Economic Studies 91

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Empirical Essays on Housing Allowance, Housing Wealth and Aggregate Consumption
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ECONOMICS AT UPPSALA UNIVERSITY

The Department of Economics at Uppsala University has a long history. The first chair in Economics in the Nordic countries was instituted at Uppsala University in 1741.

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- Labour economics
- Public economics
- Macroeconomics
- Microeconometrics
- Environmental economics
- Housing and urban economics

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Abstract


This dissertation consists of four self-contained essays:

Essay I (with Cecilia Enström Öst) investigates whether housing allowance affects recipients’ tenure choice in Sweden. A two-stage conditional maximum likelihood probit (2SCMLP) model is applied in a panel data setting to simultaneously control for individual heterogeneity, state dependence and endogeneity. The empirical study is based on administrative data of housing allowance recipients between the years 1994 and 2002. Our results indicate that the housing allowance positively affects recipients’ homeownership propensity in Sweden.

Essay II investigates whether the Swedish housing allowance system creates dependence on welfare in recipients. Using longitudinal data from Swedish micro database-LINDA, this paper found that there is no evidence of negative duration dependence among the Swedish housing allowance spells. This finding is consistent across different model specifications and various controls of the heterogeneity issue.

Essay III analyzes the impacts of the 1997 reform of Swedish housing allowance system on affected recipients’ exit hazards using the DD (difference-in-difference) estimation strategy. This paper found strong evidence that the 1997 reform positively shifted up the conditional exiting probability of the couple with children recipient group, and the estimated magnitude of impact is sizable.

Essay IV extends the VECM (Vector Error Correction Cointegration Model) and PT (permanent-transitory) variance decomposition framework proposed by Lettau & Ludvigson (2004) to a situation in which total wealth is disaggregated into housing wealth and financial wealth. The empirical studies are based on the Swedish aggregate quarterly data spanning from 1980q1 to 2004q4. We found strong statistical evidence that the movements of total consumption expenditures, disposable income, housing wealth and financial wealth are tied together. It is also shown that a big fraction of the movements of housing wealth in Sweden are transitory.
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List of Papers

This thesis is comprised of the following four self-contained essays:


To my parents
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## Abbreviations

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<tr>
<td>SEK</td>
<td>Swedish Kronor</td>
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<tr>
<td>Mth</td>
<td>Month</td>
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<td>HA</td>
<td>Housing Allowance</td>
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<td>VECM</td>
<td>Vector Error Correction Model</td>
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<td>PT</td>
<td>Permanent-Transitory</td>
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Introduction

This dissertation is composed of four self-contained empirical essays. The first three address same topic: the behaviour impacts of housing allowance benefits, and all employ micro econometric models on household level data. Particularly, the second and third essays are closely related, and both discussing the duration of housing allowance recipient spells. The fourth essay is a macroeconomics study of the relationship between housing wealth and aggregate consumption, and uses time-series econometric techniques on Swedish national data.

1. Housing Allowance: the Growing Importance

The past decade has witnessed a clear shift of housing policy from supply-side subsidy to demand-side assistance in most western countries, and in accordance with this trend, housing allowance has come to play a growing important role in these countries (Ditch et al. 2001).

The growing popularity of housing allowance can be attributed to the resurgence of market-oriented economic philosophy in Europe during the past two decades, which advocates giving more choice freedom to households (Fallis, 1993). But, more importantly, this is due to the widely held belief that demand-side assistance could work better in solving the affordability problem experienced by the poor. For example, many economists suggest that demand-side assistance helps the most needy and can be flexibly tailored to the target’s needs (Galster, 1997). Meanwhile, it lessens the poverty neighbourhood clustering problem that has continuously plagued massive public housing projects. Across European countries and the US, there is a growing concern among social scientists over the rising social isolation of residents of place-oriented public housing programs (Wilson, 1987). In the literature, it has been long argued that the social segregation and spatial inaccessibility to well-paid job network systems due to neighbourhood location could be an important resource of labour market disadvantages for the underclass population (Kain, 2004)).
2. Housing Allowance in Sweden

After more than 30 years of development, housing allowance is now a central component in Swedish housing policy. In 2002, it was estimated that about 60% of single parents and 15% of all Swedish households received some kind of housing allowance. In the same year, the total housing allowance expenditure totalled 14.6 billion SEK and accounted for 0.61% of GDP, in contrast to the ratio of total housing production support at only 0.08% and the ratio of tax deductions for home loan interests at 0.46% (SCB, 2004; SCB, 2005). One should note that these scales were what remained after sharp declines in both expenditures and recipient numbers since the middle of the 1990s (Boverket, 1999).

In Sweden, the policy aim of the housing allowance is to provide better opportunities for households in obtaining dwellings of appropriate size at a reasonable cost, to diminish overcrowding and to serve as a housing cost equaliser for people living in different regions of the country (MOS, 2004). The main target population is low-income households, especially those with children (RFV, 2003). A key distinction of the Swedish housing allowance system is that housing benefits are open to households of all tenure types, and thus a priori does not favour any particular tenure choice.

The Swedish housing allowance benefit consists of three distinct components: The first is the housing allowance to young people and families with children; the second is the housing supplement to the disabled; and the third is the housing supplement to old-aged pensioners. In Essays I-III, the housing allowance to families with children is studied. The calculation of this type of housing allowance is based on the family composition of the household (for example, single or couple, number of children), household income and actual housing expenses.

3. Behaviour Impacts of Housing Allowance

In essence, housing allowance is a way to subsidise the recipient’s housing consumption. It therefore necessarily yields two types of effects: income effect and substitution effect. Hence, a number of recipient behaviours will be correspondingly affected. Nonetheless, despite the growing body of research projects investigating the socio-economic consequences of housing allowance, behaviour analysis is still limited. Particularly, there are two issues largely ignored in the literature, one being the impact of housing
allowance on a recipient’s tenure choice and the other being the dynamics of housing allowance spells.

3.1. Housing Allowance and Tenure Choice

In Essay I, we argue that both income effect and substitution effect derived from housing allowance will affect a recipient’s tenure choice. But the direction of the combined effects is hard to predict a priori. The income effect can arise when housing allowance strengthens the recipient’s income endowments in the same spirit as cash assistance does. Tenure choice literature predicts that a household’s homeownership propensity would rise with household income. However, the curial problem is that the income elasticity for housing demand can be well below unit among low-income households (Fallis, 1993). More crucially, housing allowance may not be treated as a permanent increase. Thus the income effect of housing allowance on a recipient’s homeownership propensity is ambiguous. In addition to income effects, housing allowance distinguishes itself from income support as it also produces a price/substitution effect: subsidising housing consumption causes housing goods to become relatively cheaper and stimulates more consumption of housing. However, it is difficult to predict a priori how this effect will affect the recipients’ tenure choices. The transition cost in the housing market is the crucial factor.

To the authors’ best knowledge, no previous research has been carried out to study the relationship between housing allowances and the tenure choice. This point is particularly highlighted in Ditch et al. (2001), in which tenure choice and housing allowance are the two key topics covered, but there is no discussion of any interaction between them. The Swedish housing allowance system provides a nice institutional background to study this issue, as housing allowance in Sweden is open to households of all tenure types, and a priori does not favour any particular tenure choice. This is not the case in most other countries.

Essay I investigates whether housing allowance has an impact on recipients’ tenure choice in Sweden. To address this question, three methodology challenges need to be overcome. The first is a common problem that perplexes nearly all behavioural studies of household activities: how to control the individual heterogeneity that is unobservable to analysts but crucially affects the outcomes of an individual’s activities. The second is more specific to tenure studies: how to appropriately account for the serial
persistence feature or state dependence effect in a household’s behaviour (Heckman & Borjas, 1980). The third is particular to the research question addressed here: how to avoid the pitfalls of endogeneity and consistently identify the true impact from the ‘seemingly’ reciprocal relationship between degree of reliance on housing allowance and tenure choice. Therefore, a two-stage conditional maximum likelihood probit (2SCMLP) model is applied in a panel data setting to simultaneously control for individual heterogeneity, state dependence and endogeneity.

The empirical study is based on administrative data of housing allowance recipients living in three major metropolitan areas of Sweden between the years 1994 and 2002. The result indicates that the housing allowance positively affects recipients’ homeownership propensity in Sweden. We thus conclude that the Swedish housing allowance system is doing a fairly good job in supporting low-income households in obtaining and maintaining their homeownership. Furthermore, there is no evidence indicating that the reform of the Swedish housing allowance system in 1996–97 essentially changed this fact.

3.2. Dynamics of Housing Allowance Spells

The dynamics of welfare spells is informative on the existence of welfare trap effects in a specific welfare system, and therefore carries important policy implications. We are concerned with what determines the length of time that one recipient stayed on welfare, how the duration length varies across groups with different characteristics, and whether a welfare system helps those needing to overcome temporary financial difficulties, while not serving as an obstacle to able-bodied people’s self-sufficiency.

Many analysts believe a welfare system can create dependence on government assistance in recipients: this possibility is called the “welfare trap effect hypothesis”. One reason for welfare trap is credited to the depreciation of human capital after periods of labour market inactivity (Edin & Gustavsson, 2004). Others proclaim that one’s preferences might be shifted toward leisure after entering the welfare system and that a “welfare culture” grows with the welfare experience (Plant, 1984). Further, it is also suggested that one’s welfare experience can be a negative indication of personal motivation and competitiveness. No matter what the major source is, the welfare trap hypothesis has been widely corroborated in the various welfare systems of developed countries (Moffitt, 1992).
The welfare trap hypothesis presumes a negative duration dependence pattern existing among recipient spells, that is, a recipient’s conditional leaving probability decreases over the spell history. Thus, examining the hazards of spells provides a direct test of the existence of the welfare trap. It is also useful in assisting policymakers in forecasting the demand for assistance. However, despite the growing importance of housing allowance as part of housing policy in western countries, research on its spell dynamics is still limited.

**Essay II** studies the dynamics of housing allowance spells in Sweden using longitudinal data from Swedish micro database-LINDA for the years 1991 to 2002. Welfare remaining/exiting is examined in a framework analogous to the dynamic job search model. Despite the framework being simple and elementary, it is useful in guiding the choice of explanatory variables in the empirical analysis. We also show how the dynamic analysis of sequential binary choice leads to the econometric modelling of spell durations and how the discrete-time hazard model can be interpreted in the binary choice econometric framework.

This paper found that there is no evidence of negative duration dependence among Swedish housing allowance spells. This finding is consistent across different model specifications and various controls of the heterogeneity issue. We hence come to the conclusion that recipients’ exit rates from the system do not decrease over spell history. This paper also shows that demographic characteristics, educational background, labour market status and local economic conditions play important roles in determining the probability of recipients leaving the housing allowance system. However, there are substantial variations in their impacts across different household types.

**Essay III** exploits the quasi-experiment dimension of the 1997 reform and applies the difference-in-difference (DD) estimator to analyze how the hazards of housing allowance spell are affected by changes in income threshold.

In 1997, the Swedish housing allowance system implemented a dramatic reform of the income testing regulation for the *couple with children* claimants. Prior to the reform, the income threshold for a *couple with children* household was 117000SEK/year per household. But with the reform, the income threshold was changed to 56500SEK/year per applicant. The income threshold indicates the level at which income testing begins to apply. In the Swedish housing allowance system, the withdrawal rate of applicable benefits from the portion of an applicant’s assessed incomes that exceeds the threshold is 20%. However, what made the 1997 reform
particularly interesting is that this reform only affected the *couple with children* recipients but left *single parent* recipients unaffected. Hence, such a reform schedule offered a unique opportunity to analyze the impact of benefit cuts on spell duration in a quasi-experimental setting. Very few reforms have left such a clear-cut distinction of control and treatment group. In this setting, using the single-couple status recorded during recipient’s welfare history, we allocate the *couple with children* recipient observations into the “treatment group”, while the *single parent* recipient observations constitute our “control group”.

The DD estimator is credibly more robust than the more commonly used before-and-after (BA) estimator as, the DD estimator provides the potential to remove the common-trend bias that plagues the BA estimator result. Despite the DD estimators having been employed extensively in other fields of research, it is still quite rare in the field of housing studies.

This paper is also special in its careful attention to treating the interaction effects in nonlinear models. As Ai & Norton (2003) have shown, in nonlinear models the sign and significance of interaction terms are invalid for indicating the true sign and significance of interaction effects, a point largely neglected by most previous social researchers. This paper employs their method of measuring interaction effects in logit hazard models.

After controlling for household socio-economic characteristics effects and common time trend effect, it is estimated that the 1997 reform on average shifted the exit hazard up by about 17% among *couple with children* recipients. Evidently, the attractiveness of housing allowance benefits has been reduced greatly, at least for *couple with children* claimants.

### 4. Housing Wealth and Aggregate Consumption

The relationship between wealth value and consumer spending is a classic topic in economics. However, the association between housing wealth and consumption has just begun to attract attention in the literature.

This issue has become particularly interesting since the beginning of this century. Against the backdrop of the abrupt collapse in the international stock market at the beginning of the century, it was widely feared that the consumers would respond by cutting their spending sharply and would drag the global economy to deep recession. However, consumer spending continues to show strong growth in nearly all major economies. In seeking explanations to this puzzle, more and more observers argue that the
continued surge in the housing market is the primary factor offsetting the negative impact of the stock market collapse and upholding the strong performance of household consumption. After the seminal work of Case et al. (2001), a growing body of research work has been devoted to re-examining the association between movements in the housing market and trends in aggregate household consumption.

The literature has suggested several channels by which changes in housing wealth lead to changes in aggregate consumption. The most frequently studied channel is the “wealth effect”: increases in housing price/wealth make homeowners feel richer and willing to spend more. Another transmission channel that has attracted increasing attention in recent literature and that is said to be more important is the “credit channel”. Ludwig & Slok (2002) listed four transmission channels: realized wealth effect, unrealized wealth effect, liquidity constraint effect, and stock option effect. All four transmission channels are in line with PIH consumption theory. Despite the many debates on the causality nature of the wealth effect, most economists tend to believe that housing wealth/price do have significant determining effects on movements in consumer spending.

However, despite mounting numbers of studies on the association between housing price/wealth and consumption, the existing results can be dubious. Using the US data spanning from 1951q4 to 2003q1, Lettau & Ludvigson (2004) provided evidence that the disequilibria are corrected via adjustments in total asset wealth but not via consumption. Thus, the coefficients of short run dynamics estimated in a single equation ECM are subject to model misspecification bias.

**Essay IV** extends the VECM and PT (permanent-transitory) variance decomposition framework proposed by Lettau & Ludvigson (2004) to a situation in which total wealth is disaggregated into housing wealth and financial wealth. The VECM (vector error correction model) does not require the weak exogeneity condition of independent variables as in the single equation ECM, and also provides a direct test for the exogeneity of one variable to one another. The PT variance decomposition method, while allowing us to quantify fractions of variances in incomes and wealth that are related and unrelated to consumption movement, respectively, does not require identification of the existence and direction of the independent causality relationship between each variable.

The empirical studies are based on Swedish aggregate quarterly data spanning from 1980q1 to 2004q4. We found strong statistical evidence that the movements of total consumption expenditures, disposable income, housing wealth and financial wealth are tied together and that their long run
relationships are stable in the Swedish data. The long run elasticity of total consumption with respect to net housing wealth is 0.11. But when we exploit the restrictions implied by the cointegration relationship and perform the PT analyses of shocks hitting the system, it is shown that a large proportion of the movements of housing wealth in Sweden are transitory. The implication of this is that we may not need to be greatly concerned with short run variations in the housing market as these are largely dissociated with consumer spending. Our estimated PT-adjusted average MPC (marginal propensity to consume) from per-SEK rise in net housing wealth is 0.056 SEK. Previous literature seems to have overestimated the association between housing wealth/price and consumption in Sweden. Meanwhile, it is shown that the strength of the empirical linkage between the consumption variable and housing variable is not sensitive to different model specifications, and is robust to various measures of key variables. There is also no evidence that rises in housing prices will lead consumers to substitute non-housing consumption with housing consumption.
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