

Draft Copy
Not for Citation

Following a Panel of Stayers: Length of Stay, Tenure Choice and Housing Demand

Allen C. Goodman

Wayne State University

December 2001

Running Head: Panel of “Stayers”

Department of Economics, Wayne State University, 2145 FAB, 656 W. Kirby, Detroit, MI 48202.

Phone: 313/577-3235

FAX: 313/577-0149

e-mail: allen.goodman@wayne.edu

I am grateful to Yingzi Su and Yang Chen for their excellent research assistance. The research was funded in part through Wayne State University, but the results are mine alone. The usual disclaimer applies.

For households who started in the 1981 database

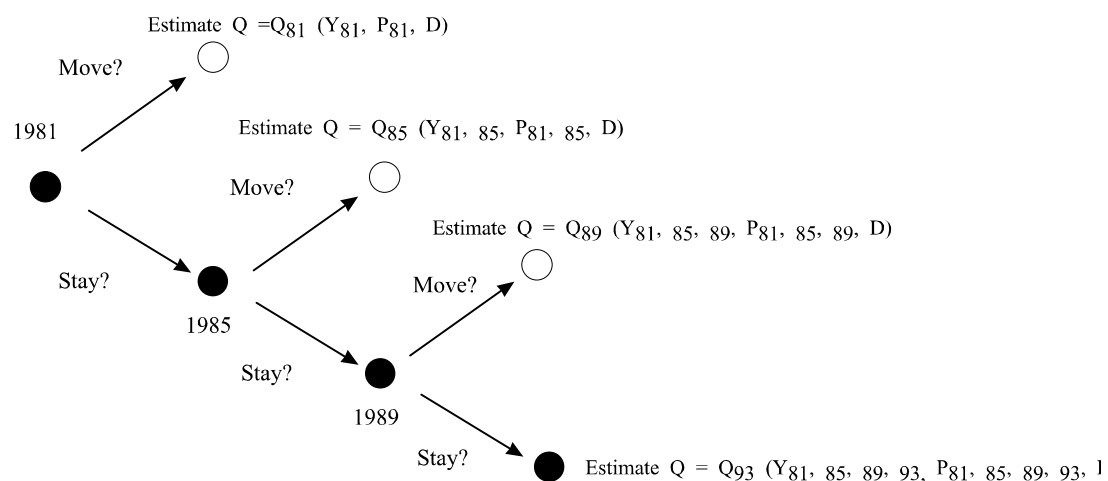


Figure 1 – Selection Model

Figure 2 Total Units and Owner/Renter Demand by Year

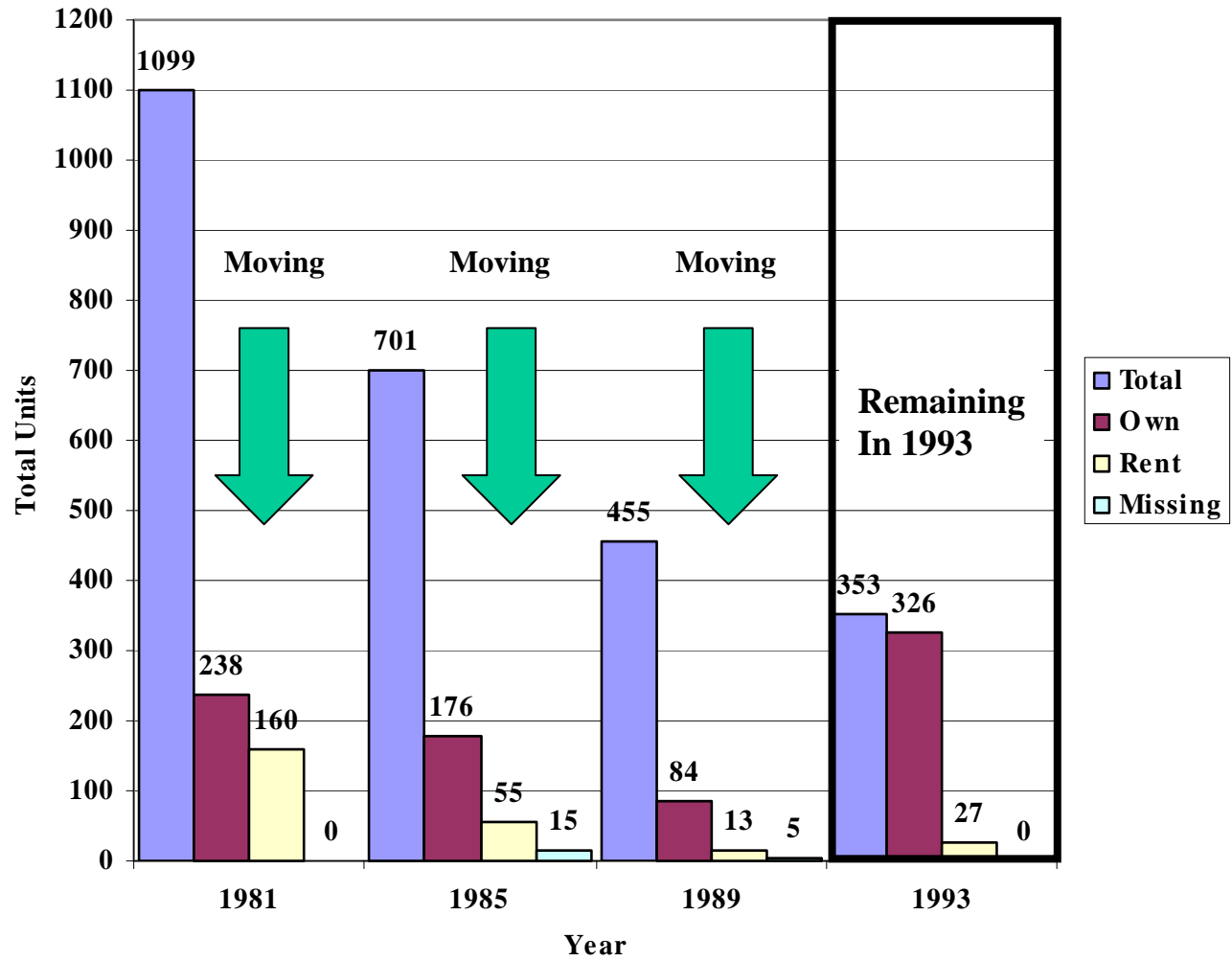


Table 1 – Values for Variables

	<u>1981</u>	<u>1985</u>	<u>1989</u>	<u>1993</u>
Current Income	23.59 15.08	33.97 25.16	39.05 25.86	42.39 28.02
Permanent Income	21.91 32.89	28.58 35.31	31.90 28.24	32.06 20.64
Transitory Income	1.68 24.17	5.44 20.42	6.94 14.11	10.33 13.07
Owner Price	43.91 7.11	40.21 9.23	43.29 10.64	42.88 11.47
Renter Price	0.36 0.04	0.41 0.04	0.37 0.04	0.37 0.04
Value-Rent	133.46 34.88	113.52 31.55	149.45 50.75	137.13 45.68
Relative (P_o/P_r)	119.63 10.04	97.91 17.18	116.58 19.48	113.00 21.66
N	1099	701	455	356

All monetary values are in \$1982-1984

Table 2 – Length of Stay

	<u>1981</u>	<u>1985</u>	<u>1989</u>	<u>1993</u>
<u>Variable</u>	<u>Coefficient</u>	<u>Coefficient</u>	<u>Coefficient</u>	<u>Coefficient</u>
Constant	-0.39600 0.23555	-4.68501 * 1.46114	3.47074 * 0.38603	3.17982 * 0.39743
YP	0.00365 * 0.00178	-0.00394 * 0.00109	-0.00116 0.00083	-0.00335 * 0.00104
SIGYP		0.00017 0.00016	-0.00005 0.00012	-0.00002 0.00010
YT	0.00472 * 0.00217	-0.00399 * 0.00170	0.00022 0.00148	-0.00020 0.00155
SIGYT		0.00006 0.00008	-0.00004 0.00008	0.00003 0.00007
PP	-0.00481 * 0.00215	0.03567 * 0.01161	-0.01529 * 0.00287	-0.01051 * 0.00273
SIGP		0.00835 * 0.00218	-0.00250 * 0.00099	-0.00222 0.00122
VR	0.00248 * 0.00074	0.00487 * 0.00081	0.00503 * 0.00042	0.00226 * 0.00051
SIGVR		-0.00011 0.00004	-0.00010 * 0.00002	-0.00000 0.00003
MAR	0.11351 * 0.04176	0.00480 0.03249	-0.04293 0.03166	-0.04796 0.03338
AGE	0.09449 * 0.00638	0.08028 * 0.00738	0.02614 * 0.00660	0.03501 * 0.00726
AGESQ	-0.00063 * 0.00006	-0.00056 * 0.00007	-0.00010 0.00006	-0.00019 * 0.00006
BLACK	-0.03774 0.05805	-0.20182 * 0.05085	-0.15241 0.05521	-0.14272 * 0.05822
σ	0.57971 * 0.01254	0.41996 * 0.01142	0.31015 * 0.01222	0.25096 * 0.01289
Lambda	0.0899	0.0574	0.0431	0.0359
P	1.7250	2.3812	3.2242	3.9848
Median	8.9940	14.9326	20.7093	25.2174

* Significant at 5% level

Table 4 – Tests of Multi-Year Models
 Tests of Multi-Year Models

a. 1989

Constant	-1.30810* 0.47021	Constant	-0.25484 0.94595	Constant	-0.90266* 0.52120
		YP81	0.00630 0.00331	YP818589	0.00352* 0.00093
		YP85	0.00382 0.00271		
YP89	0.00579* 0.00145	YP89	0.00079 0.00246		
		YT81	0.00542 0.00290	YT818589	0.00391* 0.00150
		YT85	0.00198 0.00222		
YT89	0.00630* 0.00273	YT89	0.00802* 0.00287		
		PO81	0.02290 0.03608	PO818589	0.00179 0.00203
			-		
		PO85	0.06675* 0.03250		
PO89	0.00865* 0.00442	PO89	0.04168 0.03815		
		VR81	-0.00166 0.00130	VR818589	0.00125* 0.00042
		VR85	0.00269 0.00199		
VR89	0.00294* 0.00073	VR89	0.00202* 0.00093		
BLACK89	0.06896 0.09753		-0.07921 0.10174		0.03269* 0.10138
MAR89	0.00473 0.07698		-0.05816 0.07655		0.00371 0.07928
AGE89	0.00484 0.00255		0.00172 0.00280		0.00418 0.00265
LAM_TEN3	0.39436 0.17685		0.19272 0.17692		0.37281 0.17931
LAM_SUR3	-0.84698* 0.20367		-0.38598 0.23527		-0.54719* 0.22227
R ²	0.52775	R ²	0.62592	R ²	0.51365
Adj R ²	0.47032	Adj R ²	0.52956	Adj R ²	0.45450
SER	0.24940	SER	0.23503	SER	0.25309
Ey	0.18758	Ey	0.30826	Ey	0.29512
Ep	0.31500	Ep	0.08889	Ep	0.19252

Tests of Multi-Year Models

b. 1993

Constant	0.30803 0.17931	Constant	0.50675* 0.22511	Constant	0.14683 0.21035
		YP81	0.00223 0.00225	YP81_93	0.00294* 0.00035
		YP85	0.00376* 0.00163	YT81_93	0.00339* 0.00063
		YP89	0.00176 0.00178		
YP93	0.00671* 0.00124	YP93	0.00147 0.00184		
		YT81	0.00229 0.00193		
		YT85	0.00563* 0.00141		
		YT89	-0.00033 0.00161		
YT93	0.00399* 0.00162	YT93	0.00361* 0.00174		
		PO81_93	-0.00179* 0.00090	PO81_93	-0.00204* 0.00091
PO93	-0.00635* 0.00287				
		VR81	-0.00260* 0.00090	VR81_93	0.00171* 0.00022
		VR85	0.00029 0.00129		
		VR89	0.00368* 0.00072		
VR93	0.00563* 0.00062	VR93	0.00247* 0.00088		
AGE93	0.00040 0.00185				-0.00119 0.00204
BLACK93	-0.05850 0.08079				0.00410 0.08561
MAR93	0.08764 0.05120				0.06019 0.05469
LAMBDA	0.55712* 0.15297				0.63794* 0.16619
R ²	0.50248	R ²	0.64640	R ²	0.55691
Adj R ²	0.48992	Adj R ²	0.62688	Adj R ²	0.54573
SER	0.27604	SER	0.23272	SER	0.26051
SER ©	0.34515	SER ©	0.33657	SER ©	0.35235
Ey	0.22619	Ey	0.30779	Ey	0.39128
Ep	-0.23253	Ep	-0.26204	Ep	-0.29756

Table 6 – Full elasticities and their components - Updated

a. Expected demand - baseline

b. Elasticities with respect to 1% income increase

	f	g	Q	$E(Q)$	$H(Q)$	f	g	Q
1981								
Owner	0.7637	1.0000	1.2062	1.1313	1.1313	0.1578	0.0000	0.2930
Renter	0.2363	1.0000	0.8890			-0.5098		0.0222
1985								
Owner	0.8605	0.6379	1.2125	1.1635	0.7422	0.0466	0.1424	0.3002
Renter	0.1395	0.6379	0.8616			-0.2877		0.1026
1989								
Owner	0.9111	0.4140	1.2208	1.1852	0.4907	0.0155	-0.0508	0.2929
Renter	0.0889	0.4140	0.8207			-0.1585		-0.0207
1993								
Owner	0.9235	0.3212	1.2184	1.1878	0.3815	0.0358	0.0034	0.2766
Renter	0.0765	0.3212	0.8191			-0.4327		0.1265
Sum					2.7457			

c. Expected demand with 1% income increase

	f	g	Q	$E(Q)$	$H(Q)$
1981					
Owner	0.7649	1.0000	1.2098	1.1344	1.1344
Renter	0.2351		0.8892		
1985					
Owner	0.8609	0.6388	1.2161	1.1669	0.7454
Renter	0.1391		0.8624		
1989					
Owner	0.9113	0.4138	1.2243	1.1885	0.4918
Renter	0.0887		0.8206		
1993					
Owner	0.9238	0.3212	1.2217	1.1912	0.3826
Renter	0.0762		0.8201		
Sum					2.7542
Partial 1981				0.2768	
Partial 1985				0.4348	
Partial 1989				0.2275	
Partial 1993				0.2832	
Full elasticity					0.3116

Table 3 – Determinants of Tenure Choice and Mover-Stayer Status - Updated

	<u>TEN81</u>	<u>SURV85</u>		<u>TEN85</u>	<u>SURV89</u>		<u>TEN89</u>	<u>SURV93</u>		<u>TEN93</u>
Constant	-4.22188*	-2.45858*	Constant	-4.66475*	0.23287	Constant	-5.40202*	-0.21444	Constant	-4.18782
	0.88681	0.68044		0.90869	4.35391		2.07286	2.61126		2.20184
YP81	0.02545*	0.00950*	YP85	0.02363*	-0.00164	YP89	0.01337*	0.00051	YP93	0.02439*
	0.00515	0.00343		0.00282	0.00331		0.00684	0.00326		0.00975
YT81	0.03195*	0.01305*	YT85	0.03838*	-0.00317				YT93	0.03115
	0.00713	0.00434		0.00642	0.00495					0.01730
MAR81	0.94902*	0.20089*	MAR85	0.80715*	0.01597	MAR89	0.97116*	0.08464	MAR93	0.30920
	0.12085	0.09316		0.16547	0.12415		0.33750	0.16290		0.28644
AGE81	0.07295*	0.07807*	AGE85	0.07223*	0.09617*	AGE89	0.10052*	0.06729	AGE93	0.09181
	0.01896	0.01559		0.03310	0.02420		0.06085	0.03845		0.06840
AGESQ	-0.00078*	-0.00074*	AGESQ	-0.00078*	-0.00089*	AGESQ	-0.00105	-0.00065*	AGESQ	-0.00087
	0.00019	0.00015		0.00030	0.00022		0.00056	0.00033		0.00056
BLACK81	-0.04057	0.13691	BLACK85	0.22410	-0.01933	BLACK89	0.62137*	-0.23996	BLACK93	-0.18076
	0.15543	0.13167		0.20668	0.16991		0.31666	0.23303		0.39813
HOWL81	0.11341*	0.01907*	HOWL85	0.09200*	0.01321*	HOWL89	0.08870*	0.00758	HOWL93	0.08293*
	0.01152	0.00559		0.01351	0.00605		0.02234	0.00874		0.02102
PP81	0.02139*	0.00358	PP85	0.02065*	-0.01818	PP89	0.01690*	-0.00756	PP93	0.00402
	0.00726	0.00537		0.00625	0.03515		0.00789	0.01531		0.00860
VR81	-0.00853*	-0.00027	VR85	-0.00139	0.00042	VR89	0.00260	0.00203	VR93	0.00157
	0.00198	0.00139		0.00399	0.00046		0.00404	0.00264		0.00388
			SIGYP85		-0.00008	SIGYP89		-0.00001		
					0.00056			0.00062		
			SIGYT85		0.00002	SIGYT89		-0.00008		
					0.00016			0.00507		
			SIGP85		-0.00426	SIGP89		0.00004		
					0.00662			0.00030		
			SIGVR85		-0.00007	SIGVR89		-0.00011		
					0.00012			0.00012		
p(1,2)		0.27244			0.22854			-0.00720		
		0.06917			0.10731			0.18969		
N		1099			701			455		353
LL		-1006.90			-595.43			-311.48		-61.37

*Significant at 5% level.

Table 5 – Owner and Renter Housing Demand - Updated
 Owner Housing

	<u>1981</u>	<u>1985</u>	<u>1989</u>	<u>1993</u>		<u>1981</u>	<u>1985</u>	<u>1989</u>	<u>1993</u>
Constant	0.43274* 0.21863*	0.18323 0.24772	0.30038 0.32941	0.14683 0.21035		0.68206* 0.15852	0.81755* 0.26155	0.30666 0.66620	0.25499 0.40842
YP81	0.01174* 0.00193	0.00752* 0.00257	0.00490* 0.00088	0.00294* 0.00035		0.00098 0.00142	0.00175 0.00329	-0.00454* 0.00206	0.00190 0.00148
YP85		0.00688* 0.00197	0.00490 0.00088	0.00294 0.00035			0.00545 0.00328	-0.00454 0.00206	0.00190 0.00148
YP89			0.00490 0.00088	0.00294 0.00035				-0.00454 0.00206	0.00190 0.00148
YP93				0.00294 0.00035					0.00190 0.00148
YT81	0.00915 0.00239	0.00639* 0.00242	0.00518* 0.00142	0.00339* 0.00063		-0.00057 0.00179	0.00156 0.00254	-0.00681 0.00427	0.00230 0.00249
YT85		0.00997* 0.00198	0.00518 0.00142	0.00339 0.00063			0.00892* 0.00396	-0.00681 0.00427	0.00230 0.00249
YT89			0.00518 0.00142	0.00339 0.00063				-0.00681 0.00427	0.00230 0.00249
YT93				0.00339 0.00063					0.00230 0.00249
PO81	0.00276 0.00433	-0.00272 0.00222	-0.00100 0.00189	-0.00204* 0.00091	PR81	0.73286* 0.37213	3.27002 3.36485	0.35542 0.29534	0.45646 0.23988
PO85		-0.00272 0.00222	-0.00100 0.00189	-0.00204 0.00091	PR85		-2.81491 2.96147	0.35542 0.29534	0.45646 0.23988
PO89			-0.00100 0.00189	-0.00204 0.00091	PR89			0.35542 0.29534	0.45646 0.23988
PO93				-0.00204 0.00091	PR93				0.45646 0.23988

VR81	0.00128 0.00086	-0.00333* 0.00117	0.00148* 0.00043	0.00171* 0.00022				
VR85		0.01036* 0.00128	0.00148 0.00043	0.00171 0.00022				
VR89			0.00148 0.00043	0.00171 0.00022				
VR93				0.00171 0.00022				
BLACK81	-0.02544 0.07119	-0.01807 0.07881	-0.04481 0.09656	-0.00119 0.00204	0.01623 0.03386	-0.00702 0.05629	-0.02357 0.09243	-0.00286 0.00253
MAR81	0.08458 0.05738	0.05119 0.06983	0.04575 0.07810	0.00410 0.08561	-0.03627 0.03456	0.02451 0.05924	1.12968* 0.14660	0.07956 0.10069
AGE81	0.00264 0.00157	0.00174 0.00188	0.00103 0.00251	0.06019 0.05469	-0.00223* 0.00072	-0.00079 0.00095	-0.00399 0.00212	0.04958 0.09121
LAM_TEN	0.03134 0.05282	0.16161 0.10106	0.42799* 0.17368	0.63794* 0.16619	-0.15915* 0.05430	0.11368 0.09276	-0.21461 0.25697	0.06476 0.09865
LAM_SUR	0.01296* 0.00648	0.03316* 0.01583	0.09741 0.07345		0.01764 0.09184	-0.03858 0.13931	-0.35607 0.22633	
SEE	0.32822	0.29934	0.25294	0.26051	0.14673	0.12203	0.08600	0.15831
R ²	0.31404	0.59743	0.52661	0.55691	0.27219	0.32042	0.95383	0.31776
Adj-R ²	0.28660	0.56666	0.47055	0.54573	0.23203	0.14244	0.90106	0.06641
N	235	170	86	326	154	54	16	27
E _y	0.2419	0.4071	0.3487	0.3767	0.0081	0.1509	-	0.1570
E _p	+	-0.1965	-0.1072	-0.2893	+	+	+	+

* Significant at 5% level