Real Estate Continuing Education: Rent Seeking or Improvement in Service Quality?

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Massachusetts adopted a continuing education component to its licensing requirements for real estate agents in 1999. The Massachusetts Association of Realtors lobbied for this change claiming it would enhance the quality of service for the public. Our regression analysis fails to find any improvement in the quality of service as measured by complaints to the real estate licensing board. We do find that the adoption of continuing education reduced the number of licensed active agents by 39 to 58 percent and increased the income of those who remained by 11 to 17 percent.
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INTRODUCTION

Real estate agents are subject to occupational licensure laws in all 50 US states.[1] Over the past 30 years every state except New Jersey has amended its licensing laws to require real estate brokers and sales people to complete some form of continuing education requirements prior to renewing their licenses. Massachusetts was the most recent state to adopt a continuing education requirement, and its new law took effect in 1999. Continuing education's stated goal is to improve the quality of service to consumers. But it also may have the effect of limiting competition and raising wages by decreasing the number of active real estate agents.

Milton Friedman's observations regarding occupational licensure nearly 50 years ago still ring true today:

> the pressure on the legislature to license an occupation rarely comes from the members of the public who have been mulcted or in other ways abused by members of the occupation. On the contrary, the pressure invariably comes from members of the occupation itself [1962, p. 140].[2]

Realtors have long maintained that continuing education would improve customer service. In 1978, the National Association of Realtors' (NAR) Committee on Education and License Law, developed guidelines for the state real estate commissions. The guidelines claimed that the goal of continuing education was "to provide licensees with opportunities for obtaining necessary information which will enable them to conduct real estate negotiations and transactions in a legal and professional manner in order to better protect client and public interest" [National Association of Realtors 1981b, p. 3]. The NAR claimed that continuing education,

> insures that licensees are exposed to recent developments in the real estate industry; provides an awareness of new provisions or rules for the regulation

of the business and the licensee and, in so doing, affords a protection the public might not otherwise have; leads to a greater recognition by the public that members of the industry are to be considered professionals; and causes licensees, formerly licensed under modest educational requirements, to maintain higher standards of proficiency or face loss of their licenses [Real Estate Today 1980, p. 14].

The NAR's advocacy led 49 states to adopt a continuing education requirement.[3] The NAR is the third-largest donor to political campaigns with the biggest Political Action Committee and "lobbies members of Congress and the administration on virtually every issue facing business" [Center for Responsive Politics 2009]. So perhaps it should be unsurprising that their strong advocacy predicated on improving customer service led to widespread adoption of continuing education requirements.

In Massachusetts the main push for a continuing education requirement began in 1990 when the NAR's state-level affiliate, the Massachusetts Association of Realtors (MAR) began lobbying for it. The requirement was signed into law in 1996 by Governor William Weld, who had received a contribution of $5,000 from NAR during the 1996 election cycle [Center for Responsive Politics 2009]. According to *The Boston Herald*, "The Massachusetts Association of Realtors spent six years pressing the Legislature to adopt a continuing education bill, and MAR President Laura Shifrin was pleased to prevail. This law will raise the level of professionalism within the real estate industry and help ensure quality representation for consumers relative to home buying and selling, 'stated Shifrin' " [Matte 1996].

There are good reasons to question whether continuing education requirements will do anything to enhance "professionalism" or "ensure quality representation." Courses do not require exams at their completion. As a result real estate agents can just sit through a lecture passing time while typing on their Blackberrys or doing some other activity.[4] However, this is not to say that continuing education requirements have no effect.

Many people who obtain a real estate license eventually no longer pursue a real estate career full time. Some work on a regular, part-time basis. Others maintain their license by sending in nominal renewal fees every couple of years but rarely use their license. These people might occasionally list a home for a friend or simply act as their own real estate agent when purchasing or selling their own home. These agents might go a year or more without making a single commission but then do one deal and earn a few thousand dollars.

When Massachusetts' continuing education requirement took effect in 1999, all real estate agents were required to complete 12 h of Board-approved continuing education training in the 24 months prior to each renewal in order to maintain the active practicing status of their real estate licenses.[5] Those who do not complete the education but wish to renew their license are placed on "inactive status" where they cannot represent themselves or other clients but can only earn referral fees by referring the business to an agent with an active license.

The cost, in terms of both time and money, of 12 h of continuing education is unlikely to cause many full-time realtors to exit the industry or to deter others from entering. However, for those agents who only occasionally make a sale, the barrier may encourage them to go into inactive status. If this is the case, by pushing part time and infrequent agents into inactive status, full-time real estate agents, who are

the vast majority of members of the National and Massachusetts Associations of Realtors, could enhance their own income.[6]

We examine data from Massachusetts to investigate whether continuing education has improved the quality of service as the MAR claimed it would, or, if the effect has been to decrease the number of active agents and enhance the income of those who remain. If a decrease in the number of active real estate agents is accompanied by an increase in their income with no corresponding improvement in quality, then the efforts of the Realtor Associations should be interpreted as rent seeking activity intended to capture the regulations for their own benefit rather than a public spirited attempt to improve industry quality of service as they claimed.

The following section reviews some of the previous occupational licensure literature with a focus on real estate licensing and continuing education requirements. The subsequent section outlines our data. The penultimate section contains our main contribution which presents our empirical methodology and discusses our results. The final section concludes.

LITERATURE ON OCCUPATIONAL LICENSING AND REAL ESTATE AGENTS

Economists have long been skeptical that occupational licensure is in consumers' interest. Adam Smith wrote that legal requirements of long apprenticeships "can give no security that insufficient worksmanship shall not frequently be exposed to public sale" but instead will "prevent this reduction of price, and consequently of wages and profit, by restraining that free competition" [1776: book 1, Ch. 10, pt 2]. More recently Milton Friedman was known for his opposition to occupational licensure. Friedman [1962] argued that occupational licensure decreased the average quality of service while restricting entry in order to raise the wages of the licensed profession. He considered the licensing of physicians because they are the profession "for which the strongest case [for occupational licensure] can be made" and concluded "that licensure should be eliminated as a requirement for the practice of medicine" and thus other occupational licenses should be abolished as well [1962, pp. 138, 158].[7] Occupational licensure has since grown in importance and now directly impacts more workers than either the minimum wage or unionization [Kleiner 2000]. Yet, given its importance, relatively little has been written about occupational licensure in the modern literature.

Kleiner [2000] surveys the modern literature on occupational licensure.[8] Kleiner reports that "the most generally held view on the economics of occupational licensing is that it restricts the supply of labor to the occupation and thereby drives up the price of labor as well as of services rendered" [2000, p. 192].[9] More recently, using a new survey method, Kleiner and Krueger [2008] find that occupational licensure raises the wages of licensed workers by about 15 percent. However, Kleiner also reports that "relatively little empirical work has looked at issues involving the quality of output" [2000, p. 197].

Some empirical work has been done on occupational licensure in the real estate industry.[10] Carroll and Gaston [1979] measure the effect of occupational licensing in a number of professions including real estate. They find that more restrictive licensing lowers the number of agents per capita and decreases service quality. Their measure of service quality was the time a house was unsold on the market. This measure was criticized by Johnson and Loucks [1986] who argued that too many

other factors that were impossible to control for made time on the market a poor measure of service quality. Instead they used the number of complaints to the real estate licensing boards and found that stricter licensing laws reduced the number of complaints in a cross-sectional analysis. They also found some evidence that stricter standards can reduce the number of brokers but did not find evidence that stricter standards increased brokers' income. However, their measure of income included other finance professionals and was oddly multiplied by the median home price. Shilling and Sirmans [1988] also examined the impact of stricter real estate licensing in cross-sectional analysis using board complaints as a measure of quality. They found that a 10 percent decrease in the exam pass rate resulted in a 27 percent decrease in the number of complaints. However, they did not find that post licensing requirements decreased complaints significantly. They also used the exam pass rate as a dependent variable and found that real estate boards appeared to be manipulating the pass rate for the benefit of existing agents.

No new empirical work was done on occupational licensing in the real estate industry until Barker [2008].[11] Though much of Barker's analysis is concerned with the ethics of lobbying for occupational licensure, his main section includes a 50-state cross-sectional analysis of the impact of licensing restrictions on real estate agents' income. He takes advantage of variation in licensing requirements between states by examining the effect of increased hours of pre-licensing coursework required before getting a salesperson's license, the years of experience necessary before getting a full broker's license, and the annual hours of continuing education required to maintain a license. He finds that an increase in the restrictiveness of licenses decreases the quantity of agents and increases their income. Specifically he finds adding an extra year of experience as a requirement for a broker's license adds $852 to income; an extra hour of continuing education adds $235 to income; and each hour of pre-licensing coursework adds $2 to annual income. Barker also attempts to measure if complaints against agents decrease as licenses are more restrictive and does not find any statistically significant increase in quality of service.

Barker [2008] is closely related to our study. The most important difference between our study and his is that ours is a time-series study in a single state whereas his (and the other literature on occupational licensing in real estate) is a cross-sectional analysis of the 50 states. This difference is important for two reasons. First, as Barker states his study "only estimated the variable cost of additional hours of educational requirements, not the fixed costs of the license application itself. Since every state in the US requires licensing there is no way to estimate this effect. In particular, the fixed costs of licensing discourage part-time or one-time brokers" [p. 34]. The way to examine this effect is through time-series rather than cross-sectional analysis. We examine a case where there was no continuing education requirement at all and the effect that adopting the requirement had. Our argument focuses specifically on the impact we anticipate it will have on part-time agents.

Second, Barker [2008] uses data on complaints from the Association of Real Estate License Law Officials (ARELLO). That data are not reported consistently across states. As a result, Barker [2008] simply takes a subset of states that do not have a large number of complaints as a fraction of home sales. This procedure could be why he does not find an impact on quality of increased restrictiveness of licensing requirements.

Barker [2008] is an important contribution to the literature on occupational licensure in the real estate industry, but the limitations of the data in a cross-sectional analysis leave us with questions that our time-series case study of

Massachusetts is needed to address. Perhaps most importantly is whether we can find a quality improvement associated with continuing education because that is the key question for whether increased restrictiveness is merely rent seeking by the real estate industry lobby or a legitimate attempt to increase quality of service. By studying Massachusetts we have data on complaints that is consistently reported for our period of analysis which allows us to address this question. Finally, more analysis is needed since prior studies on real estate licensing have found conflicting results on the impact of licensing on real estate agents' incomes.

DATA

We use three separate models to estimate the effect that the continuing education requirement had on the number of active real estate agents, the quality of service, and average real estate agent income. Because of data limitations our period of analysis is limited to annual data from 1990 to 2008. As such, our degrees of freedom are limited and estimation models are as parsimonious as possible. Below we describe our data sources.

The Massachusetts Division of Professional Licensure provided data on the number of active real estate agents. They also supplied data on the number of complaints about real estate agents to the board and what the board's ruling was in each case. The MAR provided a statewide data set with the annual number of real estate sales, average house price, and housing appreciation. Data on the number of internet users in the United States were compiled by World Bank.[12]

Data on real estate agent's income were harder to obtain. The Bureau of Labor Statistics only began collecting income data for Massachusetts real estate agents in 1997 and they are missing data for 2004 and 2005 so their data are obviously not suitable for regression analysis. Instead we use annual Wage and Salary Disbursements in the Massachusetts Real Estate Sector compiled by the Bureau of Economic Analysis. Unfortunately these data include income of real estate appraisers as well as real estate brokers and salespeople.[13] Although the income of appraisers cannot be separated out, according to the Massachusetts Division of Professional Licensure, there were only an average of 3,556 licensed appraisers compared to an average of 79,784 real estate agents in Massachusetts and therefore should not impact our results a great deal.[14] However this data limitation should be kept in mind when interpreting our results. Table 1 contains descriptive statistics for all of our data.

EMPIRICS AND RESULTS

Number of active real estate agents

The number of active real estate agents in Massachusetts fluctuated from a high of more than 140,000 agents in 1990 to a low of approximately 50,000 agents in 2001. The raw data indicate a decline in the number of agents correlated with the depressed housing market of the early 1990s which moderates as the market recovered and an increase in the number of agents occurs with the housing boom of the recent decade. However, by far the most dramatic change is the large drop in the number of active agents that occurred at the time of the implementation of continuing education (see Figure 1). This dramatic drop is not correlated with any

Table 1   Descriptive statistics

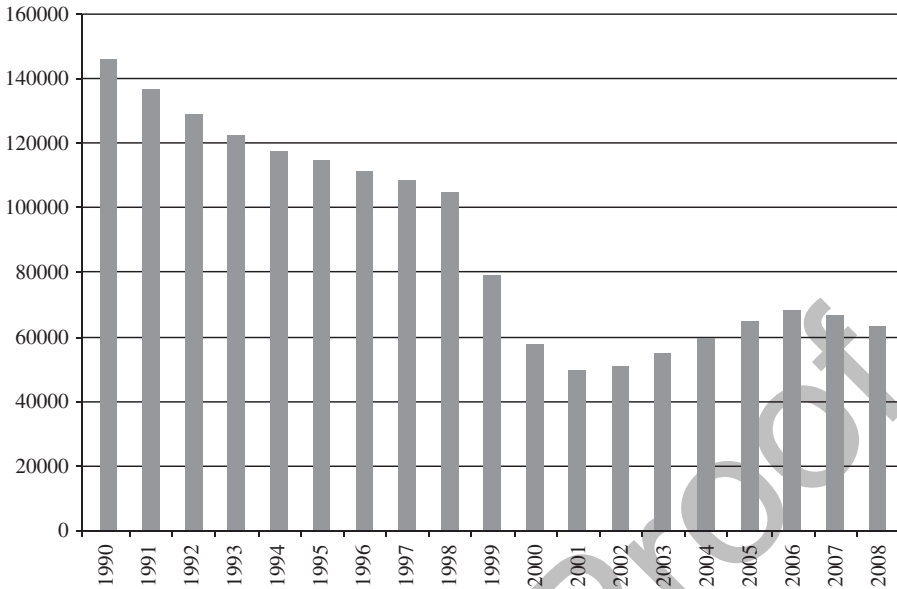| Label	Name	Descriptive statistics (annual data)					
		Mean	Std. dev.	Min.	Max.	1990	2008
LA_t	Number of active real estate agents	89,848	32,469	49,776	145,819	145,819	63,431
NS_t	Number of real estate sales	53,727	12,612	26,296	71,948	26,296	51,761
RAV_t	Real average house price	196,949	45,470	141,219	260,166	170,062	221,441
RA_t	Real housing appreciation	0.0169	0.0674	−0.1039	0.1528	—	−0.1039
IU_t	Number of Internet users (per 100 inhabitants)	36.6	28.5	0.8	73.6	0.8	72.4
$COMP_t$[a]	All complaints filed against real estate agents	354.6	88.4	239	575	—	575
$PCOMP_t$[a]	Complaints filed against real estate agents and resulted in punishment	55.8	72.7	17	324a	—	324
$EARN_t$	Average income of real estate agents	30,928	4,658	25,469	37,630	25,769	35,379

[a]First year of complaints data is 1993.

Figure 1. Number of active real estate agents.

general increase in unemployment. According to the Bureau of Labor Statistics, the unemployment rate in Massachusetts fell from more than 5 percent in the mid- to late-1990s to 3.2 percent in 1999 and 2.6 percent in 2000.

We estimate an OLS model that determines the number of active real estate agents as follows:

$$\log(LA_t) = \alpha_0 + \beta_0 CE_t + \gamma_1 \log(NS_t)$$
$$(1) \qquad\qquad + \gamma_2 \log(RAV_t) + \gamma_3 \log(IU_t) + \varepsilon_t$$

Our dependent variable, LA_t indicates the number of licensed real estate agents with "active" status in year t. CE_t is a binary variable that is equal to 0 in all years before 1999 when continuous education was not in place, and 1 otherwise. β_0 is the coefficient of interest. If $\beta_0 < 0$ then the continuing education requirement reduced the number of active agents. Because licenses are renewed every 2 years, we also estimate a second model where we phase the effect of continuing education in over a 2-year period by making CE_t equal to 0.5 in 1999 and 1 in 2000 and all subsequent years.[15]

Real estate agents earn their income as a percent of the commission charged on home sales. Therefore we anticipate that when there are more homes sold, more people will desire to become real estate agents. Because commissions are typically charged as a percent of the final sale price, we also anticipate that higher home prices will entice more people to become realtors. We control for these factors by including, NS_t which measures the number of real estate sales, and RAV_t which measures the real average house price. Both of these variables are expected to have a positive sign. IU_t controls for the number of internet users per 100 inhabitants. According to MAR: "[O]ver 90 percent of all home buyers and sellers are using the Internet as part of their home buying and selling process. Yet despite the increased

Internet usage, over 90 percent of buyers and sellers are also choosing to work with a real estate professional as well."[16] The increased knowledge of the real estate market that the Internet provides to consumers could decrease the amount of time it takes an agent to match buyers and sellers since people will already be partially educated about market conditions and property availability. This could lead to a need for fewer agents to service the same number of sales so we expect this control variable to have a negative coefficient. Finally, in models 1C and 1D we control for any effect changes in population could have by making our dependent variable agents per capita and changing our independent sales variable to sales per capita.

We find that implementing a continuing education requirement had a statistically and economically significant impact on the number of active agents.[17] In our first specification where continuing education is modeled with a binary variable that took full effect in 1999, we find that continuing education reduces the number active agents by nearly 39 percent.[18] When we phase in the effect over 2 years our results are even stronger, with continuing education reducing the number of active agents by 58 percent at the 1 percent significance level. The statistical significance and economic impact of continuing education is largely unchanged in our per capita models (Table 2).

Somewhat surprisingly sales are not a significant predictor of the number of active agents. The effect of the real average housing price was significant in two of our specifications where a 1 percent increase in real home values led to a 0.6 to 0.65 percent increase in the number of agents. Finally, the number of internet users was only weakly significant in one specification giving some weak evidence that as the number of internet users increased fewer real estate agents were needed to service them.

The strong economic and statistical significance of the impact of continuing education on the number of active agents is not surprising given the dramatic drop in the raw data. Much of this effect likely pushed many part-time agents out of the market or into inactive status. The key question becomes whether this crowding out increased the quality of service as the realtor associations claimed it would.

Quality of service

We measure quality of service by examining whether or not the continuing education requirement decreased the number of complaints to the Massachusetts Licensing Board. Board complaints are the most common measure of quality in the occupational licensure literature.[19] We were also able to obtain the board's decisions on complaints, so we use two quality measures. In our first two specifications, the number of complaints is our dependent variable. In our second two specifications, we use number of complaints that resulted in some form of board punishment or verdict of guilt.

Although complaints resulting in a guilty verdict may seem like a better measure of quality since it sorts out spurious complaints, it is also likely the case that simply having a complaint is a sign of poor service quality. Even if no actionable offense occurred, the mere fact that a customer felt it necessary to file a complaint is a signal of poor service. So we believe both specifications to be reasonable measures of service quality.

The licensing board only began collecting complaint data in 1990 and it was inconsistently reported until 1993. In 2008 there was a huge spike in the number of complaints, the number of guilty findings, and the speed with which the board came

Table 2 Regression results for Model 1
(Estimates of the number of real estate agents)

Variables	Model 1A	P-value	Model 1B	P-value	Per capita			
					Model 1C	P-value	Model 1D	P-value
Constant	11.574***	0.007	6.142*	0.030	−2.725	0.581	−11.71***	0.002
	(3.684)		(3.093)		(4.822)		(3.000)	
Continuing education	−0.489**	0.021			−0.493**	0.025		
(=1 if ⩾1999)	(0.189)				(0.196)			
Continuing education			−0.869***	0.000			−0.893***	0.000
(=0.5 in 1999 and =1 if ⩾2000)			(0.124)				(0.141)	
Sales	0.012	0.962	−0.201	0.228	0.080	0.759	−0.159	0.277
	(0.241)		(0.187)		(0.256)		(0.140)	
Real average price	0.011	0.974	0.650***	0.010	−0.053	0.879	0.594**	0.019
	(0.340)		(0.215)		(0.341)		(0.223)	
Internet users	−0.081	0.125	−0.023	0.523	−0.101*	0.066	−0.039	0.224
	(0.049)		(0.041)		(0.051)		(0.030)	
F-statistic	43.55		109.67		49.22		129.18	
Prob(F-statistic)	0.000		0.000		0.000		0.000	
Number of observations	19		19		19		19	
Adjusted R^2	0.9		0.96		0.91		0.96	

Standard errors are in parentheses.
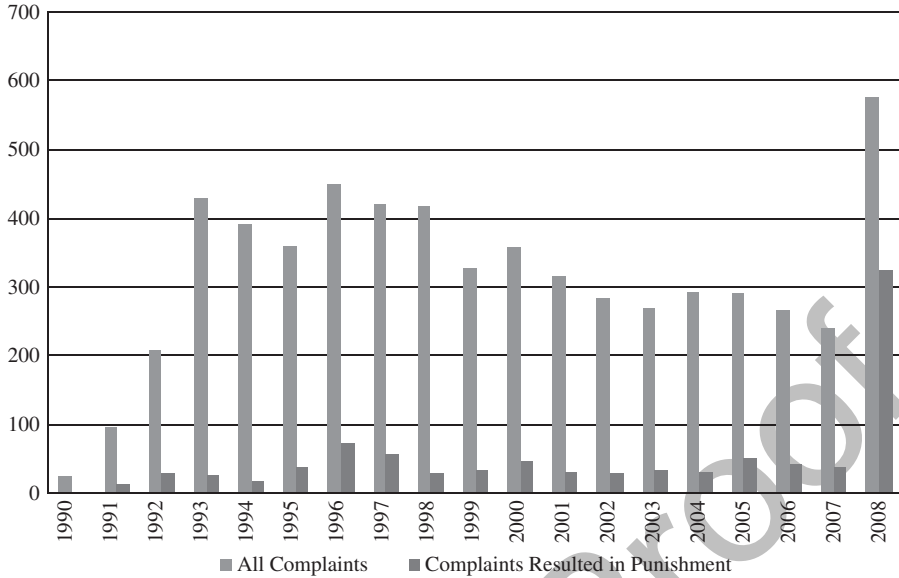***P-value <0.01, **P-value <0.05, *P-value <0.10.

Figure 2. Complaints filed against real estate agents.

to a conclusion of guilt (see Figure 2). The average proportion of complaints that resulted in punishment was only 11.5 percent from 1993 to 2007 but this jumped to 56.4 percent in 2008. Complaints can be made within 1 year of a transaction and the board often takes a year or more to reach a verdict. The huge rise in the proportion of guilty verdicts and the fact that they were reached so quickly (and this percent is likely to rise as more cases are decided) make 2008 an outlier that is clearly associated with the collapse of the housing bubble. Therefore we estimate two specifications each for complaints and complaints with guilty verdicts. In the first we exclude 2008 data. In the second we include 2008 but also include a dummy variable for 2008 to control for the impact of the collapse of the housing bubble.

We specify our model as follows:[20]

$$(2) \qquad COMP_t = \alpha_0 + \beta_0 CE_t + \gamma_1 NS_t + \gamma_2 RA_t + \gamma_3 IU_t + \varepsilon_t$$

Our dependent variable, $COMP_t$ is simply the total complaints in models 2A and 2B and represents complaints resulting in board disciplinary action in models 2C and 2D. CE_t is again a binary variable that is equal to 0 in all years before 1999 when the continuing education requirement was not in place. Customers have 1 year to file a complaint; thus those who traded property in 1998 were able to submit complaints in 1999 as well as those who traded property in 1999. Also, some of the complaints about transactions from 1999 will not have been filed until 2000. Consequently we use a binary variable that is 0.5 in 1999 and 1 in 2000 and thereafter.[21]

Other control variables include the total number of sales (NS_t), the real housing appreciation rate (RA_t), and the number of internet users per 100 inhabitants (IU_t). We expect the number of complaints and guilty verdicts to rise with the number of real estate sales simply because there are more opportunities to have a complaint. We expect housing appreciation to decrease the number of complaints. The logic

behind this expectation is that buyers are less likely to complain after a transaction if the value of what they purchased has increased. Although possible, we think it is less likely that appreciation will cause sellers to complain more.

It is not clear what sign our final control variable, internet users per 100 inhabitants, will have. On the one hand, internet use gives customers more access to information about realtors and firms and thus could lead to customers dealing with agents that are a more appropriate match for them. This should result in a decrease in the number of complaints filed. On the other hand, although filing a formal complaint against the agent can be complicated and sometimes expensive process, the internet can facilitate it. The worldwide web gives users access to a number of FAQs on where and how to file a particular type of complaint. This information can significantly decrease time and expenses necessary to file complaints, which in turn should increase the number of complaints filed. Therefore the expected sign of IU_t is ambiguous.

Guntermann and Smith [1988] conducted a cross-sectional analysis where they found that greater state enforcement effort reduced the number of complaints to the board. More recently Pancak and Sirmans [2005] examined factors that impacted complaints that resulted in disciplinary action in a cross-sectional analysis and found that increased board funding and staffing led to increases in disciplinary action. ARELLO collects data on staffing and budgets of real estate boards. During our period of analysis ARELLO reports that there were four Massachusetts board employees dedicated to investigating real estate complaints in each year they collected data. Total staffing, which includes administrators and people dedicated to pre-licensing education, increased from 12 employees in 1993 to 27 in 2008 but the data are not reported frequently enough to include in our regression analysis. It is possible that more total employees would provide more administrative support and make the four employees responsible for investigating complaints more effective, so some caution in interpreting the results is called for. But there is no variation in the number of employees whose principal job is to investigate claims so we do not think differences in enforcement significantly impact our results below.[22]

Pancak and Sirmans [2005] also examined how property disclosure laws and agency relationship laws impact complaints. Massachusetts still does not require property disclosure and the only significant change in agency laws came in 2005 when dual agency and designated agency were allowed.[23] We re-ran the below regressions with a dummy variable to control for the change in agency laws but it was insignificant and did not impact the significance of our main variables of interest. Our results are reported in Table 3.[24] Each of our four models had serial correlation, so the Newey-West error correction method was employed.

Although the continuing education requirement does have a negative sign, it is not statistically significant in any of our regressions. The impact of the internet varied somewhat across specifications. A higher proportion of internet users decreased the total number of complaints filed. According to the results from model 2A and 2B, 10 more internet users per 100 of population decreased complaints by nearly 24 per year. This indicates that the internet's ability to help consumers find agents that better suit their preferences (or are simply higher quality) had more of an effect than the increase in ease of filing a complaint from internet resources. However, this effect did not remain in the specifications examining complaints resulting in a guilty verdict. Real home appreciation and sales were never significant. Not surprisingly,

Table 3 Regression results for Model 2
(Estimates of the number of complaints regressions)

Variables	All complaints				Complaints resulted in punishment			
	Model 2A 1993–2007	P-value	Model 2B 1993–2008	P-value	Model 2C 1993–2007	P-value	Model 2D 1993–2008	P-value
Constant	307.94**	0.029	307.94**	0.033	19.67	0.512	19.67	0.525
	(120.660)		(124.610)		(28.890)		(29.850)	
Continuing education	−44.47	0.334	−44.47	0.349	−13.12	0.635	−13.12	0.645
	(43.840)		(45.280)		(26.780)		(27.660)	
Sales	0.0026	0.353	0.0026	0.368	0.0004	0.632	0.0004	0.642
	(0.0026)		(0.0027)		(0.0007)		(0.0007)	
Real housing appreciation	104.36	0.524	104.36	0.537	−22.82	0.807	−22.82	0.813
	(157.930)		(163.110)		(91.100)		(94.080)	
Number of internet users	−2.39*	0.080	−2.39*	0.089	0.15	0.815	0.145	0.820
	(1.230)		(1.270)		(0.600)		(0.620)	
2008 dummy variable			360.29***	0.0001			286.38***	0.0001
			(25.510)				(5.780)	
F-statistic	15.19		23.39		0.21		63.58	
Prob(F-statistic)	0.000		0.000		0.93		0.000	
Number of observations	15		16		15		16	
Adjusted R^2	0.80		0.88		−0.29		0.95	

Standard errors are in parentheses.
***P-value <0.01, **P-value <0.05, *P-value <0.10.

for the treatments that included 2008 data our dummy variable for 2008 was highly significant both statistically and economically.[25]

It is plausible that the continuing education variable could have had a greater impact on improving the quality of less experienced salespeople rather than more experienced agents who had a broker's license. We were able to separate our complaint data by whether an agent had a broker's license or a salesperson's license. In unreported regressions we re-ran the above models separating the data by the type of license. The continuing education requirement continued to be statistically insignificant for salespeople as well as for brokers. The only significant change in any of the results was total home sales became a statistically significant determinant of the number of complaints filed against salespeople.

These findings are an indication that the quality of service was not improved by the continuing education requirement. The agents who were pushed out of the market by the continuing education requirement were apparently not of any lower quality even if they were only part-time agents. Also, there is no indication that the classes themselves increased the quality of the remaining agents. These results are directly contrary to the claims made by the realtors associations that these continuing education requirements were in the public interest. Our final area of analysis examines the effect on real estate agents' income to see if the regulations were instead in the interest of active practicing agents rather than the general public.

Income of active real estate agents

We estimate the effect continuing education has had on the income of real estate agents. Figure 3 contains the real income in 1990 dollars of real estate brokers, salespeople, and appraisers. Figure 3 clearly shows an increase in incomes following
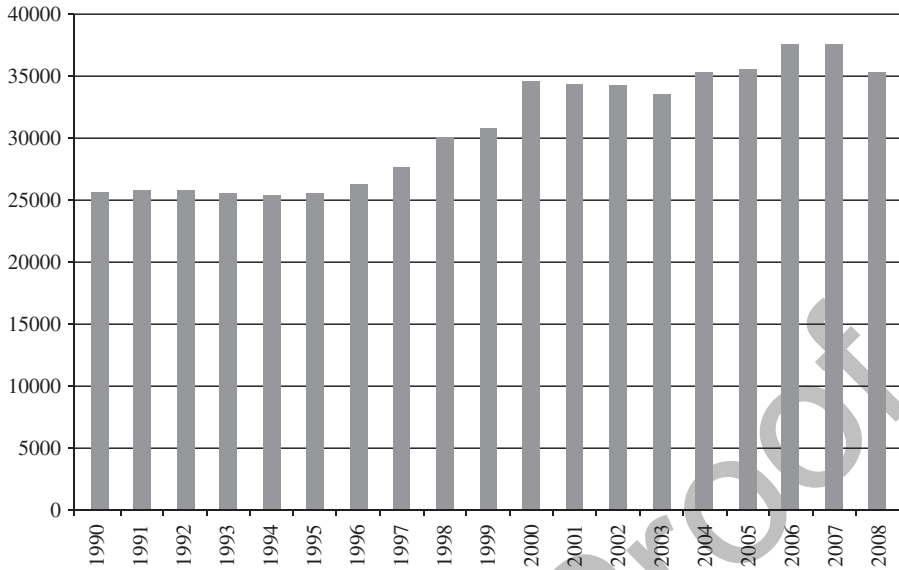
Figure 3. Real estate brokers, sales agents and appraisers wages in real terms.

the adoption of the continuing education requirement. Prior to 1999 real incomes had averaged $26,504 but from 1999 onward they averaged $34,970.

Although we have limited degrees of freedom, we control for the most important determinants of real estate agent income in our regression analysis. We estimate the following model:

$$(3) \qquad \log(EARN_t) = \alpha_0 + \beta_0 CE_t + \gamma_1 \log(NS_t) + \gamma_2 \log(RAV_t) + \varepsilon_t$$

Our dependent variable, $EARN_t$ is real average income of real estate agents in 1990 dollars. CE_t is again a binary variable that is equal to 0 in all years before 1999 in which continuing education is not in place and 1 otherwise. As in our analysis of the number of real estate agents we again estimate a second specification where we phase in the effect of continuing education over 2 years (3B). Finally, as an alternative way to estimate the phasing in of continuing education we estimate a model with two dummy variables for continuing education (3C). The first takes a value of 1 in 1999 and 0 in all other years. The second takes a value of zero until 2000 and a value of 1 from 2000 onwards.

We expect that continuing education has increased real estate agents' income. If that increase had been matched by an increase in quality of service, then continuing education could have simply shifted the demand for real estate agents out. However, we found no evidence of quality improvement so it is likely that the supply curve was simply shifted in and remaining realtors earn a rent through higher incomes by limiting competition.

As was mentioned above, the income of real estate agents is derived from commissions based on the volume of sales and the sale price. NS_t controls for the number of real estate sales and is expected to have a positive sign. RAV_t controls for the real value of home sales in 1990 dollars and is also expected to have a positive sign.

Table 4 Regression results for Model 3
(Estimates of income regression)

Variables	Model 3A 1990–2008	P-value	Model 3B 1990–2008	P-value	Model 3C 1990–2008	P-value
Constant	5.20*** (1.581)	0.005	6.45*** (1.555)	0.001	6.42 (1.589)	0.001
Continuing education (=1 if ⩾1999)	0.104* (0.057)	0.087				
Continuing education (=0.5 in 1999 and =1 if ⩾2000)			0.155** (0.054)	0.012		
Continuing education (=1 in 1999)					0.082* (0.039)	0.051
Continuing education (=1⩾2000)					0.154*** (0.055)	0.014
Sales	0.126** (0.054)	0.035	0.125** (0.052)	0.030	0.124** (0.057)	0.046
Real average housing price	0.306*** (0.095)	0.005	0.202* (0.100)	0.062	0.205* (0.103)	0.060
F-statistic	80.00		89.71		62.87	
Prob(F-statistic)	0.000		0.000		0.000	
Number of observations	19		19		19	
Adjusted R^2	0.93		0.93		0.93	

Standard errors are in parentheses.
***P-value <0.01, **P-value <0.05, *P-value <0.10.

Table 4 contains our regression results.[26] Each of our specifications had serial correlation so the Newey-West error correction method was used. In each of our models the coefficient on real estate agents' income was positive and significant. Incomes increased by nearly 11 percent when we used a single dummy variable for continuing education. When the effect was phased in over 2 years we estimate incomes increased nearly 17 percent as a result of continuing education. Our third specification is also consistent with this finding where we estimate that incomes increased more than 8.5 percent in the first year of continuing education and more than 15 percent thereafter. Our two control variables, Sales and Real Average Housing Price are each statistically significant in all specifications. A 1 percent increase in sales results in approximately a 0.12 percent increase in agents' incomes. A 1 percent increase in the real average house price raised incomes by 0.20 to 0.30 percent.

These results indicate that the decrease in the number of active agents that came about as a result of implementing continuing education did have the effect of enhancing the income of those agents who remained actively licensed.

CONCLUSION

Much of the research on occupational licensure has found that it limits entry into the licensed field and enhances the income of practitioners. The evidence on whether licensure increases or decreases quality is mixed. The continuing education requirement for real estate agents that Massachusetts adopted in 1999 was lobbied for vigorously by the MAR. MAR claimed that the continuing education

requirement was needed to improve the quality of service for the public. Our findings directly contradict their claims.

Our results show that introduction of continuing education forced from 39 to 58 percent of agents out of the real estate business as active agents. We found no evidence of improved service quality as measured by complaints to the licensing board or complaints with a guilty verdict. We did find that real estate agents' average real wage increased by between 11 to 17 percent following the adoption of a continuing education requirement. As a result, we interpret MAR's activity as a typical case of interest group lobbying intended to increase their own incomes rather than a public spirited attempt to improve service quality.

Acknowledgements

Notes

1. We use the term "real estate agents" to refer to both licensed real estate salespeople and real estate brokers (two categories of license). We reserve the term "realtor" for members of the National Association of Realtors or their state-level affiliates.
2. Graddy [1991] finds empirical evidence that interest groups and the preferences of the general public both influence which occupations get licensed.
3. Tosh and Garvey [1984] report that the majority of real estate agents surveyed supported the adoption of continuing education requirements.
4. As one current realtor told us in an email interview on May 12th "Although most Realtors are not thrilled with continuing ed classes, I have not witnessed surfing the web etc. Falling asleep may be another story."
5. According to the Massachusetts Real Estate License Law and Regulation, 254CMR 5.02.
6. The fact that full-time agents might benefit while part-time agents would lose from continuing education requirements is likely reflected in the fact that 75 percent of agents surveyed supported adopting continuing education [Tosh and Garvey 1984].
7. See Shapiro [1986] for a contrary model where licensure increases the quality and ability of the licensed profession and is beneficial for consumers.
8. See Kleiner [2006] for a book length treatment on the effects of occupational licensure. Also see Summers [2007] for a study which ranks individual states according to how pervasive occupational licensure is in them.
9. The survey's finding is largely consistent with one of the earliest empirical investigations of occupational licensure, Maurizi [1974], who found that licensing boards use their power to prolong the period of higher incomes generated by increases in excess demand by altering the pass rate of the licensing exams.
10. Three important papers in a related, but separate strands of the literature on real estate are Hsieh and Moretti [2003], Nadel [2006], and Kleiner and Todd [2009]. Hsieh and Moreetti argue that *if* commission rates are relatively fixed across cities then free entry is socially inefficient. Nadel criticizes the common commission structure and argues that it harms buyers and sellers. He offers a number of reasons why this commission structure continues to exist which include the power of the National Association of Realtors and State Real Estate Commissions that protect existing practices. Kleiner and Todd examine mortgage broker regulation and find, among other things, financial bonding of brokers is associated with higher earnings and modest reductions in the number of mortgage brokers.

11. Although they did not examine the effect of occupational licensing, Sirmans and Swicegood [1997] studied the characteristics of individual agents in Florida to see what influenced their earnings.

12. Data were retrieved December 2009. US average internet data were used rather than Massachusetts since many buyers of Massachusetts real estate come from outside the state, and those from outside the state might disproportionately depend on internet data to compensate for lack of local knowledge.

13. We use the newer NAICS classification from the BEA which includes appraisers as well as activities real estate agents do but unlike the old SIC classification does not include the rental income of lessors renting their own property.

14. The average is for the period 1993–2008 when data for both appraisers and agents were available (this is why the average number of agents is different than in the descriptive statistics table which had data from 1990). Over the entire time period the proportion of appraisers to real estate agents varied from a minimum of 2.5 percent to a maximum of 7.3 percent. We have no reason to believe that 1990–1992 is significantly different.

15. In our income model below we also employ a third dummy variable technique but unfortunately the degrees of freedom were too limited in this regression to employ that same method.

16. Based on Massachusetts Profile of Home Buyers & Sellers 2008 research.

17. The table reports the unadjusted coefficients. Because the dependent variable was in logs we make the appropriate adjustments in the text when we discuss the magnitude of the economic impact of the dummy variables: $100(\exp(\hat{\beta}_0)-1)$.

18. Each of our four models had serial correlation, so the Newey-West error correction method was employed.

19. An alternative measure of quality, claims against errors and omissions insurance, is used in a five-state study by Zumpano and Johnson [2003] although the study did not include any empirical modeling. Malpractice insurance premiums are also sometimes used as a measure of quality in other occupations. However, these data were not available for Massachusetts.

20. An alternative empirical strategy would have been to exploit individual-level variation using a regression discontinuity approach. Agent's licenses are subject to renewal every 2 years on their birth date so each agent was impacted by the continuing education requirement at different times. However, a discontinuity approach requires disaggregated data by agent which is not available.

21. Using a 0 for all years prior to 1999 and 1 in 1999 and thereafter does not significantly change our results.

22. Budget data were not reported consistently by ARELLO for Massachusetts so it could not be included. We are skeptical that their budget data are even accurate because they report a 2006 budget for the real estate division that is larger than the entire division of occupational licensure's budget was a year later according to the state.

23. Agency law was changed in 1993 to allow for buyer agency which is the first year of our period of analysis.

24. We were also able to use quarterly data (not reported) to examine quality which allowed us to use vector autoregression analysis to ensure that innovations in the dependent variable do not affect independent variables. The Granger causality test demonstrated that the complaint variables did not Granger cause independent variables nor did lags of the independent variables Granger cause the dependent variable. Continuing education was statistically insignificant as reported in the table that summarizes our annual data regressions.

25. The massive spike in number of complaints with a guilty verdict in 2008, combined with a dummy variable for 2008, explains why our R^2 increases dramatically from model 2C to model 2D. There were only 568 total complaints with a guilty verdict prior to 2008 but there were 324 complaints with a guilty verdict in 2008 alone.

26. In the table we again report the unadjusted coefficients and make the appropriate adjustments when we discuss the economic impact in the text.

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