

Age distribution, saving and consumption in Sweden*

by
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Abstract: This paper focuses on an empirical analysis of the dependency between age structure and aggregate consumption and the composition of aggregate savings. In a long-run consumption function of life cycle type, different demographic variables have a conclusive, statistically significant effect. In investigating the link between demographic variables and the composition of aggregate savings a simple simultaneous model is used, and a saving function and a house price equation are estimated. The result even here is that age composition matters for house prices and savings. This conclusion is also made visible by a simulation experiment. Finally is the model used to ascertain the effect on the recent Swedish tax reform on savings.

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Introduction

Recently there has been a renewed interest in demographic trends and their impact on economic variables. The discussion about the steadily ageing population in the industrialised countries and its impact on the pay-as-you-go pension system and other social expenditures is of course of vital interest.¹ The relationship between economic growth and age composition is a rather a new field of research.² In the US the baby boom of the 1940s and 1950s has stimulated empirical research on the influence of age distribution on various macroeconomic variables.³ Aggregate consumption is one macroeconomic variable that we know, from theoretical grounds, should be very sensitive to changes in age distribution.

Both Modigliani, Brumberg and Ando's life cycle hypothesis and the so called "Bentzel-mechanism" have convincingly shown that population growth, the shape of the earnings profile and age distribution will affect the trend of aggregate consumption and saving.⁴ Let us for the time being assume that there is a perfect capital market, which provides forward-looking households with the opportunity to smooth consumption over the life cycle. The average marginal propensity to consume, APC, then becomes a function of age structure, earnings profiles, the real interest rate and utility parameters reflecting intertemporal substitution and the rate of time preference. The economic implication of different cohort structures depends for instance on whether young people are net borrowers or net lenders. If earnings profiles and preferences lead young people to borrow, the aggregated APC will be greater if the age structure is skewed towards the young. If the age structure is skewed towards middle aged people aggregated APC will be lower. Finally, if the age structure is skewed towards old people aggregated APC will be higher.

¹ See Barr (1992) for a survey.

² See e.g. Blomquist & Wijkander (1994) using an overlapping generation simulation model and McMillan & Baesel (1990), Malmberg (1994) and Lindh & Malmberg (1995) for econometric estimation.

³ See e.g. McMillan & Baesel (1990) and Fair & Dominguez (1991).

⁴ See Modigliani & Brumberg (1954), Bentzel (1959), Ando & Modigliani (1963) and Modigliani (1975).

An area of research that has been little explored is whether age distribution might even be an important determinant of the composition of aggregate saving composition. For instance, during the 1970s the main part of household savings in Sweden was invested in non-financial assets like housing and other durables. In the beginning of the 1990s the situation was quite the opposite as households shifted from non-financial to financial assets. During the same period age distribution has changed significantly; the ratio of individuals over 65 years of age to the total population has increased by roughly 5 percentage points. Old people do not normally invest in durables and housing. The change in age distribution might be an important factor behind observed changes in the savings pattern.⁵

The purpose of this paper is to give an account of some attempts to find traces of demographic influences on the changes in aggregate consumption and the composition of savings over the last four decades. More precisely, we will try out a number of demographic variables, in addition to the standard explanatory variables, like income, interest and wealth.

Aggregate consumption and savings

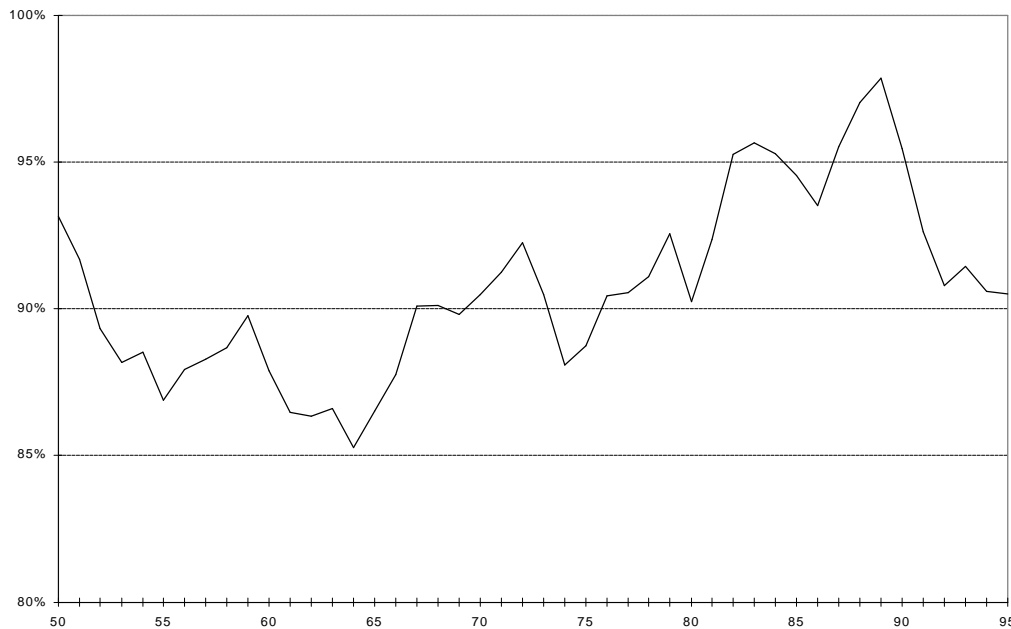
Previous Swedish studies have found significant effects of demographic variables on aggregate consumption and savings. For instance, Bentzel & Berg (1983) report a negative correlation between the savings ratio and the ratio of individuals 65 years old or older to the number of individuals of the active generation.⁶ In this section we will repeat the test of the effect of demographic variables on aggregated consumption. However, we will run the test with another type of consumption function and employ another consumption measure than the previous studies did. As a measure of consumption we use pure consumption which we believe is a more appropriate variable to use as dependent variable in a (long-run) con-

⁵ For instance, empirical studies on Swedish cross-section data report a negative correlation between age and housing wealth, see Agell & Edin (1990) and Ekman (1996).

⁶ Rather similar results are reported by Palmer (1981) and Berg (1983).

sumption function of life cycle type.⁷ For a definition of the consumption measure used see below Figure 1.

Figure 1 The ratio of pure consumption to adjusted disposable income 1950-95



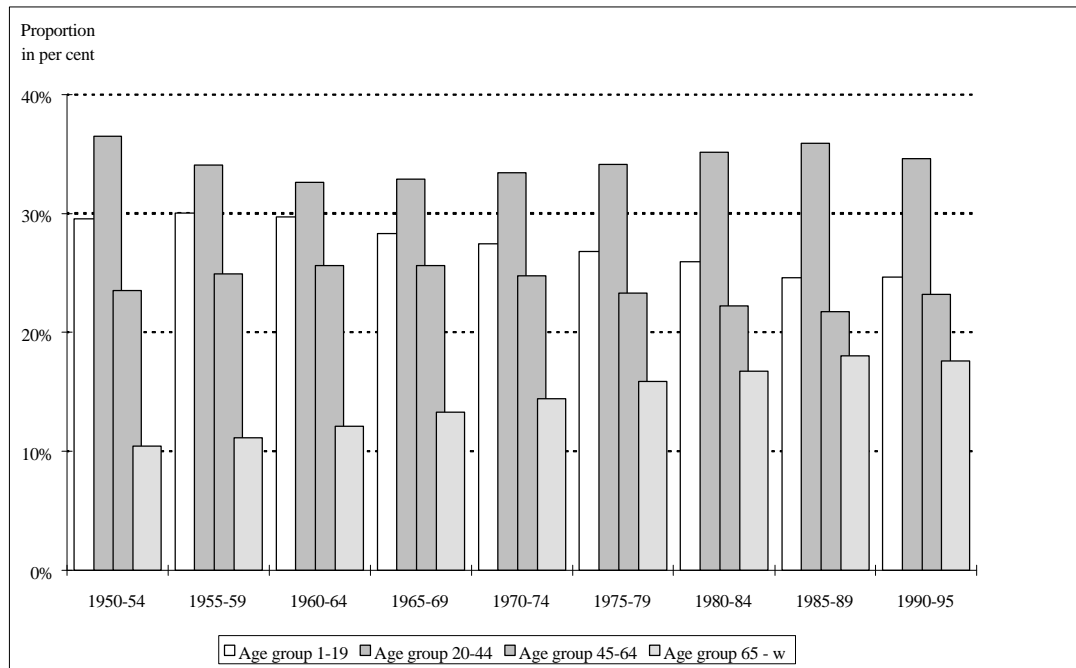
Pure consumption: Defined as expenditures for services and non-durable goods plus the value of services generated from the stock of durables owned by households. In constructing the stock of durables, we start with 1950 benchmark values for cars, other durables and semi-durables, and proceed by employing the perpetual inventory method. The depreciation rates for each of the three categories of durables were set at 0.1, 0.15 and 0.3 respectively. The consumption value for each durable category is calculated as the product between a measure of user cost and the stock of durables. Adjusted household disposable income is achieved by adding imputed durables income to household disposable income (National Accounts). The variables are developed from the Berg (1988) data set.

In Figure 1 the ratio of pure consumption to adjusted disposable income is displayed. The general impression of the graph is that the trend of the pure consumption ratio increases until 1990. After that date the ratio decreases to slightly more than 90 per cent. This sudden consumption bust in Sweden has been thoroughly analysed in a number of studies. Among the explanations put forward in these studies for the Swedish boom to bust cycle in consumption are the tax reform of 1990-91, wealth effects

⁷ To arrive at a measure of pure consumption, we add an imputed figure for the service value of the stock of durables to the consumption of nondurable goods and services. Pure consumption is thus a measure which properly reflects the activity of consuming,

through falling housing prices, increasing uncertainty among wage earners and large downward revisions of permanent disposable income.⁸ None of the mentioned studies include any demographic variables in their analysis.

Figure 2 The composition of the Swedish population 1950-95, average values for four different age groups



Source: Statistics Sweden.

Changes in population may be an important determinant behind the increasing long-run trend in the pure consumption ratio. If the composition of the Swedish population is scrutinised we can learn that the age group 1-19 years has decreased its share since the mid 1960s while old people (age group 65- ∞) increased their share from 1950 (Figure 2). The effect on consumption of a lower share of youngsters and a higher share of retired people might offset each other. A hypothesis is, following a simple life cycle model, that the lower share of the first group reduces consumption while the increase in the second group will raise consumption. Since the

as opposed to the activity of spending. The previous studies mentioned used consumption expenditures as a measure of consumption.

⁸ See Giavazzi & Pagano (1996), Agell, Berg & Edin (1995), Agell & Berg (1995) and Berg & Bergström (1995).

mid 1960s the share of age group 20-44 years has also increased while the share of middle-aged people (age group 45-64 years) has decreased. Significant for the first-mentioned age group is that they usually consume more than they earn (they are net borrowers) and thus put an upward pressure on consumption. The behaviour of the middle-aged group is normally that they consume considerably less than what they earn in a given year and are thus net lenders. A raising share of people aged 20-44 and a declining share of middle-aged people should consequently put an upward pressure on consumption.

The above discussion hinges on some "eye-econometrics" with data from Figures 1 and 2 as input. However, using econometric methods in a normal way might give another answer. To carry out some more rigorous econometric test we have specified a consumption function with real (logarithmic) non-property disposable income in per capita terms, the ratio of financial net wealth and the ratio of housing wealth to income as the primary right hand variables.⁹ The dependent variable is the real (logarithmic) per capita value of pure consumption. Different demographic variables are added to the consumption function, and we have experimented with the four age groups that are displayed in Figure 2.

We have also used two other demographic measures: the ratio of old people to the active generation, "dependency ratio", and the ratio of divorces to marriages as independent variables. A high number of old people in relation to the active generation is expected to increase consumption. The trend of the ratio of divorces to marriages is intended to capture effects of the average number of members in households.¹⁰ A high number of members in households should be a prerequisite for economics of scale and a

⁹ We follow here the approach Berg & Bergström (1995) use and split the wealth variable into housing wealth and net financial wealth. The consumption function with the ratio form of wealth-to-income makes it easy to disaggregate assets by liquidity. See Muellbauer & Lattimore (1994) for a derivation.

¹⁰ Apart from the hypotheses about scale effects depending on the number of members in households Brenner *et al* (1994) argue that the increasing insecurity of marriage and

relative lower level of consumption. Since the 1950s the number of members in households in Sweden has declined.¹¹ One indicator of this phenomenon is the divorce-to-marriage ratio.¹²

The above-mentioned demographic variables are included separately in the long-run consumption function. There is a high degree of correlation among the demographic variables which may result in problems with multicollinearity if the four age groups are included as independent variables at the same time. Attempts to use more sophisticated methods with restrictions over the parameters for these variables have not been made.¹³ Since the models in Table 1 do not reflect short-run fluctuations, we should not expect the errors to be white noise. This is confirmed by the *p*-value of the residual test, LM $\chi^2(1)$, shown in the table. As a consequence of this, standard *t*-tests are not so reliable and therefore we have used Newey West HAC correction for the standard errors. Dickey-Fuller and Phillips-Perron tests of the stationarity of the residuals indicate that in only one case can the unit root hypothesis at less than the 5 per cent level be rejected; for model 1 the Dickey-Fuller test is not significant at this level. For the remaining five models the unit root hypothesis is firmly rejected, and the residuals from these models could from a statistical point of view be included as an error-correction term in a dynamic consumption function with stationary variables.

changing social attitudes have given women a greater incentive to invest in human rather than financial capital. This will lower the savings ratio in the economy.

¹¹ The average number of members in households was 2.8 and 2.1 for 1960 and 1990, respectively. 1960 the share of household with no more than 2 members was 48 per cent and 1990 this share was 70 per cent.

¹² The divorce-to-marriage ratio increased by 0.1 units between 1950-70, and by 0.3 units between 1970-80. Since the beginning of the 1980s the ratio has been roughly constant at a level of 0.5. In generating the variable for the divorce-to-marriage ratio we have adjusted the figure for marriages for 1989. The number of marriages more than doubled in this year which was caused by a change in the law on widow's pension rights. We also use 10 years' moving sum for both marriages and divorces in constructing the ratio.

¹³ See Fair & Dominguez (1991) for a sophisticated approach in estimating demographic effects on consumption. The authors work with restrictions on the parameters for the demographic variables and assume that they lie on a second degree polynomial (Almon lag).

Table 1 Long-run consumption functions 1950-95. The dependent variable is the real (logarithmic) per capita value of pure consumption, $\ln c_t$

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Constant</i>	5.57 (15.21)	2.76 (5.92)	4.03 (15..95)	5.83 (27.49)	5.91 (23.04)	4.72 (15.49)
$\ln Y$	0.55 (18.35)	0.70 (17.26)	0.67 (25..99)	0.42 (19.07)	0.42 (15.75)	0.56 (18.16)
<i>Wfn/Y</i>	0.07 (2.41)	0.12 (3.88)	0.13 (5.80)	0.08 (4.83)	0.08 (4.51)	0.12 (5.61)
<i>Wh/Y</i>	0.08 (3.79)	0.08 (3.27)	0.07 (3.94)	0.07 (5.26)	0.07 (4.42)	0.10 (4.82)
<i>Age ratio 0-19</i>	-2.51 (-5..91)					
<i>Age ratio 20-44</i>		1.43 (4.73)				
<i>Age ratio 45-64</i>			-1.78 (-7.84)			
<i>Age ratio 65-ω</i>				3.44 (14.38)		
<i>Age 65-ω/Age 20-65</i>					1.92 (12.81)	
<i>Divorce ratio</i>						0.24 (8.32)
\bar{R}^2	0.9965	0.9954	0.9967	0.9986	0.9984	0.9968
LM $\chi^2(1)$	0.01	0.00	0.00	0.00	0.00	0.00
Unit root test of the residual:						
Dickey-Fuller test statistics	-2.69	-2.99**	-3.95*	-4.78*	-4.72*	-3.48**
Phillips-Perron test statistics	-3.21**	-3.46**	-4.20*	-4.57*	-4.77*	-3.89*

t-values inside bracket which are based on Newey-West HAC corrected standard errors. Our software package is *EViews*, version 2.0. LM $\chi^2(1)$ gives the p-value for the Breusch-Godfrey test for first order serial correlation. Test statistics for Dickey-Fuller and Phillips-Perron unit root tests for the residuals of the long-run consumption function are shown in the last two lines. * indicates that the test is significant at less than the 1 per cent level while ** indicates that the test is significant at less than the 5 per cent level. MacKinnon critical values for rejection of the hypothesis of unit root at the 1 per cent level are -3.58 and at the 5 per cent level -2.92, respectively.

The variable *Age ratio 0-19* etc. indicates the ratio between the number of individuals in the age group to the total population. The other variables are:

<i>Y</i>	real non-property disposable income, per capita
<i>Wfn</i>	real financial net wealth, per capita
<i>Wh</i>	real housing wealth, per capita
<i>Age 65-ω/Age 20-65</i>	'dependency ratio', ratio of persons 65 years or older to the active generation aged 20-65,
<i>Divorce ratio</i>	ratio of number of divorces to marriages, 5-years average.

The demographic variables included show the expected sign in all models in Table 1. The ratios of age group 0-19 years and the middle-aged group

have a negative effect, while the four remaining variables have a positive impact on per capita consumption. The conclusion of this simple analysis is that the composition of the population matters for aggregate consumption. We can also learn that estimated parameters for income and the wealth ratios vary when the different demographic variables are tested. We should not be surprised at this result because according to the life cycle hypothesis the marginal propensity to consume out of income and wealth is a function of age.

The compositions of aggregate savings

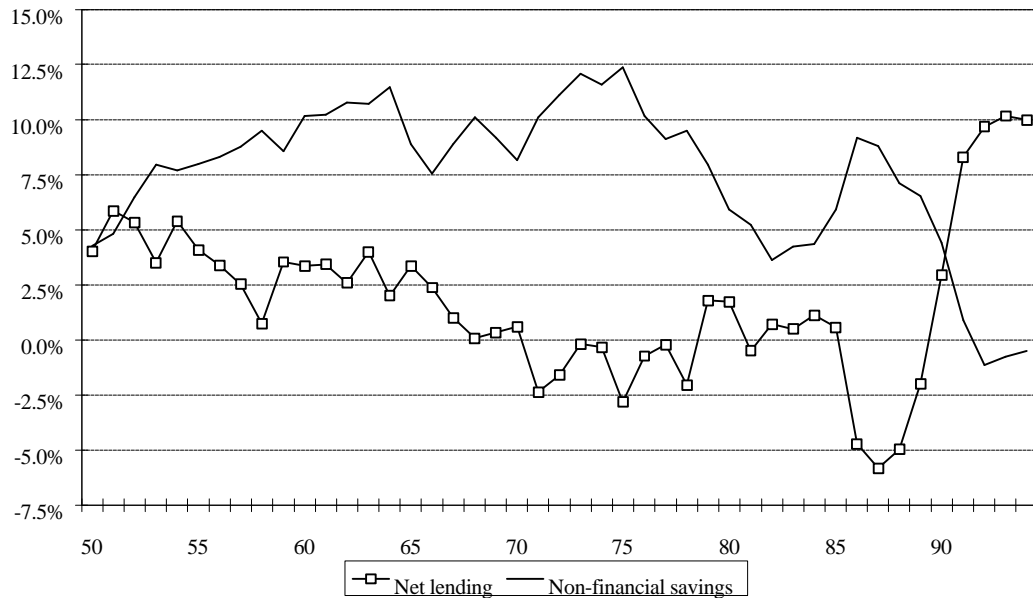
Aggregate per capita consumption is thus sensitive to demographic variables, and the question is now if the same is true for the composition of aggregate savings. Figure 3 shows the development since 1950 of net lending and the sum of non-financial investments in family homes and consumer durables. The savings ratio for net lending exhibits a negative trend until the end of the 1980s. Between 1987 and 1995 the ratio has increased by no less than 15 percentage points! During this period households have shifted their savings from non-financial to financial assets. This is quite the opposite of the 1970s when households invested mainly in non-financial assets. Agell, Berg & Edin (1995), ABE95, have analysed the composition of aggregated savings in their study of the 1990-91 Swedish tax reform¹⁴ and argue that the tax reform is a very important factor behind the rapid changes in the composition of savings.

In their study ABE95 use a savings function where the net lending ratio is a function of expected relative return and changes in the expected relative return of the assets. The model, based on a mean-variance portfolio model, is derived using some strong assumptions such as e.g. a constant

¹⁴ The major elements of the tax reform of 1990-91 were a radical cut in the state income tax for individuals, resulting in a substantial reduction in marginal income tax and the introduction of a separate flat rate tax, in principle 30 per cent, on capital income, including capital gains. The deductibility tax rate for capital losses and interest expenses, in principle, also became 30 per cent. The flat rate capital tax of 30 per cent meant, in general, a considerable fall in the marginal tax rate of savings. For a description and analysis of the tax reform see Agell, Berg & Edin (1995).

savings-to-income ratio and wealth-to-income ratio. Expected relative return is defined as the difference between nominal after the tax interest rate and the relative change in nominal house prices.

Figure 3 Savings ratio for net lending and non-financial savings 1951-95



We have used the ABE95 model for the net lending ratio and have supplemented it with demographic variables to find out whether age composition influences the composition of aggregate savings. We have experimented with three age ratios; age groups 20-44, 45-64 and 65-∞. We expect, of course, that the first age group should have a negative impact on net lending because young people invest in housing and other durables and often borrow money to finance the investment. The two remaining groups might have a positive impact on net lending ratio. The middle-aged groups has normally had high financial savings through amortisation of debts and other financial investments in various securities. Retired people sell off or run down tangible investments and usually hold their wealth in deposits and fixed-income instruments.

The experiment including the age groups as independent variables was not especially successful, since none of them turned out to be significant. We incorporated these variables separately with five other variables in the instrument set, and linear dependence between the variables might result in the effect of the demographic variable vanishing.¹⁵ As a contrast, quite a few studies have found a clear correlation between house prices and age structure.¹⁶ In two recent Swedish empirical studies both Heiborn (1994) and Hort (1996) find that age structure significantly influences house prices. In an attempt to isolate the effects of age structure we have built a simple eclectic simultaneous model for relative change in nominal house prices and savings.

In the house price equation we have incorporated variables that describe both short- and long-run developments. We use an error correction model with the inclusion of both difference and level terms in the model. The latter are often included in the form of error correction terms. After some experiments we obtained a parsimonious model that accounts for the main features of the data generating process.

Nominal house prices and construction costs for housing, the unemployment rate and the nominal after-tax interest rate are all error correction terms in the model. Construction costs for housing are expected to have a positive impact on house prices. The unemployment rate is proxy for income expectations while the nominal after-tax interest rate is proxy for the user cost of housing, and the expected sign of both variables are negative. As short-run factors change in nominal after-tax interest rate, change in age ratios and the relative change in the nominal house prices, lagged one period, are used. We also experimented with the age ratios in "levels", i.e. as error correction terms, but they never turned out to be significant.

¹⁵ TSLS (two stage least squares) is used by Agell, Berg & Edin (1995) in an attempt to both use a measure of expected return (the model is formulated in terms of expected relative return) and to cope with simultaneity bias.

¹⁶ See Hort (1996) for an overview and references.

As a savings model we use the same model as ABE95 did. The expected relative return, the growth of real non-property per capita disposable income and the first lag of the dependent variable are included in the model. Real non-property per capita disposable income is included to capture income expectations, while the first lag of the dependent variable reflects some kind of adjustment cost in the model.

The simultaneous model is estimated with full maximum likelihood, and the result is given in Table 2. The age ratios for the 20-44 and 45-64 age groups and the difference between them are included separately in the price equation. We assume that house prices and the net lending ratio are the only endogenous variables in the model. Consequently the construction cost, nominal interest rate, marginal tax rate, income growth and unemployment rate are exogenous.¹⁷

The Jarque-Bera test statistics indicate that the residuals are normally distributed in all three models for the house price equation. The same is true for the savings model if the observation for 1994 is excluded; all models show a big residual for that particular year. Note also that only model 2 for the house price model of Table 2 show sign of serial correlation for both levels and squares according to the Ljung Box statistics.

¹⁷ Keeping these variables exogenous, apart from the marginal tax rate, may cause problems with simultaneity bias. The solution to that dilemma is to model these variables separately. We consider that task to be beyond the scope of this paper, and we thus leave it to be considered in future work.

Table 2 The maximum likelihood estimate of house price and the net lending model. Sample 1954-95

<u>House price equation, dep. variable</u>	(1)	(2)	(3)
$\Delta \ln Ph$			
<i>Constant</i>	-0.150 (-2.86)	-0.165 (-2.91)	-0.166 (-3.46)
$\ln Ph_{-1}$	-0.181 (-4.10)	-0.183 (-3.59)	-0.199 (-4.73)
$\ln Pcc_{-1}$	0.204 (5.06)	0.201 (4.69)	0.215 (5.81)
U_{-1}	-0.996 (-1.52)	-0.805 (-1.29)	-0.806 (-1.24)
$(1-MT_{-1})R_{-1}$	-4.718 (-4.34)	-3.960 (-3.25)	-4.098 (-3.69)
$D[(1-MT)R]$	-3.065 (-3.56)	-2.494 (-2.59)	-2.699 (-3.17)
$\Delta(\text{Age ratio } 20-44)$	5.567 (2.91)		
$\Delta(\text{Age ratio } 45-64)$		-6.753 (-2.25)	
$\Delta(\text{Age ratio } 20-44 - \text{Age ratio } 45-64)$			3.910 (3.16)
$\Delta \ln Ph_{-1}$	0.615 (3.36)	0.620 (3.17)	0.641 (3.46)
\bar{R}^2	0.7040	0.6940	0.7074
Q(1)	0.93	0.01	0.96
Q(2)	0.94	0.00	0.98
Qsq(1)	0.31	0.10	0.68
Qsq(2)	0.11	0.18	0.15
<u>Savings equation, dep. variable <i>NLR</i></u>			
<i>Constant</i>	0.002 (0.35)	0.003 (0.43)	0.002 (0.36)
$D[(1-MT)R - \Delta \ln Ph]$	0.213 (1.70)	0.210 (1.95)	0.224 (1.70)
$(1-MT)R - \Delta \ln Ph$	0.193 (1.89)	0.198 (2.09)	0.197 (1.98)
$D \ln(Y)$	0.259 (2.07)	0.253 (1.91)	0.258 (2.02)
NLR_{-1}	0.865 (5.38)	0.852 (6.13)	0.865 (5.64)
\bar{R}^2	0.8054	0.8049	0.8026
Q(1)	0.69	0.72	0.65
Q(2)	0.81	0.82	0.76
Qsq(1)	0.38	0.38	0.40
Qsq(2)	0.65	0.65	0.69

t-values inside bracket, and the software package used is *TSP*, version 3.4. The rows for 'Q(*n*)' and 'Qsq(*n*)' give, respectively, the prob-value for the Ljung-Box statistic for residuals and squared residuals up to *n*th order of serial correlation. The distribution of these statistics is $\chi^2(n)$ under the null of no serial correlation.

The variable *Age ratio 20-44* etc. indicates the ratio between the number of individuals in the age group to the total population. The other variables are: *Ph* nominal house prices, *Pcc* nominal construction cost for housing, *U* unemployment rate, *MT* marginal tax rate for capital income, *R* nominal interest rate, *NLR* ratio of net lending to disposable income and *Y* real non-property per capita disposable income.

The estimated parameters in the savings equation are approximately the same size for the relative return and income variable as those reported by ABE95, despite the fact that we have enlarged the sample by two observations. The parameter value of the lagged savings ratio is, however, a little bigger. All variables except the unemployment rate, are beyond all doubt significant in the house price equation. One interesting feature of that equation is that the demographic variables now show a reassuring statistical significance.

The result indicates that changes in the age ratio for age group 20-44 years put an upward pressure on house prices (demand effect) which at the same time simultaneously lower the relative return for net lending and accordingly lower net lending and increases tangible investments. For the other age groups the opposite is the case since the negative parameter in the house price equation for age group 45-64 years can be interpreted as a supply effect on the housing market and will put a downward pressure on prices. In the third model the net effect of this demand and supply effect is estimated.

The estimated equations show that demographic variables affect the composition of savings through house prices. In order to get an idea of the quantitative effect of the demographic variable on house prices and the composition of savings a simulation experiment is carried out with the model. We use model 3 for this experiment and employ a rather drastic assumption in supposing that the demographic variable in the house price equation is zero. That means we assume a stationary population. One characteristic of a stationary population is that all age groups are unchanged in relative terms. It can be learned from Figure 4 that the age ratio for both age groups has changed considerably since the 1950s, and the variable used in the house price equations shows high volatility - see Figure 5. In the simulation experiment we thus assume that the $\Delta(\text{Age ratio } 20-44 - \text{Age ratio } 45-64)$ variable is zero.

Figure 4 Age ratio 20-44 and 45-64

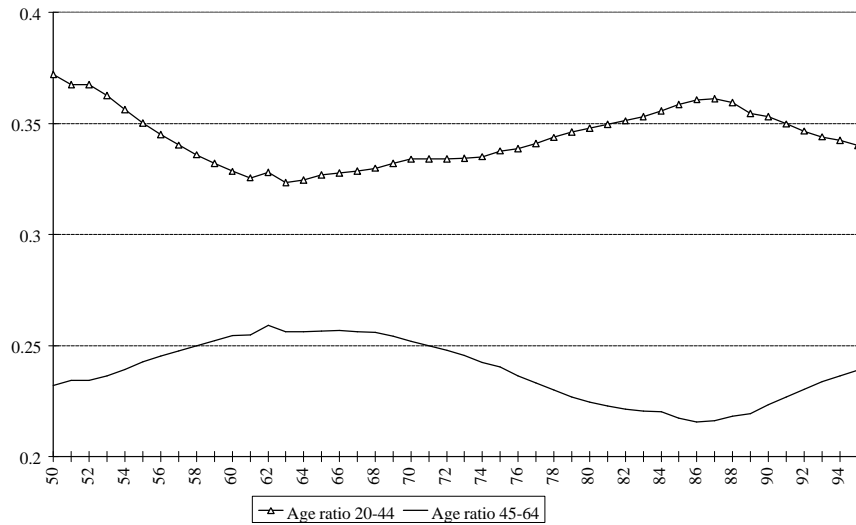


Figure 6 Actual and simulated relative change in nominal house prices

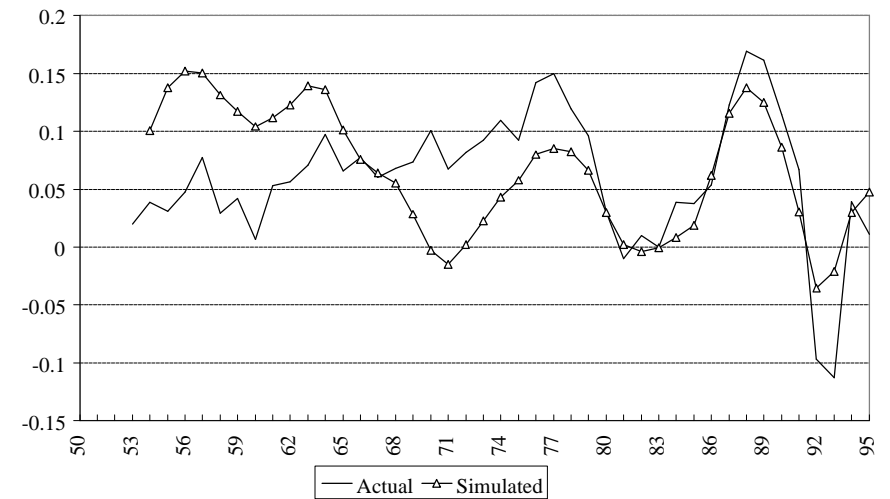


Figure 5 $D(\text{Age ratio 20-44} - \text{Age ratio 45-64})$

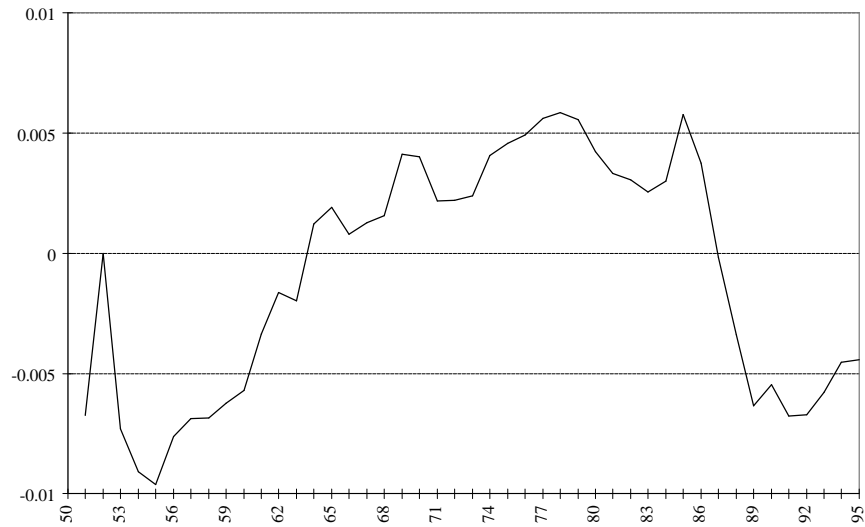
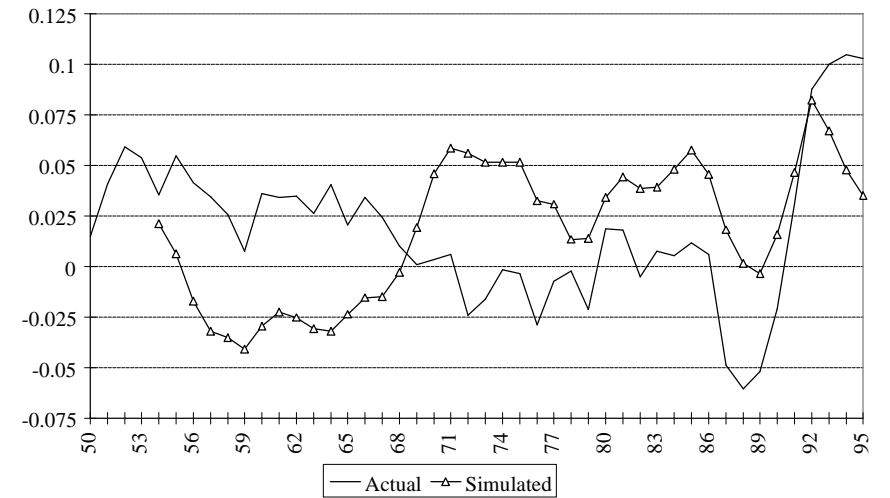


Figure 7 Actual and simulated net lending ratio



The experiment with a stationary population results in a higher relative change in nominal house prices in the 1950s and the first half of the 1960s (see Figure 6). For the 1970s the simulated change in house prices is lower than the actual values for this variable. In the beginning of the 1990s the actual fall in house prices is higher than the simulated price changes. The effect on net lending is the opposite of the price changes (compare Figure 7 with Figure 6). Without an increase in the $\Delta(\text{Age ratio } 45-64)$ variable and decrease in the $\Delta(\text{Age ratio } 20-44)$ variable in the 1950s and the 1960s the net lending ratio would be much lower. We can also notice the increase in "prodigals" and decrease in "misers" during the 1970s and 1980s has resulted in a lower net lending ratio compared with a situation without changes in these two groups. Changes in the two age groups also have a considerable effect on the saving composition for the 1990s.

Finally, we have simulated the effect of the 1990-91 tax reform.¹⁸ The assumption here is simply to hold the marginal tax rate constant at the 1990 level - the marginal tax rate was lowered from 47.5 to 30 per cent due to the tax reform. The result indicates that, on average, for the 1990-95 period, nominal house prices have fallen by some 8 percentage points as a consequence of a lower marginal tax. The capitalisation effect of the tax reform on house prices is thus quite substantial. The effect on the net lending ratio is also nearly 8 percentage points; a lower marginal tax rate increases the nominal after-tax interest rate and decreases nominal changes in house prices and thus fosters financial saving and discourages tangible investment. Our result of this simulation is much higher than those reported by ABE95; 2.5 percentage points. But in the ABE95 study the implied effect on changes in house prices is disregarded.¹⁹

¹⁸ See footnote 14 for a brief description of the major elements of the tax reform.

¹⁹ ABE95 points out that their simulation only captures the effect on the nominal after-tax interest rate on the net lending ratio, and the increase of 2.5 percentage points should be regarded as a plausible lower limit for the true adjustment to the tax reform.

Conclusion

The empirical analysis contained in this paper confirms that the composition of the population matters for the trend of aggregated consumption and the composition of savings in Sweden. In a long-run consumption function of life cycle type, different demographic variables have a conclusive statistically significant effect. A simple simultaneous model is used to investigate the link between demographic variables and the composition of aggregated savings and a savings function and a house price equation are estimated. The result even here is that age composition matters for house prices and savings. A simulation experiment is carried out which indicates that a stationary population would substantially change the trend for price changes and savings. The model is also used to simulate the effects of the recent Swedish tax reform. Our result indicates that the capitalisation effect of the tax reform on the relative change in house prices was on average 8 percentage points. The experiment also indicates that the net lending ratio has increased by some 7 percentage points as a consequence of lower marginal tax rates.

Repeating the computation of the same partial effect on net lending, as ABE95 did based on the saving equation (3) from Table 2, produces the same result as the ABE95 report.

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