

Property Condition Disclosure Law: Why Did States Mandate ‘Seller Tell All’?

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Abstract Thirty-four US states have already enacted some form of seller’s Property Condition Disclosure Law. At a time when there is a movement in this direction nationally, this paper attempts to ascertain the factors that lead states to adopt disclosure law. Motivation for the study stems from the fact that not all states have yet adopted the law, and states that have enacted the law have done so in different years. The analytical structure employs hazard models, using a unique set of economic and institutional attributes for a panel of 50 US States spanning 21 years, from 1984 to 2004. The proportional hazard analysis of law adoption reveals that greater number of disciplinary actions tends to favor passage of the law. Greater broker supervision, implying generally higher awareness among real estate agents, seems to have a negative impact on the likelihood of a state adopting a Property Condition Disclosure Law.

Keywords Property condition disclosure · Law adoption · Hazard analysis · Housing price index

Introduction

There was a time when ‘caveat emptor’, or ‘buyer beware’, ruled in the housing industry.¹ Frequently, buyers used to find material defects after the purchase. Many lawsuits were filed against real estate agents or sellers. The economic intuition behind the scenario closely resembles that of used car sales. The seller has better (or more) information about the condition of the house than the buyer can possibly have, which entails the usual story of information asymmetry. This information asymmetry

¹Article “What is a Seller’s Disclosure?,” October 1, 2001, by Dian Hymer, Distributed by Inman News Features.

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in property markets was brought to public attention by the path-breaking 1984 California appellate court verdict, which made the case for requiring a seller's disclosure statement in real estate transactions.²

This paper analyzes the seller's Property Condition Disclosure Law. We attempt to determine the factors that explain adoption of the disclosure law. The analytical structure employs hazard models, using a unique and rich set of economic and institutional attributes for the housing market in a yearly panel of 50 US States spanning 21 years, from 1984 to 2004, to address the research question. Among the institutional controls, the number of disciplinary actions taken in conjunction with formal complaints against the real estate licensees, and the extent of broker supervision of the real estate salespersons seem to matter in predicting adoption of the law.

The study contributes to the literature in the following ways: First, using empirical modeling, it adds to our understanding of the Property Condition Disclosure Law and the institutional environment of the residential real estate industry. The paper takes a first step in analyzing a real estate law that affects real estate transaction procedure. Second, understanding the law adoption process helps in highlighting the effect of the law on various institutional procedures in the housing sector. Third, the paper provides an empirical framework and makes the case for empirical analyses of policy statutes in the field of law and economics, especially in real estate law.

The rest of the article proceeds as follows: “[Relevant Issues and Literature](#)” discusses the existing literature, relevant issues, and motivation for this study; “[An Empirical Framework for Analyzing Law Adoption](#)” presents the estimation methods; “[Data Description and Empirically Testable Hypotheses](#)” describes economic and institutional variables and develops empirically testable hypotheses; “[Results](#)” analyzes, compares, and contrasts the results from different model specifications; and we conclude in “[Conclusion](#)”.

Relevant Issues and Literature

Beginning in 1984, numerous legal proceedings have brought greater transparency in property transactions. In the last two decades, many lawsuits in the real estate industry had something to do with property condition and non-disclosure of the material defects at the time of sales. Using data on the claims against errors and omissions insurance by the real estate licensees in five states, Zumpano and Johnson (2003) find that fully 76% of all suits against real estate salespeople were related to the condition of the property being sold.³ Increasingly complex real estate transaction procedures have led to homebuyers' greater reliance on real estate agents' assistance in the decision-making process. This placed real estate professionals in a more litigious environment, and efforts to satisfy more demanding customers could become costly. It has also increased the skill requirements for real estate

²Easton v. Strassburger (152 Cal.App.3d 90, 1984) was a California Appellate Court decision that expanded the duty of realtors and the grounds for realtor negligence in selling faulty homes. The State Supreme Court declined to hear the case, giving birth to the law in the state.

³Not all states require real estate salesperson to carry Errors and Omissions insurance coverage.

salespersons, due to new environmental, health, tax, and mortgage issues and standards. Therefore, two conflicting interests arise for real estate professionals—offering exclusive services for customer satisfaction and taking the risk of making mistakes that may lead to lawsuits. Enacting new laws to protect market interests deemed to be a plausible solution by some state legislatures.

The seller’s disclosure statement protects both the buyer and the seller from possible disputes after the transaction. It also prevents any misplaced liability on the seller and the broker who represents the seller. Thus, it can be viewed as a tool to avoid lawsuits, which are deadweight losses to some extent.⁴ Zumpano and Johnson (2003) describe the case aptly by noting that “in response to growing concern about the perceived increase in real estate broker litigation, a growing number of state legislatures have promulgated property condition disclosure statutes as a way of insulating real estate practitioners from legal liability problems surrounding sales transactions.” The disclosure statement shifts risk from the real estate buyers and brokers to the sellers. It was in the interest of risk-averse brokers to adopt such laws. The National Association of Realtors (NAR), which is a major trade association of real estate agents, lobbied for the disclosure law and secured the mandate in many states in the early 1990s. There is a question about whether seller disclosure should be mandated by statute or not.⁵ The most obvious argument for a statute is that it ensures widespread adherence to the mandate. A high rate of compliance is important in achieving the goal of any disclosure statement.

Not all states have seller disclosure as a statutory requirement, although there is a movement in this direction nationally.⁶ Almost two-thirds of the US states now require sellers to disclose property condition in a state-mandated disclosure form. California was the first state to require a seller disclosure statement, called The Real Estate Transfer Disclosure Statement (TDS). Beginning in the late 1980s and early 1990s, other states initiated some form of disclosure statement. The overall format of the statement differs considerably across states. The typical disclosure form asks for information on appliances, fixtures, structural items, etc. Generally, any known material defects (regarding the items) that are not readily apparent to a buyer, but known to the seller, should be disclosed.⁷ Determining what is a material defect is not always clear. Sometimes an element of subjectivity is involved. In some states, title and zoning questions appear in the disclosure form. Often natural hazards (e.g. a flood or earthquake-prone area) and environmental concerns (e.g., radon, lead, or asbestos exposure) are reflected in particular state-required disclosures. For instance, earthquake hazard disclosure is required in California, but not in New York or in most of the Midwest states.

⁴Zumpano and Johnson (2003) conclude: “There seems to be little question that the property condition disclosure, whether mandatory or voluntary, can reduce error and omission claims against real estate licensees.”

⁵See Lefcoe (2004) page 228.

⁶This paper uses information through 2004. According to latest available information from the National Association of Realtors (<http://www.realtor.org>), 44 states and the District of Columbia have adopted seller property condition disclosure law. The only states that do not require any form of seller disclosure are Alabama, Arkansas, Kansas, Vermont, West Virginia, and Wyoming.

⁷Lefcoe (2004) provides an excellent discussion on many different aspects of the property condition disclosure law. Also see Olazabal (2003).

A Property condition disclosure statement is not a warranty of the unit's condition.⁸ It is rather a representation of the information about the property condition by the seller at the time of sale. Scholars argue that the seller-provided inspection is not a substitute for the seller disclosure form, since many material defects may not be revealed by an inspector.⁹ For example, inspectors are not supposed to inspect for rodents, or check the walls, foundation, the air-conditioning, and heating system, or know about flooding, and many other potential areas for material defects.

There have been a number of studies on the Property Condition Disclosure Law and its impact on different aspects of the residential real estate market. The studies (Pancak et al. 1996; Moore and Smolen 2000; Zumpano and Johnson 2003; Lefcoe 2004) suggest a positive impact of the law on property values, buyer's satisfaction, broker's avoidance of risk etc. Exploiting the metro level variation in house prices, Nanda (2005) finds that the average seller may be able to fetch a higher price (about 3–4%) for the house if she furnishes a state-mandated seller's property condition disclosure statement to the buyer. The economic implications of this requirement can be manifold. Most importantly, the seller's disclosure statement directly affects the information asymmetry in real estate transactions. It provides better transparency in property transactions, and facilitates the buyer's decision-making process.

A law cannot be treated as exogenous, since any such proposal reflects existing institutions and undergoes close scrutiny and deliberation before it is enacted. The institutional backdrop of the law provides important information on the factors that gradually lead to adoption of the law. We attempt to determine the factors that led to adoption of the law in different states. This examination is especially appropriate when the states mandated the requirement in different years, over the last two decades, and some states have still not enacted a Property Condition Disclosure Law.

In a novel study, de Figueiredo et al. (2004) discuss the factors that led to adoption of the Administrative Procedures Act at different states in different times. The study recognizes the underlying political process of law adoption and attempts to empirically model the determining political factors. In our study, we adopt a similar objective. Unlike de Figueiredo et al. (2004), we not only look at the political factors, but also the factors that closely describe the institutional and economic environment of the housing market. We also incorporate across state heterogeneity in our empirical structure.

An Empirical Framework for Analyzing Law Adoption

The statute is not exogenous. One might argue that many different legal, economic, and special interest group activities precede government enactment of a law. Following Kiefer (1988), and de Figueiredo et al. (2004), we formulate a discrete time proportional hazard model to ascertain which factors led states to mandate Property Condition Disclosure Laws.

⁸See Lefcoe (2004) pages 212–213.

⁹See Lefcoe (2004) page 239.

We model the law adoption process by specifying a probability distribution for the survival spell until “death,” which here is the adoption of a Property Condition Disclosure Law.¹⁰ The probability distribution is given by

$$F(t) = \Pr(T < t) \quad (1)$$

which specifies the probability that the random variable T is less than some value t ; $f(t)$ is the corresponding density function. One useful representation of the data is the survivor function

$$S(t) = 1 - F(t) = \Pr(T \geq t) \quad (2)$$

Using Eqs. 1 and 2, we derive the hazard function

$$\lambda_0(t) = \frac{f(t)}{S(t)} = -\frac{d \ln S(t)}{dt} \quad (3)$$

$\lambda_0(t)$ is the rate at which spells will be completed at duration t ; given that they survive until t . Equation 3 enables us to distinguish between positive and negative duration dependence. It can be specified to depend on individual attributes. Different distributional assumptions can also be made for $\lambda_0(t)$. Most commonly used are exponential and Weibull distributions.

With the basic structure outlined by Eqs. 1, 2 and 3, we try to specify the covariates for dependence. A simple formulation incorporates time-invariant regressors in a proportional hazard framework, which can be written as

$$\lambda[t; x] = k[x]\lambda_0(t) \quad (4)$$

where $k(x) > 0$ is a nonnegative function of x ; and $\lambda_0(t) > 0$ is the baseline hazard.

Time is separated from the explanatory variables so that the hazard is obtained by shifting the baseline hazard (which is common to all units) as the individual hazard function changes based on a function $k(x)$ of observed covariates (i.e. for all the cross section units the hazard is proportional to the baseline hazard function). The model does not impose any assumptions concerning the nature or shape of the underlying survival distribution. One popular form of the model in Eq. 4 is the logit estimation, where each unit contributes several terms to a logit likelihood function, one term for each period for which the unit was at risk of leaving the treatment stage.¹¹ Typically, $k(x) > 0$ is parameterized as follows:

$$\lambda[t; x] = \exp[x\beta]\lambda_0(t) \quad (5)$$

The baseline hazard can be specified by allowing the intercept to be different for logit formulations of each time-period (i.e. by including a dummy variable for each representative period) or by including a function of time. We assume that once a law is adopted, it will remain, and so we eliminate the observations after the disclosure law has been adopted. This censoring of the data is reasonable, given that no state has ever repealed the Property Condition Disclosure Law. The hazard function in Eq. 5 is represented by a standard normal cumulative distribution function. Therefore,

¹⁰The baseline specification draws on Kiefer (1988) and Wooldridge (2002).

¹¹See Kennedy (1998), pages 259–261 for a simple discussion on this structure.

we could estimate the model after conditioning on the event not yet having occurred using a standard logit specification.

We can incorporate time-varying covariates into the framework to obtain a conditional hazard function as follows:

$$\lambda[t; x(t)] = \exp[x(t)\beta]\lambda_0(t) \quad (6)$$

$$\text{or } \lambda[t; x(t)] = \lim_{h \downarrow 0} \frac{P[t \leq T < t+h | T \geq t, X(t+h)]}{h}$$

assuming that the limit exists.

One popular way of specifying the hazard function is

$$\lambda[t; x_m, \theta] = k[x_m, \beta]\lambda_m, \quad m = 1, \dots, M \quad (7)$$

where θ is a vector of unknown parameters.

An important assumption is that time-varying covariates are constant over the interval of observation $[a_{m-1}, a_m]$, which, in our case, is a year. Equation 7 implies that time-varying covariates have a multiplicative effect in each time interval (for M intervals) and it allows a flexible baseline hazard, which is common to all units. Incorporating time-varying covariates is an important step in analyzing law adoption in our panel data framework as the law has been adopted at different times by different states.

Equations 1, 2, 3, 4, 5, 6 and 7 represent the empirical structure as outlined in Kiefer (1988), and de Figueiredo et al. (2004). However, an important aspect of the law adoption process is that it varies across states. The heterogeneity appears from the fact that different states in our sample have potentially different distributions of the duration dependence. Thus, we are sampling from a mixture distribution. Although we are controlling for a number of time-varying observables, there may still be some heterogeneity due to presence of relevant and important unobservables. The problem becomes an omitted regressor problem. The law adoption process may be affected by some institutional factors for which we cannot control. Building upon the empirical structure in Kiefer (1988), and de Figueiredo et al. (2004), we can incorporate heterogeneity into our framework as follows:

$$\lambda[t; v, x_m, \theta] = vk[x_m, \beta]\lambda_m, \quad a_{m-1} \leq t \leq a_m \quad (8)$$

where $v > 0$ is a continuously distributed heterogeneity term.

Since no state has ever repealed the Property Condition Disclosure Law (i.e. with single-spell data), we cannot allow general correlation between the unobserved heterogeneity and the time-varying covariates. Therefore, we assume that the covariates are strictly exogenous, conditional on unobserved heterogeneity, and that the unobserved heterogeneity is independent of covariates.¹² We try two common distributions for specifying heterogeneity (or frailty), which are normal and gamma distributions. Including time-varying attributes and controlling for heterogeneity are fairly standard in empirical labor economics (e.g. program evaluation literature). However, in the current context of explaining a law adoption process, they are important extensions of the empirical model outlined in de Figueiredo et al. (2004).

¹²See Wooldridge (2002), page 713 for a discussion.

Data Description and Empirically Testable Hypotheses

The study uses information on economic variables and institutional variables for 50 US states, from 1984 to 2004. The state level analysis is based on yearly information, yielding 1,050 observations. One important advantage of the time period is that on average, we can observe most of the states sufficiently before and after the adoption of the disclosure law. Thirty-four states have already mandated some form of disclosure statement. We obtained the effective dates of the mandate from official statements for different states.¹³ In our sample, California was the first state to adopt the law (1987). Most of the other 33 states adopted the law in the 1990s.

Economic Variables

The state of economy of the states greatly influenced the process of disclosure law adoption. We attempt to characterize economic make-up of the states by including some key measures that influence the housing market. Most importantly, to measure the housing price changes, we use the repeat sales quarterly Housing Price Index (HPI), reported by the Office of Federal Housing Enterprise Oversight (OFHEO). We take the average quarterly rate of change for the year. Among the fundamental drivers of the housing market, we use labor market characteristics, such as unemployment rate and nonfarm job growth rate, population growth rate, percentage change in per capita income, percentage change in per capita Gross State Product (GSP), and single-family 30-year fixed mortgage rate. The data is obtained from the US Census Bureau, US Bureau of Labor Statistics, and US Bureau of Economic Analysis. Broadly, these variables portray the state's economic and housing market conditions.

Institutional Variables and Hypotheses

Numerous lawsuits against the real estate licensees made the case for adoption of disclosure laws. Potentially the legal activities are governed by the institutional characteristics of the state. Statistics from the *Digest of Real Estate Licensing Laws and Current Issues* (reports from 1985 till date) compiled by the Association of Real Estate Licensing Law Officials (ARELLO) (1985–2005) provide a rich set of characteristics that are closely associated with the institutional backdrop of the disclosure law.

Various institutional factors influence the adoption of laws and regulations. We formulate and test various hypotheses regarding the institutional factors in housing market that influence the adoption of Property Condition Disclosure Laws. Our goal is to condition on pre-disclosure characteristics to ascertain which factors led to the adoption. Institutional factors related to real estate licensing are of particular interest, since dissatisfaction with licensing services and strong lobbying by the licensee associations are viewed as important forces behind successful adoption of mandatory disclosure laws.

Pancak and Sirmans (2006) attempt to find the effects of different institutional factors on the quality of services by real estate licensees. They measure quality of services by the number of disciplinary actions taken against real estate licensees, using

¹³Pancak et al. (1996) lists the states, which adopted the disclosure law until 1996.

controls such as whether the state has mandatory property condition disclosure, extent of broker supervision of salespersons, etc. A major objective of the Property Condition Disclosure Law is to decrease agents' liability for non-disclosure. Therefore, presumably states with some form of disclosure law will have fewer instances of non-disclosure and thus fewer transaction grievances. Moreover, Zumpano and Johnson (2003) conclude that mandatory property condition disclosure reduces claims on errors and omissions insurance. Therefore, we postulate that the level of disciplinary actions, relative to formal complaints, indicates customer dissatisfaction, and thus is an important factor in predicting law adoption by the regulatory authorities.¹⁴ This variable may also capture "real estate board dissatisfaction" or board awareness of the widespread problem of non-disclosure. A higher level of complaints is likely to motivate real estate board to propose a state legislation.

Often real estate licensees are liable for both intentional and unintentional non-disclosure of many aspects of the housing transaction. We hypothesize that greater supervision would prevent intentional and unintentional mistakes by the salespersons. We construct this supervision variable as the ratio of number of brokers to number of salespersons. As constructed, the variable may also capture variations in experience and education among licensees.¹⁵ In the analysis, this variable is an important factor, as it captures two important things: licensee awareness and the resulting effect on customer satisfaction or the quality of service.

Concerted pressure and lobbying by realtors' associations brought the law in most states. To have a sense of how organized the real estate agents are in different states, we include the number of active brokers, associate brokers, and salespersons in each state in our analysis. Ideally, the percentage of licensees who are associated with some trade organizations like NAR could serve as an excellent indicator of the lobbying effort. However, it is hard to obtain this information across the states for the long time series that we are considering in this study.

We also include a variable for partisan control in the state legislation. Following de Figueiredo et al. (2004), we include an indicator variable for Democratic and Republican control. Above all else, the political process brings about the regulations. To fully exploit the information on political make-up of the state general assembly, we use detailed partisan control variables rather than a simple blue/red category. We use Democratic control with Republican governor as the omitted category. The information on partisan control for each general election cycle is obtained from the National Conference of State Legislatures (NCSL).

Table 1 reports the summary statistics of the above controls for the treated and the control units. A few important observations can be made from the summary statistics of the two groups. At the state level, average percentage change in HPI is slightly

¹⁴When the disciplinary actions figure is missing or zero, we take the average of the figures within a 1-year range. When the total disciplinary actions figure is missing in ARELLO reports, if available, we take the sum of the figures under different categories of disciplinary actions, or we take the sum of the actions by consent and number of formal hearing as number of disciplinary actions (this is the case until 1986). Then we take sum of disciplinary actions and formal hearings from column of complaints resulting in some actions. Both of these are expected to provide the number of complaints having enough substance to attract legal attention. This is typically the case with Arizona and Hawaii for 1984–1986.

¹⁵Pancak and Sirmans (2006) define the variable as a ratio of number of brokers and total number of licensees. Our definition (ratio of number of brokers and total number of salespersons) is directed more towards capturing "supervision" (of the salespersons) instead of "experience" (of the brokers).

higher for the treated group than for the control group (1.22% against 1.06%). The unemployment rate and other economic controls are generally, on average, higher for the control units. Average number of disciplinary actions (about 134 against 51) and average number of complaints (about 860 against 737) are higher for the states that adopted disclosure laws, which strongly supports our hypothesis. A higher number of disciplinary actions and complaints against the licensees suggest that these controls are important in capturing the dissatisfaction of consumers, and, due to high volume of complaints, regulators might be inclined to enact a state-mandated disclosure requirement. On average, control units tend to have greater broker supervision (50% against 47%) than the treated units. This supports the hypothesis that greater broker supervision ensures fewer mistakes and greater awareness of the market practices among salespersons, which, in turn, tend to reduce the dissatisfaction among homeowners. The disclosure states tend to have a higher number of active licensees. Finally, there are more Republican states that adopted the law than Democratic states.

Results

With Time-Invariant Institutional Variables

As outlined in “[An Empirical Framework for Analyzing Law Adoption](#)”, our estimation strategy is one of hazard analysis where we model the process conditioning on the adoption not yet having occurred. We start with models with time-invariant attributes. Table 2 reports results from four different model specifications for the proportional hazard model of disclosure law adoption. This analysis is done with the state-level data (1,050 observations). We use the pre-disclosure average number of disciplinary actions taken against the licensees, licensee supervision index, and number of licensees as controls for pre-treatment characteristics.¹⁶ Essentially, we assume that these institutional characteristics are exclusive to the housing market. We still use the economic variables as time-varying attributes since they are not directly associated with the institutional characteristics of housing market. The columns are distinguished by the inclusion of lagged percentage change in HPI. We include the housing price growth rate to capture the trend of the market. Lagged value is appropriate, as the variable should not greatly influence in the adoption year. Moreover, as Nanda (2005) finds that having a disclosure law is generally associated with higher house prices, it is more appropriate to include lagged house price index changes to control for the inherent endogenous feedbacks. It seems that inclusion of the second lagged percentage change in HPI matters in this set-up. We also allow the intercepts to differ across the census divisions.

Most importantly, as hypothesized, the average number of disciplinary actions relative to number of complaints seems to affect adoption. A greater number of disciplinary actions relative to complaints favors adoption of a state mandate (significant positive impact across the columns). The greater the degree of broker

¹⁶Due to missing information, we cannot use all the years before the law adoption for Indiana, Montana, and New York. However, we still use information from pre-disclosure period for these states. For states without the disclosure law, we use average of all the available years.

supervision, the lower is the state's likelihood of adopting the law (significant negative impact across the columns). This supports the postulate that greater broker supervision, by ensuring fewer mistakes and greater awareness among the salespersons of the market practices and standards, tends to reduce dissatisfaction among homeowners, which, in turn, lowers the number of lawsuits that might trigger adoption. Interestingly, as observed in Table 1, Republican control tends to favor (although not statistically significant) the adoption of Property Condition Disclosure Laws. Republican control tends to be associated with regulations that promote transparency in housing transactions.

Negative coefficients for lagged percentage change in HPI (significant), percentage changes in per capita income, and per capita Gross State Product (GSP) seem to suggest that more active or 'hot' housing markets adversely affect the likelihood of adopting the disclosure law. Possibly, consumers as well as licensees prefer to neglect the disclosure issues when housing markets are 'hot'. In a market with high appreciation rates, it may be a better idea to sell the newly acquired 'lemon' rather than getting into time-consuming process of complaints or lawsuits. However, as may be indicated by the positive coefficients for job growth (significant) and population growth, it is also likely that more active housing markets raise the number of potential transactions with disclosure issues, which is conducive to the law adoption process. A plausible explanation for the negative impacts of the mortgage rate (significant) and unemployment rate is that there is an incentive for the sellers and the licensees not to support property condition disclosure statements in a tight housing market. Information on the disclosure statement may not always be encouraging for a buyer who is already discouraged by the high mortgage rates.

Table 1 Summary statistics

Variable	Disclosure mandate			No disclosure mandate		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.
50 states characteristics: 1984–2004: 1,050 observations						
%Change in HPI	714	1.225	1.299	336	1.059	0.937
%Unemployment Rate	714	5.532	1.682	336	5.583	1.875
%Job Growth Rate	714	1.536	1.891	336	1.622	1.983
%Per Capita Income Change	714	1.391	0.644	336	1.416	0.774
%Per Capita GSP Growth Rate	714	4.861	3.434	336	4.766	3.163
%Population Growth Rate	714	1.058	1.093	336	0.979	1.185
%Mortgage Rate	714	8.432	1.784	336	8.434	1.773
Number of Real Estate Licensees/1000 population	714	6.144	2.810	336	5.991	4.511
No. of Complaints	714	860.112	1465.934	336	737.382	2465.497
No. of Disciplinary Actions	714	134.243	267.121	336	50.767	53.126
Licensee Supervision Index	714	47.555	26.202	336	50.529	25.585
Democratic Control Democratic Governor	714	0.225	0.418	336	0.277	0.448
Democratic Control Republican Governor	714	0.224	0.417	336	0.241	0.428
Republican Control Republican Governor	714	0.293	0.455	336	0.259	0.438
Republican Control Democratic Governor	714	0.258	0.437	336	0.223	0.417

Table 2 Proportional hazard model with time-invariant controls

Regressors	(1)	(2)	(3)	(4)
% (No. Disciplinary Actions relative to no. complaints)	0.007*** (0.004)	0.007*** (0.004)	0.008*** (0.004)	0.008** (0.004)
Licensee Supervision Index	-0.007*** (0.004)	-0.007*** (0.004)	-0.006 (0.004)	-0.006 (0.004)
No. of Real Estate Licensees/1000 population	-0.025 (0.029)	-0.027 (0.028)	-0.025 (0.028)	-0.028 (0.028)
Democratic Control Democratic Governor	-0.134 (0.275)	-0.133 (0.275)	-0.096 (0.277)	-0.106 (0.276)
Republican Control Republican Governor	0.038 (0.225)	0.031 (0.228)	0.084 (0.235)	0.084 (0.236)
Democratic Control Republican Governor	-0.041 (0.314)	-0.071 (0.294)	0.018 (0.314)	0.019 (0.315)
Mortgage Rate	-0.419* (0.141)	-0.414* (0.148)	-0.415* (0.150)	-0.404* (0.149)
% Unemployment	-0.084 (0.076)	-0.113 (0.077)	-0.116 (0.080)	-0.131 (0.080)
% Job Growth	0.172** (0.073)	0.167** (0.072)	0.171** (0.074)	0.171** (0.073)
%Per Capita Income Change	-0.287*** (0.151)	-0.271*** (0.153)	-0.312** (0.152)	-0.296*** (0.152)
%Per Capita GSP Growth Rate	-0.034 (0.027)	-0.026 (0.026)	-0.023 (0.027)	-0.021 (0.026)
%Population Growth Rate	0.107 (0.109)	0.125 (0.109)	0.147 (0.113)	0.151 (0.111)
HPI-rate_Lag-1		-0.121 (0.074)		-0.087 (0.069)
HPI-rate_Lag-2			-0.171** (0.073)	-0.161* (0.062)
Fixed Effect?	Census Division	Census Division	Census Division	Census Division
Adj. R^2	0.234	0.227	0.221	0.223
N	732	682	632	632

Models include logarithm of time as the baseline hazard specification. Clustered Standard errors are reported within parentheses. This analysis includes data for all the states, from 1984 to 2004. The United States is divided into nine census divisions as defined by US Census Bureau e.g. New England. Number of observations is less than 1050 because we include data up to the year of adoption. We use number of licensees, the supervision index, and the number of disciplinary actions averaged at the pre-adoption level i.e. time-invariant.

*, **, and *** denote 1%, 5% and 10% significance levels respectively. Dependent variable: law adoption dummy

With Time-Varying Institutional Variables

We consider models that include time-varying covariates; address the measurement error problem; and control for state level heterogeneity. Table 3 takes the initial specification, as in column (4) in Table 2, and reports alternative econometric specifications. In this analysis, we use time-varying institutional attributes, which is a major departure from Table 2. Incorporating time-varying covariates is an important step in analyzing law adoption in our panel data framework, as the law

Table 3 Proportional hazard model with time-varying controls

Regressors	(1)	(2)	(3)	(4)	(5)
% (No. Disciplinary Actions relative to no. complaints)	0.003 (0.008)	0.003 (0.008)	0.019** (0.008)	0.019** (0.009)	0.016 (0.011)
Licensee Supervision Index	-0.014 (0.011)	-0.003 (0.007)	-0.024* (0.008)	-0.024** (0.011)	-0.025*** (0.013)
No. of Real Estate Licensees/1000 population	-0.021 (0.041)	-0.038 (0.035)	0.003 (0.058)	0.003 (0.060)	-0.017 (0.059)
Democratic Control	-0.151 (0.541)	-0.131 (0.521)	-0.059 (0.524)	-0.057 (0.495)	-0.087 (0.591)
Republican Control	0.186 (0.387)	0.165 (0.391)	0.024 (0.391)	0.024 (0.401)	0.075 (0.519)
Democratic Control Republican Governor	0.078 (0.593)	0.086 (0.586)	0.059 (0.681)	0.061 (0.659)	-0.015 (0.690)
HPI-rate_Lag-1	-0.183 (0.132)	-0.195 (0.156)	-0.209 (0.174)	-0.209 (0.145)	-0.193 (0.181)
HPI-rate_Lag-2	-0.283** (0.118)	-0.281** (0.111)	-0.277** (0.129)	-0.277*** (0.146)	-0.267 (0.177)
Model description	Current time-varying attributes	First lagged time-varying attributes	Avg. of second to fourth lagged time-varying attributes	Avg. of second to fourth lagged time-varying attributes	Avg. of second to fourth lagged time-varying attributes
Modeling Concern	More information	Current values not considered.	Variables measured with error	Heterogeneity	Heterogeneity
Distribution for Duration Dependence	Weibull	Weibull	Weibull	Weibull	Weibull
Distribution for Heterogeneity Term				Normal	Gamma
Log Likelihood	-101.45	-101.85	-94.07		-94.33
N	632	632	532	532	532

Models include logarithm of time as the baseline hazard specification and census division fixed effects. All findings for economic variables in Table 2 are robust across the models considered in Table 3. Clustered standard errors are reported within parentheses. This analysis includes data for all 50 states, from 1984 to 2004. We used time-invariant institutional variable in Table 2. However, in this table, we use time-varying institutional controls

*, **, and *** denote 1%, 5% and 10% significance levels respectively. Dependent variable: law adoption dummy

has been adopted in different years by different states, and obviously, it adds more information to our estimation.

In Table 3, we suppress the estimates on economic variables except housing price growth rate, as those are robust across specifications. For the hazard analyses in this table, we assume commonly used Weibull distribution for the duration dependence. Column 1 in Table 3 reports estimates from the hazard model with time-varying covariates with interval of 1 year. We use this model as a baseline specification in this analysis. Although we do not find significant estimates to test our main hypotheses, the signs are consistent with our postulates. As expected, number of disciplinary actions relative to number of complaints is positive, and the supervision index is negative. The ‘hot’ market argument regarding the housing price growth rate holds in this model.

Column 1 in Table 3 reveals some serious endogenous feedbacks in the system. One of the major concerns is endogenous effects of housing price growth. We include lagged values of housing price growth to mitigate the endogenous feedbacks. Another important endogenous process is associated with the institutional variables. Although Pancak and Sirmans (2006) find that having a disclosure law will result in fewer grievances against real estate agents, the number of disciplinary actions relative to number of complaints against real estate agents is included as explanatory variable in our model. The resulting concern that arises from insignificant estimates on institutional controls is exacerbated by the fact that legislators may not have observed current year values in deciding on law adoption. To address this concern, we incorporate first lagged values of the institutional variables in column (2), but it does not significantly improve our findings.

Measurement error is a major issue with the institutional variables. Moreover, legislators may look over a longer period to formulate their opinion about the need for such laws. Adopting a law is a slow process with debates, lobbying, deliberations, etc. In order to address the measurement error problem, we take the average of second to fourth lagged values for the institutional controls in column (3). The estimates strongly support our concerns (i.e. endogeneity and measurement error), and indicate a significant positive effect of number of disciplinary actions relative to number of complaints, and a significant negative effect of the supervision index. These two variables relate to most important hypothesis of the paper: a higher level of consumer and real estate board dissatisfaction, as indicated by complaints and disciplinary actions against real estate licensees, and a lower level of broker supervision (implying ill-prepared real estate agents who intentionally or unintentionally fail to disclose) tend to encourage adoption. This is well established in column (3). The ‘hot’ market argument regarding the housing price growth rate holds in this model.

The law adoption process varies across states, depending on many factors. The heterogeneity stems from the fact that different states in our sample have potentially different distributions for the duration dependence. In columns (4) and (5), we try to address the heterogeneity concern in a few different ways by building upon our specification in column (3). First, in column (4), we assume that the heterogeneity term v in Eq. 8 is normally distributed. We find significant effect of number of disciplinary actions relative to number of complaints and the supervision index. To explore further the concern that heterogeneity is present, we assume a gamma distributed frailty term in column (5). We find results similar to those in column (4) for our major hypothesis of consumer dissatisfaction. The effect of disciplinary actions relative to number of complaints becomes insignificant in column (5), but the general magnitudes of the estimates for disciplinary actions relative to number of complaints, supervision index, and house price growth are quite stable over all three specifications in columns (3), (4), and (5).¹⁷ Given endogenous feedbacks of many variables (e.g. housing price growth and other institutional variables), we suggest readers to focus on columns (2), (3), (4), and (5). In terms of magnitude, columns (3) and (4) suggest that, other things being the same, a 1 percentage point increase in percent of disciplinary actions relative to number of complaints leads on average to

¹⁷Due to many small omitted influences on law adoption, normal distribution is expected to represent data better than gamma distribution.

about 0.019 increase in the probability of a state to adopt the disclosure law. Similarly, a 1 percentage point increase in licensee supervision index leads on average to about 0.024 decrease in the likelihood of a state to adopt the law.

Our empirical analysis, as presented in Tables 2 and 3, supports two key postulates. A higher level of consumer and real estate board dissatisfaction, as indicated by a higher level of complaints and disciplinary actions against real estate licensees, and a lower level of broker supervision, implying that "...mistakes can be made that will damage one or more parties to a real estate sale," both increase the likelihood of adopting a Property Condition Disclosure Law.¹⁸

Conclusion

At least two-thirds of the US states have already mandated some form of seller's property condition disclosure statement, and there is a movement in this direction nationally. This paper attempts to ascertain the factors that lead a state to adopt a disclosure law. Motivation for the study stems from the fact that not all states have adopted the law, and states have enacted the law in different years. The study, on a more general note, also offers an empirical framework for understanding the adoption of disclosure laws or institutional arrangements. The analytical structure employs hazard models, using a unique set of economic and institutional attributes for a yearly panel of 50 US States, spanning 21 years, from 1984 to 2004.

A formal attempt has been made to explain the adoption of the disclosure law. Among the institutional controls, the number of disciplinary actions taken in conjunction with formal complaints against the real estate licensees, and the extent of broker supervision of real estate salespersons seem to matter in predicting adoption of the law. Specifically, a greater number of disciplinary actions tends to favor passage of the law. Greater broker supervision, implying more awareness among real estate agents, seems to have a negative impact on the likelihood of a state adopting a disclosure law.

Some potential explanations for our major results include consumer pressure and lobbying by real estate licensees. Consumers can only voice their dissatisfaction by lodging complaints and filing lawsuits. Significance of consumer and real estate board dissatisfaction (as indicated by the number of disciplinary actions taken in conjunction with formal complaints against the real estate licensees) in leading states to adopt the disclosure law implies that consumers, in thirty-four states, successfully raised their voices. The result clearly indicates that the law seems to protect the real estate licensees from the fatalities (e.g. disciplinary actions and lawsuits) from bearing the risk, and at the same time, it aims at protecting the consumers (homebuyers) from buying "lemon" houses. In the process, the risk is not eliminated. It is rather shifted to sellers with the caveat that non-disclosure and false disclosure (by sellers) are now open to actions backed by a law. Property Condition Disclosure Law can be compared with other consumer protection acts. This paper indicates that such laws are adopted when consumers are being affected. Future research may focus on incorporating variables that describe the institutional framework better.

¹⁸See Zumpano and Johnson (2003), page 286.

Modeling the information asymmetry and the behaviors of licensees, sellers, and buyers, especially in ‘hot’ markets, are also prospective areas of research.

Definition of Variables

Variable	Definition
Economic Variables	
%Change in HPI	Average of quarterly changes in OFHEO House Price Index for the year
%Unemployment Rate	Percent unemployment rate
%Job Growth Rate	Percent nonfarm job growth rate
%Per Capita Income Change	Percent per capita income growth rate
%Per Capita GSP Growth Rate	Percent per capita Gross State Product Growth Rate
%Population Growth Rate	Percent population growth rate
%Mortgage Rate	30-year fixed mortgage rate
Institutional Variables	
% (No. Disciplinary Actions relative to no. complaints)	$[(\text{number of disciplinary actions})/(\text{number of complaints})]*100$
Licensee Supervision Index	$[(\text{number of brokers})/(\text{number of salespersons})]*100$
No. of Real Estate Licensees/1000 population	(Total number of brokers, associate brokers, and salespersons)/population in thousands
Democratic Control Democratic Governor	Combination of dummy variable indicating democratic control as well as democratic governor
Democratic Control Republican Governor	Combination of dummy variable indicating democratic control but republican governor
Republican Control Republican Governor	Combination of dummy variable indicating republican control as well as republican governor
Republican Control Democratic Governor	Combination of dummy variable indicating republican control but democratic governor

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