

Intermediation in Real Estate Markets: Evidence from Fsbomadison.com (Very Preliminary)

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- Typically real-estate transactions are done with realtors:
 - Provide expertise on pricing, bargaining, legal and house conditioning
 - Convenience: showing the house, open houses
 - Exposure to the MLS network (the most important?)
 - From the National Association of Realtors website (realtor.org): "The median home price for sellers who use an agent is 16.0 percent higher than a home sold directly by an owner; \$230,000 vs. \$198,200; there were no significant differences between the types of homes sold." Numbers are based on their Home Buyer & Seller Survey.
- A typical realtor fee is 6%
 - How do realtors sustain a 6% commission?
 - Why is the commission the same percentage across markets (with different house prices)? and over time (as prices rise)?
 - Efficient entry and contract design

Introduction - For-Sale-By-Owner (FSBO)

- The Internet has changed many markets
- Sell by owner was always an option: newspaper ad, sign in the yard
 - Internet facilitates matching
 - Critical mass needed
- The Internet has aided the creation of an alternative to MLS
- More broadly: This is an example of a two-sided market with competing networks (platforms)

- For the average person buying/selling a home is probably the largest financial transaction in their lifetime
 - Should a relator be used? A mistake can be costly
 - Realtors' expertise and additional exposure potentially valuable
 - However, the commission is a significant amount of money. In our sample: average price over \$200,000 implies \$12,000 fee (around 26% of median state household income)
- How much does a realtor cost? How much of the commission does a realtor bring back through a higher price?
- Who bares the burden (tax)?

- The diffusion of FSBO
- As a first step we compare the performance of FSBO and MLS in terms of:
 - Prices
 - Time to sell
 - Probability of sale
- Entry, exit and contracting

- We look at a medium-size Midwestern city (Madison, WI), where a FSBO site (platform) developed
- Started by two ladies selling their homes
- Currently has over 25% market share
- Match this data set with city and MLS data
- Compare performance

- A Model of the Realtor Market
- Data
- Results
 - Comparing outcomes
 - Selection
 - houses
 - sellers
- Entry and Exit Patterns
- Conclusions

- We adapt the Coles and Muthoo (1998) stock and flow model of the labor market
- Basic idea
 - Flow of buyers and sellers
 - Entrants are put in touch with stock on other side
 - Immediately know if unit fits their needs
 - If find single agent to match, split gains from trade
 - If multiple counterparts then Bertrand-type game
 - If no match then join stock, matching only from the incoming flow

Model - Setup (cont)

- We explore two variations on Coles and Muthoo
 - Two competing platforms: F and M
 - House and seller heterogeneity
- Platform Choice
 - Platform F is known only to a subset of agents
 - Flow of buyers can look for matches on both platforms
 - Sellers list exclusively on one platform
 - Selecting M involves a τ - period commitment and a cost C should trade take place
 - Participation in F involves no fees
- Heterogeneity
 - houses might differ in their "liquidity" (the mass of agents that fit this house)
 - seller differ in patience and inconvenience costs

- **Claim 1:** A proportion of sellers try F first, if they fail to match they move to M and stay (matching the flow in M). There are no moves from M to F
- **Claim 2:** As the proportion of informed buyers increases the success rate at F is stable
- **Claim 3:** More patient sellers and sellers with easier to sell houses list on F first.
- **Claim 4:** For given seller and house characteristics, on M we should observe shorter time to sell and higher success rate, holding time on the market fixed.
- **Claim 5:** As frictions vanish (i.e., more buyers become patient and informed about F) prices across platforms tend to coincide

- FSBO records
 - Address and date of listing
- MLS records
 - Address, listing (including agent information) and sale information
- City records
 - Assessor information
 - Rich set of house characteristics
 - Transactions
 - Transaction prices
- An observation is a history for every house that comes on the market between 1998 and 2004
 - The sequence of events involves failures and platform changes
 - Performance involves: prices, time on market, and eventual sale.

Descriptive Stats – Table 1: Listings and Outcomes

List\Outcome	MLS	FSBO	Unsold	Total
1998 to 2004				
MLS	10,555 (84.5%)	19 (0.2%)	1,925 (15.4%)	12,499 (79.1%)
FSBO	694 (21.0%)	2,322 (70.2%)	293 (8.9%)	3,309 (20.9%)
Total	11,249 (71.2%)	2,341 (14.8%)	2,218 (14.0%)	15,808
1998				
MLS	1,744 (82.8%)	1 (0.1%)	361 (17.1%)	2,106 (94.2%)
FSBO	30 (23.1%)	82 (63.1%)	18 (13.9%)	130 (5.8%)
Total	1,774 (79.3%)	83 (3.7%)	379 (17.0%)	2,236
2004				
MLS	1,559 (79.8%)	9 (0.5%)	386 (19.8%)	1,954 (72.9%)
FSBO	131 (18.1%)	516 (71.2%)	78 (10.8%)	725 (27.1%)
Total	1,690 (63.1%)	525 (19.6%)	464 (17.3)	2,679

Descriptive Stats – Table 2: FSBO Penetration by Area

Area	FSBO Listing Share (%)	FSBO Outcome Share(%)	Properties Sold
28 (Lapham)	45.2	32.3	62
70 (Randall)	44.2	34.6	104
17 (Thoureau)	39.2	30.0	237
89 (Van Hlse)	35.1	28.6	154
19 (Midvale)	30.0	20.6	160
1 (Huegel)	27.0	19.4	222
21 (Franklin)	24.8	16.6	145
2 (Orchard Ridge)	21.6	14.9	208
88 (Hawthorne)	19.4	12.2	319
76 (Sandburg)	18.9	14.1	313
39 (Lowell)	12.1	7.7	182
73 (Mendota)	10.8	8.5	389
86 (various)	8.5	3.1	164
Overall	20.9	14.8	15,808

Descriptive Stats – Table 3: Property Characteristics

Characteristic	MLS		FSBO		Difference	t-stat
	Mean	Std. Dev.	Mean	Std. Dev.		
age (as of 2007)	46.48	24.31	49.14	26.50	2.66	5.18
# of bedrooms	3.07	0.71	3.04	0.69	-0.03	-1.84
# of full bath rooms	1.59	0.67	1.57	0.65	-0.02	-1.18
# of rooms	3.66	1.19	3.68	1.15	0.02	0.85
total sq footage	1,733.14	693.54	1,709.89	585.48	-23.25	-1.68
lot size	9,594.80	5,342.95	8,970.68	5,256.33	-624.12	-5.68
basement sq footage	996.94	380.24	954.89	331.55	-42.05	-5.51
inside condition	3.70	0.55	3.63	0.60	-0.07	-5.96
outside condition	3.75	0.50	3.74	0.51	-0.02	-1.48
roof age (as of 2007)	26.20	23.98	25.18	24.48	-1.02	-2.05
furnace age (as of 2007)	26.27	23.39	25.21	23.63	-1.06	-2.20
central air	0.81	0.39	0.82	0.39	0.01	1.08
quality class	4.79	1.16	4.82	1.07	0.03	1.37
street noise	16.15	26.91	15.29	26.44	-0.86	-1.55

Table 4: The Effect of Channel on Log of Price

Variable	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Sold on FSBO/100	11.69 (0.84)	6.35 (0.77)	4.29 (0.32)	3.39 (0.25)	–	0.78 (0.44)	0.44 (0.45)
Initially Listed on FSBO/100	–	–	–	–	3.23 (0.22)	2.64 (0.40)	2.92 (0.41)
MLS Listing, Sold on FSBO/100	–	–	–	–	–	–	9.58 (2.42)
$R^2 =$	0.015	0.209	0.871	0.926	0.927	0.927	0.927
Time Controls	no	yes	yes	yes	yes	yes	yes
House Characteristics	no	no	yes	yes	yes	yes	yes
Neighborhood Effects	no	no	no	yes	yes	yes	yes
N =	12,875	12,875	12,875	12,875	13,588	13,588	13,588

Table 5: The Effect of Channel on Time to Sell

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Sold on FSBO	-12.04	-11.30	-7.57	-6.28	-	-71.70	-76.16
	(1.54)	(1.53)	(1.50)	(1.52)		(2.79)	(2.84)
Initially Listed	-	-	-	-	11.65	66.10	69.86
on FSBO					(1.44)	(2.55)	(2.58)
MLS Listing,							130.17
Sold on FSBO							(15.24)
Time Controls	no	yes	yes	yes	yes	yes	yes
House Characteristics	no	no	yes	yes	yes	yes	yes
Neighborhood Effects	no	no	no	yes	yes	yes	yes
N =	12,875	12,875	12,875	12,875	13,588	13,588	13,588
R ² =	0.005	0.054	0.147	0.171	0.168	0.208	0.212

Table 6: The Effect of Channel on Probability of Sale

Dependent variable: dummy variable equal to 1 if:	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
	Conditional on sale, sold within:							
	Sold		180 days		90 days		60 days	
Initially Listed	4.60	-	-8.23	-	-13.2	-	-8.72	-
on FSBO/100	(0.68)		(0.53)		(0.80)		(0.80)	
FSBO listing	-	4.27	-	-2.41	-	-6.23	-	-4.84
stayed on FSBO/100		(0.75)		(0.57)		(0.87)		(0.88)
FSBO listing	-	5.56	-	-27.25	-	-35.91	-	-21.49
moved to MLS/100		(1.25)		(0.95)		(1.45)		(1.46)
MLS listing	-	-9.01	-	-21.25	-	-16.62	-	-20.13
moved to FSBO/100		(6.53)		(5.50)		(8.41)		(8.49)
Mean of dependent variable	0.860		0.880		0.539		0.246	
N =	15,803				13,588			
R ² =	0.140	0.140	0.471	0.493	0.483	0.496	0.306	0.312

Selection:

Unobserved House Characteristics

- Easier to sell houses (more liquid) may be sold using FSBO, and at the same time sell at premium due to higher appeal (more matches)
- Recall, observed characteristics relatively similar
- R-squared for price regressions very high: 0.93
- We look at properties with multiple sales through different channels

Dependent variable:	log of price				time to sell			
Initially Listed	2.98	2.98	-	-	21.44	18.71	-	-
on FSBO/100*	(0.46)	(0.39)			(1.77)	(1.28)		
FSBO listing	-	-	3.01	3.09	-	-	-4.93	-4.38
sold on FSBO/100*			(0.51)	(0.42)			(1.99)	(1.40)
FSBO listing	-	-	3.04	2.60	-	-	64.15	64.02
moved to MLS/100*			(0.87)	(0.77)			(3.15)	(2.34)
MLS listing	-	-	13.24	2.62	-	-	61.53	58.84
moved to FSBO/100*			(6.44)	(5.81)			(23.40)	(17.81)
House Fixed Effects	yes	no	yes	no	yes	no	yes	no
House+Neighborhood Char	no	yes	no	yes	no	yes	no	yes

Table 7: House Fixed Effects (cont)

Dependent variable: dummy variable equal to 1 if:	Conditional on sale, sold within:							
	Sold			90 days		60 days		
Initially Listed	1.49	1.39	-14.27	-	-	-5.71	-	-
on FSBO/100	(0.61)	(0.42)	(2.00)			(2.06)		
FSBO listing	-	-	-	-7.84	-5.52		-1.46	-2.04
sold on FSBO/100				(2.19)	(1.54)		(2.27)	(1.62)
FSBO listing	-	-	-	-35.91	-35.88		-20.09	-21.17
moved to MLS/100				(3.74)	(2.78)		(3.87)	(2.93)
MLS listing	-	-	-	-0.31	-5.04		-7.17	-4.54
moved to FSBO/100				(27.70)	(21.07)		(28.72)	(22.24)
House Fixed Effects	yes	no	yes	yes	no	yes	yes	no
House+Neighborhood Char	no	yes	no	no	yes	no	no	yes

Selection

Unobserved heterogeneity: Seller Characteristics

- More patient sellers or better bargainers may self select into FSBO
- We already saw evidence suggestive of selection in Table 4
- We first condition on initial listing (see Table 4)
- The FSBO premium disappears, suggesting seller selection. Although ameliorated, there may still be selection in the decision to shift to MLS.
- We next try to bound the role of selection by comparing the premium to agents selling their own houses on the MLS
- The goal is to compare sale-by-own in different platforms
- Agents performance is an upper bound, they are presumably experts

Table 8: FSBO vs Sales by Agent/Owner on MLS

Dependent variable:	log of price		time to sell		sold in 60	sold in 90	sold in 180
Sold by Owner/100	2.05	1.78	-0.81	-3.34	2.67	7.18	2.27
	(0.69)	(0.68)	(4.17)	(4.35)	(2.76)	(3.19)	(2.07)
Sold on FSBO/100	1.09	1.19	2.46	0.16	-7.01	-6.97	0.31
	(0.73)	(0.72)	(4.40)	(4.59)	(2.91)	(3.36)	(2.19)
N=	12,694	13,407	12,694	13,407	13,407	13,407	13,407

Table 9: Seller Fixed Effects

Dependent variable:	Hedonic Residual		log of price	
FSBO listing/100	-0.26		2.56	0.20
	1.09		0.80	0.80
FSBO seller/100		-0.03		2.85
		1.15		0.78

Fixed Effects	Yes	Yes	No	No
Sample	Seller with multiple listings		MLS listings	All Listings
N	2,287	2,286	10,132	13,095
Groups	1,736	1,1735		

Additional Methods of Dealing with Selection

- Instrumental variables
 - We tried: FSBO listing/success in the area, time in current residence
 - Generally, FSBO effect is very small, but s.e. is very large (weak IV)
- Structural model of price and duration

Entry and Exit Patterns

- There are 1,493 active agents in the sample
- Over 25% have only a single listing
- The median agent has 4 listings (in 7 years)
- The 95tile has 48 listings over the sample period.
- Entry and exit are prevalent.
- Entry and exit peak with the cycle

Entry and Exit Patterns

	1998	1999	2000	2001	2002	2003	2004
Active Agents	644	725	754	785	784	816	787
Entry		176	119	114	112	144	184
Exit		95	90	83	113	112	213
Net Entry		81	29	31	-1	32	-29
Total Listings	2576	2232	2090	2484	2522	2600	2662

- Immediate attrition after entry
- Subsequent attrition is lower, about a fourth or a third.
- After a period of three years over 50% of entrants have left.
 - Of the 644 incumbents in 1998, 91 exit in 1999 and 41 in 2000.
 - Of the 176 entrants during 1999, 49 exit the following year, but only between 15 and 17 in the following 4 years.

Survival Patterns

Entry\Exit	1999	2000	2001	2002	2003	2004	Still In	Total
1998	95	41	29	37	31	72	339	644
1999		49	16	17	15	15	64	176
2000			38	16	7	17	41	119
2001				43	10	15	46	114
2002					49	16	47	112
2003						78	66	144
2004							184	184
Total		95	90	83	113	112	213	787

Performance Measures

- Performance measures: listings, sales and time on market of listings and prices.
- There seems to be heterogeneity at entry which determines survival.
- The average active agent has 3.68 listings, the average entrant has 1.77 listings the year of entry.
- They increase to 3.22 the following year, and 3.45 in their second year conditional on survival.
- Agents that leave the market had 1.77 on their last year, and 2.64 the previous one.
- Agents that make it until the end of the sample entered with 2.07 listing and while those that left before the end of the sample entered with 1.44 listings.

What we plan to do with entry/exit

- Separate between different models of market participation. Is ability known (to the agent) or learned after entry?
- Estimate a structural model of participation
 - separate the various sources of inefficient entry
 - simulate counterfactual structure of the industry in response to different contracting arrangements (which might be driven by the results above)

- Realtors seem to deliver:
 - convenience
 - faster trade
- The common perception that they deliver a price premium is rejected
- The findings are consistent with:
 - MLS as a matching technology offering faster but not more comprehensive exposure
 - Most buyers shopping on both platforms
 - Low level of frictions (that are needed to generate a price gap)