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(OLS)

**Estimation of Demand for Different Kinds of Tenure
of Housing with regard to the Kind of
Tenure in Iran's Urban Areas**

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Abstract

Housing is a necessary goods that has a big share in household's budget, total valu added and employment. Understanding the factors affecting the housing demand in urban areas helps us eliminate disequilibrium in the housing market.

This paper develops a model to estimate the demand for housing in Iran. The housing demand is estimated considering the kind of tenure. To this end, a cross section data of 12338 selected urban households in 2001 is used.

In this study, the announced rent of owner-occupied (tenent-occupied) households is a function of the current, permanent and transitory income and socioeconomic variables. An Ordinary Least Square (OLS) method is used to estimate the permanent and transitory income.

The results show that the household's income (current, permanent and transitory), age of householder and number of literated pesons in household have positive effects while the household size has a negative effect on the housing demand. Moreover, the result of this research shows that the willingness to own a house in certain groups such as the youth is lower compared with other age groups in Iran's urban areas.

Keywords: Demand house, Owner-occupied, Tenent-occupied, Urban areas, Iran

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Rosen, 1974;)

.(Goodman, 1988; Ahmad, 1994

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Tiwari and Parikh, 1998; Tiwari, Parikh, 1999;)

.(Arimah, 1999; Lodhi and Pasha, 1991

Lee and Trost,)

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R_t^*

(Mills Ratios)

$$R_t^* = \alpha W_t - u_t$$

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Ahmad, 1994;)

(Goodman, 1988; Hansen, Formby and Smith, 1998

W_t

(Mills Ratio)

R_t^*

u_t

R_t

($R_t=0$)

($R_t=1$)

$$E(u_t | \alpha W_t \geq u_t) = \frac{\sigma u_{1t}, u_t}{\sigma u_{1t}} \cdot \frac{f(\alpha W_t | \alpha u_{1t})}{f(\alpha W_t | \alpha u_{2t})} = \delta \lambda_0 \quad (A)$$

$$E(u_t | \alpha W_t < u_t) = \frac{\sigma u_{2t}, u_t}{\sigma u_{2t}} \cdot \frac{f(\alpha W_t | \sigma u_{2t})}{f(\alpha W_t | \sigma u_{2t})} = \delta \lambda_R \quad (B)$$

f(0) f(0)

$\lambda_R \lambda_0$

$$H_{1t} = \beta_{1t} X_{1t} + u_{1t} \quad \text{if} \quad R_t = 1 \quad (A)$$

$$H_{2t} = \beta_{2t} X_{2t} + u_{2t} \quad \text{if} \quad R_t = 0 \quad (B)$$

X_{1t}

X_{2t}

u_{1t}

u_{2t}

λ_R

$u_t \quad u_{2t} \quad u_{1t}$

(Ahmad, 1994)

[var(u)=1]

$u_{2t} \quad u_{1t} \quad u_t$

(OLS)

$P=f(Y, H, A, Z)$

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A

H

Y

Z

P

(OLS)

$\lambda_0 \quad \lambda_R$

(Ahmad, 1994)

3. Standard Normal Probability Density Function
4. Cumulative Density Function
5. Maximum Likelihood Probit Tenure Choice Equation

1. Trivariately Normally Distributed
2. Non-singular

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(

(c)

(H)

(Z)

$$U=U(C,H,Z) \quad ()$$

(Y)

$$C + P.H = Y \quad ()$$

P

$$R_0 = R_0(Y, P, H, A, Z, \lambda_0) \quad (A)$$

$$R_R = R_R(Y, P, H, A, Z, \lambda_R) \quad (B)$$

R_R, R_0

$$\lambda_0 \quad Y, H, P, A, Z$$

$$V = \text{Max } U(Y - P.H, H, Z) \quad ()$$

λ_R

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(Ahmad, 1994; Zabe, 2004)

$$P = (\partial V. \partial H) / (\partial V. \partial Y) \quad ()$$

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$$\text{LnH} = \beta_0 + \beta_1 \text{LnP} + \beta_2 \text{LnY} + \beta_3 \text{LnZ} + \varepsilon \quad ()$$

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Lodhi)

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(and Pasha, 1991

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(Lee and Trost, 1987)

متغیرها	برآورد	آماره z
C	-2.28	-21.95
PINCOME	6.20E-08	18.90
TINCOME	-3.85.E-09	-4.17
AGEH	0.03	22.0
NLIT	0.06	3.09
H SIZE	0.18	4.79
H SIZE^2	-0.01	-5.31
LOG-LIKLIHOOD	-3652	
MCFADEN R ²	0.24	
N	8380	

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(Goodman, 1988)

(Ahmad, 1994)

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متغیرها	مدل درآمد جاری		مدل توأم درآمد دائمی و موقتی	
	برآورد	آماره t	برآورد	آماره t
C	14.32	86.3	14.18	88
HINCOME	1.22E-08	10.76	-	-
PINCOME			2.07E-08	19.35
TINCOME			1.08E-08	8.80
AGEH	0.02	3.79	0.02	3.54
AGEH^2	-0.0001	-3.44	-0.0001	-2.94
HSIZE	-0.11	-11.66	-0.11	-11.50
HPRICE	0.0003	28.36	0.0003	29.75
NLIT	0.08	7.94	0.07	7.66
MILLSRATIO	-0.23	-4.18	-0.15	-3.08
R-SQUARED	0.49		0.49	
F-statistic	858		771	
N	6212		6212	

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متغیرها	مدل درآمد جاری		مدل توأم درآمد دائمی و موقتی	
	برآورد	آماره t	برآورد	آماره t
C	14.71	130	14.62	118
HINCOME	1.58E-08	9.90	-	-
PINCOME			2.06E-08	6.61
TINCOME			1.52E-08	8.42
AGEH	0.004	1.83*	0.005	2.46
HSIZE	-0.10	-6.81	-0.10	-6.81
HPRICE	0.0003	20.13	0.0002	20.20
NLIT	0.10	4.60	0.09	5.31
MILLSRATIO	-0.25	-7.26	-0.21	-6.01
R-SQUARED	0.43	-	0.43	-
F-statistic	239	-	209	-
N	2168	-	2168	-

متغیرها	خانوارهای مالک		خانوارهای مستأجر	
	مدل درآمد جاری	مدل توأم درآمد دائمی و موقتی	مدل درآمد جاری	مدل توأم درآمد دائمی و موقتی
HINCOME	0.36	—	0.31	—
PINCOME	—	0.39	—	0.25
TINCOME	—	0.12	—	0.11
HPRICE	-0.59	-0.59	-0.57	-0.71
AGEH	0.92	0.92	0.14	0.14

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Lodhi)

(and Pasha, 1991; Ahmad, 1994

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$$R = P_h Q_h = f(P_h, Y, H) \quad ()$$

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$$\log(R) = \log(P) + \log(Q) = A + \alpha Y + \beta P + \gamma H \quad ()$$

$$() \quad \text{Log(P)}$$

$$Q - P$$

:

$$\frac{dQ}{Q} = \beta dP - \frac{dP}{P} = (BP - 1) \frac{dP}{P} \quad ()$$

:

$$E_P = \frac{dQ}{dP} \cdot \frac{P}{Q} = (BP - 1) \quad ()$$

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(Amemiya, 1984)

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X

k

k

$B_1^k \langle B_2^k$

:

X

$$Y_{1i} = X_{1i}\beta_1 + \varepsilon_{1i}$$

(-)

:

$$Y_{2i} = X_{2i}\beta_1 + \varepsilon_{2i}$$

(-)

i

$$= X_i(\beta_1 - \beta_2)$$

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$$T_i = 1(Z_i\gamma + \varepsilon_{0i} > 0)$$

(-)

$$Y_i = T_i Y_{1i} + (1 - T_i) Y_{2i}$$

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T_i

1()

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$Y_2 \quad Y_1$

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$$w_i = X_i\beta + \varepsilon_{1i}$$

X

w

()

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$$T_i = (Z_i\gamma + \varepsilon_{0i} > 0)$$

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Z

$$Z_i\gamma > \varepsilon_{0i} \quad Z_i\gamma > -\varepsilon_{0i}$$

Z X

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Z

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(())

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$$E[w_i | X_i, T_i = 1] = X_i\beta + E[\varepsilon_{1i} | \varepsilon_{0i} > -Z_i\gamma]$$

()

$\varepsilon_1 \quad \varepsilon_0$

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2- Gronau

...

$$\varepsilon_{li} = \frac{\sigma_{0,1}}{\sigma_0^2} \varepsilon_{0i} + v_i \quad ()$$

X (w_i) OLS ()

$$\begin{matrix} \sigma_{0,1} & \varepsilon_{0i} & v_i \\ \varepsilon_{0i} & \sigma_0^2 & \varepsilon_{li} & \varepsilon_{0i} \\ \vdots & & & \end{matrix}$$

$$\begin{aligned} E[\varepsilon_{li} | \varepsilon_{0i} > -Z_i \gamma] &= \frac{\sigma_{0,1}}{\sigma_0} E\left[\frac{\varepsilon_{0i}}{\sigma_0} \middle| \frac{\varepsilon_{0i}}{\sigma_0} > \frac{-Z_i \gamma}{\sigma_0}\right] \\ &= \frac{\sigma_{0,1} \phi(Z_i \gamma / \sigma_0)}{\sigma_0 \Phi(Z_i \gamma / \sigma_0)} \end{aligned} \quad ()$$

$\tilde{\sigma}$ $\sigma_{0,1}/\sigma_0$

$$\Phi(0) \quad \phi(0)$$

() OLS

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$$\begin{matrix} \sigma_{0,1} \\ () \end{matrix} \quad \text{OLS}$$

β^{\wedge}

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:

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$$\frac{\phi(Z_i \gamma / \sigma_0)}{\Phi(Z_i \gamma / \sigma_0)} \quad ()$$

OLS

:

$\theta_{0,1}/\phi_0$

:

$$w_i = X_i \beta + \frac{\phi(Z_i \gamma / \sigma_0)}{\Phi(Z_i \gamma / \sigma_0)} \tilde{\sigma} \quad ()$$

$$\frac{\phi(Z_i \gamma / \sigma_0)}{\Phi(Z_i \gamma / \sigma_0)} = \frac{-\phi(Z_i \gamma / \sigma_0)}{1 - \Phi(Z_i \gamma / \sigma_0)}$$

:

Z

γ/σ_0

1 - uncorrelated

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(Arimah,

1997)

Goodman, 1998;)

.(Ahmad, 1994

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$$\text{LOG}(\text{HINCOME}) = \alpha_0 + \alpha_1 \text{SEXH} + \alpha_2 \text{AGEH} + \alpha_3 \text{AGEH}^2 + \alpha_4 \text{NLIT} + \alpha_5 \text{NEMPL} + \alpha_6 \text{NINCOME} + \alpha_7 \text{AUTO} + \alpha_8 \text{Mobile}$$

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Lodhi and)

$$Y^T = Y^A - Y^P$$

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(Pasha, 1991

1 - Life Cycle Theory
2 - Permanent Income Theory

متغیر	مالکین		مستأجرین	
	برآورد	آماره t	برآورد	آماره t
C	15.30	146	14.86	82.76
SEXH	0.28	10.82	0.23	3.14
AGEH	0.02	6.6	0.04	4.89
AGEH^2	-0.0002	-6.56	-0.0004	-4.68
NLIT	0.05	13.40	0.06	6.17
NEMPL	0.08	7.43	0.09	3.40
NINCOME	0.11	9.33	0.09	3.49
AUTO	0.47	30.41	0.52	11.5
MOBILE	0.57	22.21	0.60	11.18
R-SQUARED	0.35		0.24	
F-STAT	557		104	
N	8471		2553	

متغیر	تعریف
متغیر وابسته	
RENT	اجاره (برآورد اجاره) سالیانه واحد مسکونی برای مستأجر (مالک) به ریال
HTENURE	اگر خانوار مالک باشد * ۱
متغیرهای مستقل	
ویژگیهای خانوار و سرپرست	
HINCOME	درآمد جاری خانوار به ریال
PINCOME	درآمد دائمی خانوار به ریال برآورد شده
TIINCOME	درآمد موقتی خانوار به ریال برآورد شده
HSIZE	تعداد افراد خانوار
NLIT	تعداد افراد با سواد خانوار
NEMPL	تعداد شاغلین خانوار
NINCOME	تعداد افراد با درآمد خانوار
AGEH	سن رئیس خانوار
SEXH	اگر سرپرست خانوار مرد باشد * ۱
AUTO	اگر خانوار اتومبیل دارد * ۱
MOBILE	اگر خانوار تلفن همراه دارد * ۱
قیمت مسکن	
HPRICE	قیمت یک متر مربع زیربنای واحد مسکونی

* در غیر اینصورت صفر است

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نام متغیر	مالکین		مستأجرین	
	میانگین	انحراف استاندارد	میانگین	انحراف استاندارد
RENT	7649255	7866265	6027254	5779658
HINCOME	29445790	24009871	19669857	175996690
PINCOME	18718476	7463542	12142776	5374893
TINCOME	10727314	21354553	7527080	15566888
HSIZE	4.79	1.83	3.96	1.70
AGEH	46.21	12.41	35.89	10.09
SEXH	0.95	0.20	0.96	0.19
NLIT	4.15	1.76	3.14	1.56
NEMPL	1.18	0.76	1.11	0.68
NINCOME	1.41	0.70	1.28	0.66
AUTO	0.25	0.43	0.11	0.32
MOBILE	0.09	0.29	0.07	0.25
HPRICE	1370	762	1440	815
N	6212		2168	

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