist, an individual's housing tenure must be known by their relevant others. This may seem unlikely given housing tenure is intangible. However, the status that parents' derive from their children's level of education (Solnick and Hemenway, 1998) indicates that something need not be tangible to carry relative benefits, it just needs to be known by others. Our contention is that if someone undergoes a tenure transition, then considering the social significance of the life event, this information is likely to be dispersed among their relevant others.

The social norm literature therefore predicts that an individual's housing tenure indicates, in part, whether they are 'normal' or 'abnormal'. The extent of the relative benefits (or costs) associated

with being a home-owner (or renter) depend on the strength of the home-ownership values of relevant others. Thus, we have our first hypothesis:

H1: if home-ownership is a social norm, the home-ownership values of relevant others will be positively related to the happiness of owners, but negatively related to the happiness of renters.

But what about the home-ownership *consumption* of relevant others? If more of one's relevant others are homeowners, does this impact the status of owners and renters?

Home-Ownership as a Positional Good

Veblen's (1899) theory of conspicuous consumption, Duesenberry's (1949) relative income theory and Hirsh's (1976) theory of positional goods all make the point that utility depends on relative, as well as absolute, consumption. As noted previously, relative consumption matters because it signals the consumer's relative wealth, and relative wealth matters because it indicates one's power over others (Csikszentmihalyi and Rochberg-Halton, 1981) and, in many cases, one's natural ability (Frank, 2013). It is therefore a key determinant of social status.

Being able to purchase one's own home requires a greater level of wealth than renting in the private sector, which in turn requires a greater level of wealth than renting social housing. Thus becoming a home-owner signals an increase in relative wealth,

> The average home owner is higher status, better paid, better educated, richer and more middle class… consequently the change from tenant to home owner increases the likelihood that the individual will be taken to be well paid, well-educated and middle class. (Marcuse, 1975: 195)

However, as the proportion of the population who can access home-ownership increases, the relative wealth that home-ownership signals will decrease (Forrest and Murie, 1983). By the same logic, expansion of home-ownership will also decrease the relative wealth with which renting is associated. This process has been most noticeable in the social housing sector. Between 1981 and 2011, the size of the social rental sector decreased from 31% to 18% as skilled workers moved to home-ownership (Jones and Murie, 2006). Whereas council tenants in England in the 1950s and into the 1960s were considered by society to be relatively affluent, now the perception is of an economically inactive underclass (Watt, 2008).

The same logic also applies to private renting. Those who move from private renting to home-ownership need capital. This means that while relative to other owners, they are likely to be poor; compared to other renters, they are likely to be wealthy. By leaving the private rental sector, they

will lower the relative status of those left behind. In the Spanish context, Vera-Toscana and Ateca-Amestoy (2008) found that *renting* in a predominantly home-owners' neighbourhood had a significant negative effect on housing satisfaction "It does not seem to be the fact of being an owner vs. non-owner that causes satisfaction or dissatisfaction" they noted "but the fact of being the renter surrounded by home-owners".

We therefore propose that home-ownership is also likely to be a *positional good.* Becoming a home-owner will increase an individual's status as it signals an increase in their relative wealth, but the price will be paid by everyone else whose status necessarily declines. We thus have our second hypothesis:

H2: *If home-ownership is a positional good, then home-ownership consumption among relevant others will be negatively related to the happiness of both home-owners and renters.*

8.3. Data and Methodology

Data are again drawn from the British Household Panel Study (BHPS). Our analysis is limited to the three waves which included information on the importance attached to home-ownership; 1998, 2003 and 2008.

Our econometric analysis is based on the following specification:

$$H_{it} = f(V_{it} + C_{it} + X_{it} + \alpha_i) \quad (1)$$

According to expression (1), for each individual *i*, happiness at time *t* is labelled by H_{it} , and is considered to be a function of relevant others' home-ownership values, *V*; relevant others' home-ownership consumption (i.e. home-ownership rates), *C*; and a range of socio-demographic control variables, *X*. We adopt a fixed-effects regression analysis, thus controlling for all time invariant and individual-specific unobservables αi. We use the same two BHPS indicators for happiness; GHQ Caseness (with scores reversed, so higher score equals higher happiness) and life satisfaction.

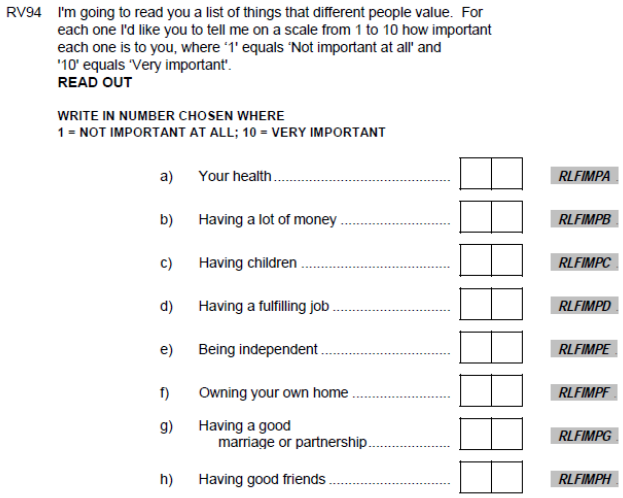
All regressions are run separately for the two groups; i) renters and ii) owners. We then split the renters sample into private and social renters in order to empirically distinguish between the sanctions associated with the two tenures. Throughout the analysis, we define those adults (>20 years old) who live in the same household as home-owning parents as renters, contrary to the BHPS which defines them as owners. Observations which relate to individuals aged under 21 are excluded from our analysis. If economic status is more important to the happiness of men than

women, as hypothesised in the previous chapters, then we would expect home-ownership to be more of a positional good for men than women, and the (negative) relationship between the home-ownership consumption of relevant others and individual happiness to be stronger for men than women. To test this hypothesis, we also split the owners and renters sample according to gender.

One key step in our methodology is to define *relevant others.* As noted in the previous chapter, relevant others, or 'reference groups' have been defined using various criteria. In this chapter, we again follow Ferrer-i-Carbonell (2005) in identifying relevant others as those people with similar education (higher education, medium education or low education), inside the same age bracket (21-30; 31-40; 41-50; 51-65; 65+), and living in the same side of the country (North UK[26] or South UK). We use these criteria for several reasons[27].

In each one of the three waves, individuals were asked to rate how important it was to own their own home on a scale of 1-10. This question is reproduced below as it appeared to the interviewer (Figure 7).

Figure 7: Question used to calculate home-ownership values



RV94 I'm going to read you a list of things that different people value. For each one I'd like you to tell me on a scale from 1 to 10 how important each one is to you, where '1' equals 'Not important at all' and '10' equals 'Very important'.
READ OUT

WRITE IN NUMBER CHOSEN WHERE
1 = NOT IMPORTANT AT ALL; 10 = VERY IMPORTANT

a)	Your health		RLFIMPA
b)	Having a lot of money		RLFIMPB
c)	Having children		RLFIMPC
d)	Having a fulfilling job		RLFIMPD
e)	Being independent		RLFIMPE
f)	Owning your own home		RLFIMPF
g)	Having a good marriage or partnership		RLFIMPG
h)	Having good friends		RLFIMPH

For each individual *i*, we use mean responses to this question among relevant others (excluding the response of the individual themselves) as a proxy for the strength or 'oughtness' of home-

[26] North UK includes North East, North West, Yorkshire and Humberside, Wales, Scotland, and Northern Ireland. South UK includes London, South East, South West, East Midlands, and West Midlands. We also dropped the 'region' criterion (i.e. defined relevant others as people of similar education and age, in the UK as a whole) but this made little meaningful difference to the coefficients of interest (results not shown).

[27] First, Ferrer-i-Carbonell (2005) found the income of this group to be as important as own income for an individual's happiness, implying that the material success of an individual is defined (by others/themselves) relative to this group. Second, these criteria are likely to incorporate a significant proportion of one's work colleagues, friends, and siblings – all of whom are in a strong position to impose sanctions. Third, including age as a criterion fits well with Knight (2002), who found that society compares renters to people of a similar age in determining whether they were normal/abnormal.

ownership values of relevant others, V_i. Scores for this variable ranged from *7.06* (for 21-30 year olds with low education in the North of England in 2008) to *8.94* (65+ year olds with medium education in the South of England in 2008). Similarly, we use the home-ownership rates among relevant others as an indicator of the consumption of relevant others, *C*, with scores ranging from 18 percent to 93 percent.

We control for changes in age, marital status, employment status, individual household income, housing costs (mortgage/rent), housing problems which have been found to influence happiness (damp and noise), year, region, year*region interaction terms (which control for changes in house prices/rents at the regional level) along with other variables listed in Appendix A. Importantly, we also control for the mean household income of relevant others, in order to ensure that the effect of changes in relevant others' home-ownership values and consumption are independent of changes in relevant others' income[28]. Descriptive statistics for all variables, including the control variables, are displayed in Appendix B.

8.4. Results

Setting the most pertinent variables aside for one moment, it is again worth considering the coefficients on the other housing (control) variables (see Table 15). We can that neighbour noise has a significant impact on the life satisfaction of owners (-.066, $p<0.1$) but not renters. Similarly, damp walls have a negative effect on the life satisfaction of owners (-.10, $p<0.05$) but not renters. Neither variable has an effect on GHQ caseness.

Indeed, there are signs here that housing conditions in general are more important to the happiness of owners than renters, as hypothesised in Chapter 5. In addition to the two variables above (damp walls and neighbour noise), the number of people in the household is also negatively related to the happiness of owners but not renters. An increase in household size by one person is associated with a -.11 decrease in owner's life satisfaction ($p<0.01$) and a -.16 decrease in GHQ caseness ($p<0.01$). The negative relationship between housing costs and happiness is also limited to owners, although this relationship is relatively weak (e.g. a £100 increase in monthly net housing costs is associated with a -.013 decrease in life satisfaction and a -.045 decrease in GHQ caseness). Let us now turn to the main variables of interest; relevant others' home-ownership consumption and relevant others' home-ownership values.

[28] We also included relevant others' average house size ('rooms per person') as a control variable, but this made no meaningful difference to the coefficient of interest (results not shown)

Relevant others' home-ownership consumption

We first describe the effect of relevant others' home-ownership *consumption* on the happiness of owners and renters. The coefficients are reported in the second row of Table 15. Consistent with the positional good hypothesis (hypothesis one), we find that for home-owners, changes in home-ownership rates among relevant others are negatively related to changes in life satisfaction ($p<0.05$). The magnitude of this effect is substantial: an increase in relevant others' home-ownership rates from the 25th percentile (56 percent) to the 75th percentile (85 percent) of the sample would lead, on average, to a decrease in owners' life satisfaction of **-.0.11.** To put this effect into context, Zumbro (2014) found becoming a home-owner with a low financial burden (in Germany) led to an increase in life satisfaction of only **0.09** (and this was on a 10-point scale!). As another benchmark, Fujiwara and HACT (2013) found that when respondents in BHPS began reporting damp and neighbour noise, each was associated with a **-0.05** decrease in life satisfaction, and these were the two most damaging housing problems. The coefficient on relevant others' consumption is also negative when GHQ caseness is used as a dependent variable (Column 2, Table 15), but the relationship is not statistically significant. For *renters*, we find no negative impact of relevant others' home-ownership rates on individual happiness (Column 3 and 4, Table 15)[29]. This holds even when we split renters into social renters and private renters – see Appendix C. Taken together, these findings imply that home-ownership is a positional good, but only for owners. When we split the renters and owners samples according to gender, there is no evidence that home-ownership is more of a positional good for men than women. To the contrary, it is only the life satisfaction of women owners which is negatively affected by the home-ownership consumption of relevant others (results not shown).

Relevant others' home-ownership values

Our results also imply that home-ownership is a social norm. The coefficients on the third row of Table 15 show that, for owners, changes in the home-ownership values of relevant others are positively related to changes in happiness, both in terms of life satisfaction ($p<0.01$) and GHQ caseness ($p<0.05$). The magnitudes of these effects are also meaningful. If the importance of home-ownership to a home-owner's relevant others increased from the 25th percentile (7.68) to the 75th percentile (8.08), this would lead to an increase in the home-owner's life satisfaction of **0.06** and an increase in GHQ caseness of **0.15**.

For renters, the negative effects of relevant others' home-ownership values on happiness are also statistically significant and substantial. If the importance of home-ownership to a renter's relevant

[29] In principle, this absence could be due to the small sample size- the sample size for renters is about 40 percent smaller in terms of observations- but this seems unlikely considering, i) the opposing coefficient signs on GHQ caseness and life satisfaction, and ii) the small magnitude of both coefficients.

others increased from the 25th percentile to the 75th percentile, this would lead to a *decrease* in the renter's life satisfaction of **-0.12** ($p<0.05$) and a decrease in GHQ caseness of **-0.22** ($p<0.1$)[30] Together, these results imply that the relative benefits associated with home-ownership as a social norm are distributed on a zero sum basis: a strengthening of home-ownership values increases the happiness of 64 percent of respondents (owners) and decreases the happiness of 36 percent of respondents (renters), but the magnitude of the decrease is approximately double the magnitude of the increase.[31] Note also that if respondents *adapt* to changes in their social status (e.g. the positive effect of a strengthening of relevant others' home-ownership values on individual happiness is larger after one year than after five years) then these effect magnitudes would be underestimated. This is perfectly plausible given the five year gaps between the three waves of observations.

Table 15 – The effect of relevant others' home-ownership values and consumption on the subjective well-being of renters and owners

	OWNERS		**RENTERS**	
VARIABLES	Life Sat	GHQ	Life Sat	GHQ
RELEVANT OTHERS' CONSUMPTION	-0.00365**	-0.00336	-0.00034	0.0059
	-0.00169	-0.00488	-0.00351	-0.00936
RELEVANT OTHERS' VALUES	0.141***	0.368**	-0.292**	-0.546*
	-0.053	-0.147	-0.134	-0.323
POOR_HEALTH	-0.456***	-1.663***	-0.605***	-2.354***
	-0.0526	-0.15	-0.0862	-0.221
FREQ_MEET_PEOPLE	-0.0254*	0.0208	-0.0854**	-0.101
	-0.0136	-0.0389	-0.0352	-0.0809
NEIGHBOUR_NOISE	-0.0664*	-0.143	-0.0413	-0.192
	-0.0398	-0.113	-0.0653	-0.158
DAMP_WALLS	-0.102**	-0.0835	-0.0767	0.101
	-0.0456	-0.13	-0.07	-0.171
CARING_HRS_SPENT	-0.0275***	-0.103***	-0.00625	0.00725
	-0.00764	-0.0212	-0.0146	-0.0365
HH_PERSONS	-0.113***	-0.160***	-0.0527	-0.0373
	-0.0202	-0.0571	-0.0365	-0.0997
RELEVANT OTHERS' INCOME	1.83E-06	-2.66e-05*	-2.90e-05*	-5.82E-05
	-5.77E-06	-1.60E-05	-1.51E-05	-3.76E-05
HOUSING_COSTS	-0.000129***	-0.000450***	0.00021	0.000415
	-4.39E-05	-0.00014	-0.00017	-0.00042

[30] We interpret this as statistically significant because theory only predicts this negative effect thus justifying a one sided t-test, for which the standard threshold p-value is 0.1.
[31] In terms of life satisfaction, the positive effect of relevant others' values on home-owners is 2.1 times the size of the negative effect on renters. In terms of GHQ caseness, this multiple is 1.9.

EMPLOYED	0.0619	0.473***	0.316***	0.886***
	-0.0423	-0.122	-0.0709	-0.196
RETIRED	0.151***	0.576***	0.308**	0.461*
	-0.0489	-0.133	-0.121	-0.256
MARRIED	0.352***	0.569**	0.276**	-0.241
	-0.0859	-0.273	-0.134	-0.331
COHABITING	0.350***	0.540*	0.342***	0.297
	-0.081	-0.276	-0.107	-0.262
WIDOWED	-0.114	-0.373	-0.332	-1.665***
	-0.115	-0.33	-0.218	-0.488
DIVORCED	0.0687	0.236	-0.0595	-0.344
	-0.111	-0.329	-0.175	-0.473
SEPARATED	-0.250*	-1.936***	-0.0519	-1.134**
	-0.145	-0.459	-0.218	-0.552
LOG_INCOME	0.0178	-0.00875	0.0158	-0.249**
	-0.022	-0.0568	-0.0407	-0.112
AGE	-0.059	-0.269**	-0.0534	-0.174
	-0.0498	-0.118	-0.0887	-0.143
AGESQ	-0.000175**	-0.00108***	-0.00015	-0.00068*
	-8.44E-05	-0.00022	-0.00018	-0.00039
HH_KIDS	0.0523**	0.165***	0.0439	0.0624
	-0.0204	-0.0571	-0.0453	-0.125
OBSERVATIONS	21,463	21,462	8,976	8,939
R-SQUARED	0.041	0.052	0.085	0.115
NUMBER OF PID	11,651	11,636	6,427	6,404

Note 1: Dummies for region, year, and region-year interactions were included but are not shown.
Note 2: Variables for education level, accommodation type and number of rooms were statistically insignificant in all four regressions, so are not shown.

When we split the renter sample into social and private renters (see Appendix C), the coefficients on relevant others' values remain negative for both private and social renters, but are only statistically significant for social renters: an increase in the home-ownership values of relevant others has a negative effect on the mental health and life satisfaction of social renters. If the importance of home-ownership to a social renter's relevant others increased from the 25th percentile to the 75th percentile, this would lead to a decrease in their life satisfaction of **-.12** ($p<0.1$), and a decrease in their GHQ Caseness of **-0.4** ($p<0.05$). To put this latter effect into context, the effect on becoming unemployed on male GHQ caseness is **-0.85** (Clark and Georgellis, 2013).

We also conducted two additional regressions to test further whether home-ownership is a social norm. First we examined whether the effect of *becoming* a home-owner was moderated by changes in the home-ownership values of relevant others. If, in the period that I move from renting to owning, home-ownership becomes more important to my relevant others, then according to the social norm hypothesis, this should increase the magnitude of any positive home-ownership effect

on my happiness. To test this hypothesis, I used the same specification (equation 1) but included two additional variables; i) a dummy variable indicating whether the individual was owner (=1) or renter (=0) and, ii) this dummy variable interacted with relevant others' home-ownership values (V_{it}). I included both owners and renters in the sample, to identify those individuals who moved between tenures. As can be seen in Figure 8 below, the effect of becoming a home-owner on happiness increases as the home-ownership values of one's cohort strengthen. For instance, an individual whose cohort attached a high importance to home-ownership (i.e. 75th percentile of 8.08) would experience a small increase in happiness after becoming a home-owner (+0.05 life satisfaction; +0.03 GHQ Caseness). But if their cohort attached low importance to home-ownership (i.e. 25th percentile of 7.68), then that individual would experience a small *decrease* in happiness (-0.07 life satisfaction; -0.3 GHQ Caseness). The regression results corresponding to Figure 8 below are also shown as Table 16 (below).

Figure 8: Predictive margins of owning on GHQ Caseness (left) and life satisfaction (right)

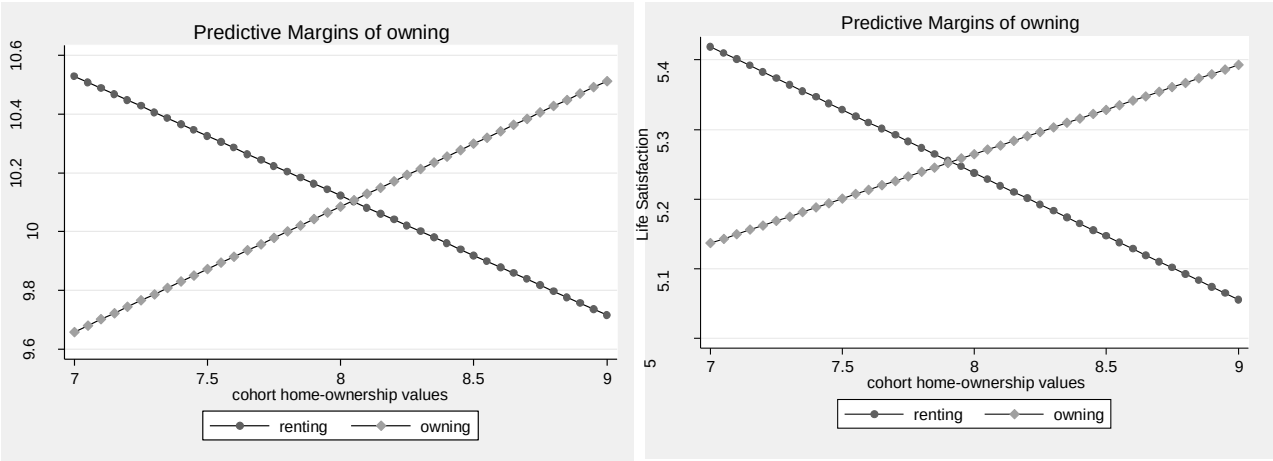


Table 16 – Regressions showing how the effect of becoming a home-owner is moderated by relevant others' home-ownership values

VARIABLES	GHQ_caseness	life_sat
RELEVANT OTHERS' HOME-OWNERSHIP VALUES	-0.406**	-0.182**
	-0.203	-0.083
OWN (AS OPPOSED TO RENT)	-6.695***	-2.449***
	-1.565	-0.62
OWN # RELEVANT OTHERS' HOME-OWNERSHIP VALUES	0.832***	0.309***
	-0.2	-0.0793
OBSERVATIONS	30,401	30,439
R-SQUARED	0.057	0.045
NUMBER OF PID	16,843	16,872

Note 1: Same variables used as specification one (see table 15) with addition of binary own/rent variable and interaction term (both shown above). Relevant others' home-ownership *rates* included but not shown

If home-ownership is a social norm, then we would also expect increases in the importance that relevant others attach to home-ownership to be associated with increases in the importance that the individual (renter or owner) attaches to home-ownership. We conducted an additional regression using the same specification (1) but replacing happiness *W* with the individual's home-ownership values, on the same scale of 1-10. Using the full sample (owners and renters together), we find changes in the home-ownership values of relevant others to be positively related ($p<0.05$) to changes in the home ownership values of the individual (see Appendix D) which again implies that home-ownership is a social norm.

8.5. Robustness Checks

One potential concern is that the home-ownership social norm is correlated with other social norms which may have opposite effects on the happiness of owners and renters. It could be, for instance, that home-ownership values are correlated with levels of racism. If there were more ethnic minorities renting than owning, then this may explain why the happiness of home-owners

(renters) is positively (negatively) related to the home-ownership values of relevant others. This would not, however, explain the findings presented in Figure 8/Table 16. This finding shows that the increase in happiness associated with becoming a home-owner depends on the homeownership values of relevant others, keeping income, education, household structure and all time invariant variables (e.g. race/ethnicity/family background) constant. As noted, this regression is not perfectly robust. Therefore, there is still a possibility that these other norms are confounding variables. But it seems sufficiently robust to allow us to conclude with some confidence that it is the homeownership norm which is driving the relationship between relevant others' home-ownership values and happiness.

Moving house is also a potential source of omitted variable bias. For instance, a strengthening of relevant others' values may be associated with home-owners moving to a better neighbourhood, thus improving their happiness. To test for this, we excluded those respondents who moved house between waves. That is, we only looked at the effect of changes in relevant others' homeownership values and consumption on changes in the happiness of those respondents who stayed in the same house from one wave to the next. For owners, the results fit even more closely with our hypotheses (see Appendix E); all four coefficients of interest are statistically significant with the expected signs. On the other hand, for renters, none of the four coefficients of interest are statistically significant, although the coefficients on relevant others' values remain negative.

One potential concern raised by Ferrer-i-Carbonell (2005) is multi-collinearity. The three variables used to construct the relevant others (age, education, and side of the country) are also included in regressions as variables in their own right. This could lead to multi-collinearity. To test for this, we conducted the regressions in Table 15, but this time without age, education, region and region*year variables. This leads to similar conclusions as the ones presented in Table 15 (see Appendix F) and indicates that multi-collinearity is not a problem.

Finally, some may object to our treatment of life satisfaction and GHQ caseness as cardinal. With regard to life satisfaction, this concern has been addressed by Ferrer-i-Carbonell and Frijters (2004), who have shown that ordinal and cardinal approaches usually lead to qualitatively very similar results. With regard to GHQ Caseness, the concern is more pertinent. Therefore, we ran regressions without assuming cardinality in GHQ Caseness. More specifically, we collapsed GHQ Caseness into two values; 0 (for GHQ Caseness values 1-11) and 1 (for GHQ Caseness value 12), and ran several non-linear regressions, consisting of; i) two pooled logit models for renters and owners, and ii) two fixed effect logit models for owners and renters. All logit

regressions used a similar specification to Table 15[32]. With regard to the pooled logit model (Appendix G, Columns 1 and 2), relevant others' home-ownership values are positively related to the (binary) GHQ Caseness of home-owners ($p<0.05$). None of the other relevant coefficients are statistically significant. For a respondent to be included in the *fixed effect* logit regressions, their GHQ Caseness score must have changed over time from 1-11 to 12, or the reverse. Setting this criterion reduces the sample size of owners by approximately 75 percent, and of renters by almost 90 percent. It is perhaps unsurprising therefore, that none of the relevant coefficients are statistically significant (see Appendix G, Columns 3 and 4), although the effect of relevant others' home-ownership values on the (binary) GHQ Caseness of owners is nearly statistically significant ($p=.13$).

8.6. Review of findings

In this chapter, we conceptualised home-ownership as both a positional good and a social norm. Based on this original conceptual framework, we proposed that the status of owners and renters should depend on both the home-ownership consumption and values of relevant others.

Hypothesis one drew from social norm theory and predicted that if sanctions are dealt out on a binary basis of whether the individual is 'normal' (owner) or 'abnormal' (renter), then the strength of these sanctions should depend on the strength of the norm among relevant others. Consistent with this hypothesis, we found that if relevant others attach greater importance to home-ownership, this increases the happiness of home-owners and decreases the happiness of renters.

Conceptualising home-ownership as a social norm, however, does not fully capture the nature of the relative benefits of home-ownership. Hypothesis two drew on the positional goods theory to contend that sanctions are also dealt out by relevant others according to status. One determinant of status is relative wealth. By becoming a home-owner, one can signal that one is worth a certain amount. When home-ownership is expanded, this reduces the wealth that home-ownership signals, thereby decreasing the status and happiness of the original home-owner. Consistent with this logic, we found that as home-ownership rates among relevant others increased, the life satisfaction of home-owners decreased.

Hypothesis two also predicted that as more of a renter's relevant others become home-owners, remaining a renter would signal a greater level of relative deprivation. We found no evidence to

[32]The only difference was, for the fixed effect logit models, instead of the twelve regional dummy variables, we used two dummy variables; North UK and South UK. This change was needed for the model to converge.

support this logic. Our results therefore imply that home-ownership is a social norm for both owners and renters, but is only a positional good for owners. We considered two possible explanations for this discrepancy. First, owners and their relevant others may be more materialistic than renters and their relevant others, meaning relative wealth matters more to the status of owners than renters. We compared the importance that owners and renters attach to 'having a lot of money' (measured using responses to question 'b' in Figure 7) but renters actually rated this domain as *more* important than owners (results not shown). Another possible explanation, and one deserving of further examination, is that housing tenure matters more as an indicator of relative wealth for owners than renters, who may signal their wealth through alternative forms of conspicuous consumption (e.g. cars, clothes). Indeed, this is consistent with the logic posited in previous chapters, that because owners have greater opportunities, and incentives, to personalise their homes, their home also becomes a greater source of social status.

In sum, this chapter has demonstrated that i) the happiness of owners and renters depends on the home-ownership values of relevant others, thus implying that in the UK, home-ownership is a social norm, and ii) the happiness of owners is also negatively related to the home-ownership consumption of relevant others, implying that for owners, home-ownership is also a positional good. Taken together, these findings suggest that home-owners enjoy relative benefits at the expense of renters: first, through being considered 'normal' by society versus renters who are considered 'abnormal', and second through being considered wealthier than renters. In the final chapter, I collate the findings from this chapter with the previous two chapters, and discuss the implications of these findings for housing policy and future research.

9. DISCUSSION AND CONCLUSION[33]

The most common theoretical framework used to analyse the relationship between housing and happiness is standard economic theory; which states that individuals have certain housing preferences or 'expectations', which when met, lead to an increase in happiness. Therefore, if the aim of public policy is to increase societal happiness, it should look to meet these preferences through, for instance, increasing the supply of housing, or expanding rates of home-ownership.

The first flaw with this logic is that individuals are not always capable of making decisions which maximise their happiness. Our preferences are susceptible to various biases, severely limiting our ability to predict the effect of different housing characteristics on our happiness. It is this first flaw which justifies the discipline of happiness economics. Just because individuals choose to suffer damp or poor light for the sake of larger accommodation, we should not simply assume that this decision will maximise their happiness. Rather, we should explicitly examine the effect of different decisions on reported happiness.

The central argument of this thesis though relates to the second flaw of standard economic theory; its assumption that individual preferences are stable and exogenously determined. Woven through each of these chapters is the thread of argument that, contrary to this assumption, individual housing preferences are in fact influenced by one's past experience and social context, and are therefore not necessarily set at the level which maximises societal happiness. In this final chapter, I discuss this thesis' findings on social status and adaptation; what they mean for our understanding of the relationship between housing and happiness; and how they might explain housing market behaviour.

I also use this thesis to make some policy recommendations. For clarity's sake, I initially do this this using a utilitarian framework. That is, I outline some policies which, based on the finding of this thesis, could lead to the greatest happiness of the greatest number. In interpreting these policy recommendations, however, the reader should bear the third flaw of the logic posited in the forefront of their mind, that there are other self-evident goods which may be compromised in the pursuit of happiness. In the concluding section of this thesis, I explicitly address this limitation by re-introducing the capabilities approach. Using the theoretical framework outlined in Chapter 2, I consider what a more *just* housing policy may look like in the context of this thesis' findings on housing and happiness.

[33] Parts of Chapter 9 have been used for the paper *The Concept of Well-being in Housing Research* by Clapham, D., Foye, C. and Christian, J., which is currently under review at *Housing, Theory and Society*

9.1. Social Status

There is little doubt that social status is a highly influential variable in determining a range of social outcomes. In this thesis, I focussed on happiness, which I argue is likely to be influenced by social status in two ways. First, low subjective social status is associated with a sense of shame and/or envy while high status is associated with pride and confidence. Second, with low/high objective social status comes access/denial to social resources which, in turn, is likely to be beneficial/detrimental to individual happiness. While an individual's subjective social status will therefore be determined by the people to whom they compare themselves or seek the respect of, their objective social status will be determined by the people who have the power to access/deny them material resources. This multitude of pathways led me to define one's relevant others broadly as those persons an individual interacts with, seeks the respect of, or compares themselves to.

In this thesis, I concentrated on two factors in particular which have been demonstrated to influence an individual's (subjective/objective) social status; relative income/wealth and 'being normal'. First, **relative income/wealth** is important because it indicates one's power over their environment and other people, and is a good indicator of one's natural ability. But because relative income is not itself visible, it must be signalled. Although all forms of consumption signal our relative wealth to some degree, some are particularly effective to this end. Robert Frank defines these as positional goods. The problem with positional goods is that they carry significant negative externalities; a large part of the happiness that individuals derive from consumption of these goods depends on lowering the social status of others (and simultaneously raising the social status of the consumer). As a highly conspicuous form of consumption, housing represents an ideal means to signalling wealth. Of course, housing is a complex bundle of characteristics and all are likely to signal relative wealth to some degree. In Chapters 6 and 7, I focussed one characteristic in particular, house size.

In Chapter 4, I contended that house size, or more accurately size of living space, affects happiness through two pathways; lifestyle and social status. I found the strength of this relationship to be highly dependent on several factors; gender, country, and context surrounding the change in living space. The effect magnitudes are detailed and contextualised in table 17 below. The only strong positive effect was found for German men in the year after moving to larger accommodation. This group (5-year sample) reported a 0.26 ($p<0.05$) increase in life satisfaction. Apart from this though, the effect of size of living space on happiness generally appears to be weak or non-existent. Much more research is needed before any strong conclusions can be drawn about the importance (or unimportance) of size of living space to

happiness, as the methodology adopted is unlikely to have completely isolated the causal effect of size of living space on happiness.

Table 17: The effects of different housing and life events on happiness

Effect description	Magnitude	Author(s)
Data: BHPS **Indicator**: Life Satisfaction (1-7)		
Becoming a widow (females)	-0.56***	Clark and Georgellis (2013)
Becoming unemployed (males)	-0.35***	Clark and Georgellis (2013)
Positional good effect* (owners)	+/- 0.11**	Foye, Chapter 8
Social norm effect* (all renters)	+/- 0.12**	Foye , Chapter 8
Social norm effect* (owners)	+/- 0.06**	Foye , Chapter 8
Damp	-0.05***	Fujiwara and HACT (2013)
Neighbour noise	-0.05***	Fujiwara and HACT (2013)
Poor lighting	-0.05***	Fujiwara and HACT (2013)
Living Space: one room per person (males)	+/- 0.04**	Foye , Chapter 6
Condensation	-0.03**	Fujiwara and HACT (2013)
Rot	-0.03*	Fujiwara and HACT (2013)
Vandalism	-0.02**	Fujiwara and HACT (2013)
Data: BHPS **Indicator :** GHQ Caseness (1-12)		
Becoming widow (males)	2.72***	Clark and Georgellis (2013)
Social norm effect* (*social* renters)	+/- 0.4**	Foye , Chapter 8
Getting married (females)	0.32*	Clark and Georgellis (2013)
Damp walls (females)	-0.22**	Foye , Chapter 6
Social norm effect* (all renters)	+/- 0.22*	Foye , Chapter 8
Poor light (males)	-0.18**	Foye , Chapter 6
Social norm* effect (owners)	+/- 0.15**	Foye , Chapter 8
Rot (males)	-0.12*	Foye , Chapter 6
One room per person (males)	+/- 0.11**	Foye , Chapter 6
Data: GSOEP **Indicator:** Life Satisfaction (0-10)		
Becoming a widow (males)	-1.02***	Lucas et al. (2008)
Becoming unemployed (females)	-.53***	Lucas et al. (2008)
Moving to larger accommodation (men-5yr sample)	+0.26**	Foye , Chapter 6
Becoming home-owner (financially secure)	0.09***	Zumbro (2014)
Becoming home-owner (financially insecure)	-0.13***	Zumbro (2014)
Increase in one room (32m2-57m2) (women)	+0.02**	Foye , Chapter 6

**social norm (positional good) effect refers to effect of moving from 25th percentile to 75th percentile of relevant others home-ownership values (consumption). See Chapter 8 for more details.*

In Chapter 5, I focussed more specifically on social comparisons as a determinant of space preferences. I showed that in both the UK and German contexts, the level of living space that people consider adequate is substantially influenced by regional and national levels of living space. I advanced the positional good theory to explain this relationship: increasing the size of one's living space signals an increase in one's relative income, which in turn, increases an

individual's social status and happiness. However, as average levels of living space among one's relevant others increase (specifically people in the same region/country), then by the same logic, this decreases that individual's social status and happiness.

Understanding the positionality of house size could have implications for planning policy. Because people clearly prefer more space (size of living space, both internal and external, is one of the most influential determinants of house price) then according to standard economic theory, increasing the supply of housing would increase social happiness. In the UK context, this logic has led some housing economists and think-tanks to recommend the relaxation of planning regulations. However, if house size is a positional good, then increasing the supply of space will have a weaker effect on social happiness than standard economic theory predicts because of the negative externalities it brings. In weighing up the costs and benefits of planning restrictions, it is therefore important that policymakers understand the positionality of house size.

If house size is a positional good, then the *distribution* of house sizes is likely to be extremely important. Over the past three decades, the distribution of living space – in the UK at least- has become increasingly unequal (Tunstall, 2015; Dorling, 2014). As noted in Chapter 6, this change in the distribution of living space may be detrimental to societal happiness because if size of living space has diminishing marginal utility (as the results in Chapter 6 generally suggest) then the happiness that those individuals at the top of the space distribution have derived from gaining more space may be outweighed by the happiness that those individuals at the bottom of the space spectrum have lost from losing space. But, according to the positional good theory, the damage to societal happiness may be even greater.

Ferrer-i Carbonell's (2005) found that people's happiness is negatively affected if their income is below their reference levels, but people's happiness is not affected if their income is above their reference levels. Similarly, Boyce et al. (2010) found, using the BHPS, that life satisfaction judgements are more affected by upward income comparisons than downward income comparisons. There are two ways of interpreting these findings (for the purpose of this discussion). One interpretation is that the poor (and middle class) construct their (subjective) relevant others differently to the rich. This is the hypothesis forwarded by James Duesenberry's (1949) in his relative income theory, and by Schor (1998: 4) who similarly argues that individuals today make "comparison with, or choose a 'reference group', people whose income are three, four, or five times their own". Because income inequality is going to decrease the income of the poor and middle class, while increasing the income of those people to whom they compare themselves; this interpretation implies that an increase in income inequality will have a net negative effect on social happiness. In this context, it is important to examine who an individual's relevant others are. We only looked at people of a similar region, nation and cohort,

but this does not fully capture an individual's relevant others. Future qualitative research should develop the work of Knight (2002) to examine the people with whom individuals compare their house size and housing conditions more generally.

The alternative explanation for Ferrer-i-Carbonell's (2005) findings is that while rich and poor people construct their subjective relevant others in the same way (e.g. people in the same region, country), the happiness that individuals derive from high subjective status is *outweighed* by the psychological costs that individuals suffer from low subjective status. This mirrors the argument of the Spirit Level (Wilkinson and Pickett, 2006), and again implies that a more unequal distribution of living space – which is associated with a more unequal distribution of income (Tunstall, 2015) - will decrease societal happiness.

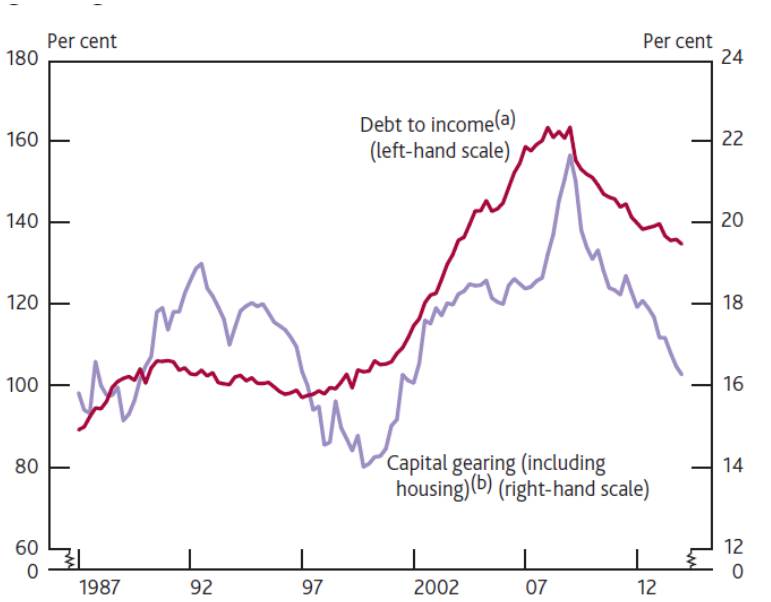
A more unequal distribution of wealth may also initiate, or accelerate, a positional arms race, leading society to spend a higher proportion of its income on house size and other positional goods than is optimal for societal happiness. This is the argument posited by Robert Frank and it is worth exploring it in detail here. Frank (2013: xi) posits the following chain of events;

> "The first step in this process occurred because people at the top have been spending more, which has happened simply because they have so much more money. When the very rich build bigger mansions, they shift the frame of reference that shapes demands for those with slightly smaller incomes, who travel in overlapping social circles. The near-rich respond by building bigger houses as well, which shifts the frame of reference for others just below them, and so on, all the way down the income ladder."

By purchasing a larger house, individuals at the top of the income spectrum increase their status and utility/happiness. However, they simultaneously increase the level of space that is considered 'adequate' among their relevant others, meaning they have to also upsize if they want to maintain their social status. When everyone increases their house size, no-one's status increases. As in the familiar stadium metaphor, all stand to get a better view, but when all stand no one sees better than when all were seated.

Frank shows that, consistent with the above logic, the size of median new single-family house in the US has increased from 1,570 square feet in 1970, to more than 2,300 square feet by 2007, despite incomes increasing by a much smaller proportion (Frank, 2013). If the price of house size, or another positional good, remains constant, and incomes remain static, then to pay for this extra consumption, people will have two options open to them. One option is to increase indebtedness/reduce savings. As Figures 9 and 10 below show, levels of household debt have increased significantly in the US and UK over recent decades.

Figure 9: Debt to income ratios, and capital gearing in the UK from 1987 to 2014

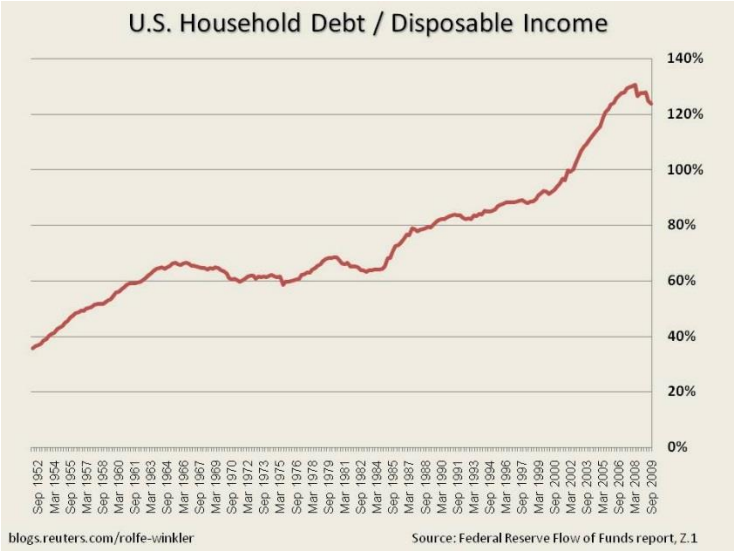


Sources: ONS and Bank calculations.

(a) Total financial liabilities as a percentage of annualised total household resources.
(b) Total financial liabilities as a percentage of households' total financial assets and residential building assets.

Note 1: Sourced from:
http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q304.pdf (2014)

Figure 10: U.S. Household Debt/Disposable Income Ratio from 1952-1009

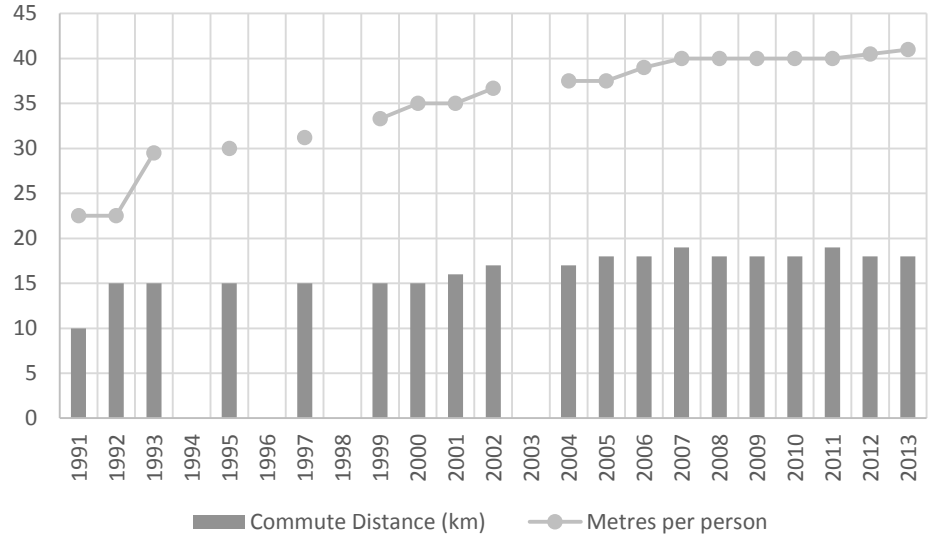


Note 1: Sourced from http://blogs.reuters.com/rolfe-winkler/2009/12/10/households-cut-debt-have-long-way-to-go/ (2009)

Another option is to divert expenditure from less positional to more positional goods. In the context of housing, this could involve commuting longer in order to live in a larger house. As

Figures 11 and 12 show, in the both the UK and German contexts, an increase in living space over the past two decades has been accompanied by an increase in time and distance commuting.

Figure 11: Graph showing time spent commuting vs metres per person in GSOEP (sample is limited to individuals who commute daily)

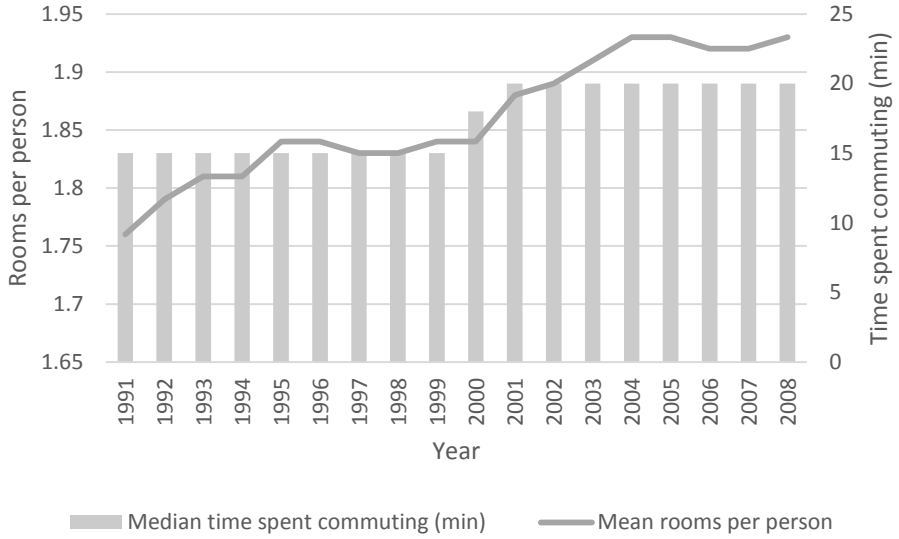


Note 1: Metres per person calculated using same methodology as in Chapters 6 and 7

Note 2: Commute distance calculated using responses to the question "*How far (in kilometres) is it from where you live to where you work?"*

Note 3: Commute distance question only asked in the years above (hence the gaps)

Figure 12: Graph showing time spent commuting vs rooms per person in BHPS (sample is limited to people in part-time or full-time employment)



Note 1: Mean rooms per person calculated using same methodology as in Chapters 6 and 7
Note 2: Time spent commuting calculated using responses to the question "How long does it usually take you to get to work each day, door to door?". "

In sum, concerns about social status may lead to "positional arms races" whereby individuals spend more on positional goods (e.g. house size), partly motivated by the status that these goods carry. However, when society increases their consumption of these positional goods in tandem, the anticipated gain in status - that they spent longer working / commuting for, or incurred greater debt for - proves illusory, resulting in a loss in societal happiness. This positional arms race is exacerbated by increases in wealth inequality which, through a chain of indirect effects, ratchet up 'the cost of adequate'.

There are two ways in which public policy can limit the damage that positional arms races have on happiness. The first is to reduce income and wealth inequality; thus tempering the consumption of those at the top, and slowing down the positional arms race. The second is to discourage consumption of positional goods. Frank (2004) hypothesises that one reason for the Easterlin Paradox is that, as a society, we have spent the proceeds of economic growth on the wrong things. If, instead of engaging in a positional arms race, society spent the proceeds of economic growth on shorter commutes, longer vacation times, shorter working hours and other non-positional goods, then we could better translate GDP/capita into societal happiness.

One aim of future research should be to examine the positionality of different dimensions of housing. As well as house size, house prices (and rents) are also determined by other

dimensions such as aesthetics (both interior and exterior) and the physical state of the home. All of these dimensions are visible signals of one's wealth (although they will be visible to different groups of relevant others) and are therefore likely to be positional.

One key dimension of housing consumption is location. The neighbourhood in which an individual lives signals their relative wealth (and cultural tastes). As Phe and Wakeley (2000) noted, the existing models of residential location are facing difficulties in explaining new trends in urban development such as gentrification and abandonment. To better explain these trends, they advance an alternative theoretical model which also considers the role of neighbourhood status in determining residential location. While their article was highly acclaimed (winning the Donald Robertson memorial prize) it does not seem to have stimulated much further empirical research into the role of social status in influencing residential choice.

As well as addressing this gap, future research should also explore the role of social status in explaining the effects of neighbourhood characteristics on social outcomes. Much of the 'neighbourhood effects' debate is centred on whether there are material benefits (e.g. educational opportunities) associated with living – and growing up- in a wealthier neighbourhood. Much less research has examined the *relative* benefits of living in a neighbourhood with high socio-economic status. Differences in neighbourhood status may partly explain spatial disparities in outcomes such as education and health.

Future research could use similar survey experimental methodologies to Alpizar, Solnick and Hemenway, in order to approximate the relative positionality of different housing characteristics, relative to each other. Based on the existing (limited) evidence base, we would expect those visible housing characteristics that are correlated with wealth – such as house size, garden size, architectural style – to be more positional than less visible housing characteristics such as (absence of) damp, neighbour noise, neighbourhood safety, or time spent commuting.

Another aim should be to examine whether housing consumption as a whole is more positional than other forms of consumption combined. As noted, Alpizar et al. (2015) findings suggested that about half of the utility gain of additional expenditures on housing may be due to increased relative consumption. US data show that over the last three decades the proportion of income devoted to housing has increased significantly, even after accounting for a range of demographic variables (Albouy et al., 2016). By 2010, the median earner had to work substantially more hours each month (or borrow substantially more) than in 1950, to gain access to a house at the midpoint of the housing price distribution (Frank, 2013). One explanation for this trend is that the same house now costs more (in real terms) than it did in 1950 (e.g. due to increased cost of land/labour). But one alternative (or additional) explanation is that, with rising levels of inequality, individuals

have devoted increasing proportions of their income to afford bigger and better housing, in order to maintain their social status. That is, as a result of a positional arms race in housing consumption, the proportion of income individuals spend on housing has increased over time, *keeping the cost of housing constant.* The fact that median house sizes have increased in line with the proportion of income spent on housing certainly supports the latter logic.

If housing consumption is more positional than non-housing consumption then policies that shift consumption from the former to the latter could increase societal happiness (see Aronsson and Mannberg, 2015). In the UK context, one viable policy may be a progressive council tax based on house value. By progressively taxing housing consumption, this policy could decrease people's housing consumption, thus slowing down the positional arms race and allowing people to spend more money on non-positional goods (e.g leisure time).

In sum, the relationship between housing conditions and happiness is likely to be more complicated than standard economic theory implies because certain housing characteristics, like house size, influence happiness partly through social status. In understanding these relationships we have so far relied on the positional good theory, which conceptualises social status only in terms of relative wealth. But social status is also determined by other factors.

The second determinant of social status that this thesis focussed on was **'being normal' or 'acting normal'**. Heterosexuality, getting married and having children are all social norms. Not only are they 'normal' in the sense of being statistical regularities, but hey are also 'normal' in that society considers them ways in which individuals *should* behave; there is a sense of *oughtness* with them*;* they are *normative*. By conforming, individuals increase (or maintain) their social status (or, using the terminology of social norms, they benefit from positive sanctions) and by deviating, they decrease their social status (i.e. they suffer from negative sanctions).

In Chapter 6, I presented evidence to show that home-ownership is likely to be both a positional good *and* a social norm; meaning home-owners not only derive social status and happiness from signalling their relative wealth, but also gain social status through 'acting normal'. More specifically, I showed that if more of a home-owner's relevant others follow them into home-ownership, then this is associated with a decrease in the original home-owners happiness. This implies that, for owners, home-ownership is a positional good. In terms of the social norm component, I also showed that a strengthening of the home-ownership values of relevant others was associated with an increase in the happiness of home-owners, but a decrease in the happiness of renters (and especially social renters). This implies that home-ownership is also a social norm.

Once again, understanding the role of social status in mediating the relationship between housing and happiness, has implications both for policy and our understanding of individual behaviour. As Table 17 reminds us, these *relative* benefits associated with home-ownership are of a meaningful magnitude when compared to other housing conditions. If the tenure gap in happiness, and other social outcomes, is due to these relative benefits then the case for increasing home-ownership rates is weaker, as for every home-owner that benefits from being 'normal', other renters pay the price for being 'abnormal'. Similarly, for every home-buyer that benefits from an increase in economic status, other owners pay the price in the form of lower status. That is not to say that the relative benefits of home-ownership are necessarily distributed on a zero sum basis. The happiness that home-owners derive from conforming to the social norm may outweigh the psychological costs that renters incur from deviating (although our findings suggest otherwise[34]), meaning that the normalisation of home-ownership has a net positive effect on societal happiness. Similarly, the psychological benefits that a home-owner derives from signalling an increase in their relative wealth may not be entirely offset by the psychological costs that others incur from a decrease in social status.

Even if these relative benefits are distributed on a zero sum basis, it does not mean that the UK, or any other country that promotes home-ownership, should become tenure neutral. There are many other arguments both for and against home-ownership[35]. Nevertheless, by introducing the relative benefits into the equation, we cast doubt on the oft-cited absolute benefits of home-ownership, thus weakening the case for the state support of home-ownership.

This status associated with home-ownership may explain why demand for home-ownership is higher in some countries than others. Furthermore, Rowlands and Gurney (2000) found home-ownership to be a social norm among children. On the understanding that status is a determinant of educational outcomes (e.g. Hoff and Pandey, 2004), these relative benefits of home-ownership may even explain part of the tenure gap in child educational outcomes (Haurin et al., 2002; Green and White, 1997). In testing the effect of tenure on social outcomes, it is important that researchers control for, test for, or at least consider the mediating role of social status. Otherwise, they risk confounding the effect of the *absolute* and *relative* benefits of home-ownership.

Our findings also imply that in the UK at least, the happiness gap between owners and renters is wider than previously thought. Not only do home-owners benefit financially, through state led tax breaks, at the expense of renters; they also benefit from having higher status than renters,

[34] Our findings demonstrate that the (smaller) relative benefits that home-owners derive from an increase in the strength of the social norm (in terms of happiness), are offset by the (larger) relative costs incurred by renters.
[35] See Dietz and Haurin (2003) for economists' review of the evidence; and Shlay (2005) for a more historical and critical review.

and from 'being normal'. As long as this remains the case, there will continue to be a presumption in favour of owning, implying that households will cling to owner occupation even when they may be financially better off in an alternative tenure.

The negative sanctions associated with 'being abnormal' are particularly acute for social renters. Future research should examine the extent and form of these sanctions, and the role that media coverage and government rhetoric play in augmenting them. This is an important area of research as these sanctions may undermine regeneration initiatives, and may also play a role in explaining why social housing tenants have higher than predicted levels of unemployment (Hills, 2007).

Among relevant others, home-owners have a particular interest in maintaining and enforcing the social norm of home-ownership, as they are beneficiaries. If UK home-ownership rates continue to decline, it will be in the interests of fewer people to sustain the normalising discourse of home-ownership. Renters – who cannot access home-ownership- may increasingly challenge the idea that home-ownership is 'normal'. Home-ownership may therefore become less of a social norm[36], and the relative benefits of home-ownership may diminish, further undermining the appeal of home-ownership. There could, in short, be a tipping point causing the decline in home-ownership rates to accelerate.

That said, any challenge to the idea that home-ownership is 'normal' is likely to face considerable resistance from other beneficiaries. Developers, the financial services industry, the real estate industry, planners, road builders all benefit from high rates of home-ownership (Buchholz, 2002). It is therefore in the interest of these parties to portray home-ownership as 'normal' through marketing, speeches, policy and lobbying or other means. The UK government has also played a significant role in normalising home-ownership. Given the significant decline in home-ownership rates over the last decade, there is a pressing need for qualitative research which examines whether the role of these different actors, including home-owners themselves, in portraying home-ownership as 'normal' has changed since the work of Gurney (1997) and Knight (2002).

In sum, social status both determines one's happiness and shapes the decisions that one makes. While most housing researchers, and particularly qualitative researchers, would recognise that social outcomes are influenced by the social status that housing carries (e.g. research on 'stigmatisation of social housing') and that housing consumption is driven by considerations of status, there have been few attempts to formally conceptualise these relationships and draw policy implications. The primary contribution of this thesis, in my view, is to go some way to addressing

[36] Logic implies that home-ownership will still remain a positional good in this case.

this gap. I looked at two types of housing consumption-house size and tenure- and provided evidence to suggest that a sizeable component of the happiness that individuals derive from these forms of consumption operates through social status. A larger house increases status through signalling a higher relative income. Home-ownership increases one's status through signalling one's relative wealth and demonstrating that one is 'acting normal'.

9.2. Adaptation

If the primary contribution of this thesis is to conceptualise and empirically examine the relationship between housing consumption, social status and happiness, the secondary contribution is to consider the effect of adaptation in changing the relationship physical housing conditions and happiness over time. This thesis looked specifically at adaptation to changes in size of living space. Chapter 4 showed that moving to larger accommodation consistently led to a large uplift in housing satisfaction which – consistent with adaptation theory - partially diminished over time. Chapter 5 similarly showed that individuals who upsized to their current accommodation are more likely to report shortage of space than individuals who downsized; thus supporting the central principle of adaptation theories, that individual preferences, or expectations, are influenced by past experience.

Aspiration spiral theory (Stutzer, 2004) seems the most likely explanation for *why* individuals adapt (in terms of housing satisfaction and preferences). After upsizing, individuals report an initial increase in housing satisfaction, as the gap closes between their housing conditions and their housing aspirations. However, as individuals experience the larger accommodation over time, they shift their housing aspirations (and preferences) upwards, causing the initial uplift in housing satisfaction to diminish over time.

These findings have potentially significant implications for our understanding of the housing market. In 2008, 8 percent of BHPS respondents moved for "larger accommodation". Because housing satisfaction is very influential in determining moving propensities (Diaz-Serrano and Stoyanova, 2010), it could be argued that in addition to micro and macro factors, adaptation in housing satisfaction judgements acts to accelerate movement up the housing ladder and increases levels of residential mobility.

Furthermore, international differences in the extent to which individuals adapt to housing may also explain international differences in the income elasticity of housing demand. For example, an increase in the average income has a much greater effect on house prices in the UK than Germany (i.e. income elasticity is higher in UK), which partly explains why house prices are higher (in relation to incomes) in the UK than Germany (Meen, 2016). Could this difference in

the income elasticity of housing demand be attributed to Brits adapting more - and adapting faster- to housing than Germans, thus prompting them to spend greater proportions of their income on housing? Or could it be that housing is more positional in UK than Germany, causing UK housing consumers to escalate their housing consumption at a greater rate, in order to maintain/increase their social status? There is no evidence in this thesis to support either explanation. I find that people who move to 'larger accommodation' exhibit similar patterns of adaptation in the UK and Germany, and that house size is positional in both countries. Nevertheless, this thesis does introduce these two variables – adaptation and social status- into the housing demand equation, and future studies should explore further whether these two phenomena can explain international differences in the income elasticity of housing demand.

According to aspiration spiral theory, happiness judgements should follow a similar, but smoother, pattern over time; increasing initially after the move, but decreasing thereafter. This is indeed the relationship we observed for men in the GSOEP. If individuals do adapt to changes in living space, then standard economic theory would again be guilty of over-estimating the uplift in societal happiness brought about by an increase in housing supply would result in. If individuals adapt to increases in living space, and improvements in living conditions more generally, then this would also explain the other side of the 'commuting paradox'. In order to afford larger/better accommodation, individuals move to somewhere further from work. Over time, however, individuals adapt to their improved living conditions but not their longer commute, explaining why people who commute longer report lower levels of life satisfaction (Stutzer and Frey, 2008). Thus by moving to larger/better accommodation, individuals may not only impose negative externalities on the rest of society (by increasing what is considered an adequate quantity/quality of housing), they may also decrease their own happiness in the long term by overlooking the extent to which they adapt to their improved housing conditions (this would be a case of *projection bias*). The trade-off that society makes between housing conditions and commute time when deciding where to live is therefore likely to be imperfect due to the presence of both adaptation and social comparison effects. In the same way that public policy could, in theory, increase societal happiness by shifting consumption from positional to non-positional goods, so public policy could increase societal happiness by investing in, or incentivising/encouraging consumption of those goods which individuals do not adapt to. Getting people to consume smaller houses closer to work could, according to both adaptation and the positional good theory, increase societal levels of happiness.

9.3. A more just housing policy?

In the discussion above, I detailed some ways in which housing policy could maximise societal happiness, in light of the adaptation and social comparison effects. However, as noted in Chapter 2, we should not directly equate societal happiness with justice. Utilitarianism is a flawed theory of justice because it fails to account for the intrinsic value of goods such as equality or agency. To account for the plurality of self-evident goods, I introduced the capability approach in Chapter 2, which bases judgements about justice, equality or progress, on the effective opportunities that people have to lead the lives they have reason to value – their capabilities. In this concluding section, I attempt to operationalise Sen's capabilities approach to make some recommendations for housing policy.

As will become clear, this is not a simple task. To allow for the inherently complex and heterogeneous nature of justice, the capabilities approach is radically under-specified. Adopting a different variant of the capabilities approach (say, Nussbaum's rather than Sen's) would likely lead to different policy recommendations than the ones presented here. The discussion below should therefore be seen as an opening statement on the relationship between housing and capabilities, not the final word. Hopefully, it will highlight some of the obstacles faced when sketching out what form a just housing policy may take, and stimulate future debate on the relationship between housing, capabilities and social justice.

The task in hand - of applying Sen's capability approach to housing policy - is complicated further by the paucity of existing literature on this topic. Despite ''adequate shelter'', ''housing'' and ''control over one's space'' or ''enjoyment of home'' repeatedly appearing as core components of capability lists (see Nussbaum, 2003; Vizard & Burchardt 2007:6), there has, according to a Google Scholar search of "housing capabilities", been only one attempt so far to operationalise the capabilities approach in housing studies. Nicholls (2010) used longitudinal qualitative interviews of 28 people who were, or recently had been, homeless, to understand how housing can contribute to a ''well lived'' life. To define a "well-lived" life, Nicholls used Nussbaum's capabilities approach, with its ten universal basic functionings, then explored how housing meets these capabilities. In this section, I take a different approach. Rather than taking a list of capabilities for granted, I consider how Sen's capability approach might be combined with happiness research to *specify* a list of housing capabilities which housing policy should seek to satisfy.

As I noted in Chapter 2, although Sen explicitly refrains from drawing up a list of capabilities,

he implicitly recognises that there are *basic capabilities* – being healthy, well-nourished and educated - which should be universal. The first priority for any government should be to meet those basic needs; to expand the substantive freedoms that individuals have to be nourished, educated and healthy. To this end, housing policy should ensure that every individual has the option of a home that is healthy. It could be made a legal requirement that tenants can make their landlords remove damp or condensation from their home, and remedy other housing conditions which have been found to be detrimental to health (for reviews of literature on housing and health, see Thomson et al., 2001; and Gibson et al., 2011). Housing policy could also be used to facilitate education and nourishment through ensuring that individuals have the option of a home that is sufficiently sized that children can study in private, and adequately provisioned that people can cook. Furthermore, housing should be sufficiently affordable that individuals can meet these basic housing requirements without jeopardising their health, nourishment and education through other life domains. If for instance, an individual has to forego medical insurance to be able to afford a basic but healthy home, then addressing this clash in basic capabilities should be a key priority for housing policy and public policy more generally. For example, recent cuts to housing benefit in the UK, which have been detrimental to the mental health of private renters (Reeves et al., 2016), would appear to represent a backward step in the pursuit of justice.

The capabilities approach also implies that we should define equality not in terms of resources but in terms of capabilities. A person who is wheelchair-bound is likely to require greater resources to achieve a healthy living environment than a person with no disabilities. Just ensuring that there is a threshold of resources available for all does not take into account other factors that enable or constrain what humans are actually capable of with these resources (Sen 2004:332). In a just society, housing policy should account for this range of "conversion factors" by offering more resources to those people for whom capabilities, like a healthy living environment, are more difficult to achieve.

Once we move beyond these basic capabilities, the specification of capabilities becomes more complicated. Sen argues that democratic process and public reasoning should be the primary method in specifying capabilities but, as I pointed out in Chapter 2, there are methodological limitations associated with relying entirely on public discussion. It was to this end that I argued for happiness research as a secondary informational space in specifying and weighting capabilities.

Despite sharing many objectives, happiness research and the capabilities approach have, in the main, evolved independent of each other. The major problem that followers of the capability

approach have with happiness (or subjective well-being) judgements is that they are highly dependent on social context and past experience. As demonstrated by this thesis, an individual living in squalor may consider their housing conditions perfectly adequate if that is all they, and their relevant others, have experienced. Their objections can be broken down into two parts, which are worth discussing here, because they highlight both the strengths and limitations of using subjective judgements in assessing the efficacy of housing policy.

The first is that, even if deprived people 'come to terms' with their deprivation as a way of coping, then this does make such a state of affairs *just*. Even if an impoverished peasant is more satisfied with their life than a billionaire, it does not make them more 'advantaged' or 'better off'. There are lessons to heed here for researchers and policymakers who, at times, attach too much significance to housing satisfaction judgements. Even if a group of people are satisfied with their housing situation, it does not necessarily make that state of affairs just. Take the quotation below as a case in point;

> "The overwhelming majority of landlords are reputable and provide decent well maintained homes. This is demonstrated by high levels of satisfaction with 83% of tenants happy with the service they receive from their landlord"
> February, 2014; Department for Communities and Local Government Review of Property Conditions in the Private Rented Sector

Here the authors conclude, solely on the basis of subjective reports, that private rental tenants are living in "decent well maintained homes". However, as this thesis has demonstrated, subjective judgements of housing are likely to be affected by both adaptation and social comparisons. It could be that these renters are actually living in conditions that are much worse than average but because they adapted, or compared themselves to people in a similar/worse situation, this is not reflected in their subjective judgements.

Recognising that adaptation (or social comparisons) exists should not however lead us to discount subjective judgements altogether in evaluating states of affairs. The capabilities approach is founded on the idea of value pluralism; that there are several values which may be equally correct and fundamental, and yet in conflict with each other. One of these values is happiness, which Sen views a 'momentous functioning' that 'has importance on its own' (Sen, 1984: 513; 1985: 200). If, like Sen, we accept happiness as a self-evident good, then a situation where an individual is *happy* in dire poverty is preferable (at least in a static sense) to one where they are *miserable* in dire poverty. Dismissing happiness judgements that have been affected by the adaptation/social comparison process as 'biased' is equivalent to disregarding happiness as a

self-evident good.

The second problem followers of the capability approach have with adaptive preferences (and by extension, happiness judgements) is that if through adapting, 'deprived groups' come to accept their position, then they are participating in their own marginalization. Adapted perceptions might therefore induce people to adhere to an unjust order such that they become ''an implicit accomplice'' (Sen, 1990: 126) of the system. In this case, an individual's happiness in the present, may restrict their capabilities (and functionings) in the future. This is a valid argument. The point remains though, that in determining the justness of a state of affairs, we should not disregard the happiness that adaptation brings, but rather value it in the context of other capabilities and functionings (present and future). If we accept being happy is a 'momentous functioning', then even in the presence of adaptive preferences, happiness judgements have a key role to play in indicating the extent to which this functioning is being met. Put another way, the two arguments above are actually objections to utilitarianism (i.e. relying entirely on happiness judgements as an indicator of progress), rather than happiness indicators *per se*.

In Chapter 2, I argued that happiness research has two major strengths as an informational space for specifying capabilities; i) it can tell us what makes people happy (a self-evident good that individuals undoubtedly have good reason to value) and ii) it can reveal individual objectives (including those which people are reluctant to admit in public discussion). However, because individuals have good reason to value objectives which do not make them happy, such as education, happiness research should only be used as a secondary informational space (the primary being public discussion).

Of course, in order to use this framework to specify a list of housing capabilities, we need the relevant evidence base. Specifically, we need to know what objectives individuals value in terms of housing, and what effect different aspects of housing have on individual happiness. Here the empirical literature is limited and addressing this limitation should be a key area for future research. Nevertheless, even without much of an evidence base, we can identify several uncontroversial objectives which individuals value in the UK context-having enough space to eat as a family, access to space to play, opportunities to personalise one's space – and which housing policy should therefore seek to fulfil. Furthermore, there are several aspects of housing which have been found to affect happiness – access to natural light, avoidance of damp, condensation, and neighbour noise (see Chapter 6, and Fujiwara and HACT, 2013) – and which should, according to the framework outlined above, also be considered as housing capabilities. Thus, we can start to see how evidence on what people value in terms of housing, and what

makes people happy, can together inform a more just housing policy.

However, we can only get so far in the specification of 'housing capabilities' before we come across the same obstacle that has featured throughout this thesis. In the same way that the uplift in happiness associated with an increase in living space, or a change of tenure, is likely to come partly at the expense of others' status and well-being; so the enhancement of one individual's 'housing capabilities' is, in many cases, likely to be at the expense of others' freedom to avoid shame and achieve self-respect, both of which are widely cited capabilities;

> "The capabilities of relevance are not only those that relate to avoiding pre-mature mortality, being in good health, being schooled and educated, and other such basic concerns, but also various social achievements, including— as Adam Smith (1776) emphasized—being able to appear in public without shame and being able to take part in the life of the community." (Sen, 2006: 35)

As the national income of a country increases, so does the income needed to buy enough commodities to achieve the same social functioning. As Sen notes, "being relatively poor in a rich country can be a great capability handicap, even when one's absolute income is high in world standards." (Sen, 2006: 36). Thus the absolute deprivation of social capabilities depends on relative deprivation of incomes. For this reason, public policy should be concerned with poverty in both a *relative* and *absolute* sense.

There is an inherent conflict here between consumption capabilities and social capabilities. Where a certain capability can only be fulfilled through the consumption of positional goods (like the objective of having a separate dining room, or living in a detached house) then achieving such a capability will lead to an increase in the 'cost of adequate', thus making it more difficult for others to 'fit in' and avoid shame. Faced with this 'positional arms race', people at the lower end of the income spectrum may even decide to compromise on those basic capabilities, such as health and nourishment, in order to achieve these social capabilities. This would help explain the phenomenon of "hunger in America,", whereby families (often the children) go hungry despite their income being much above the income levels at which hunger can be observed in poorer economies (Sen, 2006). In order to 'save face', they may have to compromise on those basic capabilities.

This conflict in capabilities is made more complex still by the fact that the consumer who wants a separate dining room may themselves be driven by the objective of avoiding shame, as the majority of their 'relevant others' already have a separate dining room. It is not clear from the

capability approach when individuals have 'good reason to value' consumption of positional goods, and when they do not. As Robeyns (2006) concludes;

> "An upper class man might "need" an expensive car in order to earn respect from his peers, while an environmentalist needs only a bike. Similarly, in order to achieve the functioning of not having to be ashamed at work by one's attire, business consultants are likely to require more expensive clothes than academics or social workers. Thus, it seems that the capability approach can handle the expensive tastes problem only when the expensive taste cannot be justified by environment-dependent functionings, but the difficult question remains of how far expensive tastes can be justified and should be respected when they impinge upon functionings and capabilities."

Similarly, fulfilling a certain housing capability which is a social norm (like becoming a home-owner) may increase the extent to which others (like renters) are perceived as 'abnormal', potentially restricting their ability to take part in the life of the community. In both instances, we face a trade-off between different capabilities. One way forward in these cases may be to weigh different capabilities according to their effect on societal happiness. We would, for instance, prioritise those capabilities which depend on consumption of non-positional goods (e.g. having enough vacation time, or having a reasonable commute to work) over those which depend on positional goods (e.g. having plentiful living space) and therefore come attached with negative externalities. Future research – both empirical and theoretical – is clearly needed to address this clash in capabilities.

To conclude, in applying the capabilities approach to housing policy, we must ask not *what* housing can people access (as different types of housing may suit some groups more than others) but *what functions* are they capable of attaining when they live in this housing (Nicholls, 2010). Because health (along with nourishment and education) are the most basic universal capabilities, a just housing policy should aim above all else to ensure that every individual has the opportunity of a healthy home at an affordable price. Beyond this, the specification of capabilities should be based; first on public discussion; and second on happiness research. In some cases, this specification process may be simple, such as access to space to play. However, where different objectives clash (like when one person's desire for a larger house is at odds with other people's pursuit for self-respect), then it is not clear which capability should prevail. The greatest strength of the capabilities approach is also its greatest weakness. In recognising the plurality of goods that individuals have reason to value, the capabilities approach introduces a complexity and ambiguity into definitions of justice and progress that other approaches like utilitarianism and libertarianism ignore. This should not stop researchers from using and

building on it. As Sen (2003: 45) notes, paraphrasing John Maynard Keynes, “In social investigation and measurement, it is undoubtedly more important to be vaguely right than to be precisely wrong”.

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11. APPENDICES

All appendices are categorised according to the chapter in which they are referred to.

11.1. Chapter 5

Appendix A

Variable Name	Variable Coding	Other information
Not employed	If employment status is not employed =1 (inc. retirees and housewives; Otherwise=0)	Reference group is full time employed
Part time	If employment status is part time (regular/irregular)=1; otherwise=0	
In education	If receiving training/education=1; otherwise=0	Reference group are those not in education
Age		
Married	If married =1; otherwise=0	Reference group is single persons
Divorced	If divorced=1; otherwise=0	
Separated	If separated=1; otherwise=0	
Widowed	If widowed=1; otherwise=0	
East German	If lived in E. Germany in 1989=1; otherwise=0	Reference group is West Germans
Immigrant	If lived abroad in 1989=1; otherwise=0	
Male	If male=1; otherwise=0	Reference group is female
Winter	If interview in Nov/Dec/Jan/Feb=1; otherwise=0	Reference group is rest of year
1994, 1998	If year is 1994=0; otherwise=0. Same for 1998	
Log household Income	Log of monthly household net income	
Hh_persons	Number of persons in household	
Hh_children	Number of children in household	

Berlin, Rhein…(*region)*	16 regional dummy variables	
Space per person	Square metres of floorspace/ number persons	
House	If individual lives in house=1; otherwise=0	Reference group is High Apartment
Low Apartment	If individual lives in low apartment=1; otherwise=0	
Owner	If individual is owns home=1; otherwise=0	Reference group is renters.
Moved_house	If moved house since previous interview=1; otherwise=0	

11.2. Chapter 6

Appendix A – Variable description and coding (BHPS)

Variable	Description
General Variables that could potentially influence happiness	
child_0_2	1= Child in household 0-2 years old;0=otherwise
child_3_4	1= Child in household 3-4 years old;0=otherwise
child _5_11; child _12_15; child _16_18 all work in same way: 1= Child in household in age group ;0=otherwise	
kids_total	Number of children in household
log_hh_income	Log of household income
log_ind_income	Log of individual income
Winter	1=survey conducted in Nov/Dec/Jan/Feb; 0=otherwise
married	1=married; 0=otherwise (ref group=single)
Cohabiting	1=cohabiting;0=otherwise (ref group=single)
Widowed	1=widowed;0=otherwise (ref group=single)
div_sep	1=divorced or separated;0=otherwise (ref group=single)
Smoker	1=smokes;0=otherwise
Household size	Number of people in household
resi_carer	1=cares for someone in household;0=otherwise
non_resi_carer	1=cares for someone outside of household;0=otherwise
frequency_meeting_people	1 = if meets people at least once or twice per month; 0 = if meets people less than once per month

Retired	1= Retired; 0=otherwise (ref group=unemployed)
Student	1=FT student; 0=otherwise (ref group=unemployed)
Age	age at time of interview*
Employed	1=employed 0=otherwise (ref group=unemployed)
poor_health	1=Health status poor/very poor over last 12 months;0=otherwise
yr1991; yr1992;….;yr2008	1= Observed in that particular year; 0=otherwise.
North_East; North_West	1=Observed in that region; 0=otherwise
Housing and Environmental Variables	
Detached	1=Detached house; 0=Otherwise
Terraced	1=Terrace House; 0=Otherwise
Semi Detached	1=Semi detached house; 0=Otherwise
Flat	1=Flat; 0=Otherwise
Sheltered	1=Sheltered Accommodation; 0=Otherwise
owner	1=Owner-occupier, outright; 0=otherwise
Public	1=LA or HA owned home; 0=otherwise
Private	1= Private rental property; 0=otherwise
street_noise	1 = if reports neighbour street problem; 0 = otherwise
neighbour_noise	1 = if reports neighbour noise problem; 0 = otherwise
Vandalism	1 = if reports vandalism problems; 0 = otherwise
Pollution	1 = if reports local area pollution problems; 0 =otherwise
no_light	1 = if reports poor lighting; 0 = otherwise
Rot	1 = if home has rot; 0 = otherwise
condensation	1 = if reports condensation; 0 = otherwise
Leaky roof	1 = if roof has leaks; 0 = otherwise
poor_heating	1 = if reports heating problem; 0 = otherwise
Garden	1 = has garden; 0 = otherwise
rooms_pp	Number of rooms per person = number of rooms/number of people in household*
damp_walls	1 = if home has damp; 0 = otherwise
Potential “costs”(in terms of happiness) associated with larger accommodation	
mover	1=Moved house in previous year; 0=otherwise*
housework	Hours spent doing housework
commute_time	Number of minutes spent commuting to work (self employed and employed responses merged). If N/A, commute time=0
housing_costs	Net Monthly Housing Costs
house_value	House Value; 0=if renting public or private
‘Neighbourhood Effects’-Indices of Deprivation at the Lower Level SOA in 2004 (ODPM, 2004)	
Health_Disab_Score	Health Deprivation and Disability Score
Education_Score	Education, Skills and Training Score

Income_Score	Income Score
Housing_Services_Score	Barriers to Housing and Services Score*
Crime_Score	Crime Score*
Living_Env_Score	Living Environment Score*
Multi_Dep_Score	Multiple Deprivation Score

*Only included in part one regressions

Appendix B – Variable description and coding (GSOEP)

Variable	Description
General Variables that could potentially influence happiness	
Household size	Number of people in household
kids_total	Number of children in household
Child_0_1; child_2_4	All work in same way: 1= Child in household in age group ;0=otherwise
hh_income	Monthly household net income (EUR)
Winter	1=survey conducted in Nov/Dec/Jan/Feb; 0=otherwise
married	1=married; 0=otherwise (ref group= single)
Cohabiting	1=cohabiting;0=otherwise (ref group= single)
Widowed	1=widowed;0=otherwise (ref group= single)
divorced	1=divorced ;0=otherwise (ref group= single)
Separated	1=separated; 0-otherwise (ref group= single)
Retired	1= Retired; 0=otherwise (ref_group=unemployed)
Age	age at time of interview*
Full time	1=employed full time;0=otherwise (ref_group=unemployed)
Part time	1=employed part time; 0=otherwise (ref_group=unemployed)
Poor_health	1=self rated health is poor or bad; 0=otherwise
yr1991; yr1992;….;yr2008	1= Observed in that particular year; 0=otherwise
Hessen; Hamburg; Bremen	1=Observed in that region; 0=otherwise
Housing and Environmental Variables	
Farm_house	1=Farm house; 0=Otherwise
Small_house	1=Small house; 0=otherwise
Rowhouse	1=Row house; 0=Otherwise
Lowapartment	1=Low apartment building; 0=Otherwise
Med_apart	1=Medium (height) apartment building; 0=Otherwise

High_apart	1=High apartment building; 0=otherwise
High_rise	1=High rise flats; 0=otherwise
Garden	1 = has garden; 0 = otherwise
Balcony	1=has balcony; 0=otherwise
Basement	1=has basement; 0=otherwise
owner	1=Owner-occupier, outright; 0=otherwise (ref group=renter)
House_age	Year house was built
metres_pp	metres per person = size of house in metres (excl. rooms<6m2) /number of people in household*
Potential "costs"(in terms of happiness) associated with larger accommodation	
mover	1=Moved house in previous year; 0=otherwise*
Housework	Hours spent on weekdays doing housework
commute	Distance of commute (km)
rent_cost	Estimated amount of rent
Mortgage_cost	Interest and mortgage payment in previous year

Appendix C – Descriptive Statistics for BHPS (sample as a whole)

Variable (Continuous/ Categorical)	Obs	Mean	Std. Dev.	Variable (Binary)	Obs	
life_sat	152553	5.2	1.3	**mover**	223249	6.4%
GHQ_caseness	204913	10.11	2.96	**resi_carer**	178222	7.2%
housing_sat	152780	5.45	1.43	**non_resi_carer**	212032	11.3%
rooms_pp	218475	1.98	1.12	**Freq meeting people**	163724	97.3%
irhhsize	223086	2.84	1.38	**irsmoker**	200144	26.0%
commute_time	208937	11.70	18.65	**winter**	223078	24.7%
iaage	223169	45.82	18.66	**poor_health**	207599	9.7%
housework	208357	10.94	10.54	**married**	222518	54.1%
log_hh_income	217218	9.97	0.80	**cohabiting**	222518	10.3%
log_ind_income	204794	9.02	1.16	**widowed**	222518	7.9%
house_value	21428	101874.00	136390.00	**div_sep**	222518	7.0%
child_0_2	223167	0.06	0.26	**owner**	219029	27.4%
child_3_4	223167	0.24	0.25	**public**	219029	18.0%
child_5_11	223167	0.17	0.58	**private**	219029	8.2%
child_12_15	223167	0.06	0.44	**detached**	216460	26.4%
child_16_18	223167	0.56	0.25	**Semi**	216460	32.3%
kids_total	223167	0.56	0.95	**Terrace**	216460	27.0%
housing_costs	217675	214.00	285.00	**Flat**	216460	12.5%
				Sheltered	216460	0.6%
				Employed	221989	56.9%
				Retired	221989	21.0%
				Student	221989	5.9%
				Roof	175773	3.7%
				Garden	175991	94.6%
				Neighbour noise	175905	10.5%
				Street noise	175925	15.6%
				no light	175897	6.0%
				poor heating	175884	4.4%
				condensation	175877	12.3%
				damp walls	175866	7.9%
				rot	175806	6.6%
				pollution	175861	7.3%
				vandalism	175712	17.4%

Appendix D – Descriptive Statistics for GSOEP (sample as a whole)

Variable (Continuous/ Categorical)	Obs.	Mean	Std. Dev	Variable (Binary)	Obs.	
				part_time	665367	9.8%
dwelling_sat	496725	7.7	2.1	**full_time**	665367	32.1%
life_sat	500703	7.0	1.8	**male**	665367	49%
hh_income	630601	2442.7	1722.6	**retired**	665367	11.9%
hh_persons	665367	3.1	1.4	**married**	507521	61.8%
commute	412095	9.3	35.6	**widowed**	507521	6.3%
hh_0_1	665367	0.1	0.2	**divorced**	507521	6.1%
hh_2_4	665367	0.1	0.4	**separated**	507521	1.6%
hh_8_10	665367	0.2	0.4	**winter**	665367	26.3%
hh_11_12	665367	0.1	0.3	**poor_health**	402441	17.0%
hh_13_15	665367	0.2	0.4	**garden**	652786	63.1%
hh_16_18	665367	0.2	0.4	**basement**	658981	95.2%
rent_cost	585185	386.0	613.9	**balcony**	652371	74.8%
mortgage_costs	624751	775.9	6656.1	**owner**	665299	47.5%
housework	456460	1.9	1.9	**farm_house**	652432	3.4%
house_age	647431	3.3	1.6	**small_house**	652432	33.9%
hh_children	665367	0.9	1.1	**rowhouse**	652432	17.6%
				lowapartment	652432	11.0%
				med_apart	652432	18.9%
				high_apart	652432	13.4%
				high_rise	652432	1.8%

11.3. Chapter 7

Appendix A – Variable description and coding (BHPS and GSOEP)

Variables (BHPS and GSOEP)	Description
log_income	Log of household income
married	1=married; 0=otherwise (reference group=single people)
Widowed	1=widowed;0=otherwise (reference group=single people)
Separated	1=separated; 0=otherwise (reference group=single people)
Divorced	1=divorced;0=otherwise (reference group=single people)
Retired	1= Retired; 0=otherwise (reference group is unemployed)
Part_time	1 Part_time;0=otherwise (reference group is unemployed)
Full_time	1=Full time; 0=otherwise (reference group is unemployed)
House_worker	1=Full time houseworker; 0=otherwise (reference group is unemployed)
Student	1=In full time education; 0=otherwise
House	1=Individual lives in house; 0=Individual lives in flat
Age	age at time of interview
child_0_2 , child_3_4 ,child_5_11 , child_12_15 , child_16_18	1= if there is a child in the household in that age bracket (e.g. 0-2, 3-4….); 0=otherwise. For GSOEP, there are 7 dummy variables for 7 different age brackets (all under 18). These are coded in the same way.
Variables (BHPS)	Description
Cohabiting	1=cohabiting;0=otherwise (reference group=single people)
neighbour_noise	1 = if reports neighbour noise problem; 0 = otherwise
damp_walls	1 = if, according to respondent, home has damp; 0 = otherwise
Light	1 = if reports poor lighting; 0 = otherwise
Street_noise	1 = if reports neighbour street problem; 0 = otherwise
Cold	1 = if reports heating problem; 0 = otherwise
Condensation	1 = if reports condensation; 0 = otherwise
Leaky_roof	1 = if home has leaks; 0 = otherwise
Rot	1 = if home has rot; 0 = otherwise
Pollution	1 = if reports local area pollution problems; 0 = otherwise
Vandalism	1 = if reports vandalism problems; 0 = otherwise
Private_rent	1=if private renter; 0=otherwise (reference group is outright owners)
Social_rent	1=if social renter/housing association; 0=otherwise (reference group is outright owners)
Mortgage	1=if mortgage holder; 0=otherwise (reference group is outright owners)

housing_costs	Net Monthly Housing Costs (rent or mortgage costs)
Second_home	1=if individual has second home; 0=otherwise
Renovation_rooms	1= if there is a change in the number of rooms reported in the house; 0= otherwise
Renovation loan	1= if the individual reported taking a loan out for a renovation; 0= otherwise
Variables (GSOEP)	Description
Tenant	1=if renter; 0=otherwise
House_cond_bad	1=if house condition reported as bad; 0=otherwise (reference group = house in good condition)
House_cond_vbad	1=if house condition reported as very bad; 0=otherwise (reference group = house in good condition)
House_dilapidated	1=if house condition reported as dilapidated; 0=otherwise (reference group = house in good condition)
Renovation_rooms	1= if there is a change in the number of rooms reported in the house; 0= otherwise
Renovation_report	1= if the respondent reports having made one of the following alterations since the previous year; “bath, shower or toilet added”, “heating added”, “new windows added”; “age-based renovations” or “other larger renovations”; 0=otherwise

Appendix B – Descriptive Statistics (BHPS)

Variable (Continuous/ Categorical)	Obs	Mean	Std. Dev.
rooms_pp	233952	2.0	1.1
housing costs	275018	219.1	287.3
log_hh_income	274666	10.0	0.8
age	238983	45.3	18.6
child_0_2	283432	0.1	0.3
child_3_4	283432	0.1	0.3
child_5_11	283432	0.3	0.7
child_12_15	283432	0.2	0.5
child_16_18	283432	0.1	0.3
income_yr	275308	27565	21747

Variable (Binary)	Obs	% of respondents
space_short	210910	21.72%
neighbour_noise	210892	10.59%
damp_walls	210842	8.15%
light	210875	6.14%
street_noise	210916	15.76%
cold	210854	4.48%
condensation	210847	12.75%
leaky_roof	210730	3.77%
rot	210759	6.88%
pollution	210831	7.35%
vandalism	210661	17.61%
private_rent	269306	31.21%
social_rent	269306	13.67%
mortgage	269306	34.72%
retired	237504	20.25%
student	237504	6.19%
married	251090	53.55%
cohabiting	251090	10.49%
widowed	251090	7.39%
divorced	251090	5.10%
separated	251090	1.64%
second_home	235025	9.99%
single	251090	21.83%
owner	269306	20.39%
house_worker	275308	6.96%
retired	231812	20.33%
student	231812	6.22%
moved	275308	7.77%
part_time	275308	9.43%
full_time	275308	37.44%

Appendix C- Descriptive Statistics (GSOEP)

Variable (Continuous/ Categorical)	Obs	Mean	Std. Dev.	Variable (Binary)	Obs	% of respondents
metres_pp	665367	38.0	21.9	**space_short**	661511	19.7%
age	662931	38.5	21.8	**moved**	665367	7.2%
agesq	662931	1958	1812.3	**student**	665367	3.1%
hh_0_1	665367	0.05	0.2	**part_time**	665367	9.8%
hh_2_4	665367	0.14	0.4	**full_time**	665367	32.1%
hh_5_7	665367	0.15	0.4	**retired**	665367	11.9%
hh_8_10	665367	0.16	0.4	**house_worker**	665367	11.3%
hh_11_12	665367	0.11	0.3	**owner**	665299	47.5%
hh_13_15	665367	0.17	0.4	**tenant**	665299	52.5%
hh_16_18	665367	0.17	0.4	**married**	507521	61.8%
hh_income	630601	2443	1722.6	**widowed**	507521	6.3%
log_hh_income	630528	7.63	0.6	**single**	507521	24.2%
hh_persons	665367	3.14	1.4	**divorced**	507521	6.1%
				separated	507521	1.6%
				house cond bad	662207	29.1%
				house cond vbad	662207	4.2%
				house cond good	662207	66.6%
				house dilapidated	662207	0.2%
				male	665367	49.1%

Appendix D – Testing effect of renovations

GSOEP

VARIABLES	space_short
metres_pp	0.907***
	-0.00391
Plus >20_percent	0.699***
	-0.0568
Plus <20_percent	0.995
	-0.0634
Minus >20_percent	1.035
	-0.0775
Minus <20_percent	1.08
	-0.0649
renovation_Report	0.886*
	-0.0552
renovation_rooms	1.003
	-0.0559
cohort_metres_pp	1.001
	-0.0068
region_metres_pp	1.067**
	-0.03
national_metres_pp	1.125*
	-0.0679
Observations	19,635
Number of pid	2,876

BHPS

VARIABLES	space_short
rooms_pp	0.406***
	-0.0263
cohort_rooms_pp	1.034
	-0.143
region_rooms_pp	3.475**
	-1.727
median_nation_rooms_PP	1.563*
	-0.393
upsize	0.872*
	-0.0678
downsize	1.096
	-0.0873
renovation_rooms	0.888
	-0.0704
renovation_loan	0.757**
	-0.0883
Observations	18,740
Number of pid	2,916

Appendix E – Testing effect of individual, and regional/national lifestyle (GSOEP)

VARIABLES	space_short	space_short	space_short
metres_pp	0.928***	0.928***	0.928***
	-0.00625	-0.00625	-0.00626
Plus >20_percent	0.563***	0.559***	0.543***
	-0.0913	-0.0909	-0.0891
Plus <20_percent	1.076	1.077	1.039
	-0.121	-0.122	-0.12
Minus >20_percent	1.033	1.029	1.016
	-0.184	-0.183	-0.181
Minus <20_percent	1.163	1.165	1.109
	-0.125	-0.125	-0.123
cohort_metres_pp	1.017	1.016	1.017
	-0.0121	-0.0121	-0.0121
region_metres_pp	1.062	1.065	1.055
	-0.0515	-0.0517	-0.0515
nation_metres_pp	1.286*	1.286*	1.360**
	0	0	-0.192
friends_dinner		1.165*	1.168*
		-0.099	-0.0999
reg_homecentredness			1.024
			-0.0156
nat_homecentredness			0.873**
			-0.0566
Observations	4,999	4,999	4,999
Number of pid	1,365	1,365	1,365

Appendix F - Testing the effect of regional and national lifestyles (BHPS)

VARIABLES	space_short	space_short
rooms_pp	0.426***	0.427***
	-0.0342	-0.0343
upsize	0.785***	0.784***
	-0.0531	-0.0531
downsize	1.031	1.031
	-0.0722	-0.0723
cohort_rooms_pp	0.969	0.994
	-0.164	-0.169
region_rooms_pp	3.047*	3.087*
	-1.827	-1.861
median_nation_rooms_pp	0.774	1.278
	-0.228	-0.443
reg_dinner_together		0.997
		-0.00362
nat_dinner_together		1.028***
		-0.0105
Observations	12,710	12,710
Number of pid	2,364	2,364

11.4. Chapter 8

Appendix A – Variable description and coding

Variable	Description
Relevant others' Values	Home-ownership values among relevant others
Relevant others' Consumption	Home-ownership rates among relevant others
Relevant others' Income	Mean individual income of relevant others
High_educ	1=achieved higher qualification (in further educ. institution) 0=otherwise (reference group=low_educ)
Med_educ	1=highest qualification is O-levels, GCSE's or A-levels; 0=otherwise (reference group=low_educ)
Low educ	1=no o-levels or GCSE's; 0=otherwise
log_income	Log of household income
married	1=married; 0=otherwise (reference group=single people)
Cohabiting	1=cohabiting;0=otherwise (reference group=single people)
Widowed	1=widowed;0=otherwise (reference group=single people)
Separated	1=separated; 0=otherwise (reference group=single people)
Divorced	1=divorced;0=otherwise (reference group=single people)
Caring_hrs_spent	Hours per week spent caring for someone
Hh_persons	Number of people in household
Hh_kids	Number of children in household
freq_meeting_people	Frequency of meeting people 1=most days; 2=once/twice a week; 3=once/twice a month; 4=<once a month; 5=never
Retired	1= Retired; 0=otherwise (reference group is unemployed)
Employed	1=Employed;0=otherwise (reference group is unemployed)
House	1=Individual lives in house; 0=Individual lives in flat
number_rooms	Number of rooms in household (excl. kitchens, bathrooms, and any rooms let or sublet)
Age	age at time of interview
poor_health	1=Health status poor/very poor over last 12 months;0=otherwise
neighbour_noise	1 = if reports neighbour noise problem; 0 = otherwise
damp_walls	1 = if, according to respondent, home has damp; 0 = otherwise
housing_costs	Net Monthly Housing Costs
y1998; y2003	1= Observed in that particular year; 0=otherwise (y2008=reference group)
Regional dummies	1=Observed in that region; 0=otherwise

Appendix B – Descriptive Statistics

Continuous/ Categorical Variable	Obs	Mean	Std. Dev.	Binary Variable	Obs	
life_sat	143938	5.2	1.3	**owner**	206622	25.6%
GHQ caseness	200302	10.1	3.0	**mortgage**	206622	43.4%
Caring hrs spent	203376	0.5	1.5	**private_rent**	206622	14.2%
irhhsize	207487	2.8	1.3	**poor_health**	193513	9.9%
hrhsroom	206080	4.6	1.7	**house**	205976	85.2%
housing_costs	205447	213	284	**neighbour_noise**	164509	10.4%
log_income	207088	10	1	**damp_walls**	164467	7.7%
Irage	207481	48	17	**employed**	206650	59.2%
kids_total	207499	0.59	0.98	**retired**	206650	22.4%
individual (home-ownership) values	33393	7.92	2.40	**student**	206650	1.6%
relevant others' consumption	195925	68.9	17.0	**married**	207482	58.5%
relevant others values	35383	7.9	0.3	**cohabiting**	207482	11.0%
Freq meeting people	156971	1.7	0.8	**widowed**	207482	8.4%
				divorced	207482	5.9%
				separated	207482	1.9%
				male	207517	45.4%
				owner	206622	25.6%
				mortgage	206622	43.4%
				social_rent	206622	16.8%
				private_rent	206622	14.2%
				higher_qf	207517	37.7%
				med_ed	207517	27.0%

Appendix C – Splitting renters sample into private renters and social renters

	Private Renters		**Social Renters**	
VARIABLES	life_sat	GHQ_caseness	life_sat	GHQ_caseness
Relevant others' Consumption	0.00409	0.0118	-0.00352	0.0134
	-0.00511	-0.013	-0.00581	-0.0159
Relevant others' Values	-0.331	-0.0972	-0.302*	-0.989**
	-0.217	-0.614	-0.178	-0.421
Fixed Effects	Yes	Yes	Yes	Yes
Observations	4214	4207	4762	4732
Number of pid	3360	3357	3283	3264

Note 1: Same variables used as first specification (see Table 15)

Appendix D – Testing relationship between home-ownership values of relevant others and values of individual

VARIABLES	**Home-Ownership Values**
Relevant others' Values	0.193**
	-0.087
Fixed Effects	Yes
Observations	31,467
Number of pid	17,509

Note 1: Same variables used as first specification (see Table 15) but with individual home-ownership values as dependent variable instead of happiness

Appendix E – Regressions excluding movers

VARIABLES	life_sat	GHQ_caseness	life_sat	GHQ_caseness
Relevant others' Consumption	-0.00712**	-0.0195**	0.000306	0.0123
	-0.0029	-0.00863	-0.00646	-0.0163
Relevant others' Values	0.213***	0.499**	-0.217	-0.053
	-0.0735	-0.2	-0.209	-0.464
Fixed Effects	Yes	Yes	Yes	Yes
Observations	12,615	12,600	4,263	4,240
Number of pid	7,792	7,775	3,269	3,250

Note 1: Same variables used as first specification (see Table 15)

Appendix F– Tests for Multi-Collinearity

	OWNERS		RENTERS	
VARIABLES	Life Sat	GHQ caseness	Life Sat	GHQ caseness
Relevant others' Consumption	-0.00376**	-0.00675	-0.00389	-0.00296
	-0.00163	-0.00472	-0.00326	-0.00847
Relevant others' Values	0.131**	0.414***	-0.229*	-0.416
	-0.052	-0.145	-0.132	-0.314
Fixed Effects	Yes	Yes	Yes	Yes
Observations	21,669	21,665	9,066	9,028
Number of pid	11,823	11,804	6,505	6,481

Note 1: Same variables used as first specification (see Table 15) but without age, education, region and region*year variable

Appendix G – Testing Cardinality Assumption – Logit Regressions with GHQ Caseness_Binary

	Pooled Logit		**Fixed Effect Logit**	
	Owners	**Renters**	**Owners**	**Renters**
VARIABLES		**GHQ CASENESS_ BINARY**		
Relevant others' Consumption	-0.00279	-0.00162	-0.00038	-0.00231
	-0.00244	-0.00336	-0.00492	-0.00927
Relevant others' values	0.198**	0.107	0.243	-0.334
	-0.0788	-0.123	-0.159	-0.325
Fixed effects	No	No	Yes	Yes
Observations	21,462	8,939	7,501	1,971
Number of Pid			2,919	744

Note 1: Same variables used as first specification (see Table 15), although for fixed effect logit regressions regional dummy variables had to be replaced by dummy variables indicating whether individual resided in North UK or South UK