Homeownership and subjective well-being

by

Gintautas Bloze

and

Morten Skak

Discussion Papers on Business and Economics
No. 5/2010

FURTHER INFORMATION
Department of Business and Economics
Faculty of Social Sciences
University of Southern Denmark
Campusvej 55
DK-5230 Odense M
Denmark

Tel.: +45 6550 3271
Fax: +45 6550 3237
E-mail: lho@sam.sdu.dk
http://www.sdu.dk/osbec

ISBN 978-87-91657-41-2

Homeownership and subjective well-being

by

Gintautas Bloze* and Morten Skak*

University of Southern Denmark**

Abstract

Favouring homeownership is an important part of housing policies in many countries. Although this may be explained by the preferences of the majority of voters, it may also be because homeownership is believed to have positive effects on individuals' behaviour and welfare. Previous research seems to indicate that homeownership increases individual welfare, but it is difficult to control for all other factors that may influence and bias the results. Based on panel data from Danish surveys on living conditions from the years 1976, 1986 and 2000, the paper presents an analysis of homeownership and subjective well-being.

JEL Classification: D1, I1, R2

Keywords: Homeownership, Subjective well-being, Panel data.

* Department of Business and Economics, Campusvej 55, DK-5230 Odense M, Denmark. Corresponding author Gintautas Bloze: Phone +45 6550 3342. E-mail gbl@sam.sdu.dk.

** The paper is written as a part of the Centre for Housing and Welfare - Realdania Research project. Economic support from Realdania is acknowledged.

1. Introduction

Private ownership is a crucial part of all market economies and an important aspect of individual freedom. This includes the right to own the dwelling, which constitutes the person's or family's home. When asked, a fairly constant share of approximately three fourth of Danish families[1] want to own their home, mainly because the right of disposal is of crucial importance and adds to the welfare of persons and families.

In addition to the impact on personal welfare, homeownership may also affect social behavior of individuals and so social capital with important positive implications for the functioning of democratic societies. Dietz and Haurin (2003) have an extensive review of the literature on the impact of homeownership on the economic and social behavior of owners. They identify the following areas where homeownership may have an impact:

- Household wealth and portfolio choice
- Mobility
- Labor force participation
- Urban structure and segregation
- Home maintenance
- Political and social activities
- Health
- Demographics
- Self-esteem
- Child outcomes

If homeownership creates some significant benefits compared to renting, it would be welfare-improving for the public sector to engage in active support of homeownership. In fact, housing policies in many European countries are directed at promoting homeownership, in many cases especially for low-income households; see the European Central Bank (2003). In Denmark, a little more than half of the dwellings are owned by the occupants, who enjoy more favorable real estate taxation than landlords.

[1] See Kristensen and Skifter Andersen (2009)

The present study has the same aim as other studies in the field, namely to detect whether or not homeownership has a positive influence on the welfare of individuals measured as the self reported or subjective well-being. It is new in that it uses Danish data not earlier used for this purpose, and with some new control variables compared to earlier studies. We also try to answer the question: is subjective well-being low for households, who (voluntarily) change from homeownership to tenancy?

The data are from the Danish Living Conditions Survey conducted in the years 1976, 1986 and 2000, and contain both panel and cross-section elements. There were 9317 people extracted to participate in the surveys, out of which 7929 respondents participated in at least one survey, and 2335 participated in all three surveys. Concerning well-being, the enquiry does not contain the often used question: All in all, do you feel satisfied with your life? Instead, we use the answers to five questions about whether or not the respondent often is tired, in bad mood, has weak nerves, is afraid, is taking pills against these maladies, to construct a measure for self reported well-being (SWB). Apart from homeownership status and changes in this, the data allows us to control for a number of changes in the respondent's living conditions that may potentially influence her or his well-being.

Our analysis leads us to the conclusion that homeownership positively affects the respondents SWB. The significantly positive coefficients for homeownership in the cross-section regressions for the years 1986 and 2000 are corroborated by significant positive coefficients in the subsequent fixed effect regressions.

The next section gives a short overview of previous research and discusses the conceptual framework. Section three describes the data at hand and section four starts with OLS and ordered logit cross-section regressions for the three years 1976, 1986 and 2000. After this first difference and fixed effect estimations of the respondents SWB are done and finally two first difference regressions for new homeowners and new tenants respectively are presented. Section five brings our conclusion.

2. Previous research and conceptual framework

For a social planner – and so for economists - it is of decisive importance to know what affects life satisfaction, happiness and well-being of individuals, and this has lead to an increasing amount of literature trying to explain the determining factors for this. Self reported or subjective well-being (SWB) is a natural variable to choose as indicator of individual welfare, and Krueger and Schalke (2008) tests the reliability of this measure using the SWB of 229 women interviewed two weeks apart. They conclude that the reported SWB is a fairly reliable measure of the respondents' SWB, and can be meaningfully used for empirical analysis, especially where group means SWB are compared. Also van Praag, Frijters and Ferrer-i-Carbonell (2003) find that answers to subjective questions are a useful instrument for measuring individual satisfaction, happiness and well-being.

There is an abundant empirical literature on factors determining human well-being or happiness Clark and Oswald (1994), Oswald (1997), Theodossiou (1998), Clark and Oswald (2002), Frey and Stutzer (2002), Frijters et al (2004), Van Praag and Ferrer-I-Carbonell (2004), Graham (2005), Shields and Wheatley (2005), Easterlin (2006), Blanchflowerand Oswald (2007), Blanchflower and Oswald (2008) just to mention some. Some of those also take housing into account. One of the studies that included homeownership, by Clark and Oswald (2002), showed that becoming a renter is associated with a significant drop in well-being.

There are also a few studies that have focused on housing and homeownership more explicitly. Early studies of the influence of housing on social behavior are Rossi and Weber (1996) who, using a simple cross-sectional setting, showed that owner households rate their well-being more positively than renters. Rohe and Basolo (1997) find higher neighbourhood involvement among homeowners, and DiPasquale and Glaeser (1999) demonstrate a positive relation between homeownership and social capital. Glaeser and Sacerdote (2000), however finds higher neighbourhood involvement among residents in large apartment buildings, but less involvement in local politics and higher street crime rates. More recently Dietz and Haurin (2003) have an extensive review of the literature on homeownership and claim that most of the pre-1990 studies are unreliable, and that there are numerous gabs in the literature on the effect of homeownership to be filled in with new and more reliable research. Diaz-Serrano (2009) uses the eight waves of the European Community Household Panel to study effects on reported housing satisfaction and find that homeowners derive more satisfaction than tenants from the same housing context. Also the shift into homeownership without

change of dwelling is found to raise the level of satisfaction. Bucchianeri (2009), using a sample of 809 women, showed that homeowners are happier than renters.

In the dataset used for this study, we do not have the often posed question: All in all, do you feel satisfied with your life? - or: All in all, do you feel satisfied with your housing conditions? Instead, we use the answers to five questions concerning aspect of the respondent's well-being to construct a single score for the respondent's SWB. The questions used are: Do you often feel tired? Are you often in a bad mood? Do you often have weak nerves? Are you often afraid? Do you often take pills against one of these maladies? In case the answers are yes to all questions, we interpret this as the lowest state of well-being corresponding to the value 0, and if the answers are no to all questions, the value 5 is given as the highest level of well-being. This questioning method may be less suggestive that a direct question about the respondent's well-being, but the variable has the disadvantage that its distribution is left skewed because many respondents say no to all five questions. This lack of normal distribution of the dependent variable violates the assumptions behind the conventional OLS model. Because of this, we have also done an ordered logit model regression on the cross-section data for the three years. The respondents' SWB may be seen as the result of satisfaction in different domains like job satisfaction, financial satisfaction, and health satisfaction, besides housing satisfaction. We are not able to fully disentangle this, but we control for health variation and have a variable for income and for the family social group, which reflects the employment position of the highest ranked person in the household.

It is assumed that individuals' utility, derived from a given residential situation depends on a set of residential attributes and a set of individual characteristics, and that two alternatives with different attributes will provide different utility levels. We also assume that two respondents who give the same number of no answers enjoy similar well-being levels. Among the residential attributes we include renting and private or cooperative ownership. Empirically, the assumptions can be tested by comparing contributions of attributes to the individual's utilities. The utility in this paper is conceptualized by the above described SWB measure, whereas the attributes include a number of residential and individual characteristics.

3. Data

The data are from the Danish Living Conditions Survey conducted by the Danish National Centre for Social Research and Department of Sociology at Copenhagen University. The interviews were done in years 1976, 1986 and 2000, and the data contain both panel and cross-section elements. There were 9317 people extracted to participate in the surveys, out of which 7929 participated in at least one survey of which 2109 participated in two surveys and there are 2335 respondents who have participated in all three surveys. For those who participated in all three surveys we have 851 respondents who have changed tenure (or type of ownership) at least once and for those who participated two times we have 460 respondents who have changed tenure. With a time span of ten and four years between the three years, much unobserved may have happened before and in the intermediate years with effect on the persons' SWB in the three years. We have no possibility to account for this. Neither is our dataset so rich that we can investigate housing carriers and SWB over individual life spans. In example, it could be that changing into homeownership increases SWB in the early years on the labor market, while moving out of homeownership increases SWB in the years after retirement. Longitudinal data for persons have the problem that some persons drop out over the years. In the present surveys, persons in the lower social strata and older persons[2] have a higher dropout rate than the average person. Potentially, this may influence our results.

Besides renting, we have two types of ownership, rentals with cooperative ownership[3] and private ownership. Rentals with cooperative ownership are seen as a medium form where renters exercise their right of disposal in common. Also, the tenants have to buy a share of the society's wealth in addition to the payment of a (comparatively low) rent. We consider rentals with cooperative ownership to be a lower degree of ownership than private ownership. Some households use rentals with cooperative ownership as a stepping stone for later acquirement of private ownership, but many stays in the dwelling for life. The highest fraction of respondents living in rentals with cooperative ownership is achieved in 1986 where close to 5 per cent of the respondents live in these rentals. The interviewers' questions about income have been changed between all three years and made it difficult to construct an income variable comparable over the years. As a consequence of this, we have obtained register based data on taxable income, which we have deflated into real terms over the three years. Table 1 gives an overview of the variables at our disposal.

[2] The higher dropout rate is apart from their higher probability of dying.

[3] This ownership type is named andelsboliger in Danish.

Table 1: Variable description

Variable	Description	Mean	S.D[1]	S.D (within)	Min - Max
Dependent variable	Subjective well-being (higher = better)	4.48	(0.91)	(0.47)	0 - 5
Health	Self reported health	0.69	(0.46)	(0.27)	0 - 1
Physical condition	Physical condition (higher = better)	9.93	(1.44)	(0.75)	5 - 15
Male	0 = woman, 1 = man	0.49	(0.50)	-	0 - 1
Age	Age of respondent	45.98	(15.63)	(2.27)	20 - 93
Log of Income	Log of taxable income, 1000 DKK	152.89	(131.78)	(84.99)	-86.75 – 4386
Living alone	1 = respondent is living alone	0.17	(0.37)	(0.21)	0 - 1
Close friends	Has close friends = 1	0.82	(0.38)	(0.24)	0 - 1
Practise sport	Practice sport at least once a month = 1	0.33	(0.47)	(0.27)	0 - 1
Family social group	Social group classification made by Danish sociologists (lower=better)	2.45	(1.04)	(0.44)	1 - 4
Completed education	Has completed job qualifying education = 1	0.68	(0.47)	(0.15)	0 - 1
Employed	Employed, assisting spouse=1	0.73	(0.44)	(0.30)	0 - 1
Unemployed	Unemployed = 1	0.04	(0.20)	(0.13)	0 - 1
Pensioner	Pensioner or early retirement= 1	0.18	(0.39)	(0.26)	0 - 1
Student	Under education or draftee = 1	0.05	(0.21)	(0.11)	0 - 1
Discomfort	Number of discomforting elements (draught, damp, cold, noise, air pollution)	1.54	(2.54)	(1.51)	0 - 27
Equipment	Number of equipments (kitchen, wc, bath, refrigerator, garden etc.) in the dwelling	9.41	(1.56)	(0.91)	0 -11
Rooms per person	Number of rooms per person	0.70	(0.39)	(0.25)	1 - 20
Detached	Detached family house, farm house, summerhouse = 1	0.62	(0.48)	(0.24)	0 - 1
Semi-detached	Semi detached family house = 1	0.14	(0.34)	(0.20)	0 - 1
Multi-family	Apartment building = 1	0.24	(0.43)	(0.20)	0 - 1
Owned dwelling	Dummy variable for homeownership = 1	0.66	(0.47)	(0.23)	0 - 1
Coop dwelling	Dummy variable for cooperative ownership = 1	0.03	(0.18)	(0.10)	0 - 1
Rented dwelling	Dummy variable for rented dwelling = 1	0.31	(0.43)	(0.20)	0 - 1

Notes: 1) Mean for total year observations. 2) Refers to the deviation from each individual's average.

4. Empirical analysis

As a starting point, we compare the SWB averages of the three types of homeownership by using one-way analysis of variance (ANOVA). Table 1 presents the ANOVA table. The table reveals that homeowners report on average the highest SWB scores compared to people living in coop. dwellings and tenants. Tenants report on average the lowest SWB scores. The differences between the averages are statistically significant.

Table 1: One-way ANOVA of the SWB averages by type of tenancy

Type of homeownership	Mean	S. D.	Frequency
Rented dwelling	4.32	1.07	3670
Coop. dwelling	4.47	0.89	387
Owner occupied dwelling	4.57	0.81	7804
F-statistic	96.1***		

Notes: Significance at the 1% level: ***.

Obviously, there are other factors affecting individuals' subjective wellbeing, and the question is whether homeowners would still maintain higher SWB score after controlling for those factors, or would it make the difference between the SWB scores insignificant?

Cross-section results

The cross-sectional analyses for each year are presented in table 2. Because our dependent variable SWB is discrete with ordinal scale, both OLS and ordered logit analysis are presented. The general impression is that the results are very similar both with respect to sign and significance. In no case do a significant sign turn around. The sizes of the coefficients are not comparable because the logit coefficients give the expected change in the ordered log-odds scale of the SWB.

The SWB is, quite as expected, positively and robustly affected by the respondent's (self reported) health and general physical condition. Furthermore, males are on a significantly higher level of SWB than women. When it comes to age, SWB goes down with higher age, but the coefficient for age squared shows a dwindling impact with higher age so that it eventually turns positive, which is also found in other studies of SWB/happiness, see Blanchflower and Oswald (2007). The bottom for the age effect is different for each regression year. It has a turning point around age 38 years for

the OLS regressions. This shape of the age effect could be explained by greater acceptance of one's age when the hair starts turning grey, but cohort effects may also play a role. Income has a positive effect on SWB, with the largest effect in 1976. As expected, practicing sports has a significant positive effect on SWB in every year. Living alone seems to have a negative impact on the SWB. To have a close friend is very important for the respondents SWB. The family social grouping is made by Danish sociologists based on the highest occupational position among the family members, and in a way where lower numbers refer to more superior positions. Table 2 shows that a lower social family position significantly reduces the respondents' SWB. Having completed a job qualifying education has a positive sign, but the effect is not significant in any year. Being unemployed reduces the SWB; and the SWB is reduced very significantly when the respondent is a pensioner. Students, who probably have bright hopes for their future, seem to have a comparatively high level of SWB.

Table 2: OLS and Ordered Probit estimates of the determinants of the SWB

	OLS			Ordered logit		
Year	1976	1986	2000	1976	1986	2000
Variables	Coeff. (t stat.)	Coeff. (t stat.)	Coeff. (t stat.)	Coeff. (z stat.)	Coeff. (z stat.)	Coeff. (z stat.)
Health	0.71***	0.57***	0.34***	1.61***	1.43***	1.11***
	(15.29)	(13.86)	(12.67)	(17.03)	(15.60)	(13.92)
Physical condition	0.04***	0.08***	0.08***	0.09***	0.15***	0.17***
	(2.67)	(5.10)	(6.05)	(2.83)	(4.48)	(5.20)
Male	0.14***	0.06**	0.13***	0.37***	0.20**	0.44***
	(4.53)	(2.09)	(5.22)	(4.32)	(2.22)	(5.56)
Age	-0.03***	-0.03***	-0.03***	-0.04*	-0.04	-0.06***
	(-3.00)	(-2.72)	(-5.18)	(-1.84)	(-1.32)	(-3.27)
Age^2	0.0003***	0.0004***	0.0004***	0.0005*	0.0005*	0.001***
	(2.92)	(3.29)	(5.61)	(1.76)	(1.86)	(3.92)
Log of income	0.06***	0.03*	0.03	0.14***	0.07*	0.11**
	(2.75)	(1.80)	(1.49)	(2.85)	(1.67)	(2.06)
Living alone	-0.09	-0.12*	-0.11***	-0.18	-0.28*	-0.29**
	(-1.48)	(-1.90)	(-2.66)	(-1.19)	(-1.86)	(-2.31)
Practice sports	0.13***	0.12***	0.10***	0.37***	0.37***	0.39***
	(4.47)	(4.33)	(4.59)	(3.98)	(3.83)	(4.57)
Close friends	0.10***	0.17***	0.07*	0.24*	0.39***	0.19*
	(2.42)	(3.79)	(1.79)	(2.40)	(3.88)	(1.65)
Fam. Social Group	-0.05***	-0.03*	-0.02*	-0.10**	-0.10**	-0.07*
	(-3.08)	(-1.99)	(-1.79)	(-2.13)	(-2.15)	(-1.81)
Completed education	0.00	0.03	0.06	0.07	0.05	0.10
	(0.01)	(0.73)	(1.60)	(0.73)	(0.51)	(0.94)
Unemployed	-0.01	-0.25***	-0.13*	-0.06	-0.50***	-0.28**
	(-0.16)	(-2.56)	(-1.83)	(-0.25)	(-2.46)	(-1.57)

Pensioner	-0.64***	-0.41***	-0.34***	-0.94***	-0.71***	-0.76***
	(-5.74)	(-5.25)	(-5.91)	(-4.97)	(-4.73)	(-5.29)
Student	0.17**	0.20	0.10*	0.47**	0.80	0.44**
	(2.51)	(1.32)	(1.64)	(2.05)	(1.41)	(2.12)
Discomfort	-0.03***	-0.03***	-0.04***	-0.06***	-0.08***	-0.10***
	(-4.57)	(-3.56)	(-5.10)	(-4.04)	(-4.85)	(-5.37)
Equipment	-0.03**	-0.03*	-0.00	-0.07**	-0.09*	-0.02
	(-2.09)	(-1.80)	(-0.22)	(-2.08)	(-1.89)	(-0.37)
Rooms per person	-0.09*	-0.09	0.01	-0.23*	-0.22	0.06
	(-1.90)	(-1.35)	(0.33)	(-1.79)	(-1.43)	(0.46)
Semi-detached	-0.02	-0.00	0.06*	-0.05	0.03	0.28**
	(-0.46)	(-0.11)	(1.70)	(-0.39)	(0.18)	(2.15)
Multi-family	-0.14***	-0.11*	0.07*	-0.36***	-0.16	0.32**
	(-2.83)	(-1.72)	(1.65)	(-2.68)	(-0.98)	(2.15)
Coop. owned dwelling	0.21*	0.07	0.02	0.46	0.04	-0.06
	(1.88)	(0.62)	(0.40)	(1.42)	(0.16)	(-0.34)
Owned dwelling	-0.00	0.12**	0.12***	0.03	0.34**	0.38***
	(-0.03)	(2.43)	(3.07)	(0.25)	(2.54)	(3.10)
Constant	3.02*** (8.36)	3.21*** (7.94)	3.04*** (6.85)	-	-	-
N	3180	3150	3863	3180	3150	3863
R^2	0.24	0.22	0.18	0.11	0.12	0.10
F	28.6***	24.1***	22.4***			
Wald chi2				663***	603***	546***

Notes: Regressions are with robust standard errors. Significance at 1% level: ***; significance at 5% level: **; significance at 10% level: *. For ordered logit is reported pseudo R^2.

When it comes to housing conditions, our variable for discomfort comes out with a robust negative effect on the SWB. This variable counts the number of negative circumstances in the home, i.e. draught, damp, and cold, noise, and air pollution. The variable equipment, which counts the number of comforting installations and household appliances, come out with a negative coefficient for 1976 and 1986[4]. We have no straightforward explanation for this, but it may be that persons with high equipment levels have a more stressing lifestyle. The number of rooms per person has a negative effect in case of 1976. Here one might have expected a positive impact on the SWB as more rooms indicate a more spacious dwelling, but more rooms could also have negative impact because of more maintenance involved.

[4] However, if we run the same regressions with equipment squared added, the effect of equipment has the U-shaped form. It has a positive effect for the first no doubt more basic elements of equipment like water closet, bath, central heating etc., and becomes negative when more household appliances like refrigerator, freezer, dish washing machine, garden etc, are added. Adding equipment squared, though, makes coefficients for equipment insignificant in all regressions and, therefore, is not presented here.

The dummy variables for semi-detached and multi-family housing indicate distance to the neighbors. Negative coefficients were expected because surveys show that detached housing has higher priority among Danish households, see Kristensen and Skifter Andersen (2009), but this tendency is not robustly confirmed by the cross-section regressions. The coefficients are negative in year 1976 regressions, but turn out to be positive in year 2000 regressions. Living in a cooperatively owned housing unit tends mainly to have a positive influence on the SWB compared to renting. With only 3 percent of the respondents living in cooperatively owned dwellings, the lack of significance is not surprising. Finally, living in an owned home (compared to renting) has no significant influence on the respondents' SWB in the year 1976, but has a significantly positive effect for the two years 1986 and 2000.

Our conclusion on the above cross-section analyses is that homeownership tends to have a positive effect on the SWB even after controlling for other factors, but the lack of a significant positive effect for the year 1976 weakens this conclusion.

An important reservation to the above cross-section analysis is that a bias from unobserved heterogeneity among the respondents may disturb the results. Homeowners may be of a different kind, e.g. intrinsically more optimistic, compared to persons living as renters or as cooperative owners, and such idiosyncratic differences may bias the coefficients and make the cross-section analysis invalid. Hansen and Skak (2008) present a formal model based on the assumption that households are heterogeneous and homeowners enjoy especially high welfare from owned housing where they have the possibility to adapt the home to their own preferences. Because the house price is decided by the marginal household, who are indifferent between renting or owning at the going price, extra marginal homeowners enjoy a welfare gain, which may materialize in a high SWB. Furthermore, a number of tenants may be in this position because of financial constraints, and will change into homeownership to gain welfare, when the constraints are relaxed. Kristensen and Skifter Andersen (2009) presents survey results, which demonstrate that those who want to be homeowners state the right of disposal as the prime reason, whereas those who want to be tenants state lower financial entry costs and no maintenance burden as reasons for their choice.

Fixed Effects regressions

A way to overcome the heterogeneity problem is to look at variations of the individual respondents' housing conditions over time by differencing out unobserved heterogeneity by the first-difference estimation method (FD) and see how changes in ownership status have affected their SWB with control for changes in other variables that may influence the SWB. If the idiosyncratic error terms are serially uncorrelated, the fixed effect method (FE) which uses deviations from the mean as the dependent variable, gives more efficient estimates than FD. We tried both methods, and the results were almost identical, so we only FE results are presented in table 3. Four different FE regression models were estimated. Firstly, a base case regression was run using all observations. Secondly, we ran three regressions with different income specifications: a lower income group and a higher income group, and one regression with relative income, which indicates (changes in) each respondent's income position relative to the average income.

Table 3: Fixed effects regression estimates of the determinants of the SWB

	Base case	Yearly income < 163000DKK	Yearly income >163000DKK	Relative income
Variable	Coeff. (t stat.)	Coeff. (t stat.)	Coeff. (t stat.)	Coeff. (t stat.)
Health	0.34***	0.48***	0.24***	0.33***
	(6.97)	(5.22)	(3.34)	(7.14)
Physical condition	0.03	0.01	0.01	0.03*
	(1.56)	(0.38)	(0.34)	(1.76)
Age	-0.05**	-0.06***	-0.05	-0.05**
	(-2.25)	(-2.77)	(-0.29)	(-2.54)
Age^2	0.0003***	0.001***	0.0002	0.0004***
	(2.62)	(3.23)	(0.95)	(2.95)
Log of income	0.03	0.02	0.08	-0.002
	(0.83)	(0.42)	(0.80)	(-0.18)
Living alone	-0.06	-0.16	0.02	-0.03
	(-0.80)	(-1.04)	(0.26)	(-0.35)
Practice sports	0.06	0.05	0.08	0.08**
	(1.55)	(0.57)	(1.60)	(2.15)
Close friends	0.05	0.11	0.04	0.07
	(0.97)	(0.97)	(0.54)	(1.36)
Fam. Social Group	0.002	-0.06	0.05	-0.004
	(0.09)	(-1.13)	(1.12)	(-0.17)
Completed education	0.16**	0.39***	0.29**	0.16**
	(2.10)	(2.68)	(2.23)	(2.04)
Unemployed	0.07	0.22	-0.16	0.04
	(0.73)	(1.53)	(-0.66)	(0.38)
Pensioner	-0.21***	-0.43***	-0.03	-0.23***
	(-2.10)	(-3.04)	(-0.18)	(-2.57)

Student	-0.02	0.16	-0.06	-0.23
	(-0.19)	(0.70)	(-0.43)	(-0.27)
Discomfort	-0.02**	-0.004	-0.02**	-0.02***
	(-2.06)	(-0.26)	(-2.21)	(-3.04)
Equipment	-0.05***	-0.08***	-0.01	-0.04***
	(-3.07)	(-2.53)	(-0.30)	(-2.76)
Rooms per person	-0.09*	-0.13*	0.02	-0.09*
	(-2.04)	(-1.87)	(0.41)	(-2.05)
Semi-detached	0.09*	0.10	0.14*	0.08*
	(1.89)	(1.00)	(1.84)	(1.76)
Multi-family	-0.02	0.01	0.05	-0.04
	(-0.30)	(0.11)	(0.75)	(-0.72)
Coop. owned dwelling	0.01	0.18	-0.11	-0.02
	(0.15)	(1.41)	(0.30)	-(0.31)
Owned dwelling	0.11**	0.27***	0.03	0.09**
	(2.29)	(2.84)	(0.46)	(2.01)
Time dummies	yes	yes	yes	yes
Constant	4.63***	4.99***	4.19	4.98***
	(5.91)	(5.01)	(0.71)	(7.75)
N	2654	1264	1390	2803
R^2	0.08	0.15	0.07	0.08
F	5.04***	2.99***	2.14***	5.34***

Notes: Regressions are with standard errors robust to cross-sectional heteroskedasticity and serial correlation. A Poisson fixed regression has also been tried with results that are very similar to the above reported. Significance at 1% level: ***; significance at 5% level: **; significance at 10% level: *.

Applying the FE model reduces the number of observations, and many of the former significant coefficients become insignificant. Looking first at the base case, a positive change of the health still has a positive significant impact on SWB, while the physical condition has lost its significance. For age, the coefficients are similar to the coefficients in table 2, which indicates that the cross-section regression results are not seriously biased by age cohort effects. The U-shaped relationship with age is found again. Income is no longer significant, which corresponds with the Easterlin-paradox, see Frey and Stutzer (2002) that it is relative income to others and not an increase in absolute terms that matters.

Although practicing sports maintains sign it loses significance. The coefficients for a change towards living alone, getting close friends, going down in family social group position and becoming a student are all insignificant; but completing a job qualifying education has a significant robust positive impact on the SWB score. Changing into unemployment is without significant effect on the SWB, but becoming a pensioner still has a significant negative impact on the respondent's SWB.

Coming to the housing conditions, a change of housing discomforting elements like draught and noise etc. has the expected sign and keeps significance. An increase of the number of equipment in the home keeps its significant negative impact on the respondents' SWB. An increase of the number of rooms per person has a significant negative effect on SWB. Moving to semi-detached housing increases wellbeing, while moving to multi-family housing does not produce a significant effect. Changing into cooperative ownership is without significance, but this is expected as the change may be both from a previously rented home and a previously privately owned home. Changing into private ownership produces a relatively large and significant positive effect on SWB.

Focusing on the differences to the base case for low and high income groups, the negative age effect on SWB is only found in the low income group, and it is also so that the negative effect from pensioner status disappears for the high income group. When it comes to discomforting housing conditions, only the high income group demonstrates a significant negative effect, whereas the negative effect from more rooms is most outspoken in the low income group. Moving to semi-detached houses only increases SWB significantly for the low income group. Finally, moving into ownership has a clear positive impact for the low income group, but no such effect for the high income group. An explanation for this difference could be that it is has something to do with the type of tenure that the respondents occupied during childhood[5]. Those with higher-income, most likely grew up in owned homes, and after some temporary time on the rental market they return to homeownership. Those with lower income most likely lived in rental housing during childhood, and therefore transition to ownership for them has a powerful effect on SWB.

The last column repeats the base case, but now with change in the respondents' relative income position instead of their absolute income. Somewhat contradictory to expectations, the relative income position seems to have no effect on the SWB, but other variables come closer to significance. Thus the physical condition and practicing sport now reaches significant levels. Ownership is still significant, and based on the results presented in the table it seems fair to conclude that homeownership per se has a positive effect on most respondents' SWB.

[5] We have no possibility to control for this.

5. Conclusion

A housing policy that supports homeownership may carry positive effects for individuals' welfare as well as important positive behavioural effects. Based on panel data from Danish living conditions surveys from the years 1976, 1986 and 2000 combined with register data, we have applied cross-sectional and fixed effect regressions in order to detect homeownership's influence on the SWB of the respondents. The results lead us to conclude that homeownership positively affects the respondents' SWB. The significantly positive coefficients for homeownership in the cross-section regressions for the years 1986 and 2000 are corroborated by significant positive coefficients in the subsequent fixed effect regressions on the panel data. Under control for individual heterogeneity, homeownership improves the SWB of the respondents. However, it seems that homeownership effect SWB depends on income level, being much lower for higher income groups, which may have something to do with aspiration differences. Our findings suggest that it is of pivotal importance for the welfare of our societies to allow for private ownership of homes, but they do not support a preferential treatment of homeowners. This may be appropriate if homeownership changes the behavior of persons and make them better citizens; but an analyses of this is beyond the scope if the present paper.

References

Blanchflower, D. G. and Oswald, A. J. (2008). *"Hypertension and happiness across nations"*. Journal of Health Economics, 27 (2): 218-23

Blanchflower, D. G. and Oswald, A. J. (2007). "*Is Well-Being U-Shaped over the Life Cycle?"*. IZA Discussion Papers 3075, Institute for the Study of Labor (IZA).

Bratt, R. G. (2002). *"Housing and Family Well-being"* Housing Studies, 17 (1): 13-26

Bucchianeri, G. W. (2009). *"The American Dream or Yhe American Delusion? The Private and External Benefits of Homeownership"*. Working paper. The Wharton School of Business. http://real.wharton.upenn.edu/%7Ewongg/research/The%20American%20Dream.pdf.

Clark, A. E. and Oswald, A. J. (1994). *"Uhapiness and Unemployment"*. Economic Journal, 104 (424): 648-659

Clark, A.E. and Oswald, A.J. (2002). *"Well-being in panels"*, mimeo. DELTA, Paris, France.

Diaz-Serrano, L. (2009). *"Disentangling the housing satisfaction puzzle: Does homeownership really matter?"* Journal of Economic Psychology, 30: 745 - 755

Dietz, R. D. and Haurin, D. R. (2003). *"The Social and Private micro-level consequences of homeownership"* Journal of Urban Economics, 54: 401-450.

DiPasquale, D. and Glaeser, E. L. (1998). *"Incentives and Social Capital: Are Homeowners Better Citizens?"* Journal of Urban Economics, 45 (2)

Easterlin R.A. (2006). *"Life cycle happiness and its sources: intersections of psychology, economics and demography"*. Journal of Economic Psychology, 27**:** 463–482.

European Central Bank (2003): *Structural factors in the EU housing markets*. March 2003.

Frijters, M.A. Shields and J.P. and Haisken-DeNew. (2004). *"Investigating the patterns and determinants of life satisfaction in Germany following reunification"*. Journal of Human Resources, 39: 649–674.

Frey, B. S. and Stutzer, A. (2002). *"What Can Economists Learn from Happiness Research?"*. Journal of Economic Literature, 40 (2): 402-435.

Glaeser, E. L. and Sacerdote, B. (2000). "*The Social Consequences of Housing"*, Journal of Housing Economics, 9: 1-23.

Graham, C. (2005). *"Insights on development from the economics of happiness"*. World Bank Research Observer, 20: 201-231.

Hansen, J. D. & Skak, M. (2008). *"Adaptation investments and homeownership"*. Journal of Housing Economics, 17: 102-115.

Headley, B. and Wooden, M. (2003). *"The Effects of Wealth and Income on Subjective Well-Being and Ill-Being"* Presented at 32nd Conference of Economists (Australia and New Zealand), Canberra

Krueger, A. B. and Schalke, D. A. (2008): *"The reliability of subjective well-being measures"*. Journal of Public Economics. 92: 1833-1845.

Kristensen, H. and Andersen, H. S. (2009): *"Befolkningens boligønsker"*. Center for Bolig og Velfærd. Realdania Forskning. August 2009.

Oswald, A. J. (1997). *"Happiness and Economic Performance"*. Economic Journal, 107, (445): 1815-1831.

Rohe, William M. and Basolo, V. (1997). *"Long-term effects of homeownership on the self-perceptions and social interaction of low-income persons"*. Environment and Behaviour, 29: 793-819.

Rosen, S. (1974). *"Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition"*. The Journal of Political Economy, 82 (1): 34-55

Rossi, P. H. and Weber, E. (1996). *"The Social Benefits of Homeownership: Empirical Evidence from National Surveys"*. Housing Policy Debate, 7 (1): 1-35

Shields M. A. and Wheatley P. S. (2005). *"Exploring the economic and social determinants of psychological wellbeing and perceived social support in England"*. Journal of the Royal Statistical Society (Series A), 168: 513-537.

Theodossiou, I. (1998). *"The effects of low-pay and unemployment on psychological well-being: A logistic regression approach"*. Journal of Health Economics, 17 (1): 85-104

Van Praag, B.M.S., Frijters, P. and Ferrer-i-Carbonell, A. (2003). "*The anatomy of subjective well-being*". Journal of Economic Behavior & Organization, 51, 29–49.

Van Praag, B., and Ferrer-I-Carbonell, A. (2004). *"Happiness quantified: A satisfaction calculus approach"*. Oxford University Press: Oxford; 2004.