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Properties of Japanese Households Asset Choice Behavior by Panel Data

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Abstract

In this paper, the effect of home ownership, housing loan and other household attributes on risky asset are investigated using Keio Household Panel Survey. Unobserved component of the individual is controlled. Home ownership has positive effect on risky asset, but housing loan and future plan of house purchase have no effect on risky asset. Total financial asset, total asset including real asset and husband's labor income has positive effect on risky asset rate, but wife labor income has opposite effect. Education related to knowledge, city size and frequency of using internet related to convenience and information also have positive effect on risky asset rate.

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Properties of Japanese Households Asset Choice Behavior by Panel Data

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Abstract

In this paper, the effect of home ownership, housing loan and other household attributes on risky asset are investigated using Keio Household Panel Survey. Unobserved component of the individual is controlled. Effects of real asset, labor market status, information and spouse attribute are considered at the same time.

From the estimation, home ownership has positive effect on risky asset, but housing loan has no effect. Future plan of house purchase has no effect on risky asset. As total financial asset increases, the rate and amount of risky asset also increase. Husband's labor income has positive effect on risky asset rate, but wife labor income has opposite effect. Total asset including real asset has the same effect as financial asset. Wealthy households have additional asset to invest in risky asset. There is no effect of liability. Education related to knowledge has positive effect on risky asset rate in both husband and wife. City size and frequency of using internet which may be related to convenience and information have positive effect on risky asset rate.

Journal of Economic Literature Classification Numbers: C24, G11

Keywords:Asset choice, Risky assets, Panel tobit,

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1 Introduction

Japanese households have higher deposit rate and lower stock and security rate comparing to other main advanced countries. Asset choice behavior of Japanese household can be said risk averse. Under current condition, household's financial asset does not go to capital market directly and Japanese capital market may not be activated. For preventing the progress of capital market in Japan, Kotou (2000) points out that household asset choice behavior is conservative, infrastructure related to stock market is not arranged, information for investment is not enough on quality and quantity, stock trade fee is expensive and tax merit of deposit is large.

At the same time, however, real asset rate is high by the preference for home ownership. If real asset is assumed to be risky asset[1], Japanese risky asset rate including real asset is almost same as U.S.A. When Japanese low risky financial asset rate is discussed, it is important to consider the role of real asset.

In this paper, the effect of home ownership or house purchase plan on risky financial asset such as stock and security are estimated by latest dataset of Keio Household Panel Survey (KHPS). There may be three effects of home ownership on risky asset rate. First, house is considered as risky asset and safe asset rate incereases for taking balance with risky asset. Second, risky assets increase since there will be no large expenditure for the while after house purchase. Third, risky asset rate decreases for future expenditure for returning housing loan.

Risky asset rate may also be influenced by household income or total financial asset. Households which have high income or asset can afford to invest in stock or security and raise risky asset ratio. Degree of convenience, information and knowledge also have effect on asset choice behavior. There are many financial companies in the large city and people can gain more information about stock or security. Risky asset rate in large city may be higher than in small city. Nowadays, information about risky asset can be obtained by internet even in small city. Education may also influence risky asset rate through the amount of knowledge about investing.

Up to now, "Public Opinion Survey on Household Financial Assets and Liabilities" by Central Counsel for Financial Services Information, "Financial Asset Choice Survey" by Postal Services Research Institute and "Financial Behavior Survey" (NEEDS-RADAR) by Nihon Keizai Shinbun are used in survey data analysis of Japanese financial asset choice. They all are repeated cross section data and the samples are different for every year [2]. NEEDS-RADAR

[1]For example, price validate risk by housing loan, income validate risk, interest risk and moving risk are considered

[2]For panel data, "Japanese Panel Survey of Consumers" by Institute for Research on Household Economics is also available, but there are few researches about household portfolio.

covers only Tokyo, Kanagawa, Saitama and Chiba. "Public Opinion Survey on Household Financial Assets and Liabilities" does not ask the information about real asset and education and "Financial Asset Choice Survey" is examined every two years.

Komai and Abe (2005) consider the effect of real asset. They estimate the effect of home ownership and the amount of housing loan on risky asset demand by using RADAR on 2001 and conclude that home ownership has positive significant effect on risky asset demand, but the amount of housing loan has no effect on risky asset. Matsura and Shiraishi (2004) use "household saving survey" on 1998 and regard real asset as risky asset. They estimate risky financial asset and risky real asset simultaneously and conclude that risky real asset has no effect on risky financial asset, but risky financial asset has negative effect on risky real asset. Shimono (1989) also uses RADAR on 1985, 87, 90, 92 and 94 and finds that household asset choice behavior is not changed before an after bubble periods. However, the effect of home ownership dummy or housing loan dummy is not clear. Since wife employment dummy is negatively significant, if wife is working, the probability of holding risky asset is low. Mizuno (2005) tests the effects of internet on the investor behavior and concludes that degree of internet availability has positive effects on investment for risky asset. The example estimating housing market and labor market using KHPS is illustrated in Higuchi eds (2005)(2006), but asset choice behavior is not estimated.

Cocco (2004) finds that price validate risk of house restricts stock holding and the effect is large as young and lower asset holder. Yao and Zhang (2005) estimate the difference of home ownership and borrowing house in the framework of consumption, house owner and portfolio choice model. Dietz and Haurin (2003) summarize the effect of home ownership on household asset, portfolio selection, labor, city structure, politics, social activity, health and children.

Since this paper uses three years panel data, unobserved effects can be controlled. This research considers the effect of real asset (home ownership, housing purchase plan and housing loan), labor market status (employment status), information (frequency of using internet, city size and education) and spouse attribute on risky asset rate at the same time, which is not possible in previous study. Many households do not hold risky asset, therefore, tobit model which consider zero holding is used. Sample limits to married household because the effect of spouse income and education on asset choice are tested.

Main results from this research are as follows. Home ownership has positive effect on risky asset ratio and amount, but housing loan has no effect. Future house purchase plan has no effect. As total financial asset increases, the rate and amount of risky asset increases. Husband's labor income has positive effect on risky asset rate, on the other hand, wife labor income has opposite effect. Total asset including real asset has same effect as financial asset. Wealthy households have additional asset to invest in risky asset. Liability has no effect.

Higher education background related to knowledge has positive effect on risky asset rate for both husband and wife. City size and frequency of using internet which relate to convenience and information have positive effect on risky asset rate.

Portfolio choice model and estimation model are explained in section 2 and 3 respectively. Properties of the data are summarized in section 4. Section 5 is the result of the estimation.

2 Portfolio Selection Model

In this section, risky asset demand function is derived from basic portfolio selection model by Friend and Blume (1975).

Suppose investment periods can be infinitely divided and only two assets (safe asset and risky asset) are existed [3]. Assume households are risk-averse and maximize expected utility for asset W : $U'(W) > 0, U''(W) < 0$. Suppose asset at the begining of period t is W_t, end of period t is $W_{t+1} = W_t + dt$, risky asset holding rate is α_t, return of safe asset is r_f and expected return of risky asset follow mean μ, variance σ^2. In short, households hold asset W_t as $(1-\alpha_t)W_t(1+r_f)$ safe asset and $\alpha_t W_t(1+\mu \pm \sigma)$ risky asset.

Then, households maximize expected utility

$$E[U(W_{t+1})] \tag{1}$$

subject to budget constraint

$$W_{t+1} = [1 + \{(1-\alpha_t)r_f + \alpha_t\mu\}dt + \alpha_t\sigma\sqrt{dt}]W_t \tag{2}$$

By expanding $U(W_{t+1})$ about W_t, taking expected values and dropping terms involving dt to the power of 2 or more, then

$$E[U(W_{t+1})] =\simeq U(W_t) + U'(W_t)W_t\{(1-\alpha)r_f + \alpha\mu\}dt + \frac{1}{2}U''(W_t)W_t^2\alpha^2\sigma^2 dt$$

Differentiated by α, first order condition is

$$U'(W_t)(\mu - r_f) + U''(W_t)W_t\alpha\sigma^2 = 0 \tag{3}$$

Optimal holding rate for risky asset is

$$\alpha = \frac{-U'(W_t)}{W_t U''(W_t)}\frac{\mu - r_f}{\sigma^2}$$

[3] In this paper, both safe asset and risky asset are regarded as financial assets. In other words, the effect of real asset on safe financial asset and risky financial asset will be considered.

and optimal holding amount of risky asset is

$$\alpha W_t = \frac{-U'(W_t)}{U''(W_t)} \frac{\mu - r_f}{\sigma^2}$$

Rewrited by degree of risk aversion representation,

$$\alpha = \frac{1}{RRA_t} \frac{\mu - r_f}{\sigma^2} \tag{4}$$

and

$$\alpha W_t = \frac{1}{ARA_t} \frac{\mu - r_f}{\sigma^2} \tag{5}$$

where RRA is the degree of relative risk aversion $-\frac{WU''}{U'}$ and ARA is the degree of absolute risk aversion $-\frac{U''}{U'}$.

3 Estimation Model

Since data sets are available for only three years (2004-2006), validation of expected return and variance (μ, r_f, σ^2) is not sufficient for estimation. Therefore, second term of right hand side $\frac{\mu - r_f}{\sigma^2}$ is assumed to be constant and variables related to the degree of risk aversion are used for estimation. Degree of risk aversion may be determined by the variable determining utility function such as financial asset, real asset, liability, labor income, and family attribute (age, education, etc.). From equation (4) and (5), degree of risk aversion may have negative effect on risky asset rate and amount. Several patterns of variables which determine degree of risk aversion are used in the later estimation.

Risky asset rate function can be written as

$$\alpha_t = \beta_1 X_t + u_1 \tag{6}$$

and risky asset demand function can be written as

$$\alpha_t W_t = \beta_2 X_t + u_2 \tag{7}$$

Same explanatory variable matrix X is used in equation (6) and (7). Since most households do not hold risky asset and ordinary OLS method has bias, random effect tobit model which considers zero holdings is used in the estimation.

$$\alpha_{it}^* = \beta X_{it} + u_{it} \tag{8}$$

where i is individual and t is time.

Risky asset holding rate is censored at zero,

$$\alpha_{it} = max\{\alpha^*_{it}, 0\} \tag{9}$$

Detail of panel tobit model for portfolio choice is explained in Miniaci and Weber (2002).

First, whether households consider real asset as risky asset or not is investigated. If real asset is considered as risky asset, real asset may have negative effects on risky financial asset rate to take balance of total asset structure. If households do not have future purchase plan, risky asset rate may increases. In addition, the effect of housing loan is estimated. When real asset is considered, it is important to confirm the difference between real asset and financial asset. House is asset as well as consumption goods. When house is purchased for living, housing service is bought at the same time. However, it is impossible to completely distinguish between consumption purpose and asset purpose from data. For estimation, the effect of house as real asset on risk financial asset is considered.

Next, whether wealthy households have extra fund for investing in risky asset is considered. The relation between total asset, financial asset or income and risky asset ratio is estimated. Finally, the effects of variable related to knowledge, information and convenience are investigated. To invest in risky asset successfully, detailed knowledge and information of each financial product, financial market and economic status are needed. Whether higher education household has higher risky asset rate and whether large city which may have much information from many financial company has higher risky asset rate are estimated. Stock exchange by internet is nowadays increasing and is more important for collecting information. It is also expected that household using internet has higher risky asset rate. Whether spouse labor income or education has same effect as husbands is also tested.

To avoid high correlation between explanatory variables, six different explanatory variable patterns are estimated. These variables determine degree of risk aversion.

Estimation (a) is a base model and tests the effect of home ownership, income, financial asset and liability on risky asset rate. Expected sign is positive for income and financial asset, and the sign of home ownership is not clear because both effects can be considered. At the same time, the effect of age, education, employment status and frequency of using internet are also checked. Expected sign is positive for education and frequency of using internet, negative for employment.

From estimation (b) to (e), the sample is restricted to employed household. Estimation (b) investigates the effect of housing loan of home owner. To prepare for future expenditure of returning housing loan, the expected sign is negative. Liability is dropped because housing loan is part of the liability. The effect of future house purchase plan for both home owner and non

home owner is checked in estimation (c). For preparing future expenditure, the expected sign is negative. Since the effect of home owner and non home owner is different, separate dummy is included. Estimation (d) tests the effect of total asset including real asset. Unless real asset has specific effect, the effect may be same as financial asset. Estimation (e) estimates the effect of spouse. For spouse income, the effect is unclear because households where spouse is working are not always wealthy. Education may have same effect as male.

4 Data

In this paper, Keio Household Panel Survey (KHPS) of 2004-2006 is used for estimation [4]. Compare to "Public survey for household financial asset " and "Financial behavior survey", KHPS is longitual data and has information for spouse. Survey is carried out in all area of Japan. There are many questions relating labor market and housing market. To keep large sample size, households who answer only one or two years are not dropped. Unbalanced panel data is estimated.

KHPS divides financial asset into "deposit" and "security". "Deposits" include fixed-amount, fixed-term, installment and general savings in post offices, fixed-term, fixed-term installment and general deposits in banks and credit associations, in-house deposits, gold investment accounts, gold savings accounts, national medium-term bond funds, etc. "Securities" include shares (at current values), bonds (at nominal values), stock investment trusts (at current values), open-end bond investment trusts (at current values), loan and money trusts (at nominal values), etc. For simplicity, "deposit" is considered as safe asset and "security" is considered as risky asset in this paper. Foreign exchange is not included explicitly. Since KHPS limits sample under 69 and exclude old people above 70, average of 'deposit' is lower and average of liability is higher than "Household Opinion Survey for financial asset".

Total asset is the sum of financial asset and real asset. Real asset is the self-evaluation of present market value of house or land. Income is last year's annual income (before subtracting tax and social insurance). Education is indicator such as : (1) junior-high school, (2) high school, (3) college, (4) university. Frequency of using internet is indicator such as : (1) no, (2) sometimes, (3) everyday. KHPS asks to choose the ownership status of the current residence from eight categories as follows: (1) own detached house (own estate), (2) own condominium (partly own estate), (3) own detached house or condominium (general lease estate), (4) own detached house or condominium (fix-term lease estate), (5) private rental house, (6) public rental house, (7) company house or dormitory, (8) other rype. (1), (2), (3) and (4) are considered as home owner. KHPS also asks "Do you have any plan to move away from current residence

[4]For sampling methods and properties of KHPS, see Highchi (ed) (2005), (2006)

or to construct or purchase new house?" and selects answer from (1) yes, (2) no but thinking, and (3) not thinking. Answer (1) is considered as having purchase plan.

Table 1 is the descriptive statistics. On 2006, 55 percent household holds only "deposit", 25 percent holds both "deposit" and "security" and 20 percent holds neither "deposit" nor "security"

5 Estimation Results

Table 2 (1) is the result of the estimation of risky asset rate by random effect tobit model. Property of each region is controlled by seven regional dummies (hokkaidou, touhoku, kantou, chubu, kinki, chugoku, shikoku). Explanatory variables except dummy variables are divided by 100 for arranging scale. Households which do not have any financial asset are not included in the estimation. All random effects are significant.

From estimation (a), financial asset, home ownership dummy, age, husband income and husband education are positively significant. In other words, wealthier household, older household and higher academic background household have higher risky asset rate. As households use internet frequently, risky asset rate is large. Housing loan, family size and unemployment rate have no effect for risky asset rate. Since large city dummy and middle city dummy are significant, households in middle and large city have higher risky asset rate than in small city.

From estimation (b), housing loan has no effect for risky asset rate. From estimation (c), future purchase plan has no effect on risky asset rate for both home owner and non home owner. Total asset has the same effect as financial asset from estimation (d). From estimation (e), spouse labor income has negative effect and spouse education has positive effect for risky asset rate. The role of spouse labor income is different from husband labor income which may represent household wealthiness. For precise analysis, however, the factor determining spouse labor supply should be estimated.

Table 2 (2) is the result of the estimation of risky asset amount by random effect tobit model. Same models as table 2 (1) are used. Households which do not hold any financial asset are also included and sample size is larger than table 2 (1). The results are almost same as table 2 (1), therefore, the effect of households which do not hold asset is small. Husband income is not significant in case (b) and (c).

6 Conclusion

In this paper, the effects of home ownership, housing loan, and other household attributes on risky asset are investigated by Keio Household Panel Survey. By using panel data which is seldom used in Japanese previous asset choice analysis, unobserved component of the individual

can be controlled. Effect of real asset, labor market status, information and spouse attribute are considered at the same time, which is not possible in the previous studies.

From the estimation, home ownership has positive effect on risky asset ratio and amount, but housing loan has no effect. Future plan of house purchase has no effect on risky asset rate. As total financial asset increases, the rate and amount of risky asset also increase. Husband's labor income has positive effect on risky asset rate, but wife labor income has opposite effect. Total asset including real asset has the same effect as financial asset. Wealthy households have additional asset to invest in risky asset. Education related to knowledge has positive effect on risky asset rate in both husband and wife. City size and frequency of using internet which may be related to the degree of convenience and information have positive effect on risky asset rate.

In this research, financial asset is divided into two big components: safe asset and risky asset. To see the movement inside each big components, more detail data sets are needed.

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Table1：Descriptive Statistics

	mean	sd	median	min	max	sample size	
financial asset dummy	0.81	0.40	1	0	1	6591	
financial asset (10 thousand yen)	887.94	1553.61	300	0	23000	6591	
"deposit" dummy	0.81	0.39	1	0	1	7052	
"deposit" (10 thousand yen)	734.36	1202.33	300	0	14000	6781	
"security"	0.22	0.41	0	0	1	7103	
"security" (10 thousand yen)	147.75	645.12	0	0	12000	6999	
"security"/financial asset	0.08	0.19	0	0	1	5307	
total asset (10 thousand yen)	2972.76	3238.67	2200	0	40530	5170	
liability dummy	0.48	0.50	0	0	1	7458	
liability (10 thousand yen)	685.33	2088.18	0	0	70000	7177	
housing loan dummy	0.37	0.48	0	0	1	7518	
housing loan (10 thousand yen)	606.59	1237.29	0	0	36440	7280	
net financial asset (10 thousand yen)	208.64	2530.81	100	−68800	23000	6393	
net total asset (10 thousand yen)	2294.86	3673.80	1500	−62000	40530	5045	
age	49.78	12.07	50	21	72	7578	
home ownership dummy	0.80	0.40	1	0	1	7514	
husband income (10 thousand yen)	464.91	382.44	427	0	6000	6888	
wife income (10 thousand yen)	95.33	160.42	30	0	2400	7188	
husband education	2.56	1.08	2	1	4	7266	※(ｉ)
wife education	2.30	0.82	2	1	4	7119	※(ｉ)
family size	3.73	1.39	4	1	12	7578	
purchase plan dummy	0.13	0.34	0	0	1	7540	
frequency of using internet	1.53	0.77	1	1	3	7352	※(ii)
husband unemployment dummy	0.02	0.12	0	0	1	7553	
wife unemployment dummy	0.02	0.12	0	0	1	7548	
hokkaidou dummy	0.04	0.20	0	0	1	7578	
touhoku dummy	0.06	0.24	0	0	1	7578	
kantou dummy	0.34	0.47	0	0	1	7578	
chuubu dummy	0.19	0.39	0	0	1	7578	
kinki dummy	0.17	0.38	0	0	1	7578	
chugoku dummy	0.05	0.23	0	0	1	7578	
shikoku dummy	0.04	0.18	0	0	1	7578	
large city dummy	0.23	0.42	0	0	1	7578	
middle city dummy	0.59	0.49	1	0	1	7578	

(ｉ) Education is the indicator such as '1.junior high, 2. high school, 3. college, 4. university'
(ii) Frequency of using internet is the indicator such as ' 1. no, 2. sometime, 3. everyday'
(iii) Kyushu is base for region dummy and small city is base for city size dummy

Table 2：Estimation Results

	(a) pooled tobit			(a) random effect tobit			(b) random effect tobit			(c) random effect tobit			(d) random effect tobit			(e) random effect tobit		
(1) Risky Asset Ratio	**Coeff**	**t-stat**		**Coeff**	**t-stat**		**Coeff**	**t-stat**		**Coeff**	**t-stat**		**Coeff**	**t-stat**		**Coeff**	**t-stat**	
constant	−1.347	−16.31	**	−1.515	−15.55	**	−1.374	−10.56	**	−1.511	−12.96	**	−1.646	−13.45	**	−1.626	−12.87	**
financial asset	0.007	15.76	**	0.005	17.66	**	0.006	19.40	**	0.006	21.03	**				0.006	18.32	**
total asset													0.002	7.75	**			
liability	0.000	0.47		0.000	0.42								0.000	0.62		0.000	0.60	
housing loan							0.000	−0.35										
home ownership dummy	0.154	5.62	**	0.131	4.51	**										0.123	3.83	**
age	0.707	7.24	**	0.944	8.43	**	0.819	5.56	**	0.960	7.45	**	1.286	9.36	**	1.011	6.75	**
(husband) income	0.007	3.16	**	0.007	2.84	**	0.008	2.43	*	0.009	3.07	**	0.013	4.43	**	0.011	3.59	**
(wife) income																−0.023	−3.68	**
(husband) education	0.075	8.65	**	0.094	9.32	**	0.099	7.66	**	0.105	8.63	**	0.097	7.66	**	0.069	4.80	**
(wife) education																0.057	3.17	**
family size	−0.007	−1.04		−0.014	−1.86		−0.011	−1.17		−0.006	−0.70		−0.012	−1.27		−0.015	−1.57	
self-employed dummy																		
frequency of using internet	0.074	6.79	**	0.054	5.35	**	0.037	2.87	**	0.048	4.07	**	0.064	4.83	**	0.050	4.13	**
unemployment dummy	0.038	0.54		−0.007	−0.12													
purchase plan (home owner)										0.017	0.60							
purchase plan (non home owner)										−0.062	−1.36							
large city dummy	0.173	5.75	**	0.151	4.75	**	0.165	3.87	**	0.167	4.18	**	0.119	2.66	**	0.175	4.33	**
middle city dummy	0.107	4.13	**	0.088	3.20	**	0.128	3.56	**	0.115	3.30	**	0.085	2.13	*	0.126	3.58	**
sigma(v)	0.427	44.46	**	0.211	57.06	**	0.215	48.77	**	0.220	51.15	**	0.216	43.32	**	0.217	47.85	**
sigma(u), random effect				0.397	33.63	**	0.409	26.39	**	0.421	29.15	**	0.384	24.75	**	0.398	27.44	**
sample size	4611			4611			3104			3975			3166			3558		
log likelihood	−1983.48			−1454.36			−1053.73			−1268.58			−1042.10			−1136.12		
(2) Risky Asset Amounts																		
constant	−34.164	−16.87	**	−32.467	−17.70	**	−26.789	−10.09	**	−31.867	−14.23	**	−40.604	−22.16	**	−34.398	−16.53	**
financial asset	0.495	43.75	**	0.394	76.72	**	0.520	97.00	**	0.486	102.53	**				0.362	52.35	**
total asset													0.092	27.69	**			
liability	−0.007	−0.88		−0.001	−0.10								0.001	0.31		0.004	0.57	
housing loan							0.000	0.03										
home ownership dummy	3.978	5.86	**	4.455	8.01	**										1.786	3.27	**
age	9.740	4.07	**	13.013	5.52	**	7.350	2.38	*	11.852	4.55	**	25.740	12.12	**	17.845	6.78	**
(husband) income	0.103	1.92	*	0.121	2.72	**	0.095	1.41		0.087	1.56		0.532	16.78	**	0.103	1.87	*
(wife) income																−0.335	−3.06	**
(husband) education	1.597	7.44	**	1.560	7.61	**	1.302	4.37	**	1.912	7.32	**	2.284	10.80	**	1.598	6.15	**
(wife) education																1.231	3.85	**
family size	−0.091	−0.54		−0.244	−1.57		0.038	0.18		0.083	0.43		0.319	2.27	*	−0.173	−1.07	
self-employed dummy																		
frequency of using internet	2.129	7.97	**	1.744	8.39	**	1.299	4.80	**	1.333	5.74	**	2.264	9.17	**	1.005	4.57	**
unemployment dummy	0.515	0.30		−1.424	−0.97													
purchase plan (home owner)										0.313	0.53							
purchase plan (non home owner)										−1.525	−1.60							
large city dummy	4.669	6.21	**	4.739	7.64	**	3.627	3.86	**	3.002	3.35	**	2.207	3.03	**	3.066	4.52	**
middle city dummy	3.151	4.81	**	2.392	4.45	**	1.981	2.54	*	1.827	2.30	*	2.538	3.82	**	1.553	2.78	*
sigma(v)	10.392	49.60	**	4.258	87.39	**	4.948	78.24	**	4.777	83.00	**	4.872	94.30	**	3.937	74.97	**
sigma(u), random effect				8.244	63.79	**	8.080	41.94	**	8.719	51.04	**	5.763	44.97	**	8.097	55.34	**
sample size	5610			5610			3683			4876			3855			4360		
log likelihood	−5948.27			−5156.01			−3662.89			−4262.28			−3593.78			−3750.92		

(1) (b)-(f) are employed household and (c) is also home owner
(2) * and ** indicate significance at the 5% and 1% levels, respectively