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Guarding the Subjective Premium: Condemnation Risk Discounts in the Housing Market

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We propose the condemnation risk discount theory, whereby home buyers deduct a discount from housing prices in the absence of insurance against the risk that the government will condemn their property for private transfer. Home owners cannot separate out the negative risk that their home will be condemned from the positive effect that high-value redevelopment projects may have on the surrounding area. There are, consequently, competing effects of the risk of eminent domain on fair market value.

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I. INTRODUCTION

Michael Cristofaro’s family had two homes condemned by the city of New London, Connecticut, as part of the 2000 Fort Trumbull Municipal Development Plan. The project included plans to build new housing, a hotel, a restaurant, conference and athletic centers, and a bioscience office park in the Thames River shoreline area.¹ When recently interviewed about his experience, Cristofaro insisted: “It wasn’t about money. . . . This was our home.”² He explained that he and the other property owners who refused to sell their homes were treated as if they were stonewalling economic development.³ The dispute was ultimately resolved by the United States Supreme Court in the infamous Kelo v. City of New London decision, which upheld the city’s redevelopment plan as a valid taking under the Fifth Amendment.⁴ In the aftermath of the ruling, the city has struggled to get the redevelopment project off the ground.⁵ Despite the developer’s promise to build rental units with “Greek Revival and Italianate facades and interiors with a Japanese contemporary flair,”⁶ the city and the developer are headed to mediation—thirteen years later—to resolve financing problems.⁷ For now, the residents of New London only see an empty site and hear about future plans.⁸

Cristofaro takes solace in the fact that the city of New London’s saga motivated home owners around the country to fight against eminent domain. “[T]hey got off their couches and did something,” he said. ‘Because of our case, people have been allowed to stay in their homes.’”⁹ Indeed, forty-four states responded to Kelo by enacting new or stronger legislation to protect home owners against the risk of a

². Id.
³. Id.
⁷. Edgecomb, supra note 1.
⁸. Id.
⁹. Id.
taking.\textsuperscript{10} We provide—for the first time—an empirical analysis of the effect of both the \textit{Kelo} decision and subsequent state legislation on housing prices.

We argue in Part II that eminent domain laws have two potentially competing effects on housing prices, through the home buyer's "condemnation risk discount" and the relevant real estate market value. Home buyers include the risk of eminent domain—and the potential losses caused by undercompensation through "fair market value"—as a discount in the closing price of their properties.\textsuperscript{11} Fair market value of the property simultaneously may rise or fall depending on the expectation that eminent domain projects are efficient, that is, whether they will yield positive redevelopment or empty lots in the relevant real estate market.

In Part III, we examine the \textit{Kelo} decision and the national response within the framework of the condemnation risk discount and relevant real estate market theories. We argue that \textit{Kelo} should have caused an increase in condemnation risk discounts, given the concern over increased usage of eminent domain in each state. Turning to state legislative responses, we expect that home owners' condemnation risk discounts should have declined, on average, commensurate to the strength of their legislatures' assurances that they would not replicate the city of New London's development plan. Assuming the efficient usage of eminent domain for private transfer, we contend that \textit{Kelo} should cause an increase in the relevant real estate market but that any increases may have been undone by strong anti-\textit{Kelo} legislation.

We test our condemnation risk discount theory in Part IV and show that the empirical results are consistent with our theory. \textit{Kelo} had a statistically significant negative impact on the change in housing prices across the nation. We further demonstrate that home prices responded negatively, with statistical significance, to state legislation following \textit{Kelo}, that is, the stronger the state's response against \textit{Kelo}, the greater the negative impact on the change in housing prices. Those states that took no action against the decision experienced an increase in housing prices, largely recouping the losses caused by the initial shock of \textit{Kelo}.


\textsuperscript{11} Another way to think about this concept is the price required to transform an unwilling seller into a willing seller.
II. HOME VALUATION—AN ECONOMIC FRAMEWORK

The Kelo poster children are the elderly husband and wife who have spent their married lives together in their home and are suddenly informed that their property has been condemned for a corporate redevelopment project and are offered the fair market value in exchange.12 Such an outcome strikes fear in the heart of any warm-blooded home owner. Legal scholars have argued that fair market value undercompenses the elderly couple, focusing on the sense of autonomy and sentimental value that is lost in the cold, economic calculation.13 We propose a modified framework to understand the elderly couple’s predicament by offering the condemnation risk discount theory, suggesting that the market has integrated the risk of undercompensation into housing prices.14 We then explore the competing effects on home valuation through the potential benefits of eminent domain.

A. Subjective Premium

The Fifth Amendment requires the government to pay a condemnee “just compensation,”15 which is generally measured as the property’s fair market value.16 The fair market value, in turn, is calculated by estimating “what a willing buyer would pay in cash to a willing seller.”17 There is a natural intuition that this calculation misses something critical, given that a seller who is forced to sell to the government is, by definition, not willing.18 This gap in the calculation

12. Kelo v. City of New London, 545 U.S. 469, 475 (2005) (“Petitioner Wilhelmina Dery was born in her Fort Trumbull house in 1918 and has lived there her entire life. Her husband Charles (also a petitioner) has lived in the house since they married some 60 years ago.”).
15. U.S. Const. amend. V.
18. See, e.g., Krier & Serkin, supra note 14, at 866 (“The difficulty, of course, is that in condemnation cases the sellers are not willing at all, however eager the buyers happen to be.”).
is described in the literature as the subjective premium.\textsuperscript{19} The subjective premium is the additional amount of money a home owner would be willing to accept to sell their home at fair market value.\textsuperscript{20}

Subjective premium can be calculated by measuring the difference between the owner's value of their property (their reservation price) and the market's value of the property (fair market value).\textsuperscript{21} Its movement is subject to private information\textsuperscript{22} and is not necessarily correlated with the property's market value. The subjective premium may increase over time as positive memories are accumulated in the home, such as the birth of a child or the achievement of professional accomplishments. Conversely, there may be a sudden drop in the subjective premium if negative personal experiences occur there.

It is important to distinguish between those negative personal experiences that cause a decline in the subjective premium and those that may simultaneously decrease the subjective premium and the fair market value. Depending on the jurisdiction, a home seller may have a duty to disclose the fact that a house may be haunted,\textsuperscript{23} that a murder\textsuperscript{24} or death\textsuperscript{25} took place, or that a previous owner was significantly indebted, in order to prepare for harassing calls or creditor visits.\textsuperscript{26}

\textsuperscript{19} Thomas W. Merrill, \textit{The Economics of Public Use}, 72 C\textit{ornell L. REV.} 61, 83 (1986).
\textsuperscript{20} Lee, supra note 13, at 600.
\textsuperscript{21} See, e.g., Krier & Serkin, supra note 14, at 866 ("The difficulty, of course, is that in condemnation cases the sellers are not willing at all, however eager the buyers happen to be. They are unwilling precisely because, absent some statutory provision, they are not compensated for moving expenses, loss of goodwill, consequential damages, nor, most importantly, loss of consumer surplus—which is to say the amount by which an owner values property over and above its fair market value. That amount, especially significant in the case of residential property, has to be positive, for otherwise owners would already have sold their holdings on the market." (footnote omitted)).
\textsuperscript{22} Private information is available for potential buyers for all of the possible disclosures on a home, but in the case of eminent domain revealing any private information is not necessary. Nonetheless, a potential buyer would rely on public information to assess this risk. It is clear that a neighborhood insider would be more likely to know to check the potential risk of eminent domain if it exists in a given neighborhood.
Even if there is no duty to disclose, the fact of certain negative characteristics may negatively impact the fair market value. The subjective premium does not need to track these outcomes, and even if it follows in tandem, the decrease does not need to be the same amount as the fair market value decrease. When the home owner is prepared to put their home on the market, their subjective premium is zero. Any value greater than zero signifies that the home owner is not on the market. The higher the subjective premium, the greater the resistance to condemnation.

B. Condemnation Risk Discount

Given the well-understood undercompensation problem in the eminent domain context, the question arises: where is the insurance market for the subjective premium? Eminent domain insurance has been proposed to provide home owners protection against the risk of regulatory takings. At least one insurance company considered offering similar coverage for physical takings to California residents. These insurance market proposals are predicated on the difference between fair market value and the compensation provided by the government, however, and not on the subjective premium. The problem for insuring the subjective premium is that it is, by definition, subjective and impossible to verify in an insurance claim process. Real property insurance is generally founded on fair market value, which will not help the condemnee who seeks more than fair market value to cover their loss. In some instances outside the real property context, there are “agreed value” insurance policies, but these would also fail the home owner if their subjective premium has increased since agreeing to the policy. There is consequently no formal insurance available to cover sentimental value, in the real estate context or elsewhere.

29. Id.
30. See, e.g., Philip J. Cook & Daniel A. Graham, *The Demand for Insurance and Protection: The Case of Irreplaceable Commodities,* 91 Q.J.Econ. 143, 143 (1977) (arguing that owners “will typically not fully insure an irreplaceable commodity and may even choose to bet against losing it”).
31. See, e.g., David Markell et al., *What Has Love Got To Do with It?: Sentimental Attachments and Legal Decision-Making,* 57 Vill. L. Rev. 209, 222 (2012) (“In short,
In the absence of formal, structured insurance plans, home buyers can deduct a condemnation risk discount from the closing sale price. We argue that this discount serves as an intertemporal transfer by the home owner, such that their subjective premium is not entirely lost. Home owners compensate themselves at closing for the expected loss of their subjective premium at the time of condemnation. Suppose that we consider a rational, risk-averse agent who could sell their home at price $R$ (reservation price) if they want to sell. There is a probability $p$ that the government will decide to condemn their house. In that case, they can only sell their house for fair market value. Therefore, they would want to enter into a contract with an insurance company that would ex ante offer them insurance to make sure they receive the same marginal utility in both states of the world (condemnation and noncondemnation).

Upon first consideration, one might think that condemnation risk discounts reflect all eminent domain usage, not private transfer in particular. The argument is that subjective premium is equally lost whether the property is subsequently used for a hotel or for a public park. While the condemnation risk discount may pick up some amount of protection against idiosyncratic eminent domain usage, we argue that the discount is largely limited to private transfers because of the unique inability of home owners to avoid such condemnation risks. If a home buyer is uniquely risk-averse, they can purchase a home far away from major roads to avoid the risk of a highway expansion. If they are concerned about the possibility that a town may want to create additional parks through eminent domain, they can choose a town saturated in parks or a community with truly blighted areas that could benefit from restored public spaces. They can avoid a finding of blight for their own property by maintaining it.

Private transfer is a different type of risk, primarily because the municipality's underlying calculus in pursuing private transfer is mainly based on increasing the tax base. Private transfer for sentimental value, defined broadly to include the endowment effect, information acquisition, and traditional or popular notions of sentimental value, may be very difficult to place a monetary amount on due to differences in subjective perception, both across contexts (are you the owner or the would-be purchaser) and within contexts (you may value the home you grew up in more than I do)."

32. They could potentially sell at any price higher than $R$, but we will suppose they sell at price $R$ to simplify the analysis.

economic development will almost always increase the tax base: substituting one home for many condominiums, for example, will necessarily increase tax revenues for the city. Home owners therefore lack defensive actions to protect against this risk, unlike with more "classic" public uses. It is this lack of alternatives on the part of the home owner, to protect against private transfer, that necessitates a condemnation risk discount in the housing market.

The condemnation risk discount should be contrasted with the idea that laws generally may impact housing prices. Anup Malani argues that housing prices may fluctuate in response to changes in local laws "because more people want to live there." This theory serves as a compelling method for evaluating a law's utility. In the eminent domain context, however, the condemnation risk discount is not a function of home owners "voting with their feet," but a reflection of an unavailable insurance market. Unlike other laws that can have significant financial impact on voters, such as tort reform and employment law, in the eminent domain context the expected loss is so small that it is unlikely to motivate an otherwise stationary home owner. The risk can be expected to impact housing prices on the margin and the choice of neighborhood for a home buyer already motivated to purchase.

The home buyer's condemnation risk discount is dependent on two primary variables: their expected subjective premium \( M \) and their expected likelihood of condemnation \( p \). Supposing that the home buyer is their own risk-neutral insurance company, they will want to pay a premium \( P \) such that \( P = pM \). This premium \( P \) is the condemnation risk discount.

The expected subjective premium can be calculated by first estimating the expected amount of time the home buyer will remain in the home. For example, first-time home buyers generally move out faster than trade-up buyers; in fact, it generally takes about thirteen years for half of all first-time buyers to move out of their homes, which

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34. See generally Krier & Serkin, supra note 14, at 861 (describing the difference between classic public uses and private transfers).

35. See generally Anup Malani, Valuing Laws as Local Amenities, 121 HARV. L. REV. 1273 (2008) (arguing that markets incorporate laws and their effects into prices).

36. Id. at 1275.

37. Id. at 1317-20.

38. We suppose that the insurance company is risk-neutral.
is two years faster than general home buyers.39 By contrast, it takes seventeen years for trade-up buyers to meet that threshold.40 Home buyers can therefore estimate the length of time they will remain in the home and the corresponding subjective premium fluctuations that may occur over time.

The greater difficulty for the home buyer is calculating the likelihood of condemnation. It is exceedingly rare to find a governmental entity that maintains careful usage data. In the absence of publicly available condemnation statistics, home owners rationally rely on signals to estimate the likelihood of condemnation, most importantly public reporting—what we call "information flare-ups"—and changing legislation.41

We define an information flare-up as a spike in public reporting of eminent domain, where the spike mischaracterizes the fact that eminent domain for private transfer is more consistently exercised. Information flare-ups reveal the degree of negative publicity that a condemning entity is willing and able to withstand. Moreover, it may suggest that the local government uses eminent domain regularly in more politically palatable contexts that do not gain local or national coverage, which in turn undermines the home owner’s historical estimation of the likelihood of condemnation. When the flare-up subsides, it may cause home owners to mistakenly infer that eminent domain activity has slowed down. A flare-up may distort condemnation risk discounts through a phenomenon called availability bias, which is an individual’s estimation of the likelihood of condemnation based on how easily they can think of an example of it having occurred, detached from the actual likelihood of the risk.42 The effect of Kelo as perhaps the most significant flare-up in recent eminent domain action history is discussed in greater detail in Part III, below. Local flare-ups occur more regularly and serve as a constantly

40. Id.
41. See, e.g., GEORGE J. STIGLER, THE THEORY OF PRICE (3d ed. 1966) (explaining that the optimal market price for a good is determined by the relationship between supply and demand); Michael Spence, Job Market Signaling, 87 Q.J.ECON. 355 (1973) (analyzing how signaling impacts job markets); George J. Stigler, The Economics of Information, 69 J. POL. ECON 213, 220-22 (1961) (analyzing the problems buyers have when ascertaining market prices).
updating signal on the locality's usage of eminent domain. Applied to housing decision making, availability bias will tend to add some potential irrationality in the short run, but in the long run this bias could be smoothed out into rationality by adding more relevant information.43

Home owners also rely on changes or expected changes in the legal landscape to calculate the risk of eminent domain. The home buyer will have over- and underestimated their condemnation risk discount if the eminent domain laws or usage rates change in the time period between when they purchased their home and when their property is condemned or they put it on the market for resale. If, for example, there was a high likelihood of condemnation when they purchased their home, the home buyer may have secured a lower price. When the laws tighten against condemnation, the home buyer enjoys a higher resale price. Conversely, if that home buyer purchased their home during a time when the risk of condemnation was low, they may have factored in a very low condemnation risk discount. If there is panic about the risk of eminent domain, or the laws relax at a later point in time, the home buyer will bear the loss of the change in law. Therefore, the home buyer would get more of a transfer of wealth if the risk of eminent domain is low. Overall, note that the net gain for both should be zero as the market would end up at an equilibrium in order for a given house to be sold.

Kelo can be understood not only as an information flare-up but also as an unreliable signal that the legal landscape may change. Home owners may have anticipated that local governments would become emboldened by the Supreme Court's clear and unequivocal pronouncement that an economic redevelopment plan may be upheld under the Fifth Amendment. Once again, while Held's effect on condemnation risk discounts should not be underestimated, it is by no means the only example of unsteady legal landscapes.44 We expect such dramatic swings in the legal landscape to cause concern for home owners over how the dust will settle and, in turn, to impact condemnation risk discounts.

44. The city of Aurora, Illinois, for example, developed a plan in 2000 to redevelop RiverCity. To expedite the process, the city secured approval from the Illinois legislature to use quick-take condemnation. The governor responded with an amendatory veto to the quick-take bill. Dana Berliner, Public Power, Private Gain, CASTLE COALITION 65 (Apr. 2003), http://www.castlecoalition.org/pdf/report/ED_report.pdf.
C. Relevant Real Estate Market

The risk of eminent domain cannot be understood in a vacuum, nor should it be interpreted as a purely negative risk. While a home owner in a nice home may want assurances that their property will not be unexpectedly condemned, they may not be opposed to the possibility that the unsightly apartments a few blocks away will be condemned and replaced with a high-priced high-rise building. Real estate is indeed affected by not only the behavior of a given home owner, but by all of the surrounding neighborhood, which we would describe as the relevant real estate market.\textsuperscript{45} Famously, the power of eminent domain was wielded to revitalize the Ferry Building in San Francisco, Dudley Street in Boston, and Skyland Shopping Center in Washington, D.C., which increased home values in the surrounding areas.\textsuperscript{46} We conceptualize the relevant real estate market as the geographic zone that impacts a given property's value. These eminent domain action risks represent the likelihood that the relevant real estate market will increase or decrease in value over time.

Decreasing the likelihood that an individual home owner's property may be condemned is necessarily correlated with a decreased likelihood that another home owner's property will be condemned for economic development, assuming general uniformity of risk of condemnation across residential homes. We envision eminent domain for private transfer to function like a tornado with an uncertain path that could hit anyone. The possibility that eminent domain can truly revitalize a community, thereby increasing surrounding housing prices along with the more direct benefits to those immediately impacted, should not be forgotten. One of the most positive stories of revitalization is the Melrose Commons Urban Renewal Project in the South Bronx, New York. Plans were initially developed in the late 1980s.\textsuperscript{47} After some delay, the project began to move forward in

\begin{footnotesize}
45. We adopt the economic principles underlying relevant markets in the antitrust law context to the real estate market. \textit{See, e.g., United States v. E.I. du Pont de Nemours & Co.}, 351 U.S. 377, 391, 395 (1956) (defining monopoly power as "the power to control prices or exclude competition" in the relevant market, where the relevant market is defined by products that are "reasonably interchangeable by consumers for the same purposes"); \textit{see also} \textit{Stigler}, supra note 41 (discussing optimal market prices in relation to supply and demand); \textit{R.H. Coase, The Problem of Social Cost}, 3 J.L. & ECON. 1, 1 (1960) (analyzing the economics of private nuisance law).


47. Petr Stand et al., \textit{Melrose Commons, A Case Study for Sustainable Community Design}, PLANNERS NETWORK, http://www.plannersnetwork.org/magazine-publications/case-
1994.\textsuperscript{48} The original plan risked pricing out the low-income residents, but after extensive coalition work with home owners, tenants, and businesses, new plans that included mixed-income housing were assembled.\textsuperscript{49} The thirty-five-block area now includes approximately 2,000 mixed-income housing units, retail space, and parks.\textsuperscript{50} Once described as an “apocalyptic nightmare version of urban life,” the South Bronx is now considered “[o]ne of the greatest real estate turnarounds ever.”\textsuperscript{51} Home prices have increased tenfold.\textsuperscript{52} Development is continuing, in light of the project’s tremendous success.

We therefore theorize that the effect of eminent domain risk should have competing effects on condemnation risk discounts and the relevant real estate market. When there is an increased eminent domain risk, there should be a simultaneous increase in the value of the relevant real estate market and condemnation risk discounts, assuming proper functioning of eminent domain for private transfer. The prospect of large development projects increases fair market value through the potential for improved housing, retail, and associated economic gains. At the same time, it also increases the condemnation risk discount because there is a heightened risk that the home owner’s property will be condemned and, consequently, housing prices will decrease.

There is active debate over the marginal effect that eminent domain has on a state’s economy and real estate market, however, because corporations are free to negotiate independently with home owners to purchase larger tracts of land. Moreover, state and local governments can incentivize development projects through tax incentives, rezoning, and state economic development grants, to name

\begin{footnotes}
\item 49. Id.
\item 50. Id.
\item 52. Id. ("Each property sold for between $50,000 and $59,000 even thought [sic] it cost an average of $110,000 to build.").
\end{footnotes}
a few options. Opponents of eminent domain for private transfer point to successful redevelopment projects that—though slow to develop—revitalized communities. They further argue that eminent domain is too easy of a tool for local government, such that it incentivizes "inadequate planning and economic evaluation by governments and/or undue influence of special interests." The question remains, therefore, whether eminent domain risk does, in fact, have a positive or negative effect on the housing market. If the increased risk of eminent domain causes home owners to expect demolished homes and empty lots because it is inefficiently exercised, then it should trigger a decline in housing prices. Conversely, if an increase in the likelihood of eminent domain is positively integrated as a sign of higher-value redevelopment because eminent domain is efficiently used, then it should cause an increase in fair market value. Without the necessary information, the real estate market cannot properly estimate the likelihood that private transfer via eminent domain will yield the city of New London nightmare or the South Bronx dream. This information failure also throws into question whether redevelopers will move forward with their projects in an area that offers tax incentives instead of eminent domain or if they will relocate to an area that is friendly to private transfers via eminent domain.

55. Id. at 6.
56. Id. at 9.
We represent the eminent domain trade-offs using the following table:

Table 1: Eminent Domain Trade-Offs

<table>
<thead>
<tr>
<th>Effect of Relevant Real Estate Market on Fair Market Value</th>
<th>Effect of Condemnation Risk Discount on Fair Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Effect</td>
<td>Positive Effect &gt;0</td>
</tr>
<tr>
<td>Negative Effect</td>
<td>Uncertain</td>
</tr>
</tbody>
</table>

As Table 1 shows, there are two scenarios in which the effects of condemnation risk discount and redevelopment plans will move in the same direction (the upper-left and lower-right boxes). In order for them to work together, the market must interpret redevelopment plans as inefficiently decided or effectuated. In other words, the market must expect a negative effect on fair market value arising out of a government’s redevelopment plans. An illustration will help clarify the point. If a local government restricts its ability to effectuate a private transfer using eminent domain and home owners anticipate private transfer to result in a city of New London catastrophe, the restriction will increase fair market value by reducing the need for a condemnation risk discount. In addition, the restriction further increases fair market value by reducing the likelihood of demolished homes and empty lots. Conversely, if the government expands its ability, then there will be an increased need to insure against the loss of the subjective premium, which causes a decrease in fair market value. This effect will be exacerbated by the negative effect on housing prices as home owners brace for empty lots.

In the other two scenarios (the lower-left and upper-right boxes), the effects are uncertain because the magnitude of the effects cannot be known without empirical analysis. These scenarios are caused by the market putting a positive expected value on a government’s redevelop-
ment plan. As a result, if the government restricts its ability to effectuate a private transfer using eminent domain and home owners anticipate private transfer to potentially result in greater value to the neighborhood, the restriction will increase fair market value by reducing the need for a condemnation risk discount. The restriction will decrease fair market value, however, by reducing the likelihood of improved local value in the event of holdouts. Conversely, if the government expands its ability, then there will be an increased need to insure against the loss of the subjective premium, which causes a decrease in fair market value. Such an effect will be counterbalanced by the positive effect on housing prices, given that home owners expect an improvement in the surrounding area.

Home owners seeking protection against condemnation of their homes will simultaneously harm the value of their assets by advocating for such an outcome. The only way in which they can guarantee that they will avoid negatively impacting their home prices through advocacy is if eminent domain is inefficiently used.

III. PRICING EFFECTS OF KELO V. CITY OF NEW LONDON AND SUBSEQUENT STATE RESPONSES

In this Part, we apply the condemnation risk discount and relevant real estate market theories to *Kelo* and the subsequent state responses. We first conceptualize *Kelo* as an information flare-up and signal for unsteady legal landscapes. We then review the varying state responses to *Kelo* and anticipate the effect on housing prices.

A. Kelo v. City of New London

The most widely known information flare-up is *Kelo*, where the Supreme Court upheld the City of New London’s economic revitalization project as a public use within the meaning of the Takings Clause.\(^{57}\) While the decision caused an explosively negative public reaction, it did not necessarily represent a change in the law. The Justice Stevens-led majority concluded that the city’s development plan embodied a “public purpose” because “our cases have defined that concept broadly, reflecting our longstanding policy of deference to legislative judgments in this field.”\(^{58}\) In particular, the Court relied heavily on the 1984 decision *Hawaii Housing Authority v. Midkiff*,\(^{59}\)

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57. 545 U.S. at 469-70.
58. *Id.* at 480.
where the Court upheld a Hawaii statute that authorized the transfer of fee title from lessors to lessees to combat concentrated land ownership.\textsuperscript{60}

Interestingly (although unsurprisingly), \textit{Midkiff} did not cause a reaction anywhere near as explosive as what followed \textit{Kelo}. The Hawaii statute was targeted specifically at breaking up the concentrated land wealth of very large landowners on the islands.\textsuperscript{61} The Hawaiian legislature sought to force wealthy landowners to transfer ownership to long-standing property tenants.\textsuperscript{62} Home owners were unable to relate to Hawaii's unique concerns and, moreover, could not identify with the condemnees. By contrast, the American home-owning public could appreciate the distress caused to the city of New London condemnees when they were pushed aside for a redevelopment plan. In fact, following \textit{Kelo}, T-shirts were sold with the slogan “You Could Be Next: End Eminent Domain Abuse.”\textsuperscript{63}

Some scholars interpreted the overwhelming national response to \textit{Kelo} as largely irrational, given that the decision did not create any new law.\textsuperscript{64} \textit{Kelo} may not have represented a change in the law, but it was a vital signal to home owners. Justice O’Connor anticipated in her \textit{Kelo} dissent that the decision would necessarily have an impact on the real estate market. She warned: “The specter of condemnation hangs over all property. Nothing is to prevent the State from replacing any Motel 6 with a Ritz–Carlton, any home with a shopping mall, or any farm with a factory.”\textsuperscript{65} On a purely local level, it was an indication that the state of Connecticut and City of New London were able and willing to withstand enormous political pushback because their condemnation power was so strong. However, the reason a distinctly

\begin{thebibliography}{99}
\bibitem{note60} \textit{Id.} at 233.
\bibitem{note61} \textit{Id.} at 232 (“In the mid-1960’s, after extensive hearings, the Hawaii Legislature discovered that, while the State and Federal Governments owned almost 49% of the State’s land, another 47% was in the hands of only 72 private landowners. The legislature further found that 18 landholders, with tracts of 21,000 acres or more, owned more than 40% of this land and that on Oahu, the most urbanized of the islands, 22 landowners owned 72.5% of the fee simple titles. The legislature concluded that concentrated land ownership was responsible for skewing the State’s residential fee simple market, inflating land prices, and injuring the public tranquility and welfare.” (citations omitted)).
\bibitem{note62} \textit{Id.} at 233.
\bibitem{note63} End Eminent Domain Abuse T-Shirt, \textsc{Zazzle}, http://www.zazzle.com/you\_could\_be\_next\_t\_shirt-23538936197962079 (last visited Nov. 1, 2014) (displaying a T-shirt featuring the text “You Could Be Next: End Eminent Domain Abuse”).
\bibitem{note64} Edward J. López et al., \textit{Pass a Law, Any Law, Fast! State Legislative Responses to the Kelo Backlash}, 5 \textsc{Rev. L. & Econ.} 101, 102 (2009) (“[T]he \textit{Kelo} ruling in June 2005 created no new law.”).
\end{thebibliography}
local case would cause an increase in condemnation risk discounts and, in turn, decrease home price is because it created an unsteady legal landscape. With such an unequivocal pronouncement from the Supreme Court, home owners could not be certain whether the decision would motivate local governments to flex their eminent domain powers, due to the reduced likelihood of federal judicial backlash.\textsuperscript{66}

We expect a negative effect on fair market value given the media coverage over \textit{Kelo} at the time, even though Table 1 indicates that either one of the right-hand boxes could be in play. With the potential for local governments to follow the city of New London’s lead, there was uncertainty over the likelihood of an increase in the potential for large development projects via eminent domain. In theory, the possibility of redevelopment should have caused a converse, positive effect on the housing market; however, the media coverage at and after the \textit{Kelo} decision was strongly negative against eminent domain.\textsuperscript{67} Private transfers via eminent domain were described as having “failed miserably” and examples of those failures were “not hard to find.”\textsuperscript{68}

\textbf{B. Subsequent State Legislation}

Justice Stevens, writing for the majority in \textit{Kelo}, emphasized that “nothing in our opinion precludes any State from placing further restrictions on its exercise of the takings power.”\textsuperscript{69} Forty-four states responded by enacting new or stronger legislation to protect home owners against the risk of a taking.\textsuperscript{70} The vast majority of states responded swiftly but with varying degrees of aggressiveness. Six states have chosen not to respond legislatively to the \textit{Kelo} decision.\textsuperscript{71} While evidence is limited, the available literature suggests that these states are highly active in their eminent domain usage.\textsuperscript{72} Fifteen states made nominal changes to their eminent domain legislation, but generally are not considered to have made any

\begin{footnotesize}
\begin{enumerate}
  \item This is not to say that state supreme courts did not put in their own restrictions. See discussion \textit{infra} Part IV.A.2.
  \item See, e.g., Adam Liptak, \textit{Case Won on Appeal (to Public)}, N.Y. \textsc{Times} (July 30, 2006), http://www.nytimes.com/2006/07/30/weekinreview/30liptak.html?_r=2& (discussing the public outrage over the \textit{Kelo} discussion).
  \item Brief Amicus Curiae of John Norquist, \textit{supra} note 54, at 7.
  \item \textit{Kelo}, 545 U.S. at 489.
  \item \textit{50 State Report Card}, \textit{supra} note 10.
  \item Arkansas, Hawaii, Massachusetts, New Jersey, New York, and Oklahoma. \textit{Id.}
\end{enumerate}
\end{footnotesize}
significant substantive change. Some of these states left open space for eminent domain by including "obsolete" properties as available for eminent domain action. Similarly, they kept the definition of public use general to keep local governments flexible in using eminent domain.

The remaining states engaged in substantive reform. The relative strength of reform is measured by looking at the degree to which the law forecloses the possibility of eminent domain for private transfer. Those states that prohibited private transfers through eminent domain in constitutional amendments are understood to have taken the most aggressive approach to Kelo. The majority of aggressive states did not go as far as amending their constitutions, but nevertheless took strong stances through statutory reform. They ensured that there were no or few openings in the definition of blight to circumvent the broad prohibitions against private transfers through eminent domain. Indiana, for example, prohibits private transfers and ensures that blight is narrowly defined, but it maintains an exception for certified technology parks. Indiana has sought to ensure that the technology business is not dissuaded from growing in the state.

The aggressive state responses signaled an increase in friction against private economic development through eminent domain. Florida is known as one of the states that provided some of the most aggressive protections in response to Kelo. Shortly after the ruling, Florida passed a law requiring local governments to wait ten years before transferring land through eminent domain. The state legislature and voters passed a constitutional amendment that requires a three-fifths majority in both the house and senate to permit an exception to using eminent domain for private development. Florida’s laws, according to the Institute for Justice, "effectively

75. See 50 State Report Card, supra note 10.
78. 50 State Report Card, supra note 10.
eliminat[e] condemnations for private commercial development.\textsuperscript{82} Though such reactions should decrease home buyers’ condemnation risk discounts and thereby increase home sale prices, we argue it should also decrease homes’ fair market value in theory. Once again, the empirical effects are difficult to anticipate theoretically, given that either one of Table 1’s left-hand boxes may be triggered.\textsuperscript{83}

It is important to understand that a state’s response might affect home owners’ and buyers’ valuation for a given property due to a belief bias. The belief bias in behavioral economics theorizes that a home owner or buyer may use her own personal beliefs or potential prior knowledge about the state response to \textit{Kelo} to determine the value of a given home.\textsuperscript{84} In particular, home owners and buyers may have believed in the short run that stronger anti-\textit{Kelo} legislation was better for the housing market, without considering its effects on the relevant real estate market. The short-run effect on housing prices may reflect that fact without revealing competing negative effects.\textsuperscript{85} While any such bias may create short-run irrational responses, in the long run it will tend to disappear as the state response and its effects become a clear and set form of information.\textsuperscript{86}


\textsuperscript{83} While our analysis focuses on state and local responses—which represent the substantial portion of condemnation activity—the federal government also maintains the right to eminent domain under the Fifth Amendment. \textsc{U.S. Const.}, amend. \textsc{V}. In recent history, the federal government has used eminent domain, through the Department of Justice’s Land Acquisition Section, to further conversation efforts in, for example, the Everglades and New Mexico’s Valles Caldera National Preserve. Additional projects have included the condemnation of land along the United States-Mexico border for national security interests. \textit{Summary of Litigation Accomplishments}, \textsc{U.S. Dep’t Just.} 12, 29, 51-52 (2009), http://www.justice.gov/enrd/ENRDFiles/ENRD_FY_2009_Accomplishment_Report.pdf.

\textsuperscript{84} See Kuran & Sunstein, supra note 42; Rabin, supra note 42; Stapel et al., supra note 43.

\textsuperscript{85} Another factor that could create a belief bias was the simultaneous local legislation underway at the same time. See discussion \textit{infra} Part III.C.

C. Local Legislative Responses

Local legislative activity occurred concurrently or, in some instances, in the absence of state legislative responses to *Kelo*. Many municipalities quickly passed resolutions condemning the Supreme Court’s decision and requesting responsive federal and state legislation.\(^{87}\) Dutchess County, New York, legislators, for example, passed Resolution No. 205257 to “set[] policy for the county and reassure[] constituents that property would not be taken by eminent domain for economic gain.”\(^{88}\) The resolution prohibited the county from exercising eminent domain for private transfer. While impassioned, “[t]he authority . . . exercised in the resolution was to create county policy not law.”\(^{89}\) Dutchess County’s resolution and other resolutions passed in the wake of *Kelo* are properly understood as statements of policy and not binding law, similar to Congress’s anti-*Kelo* resolution.\(^{90}\)

Other localities passed ordinances—that function as local law, in contrast with resolutions—with varying degrees of success.\(^{91}\) The uncertainty over a municipality’s authority to pass legislation in the absence of state action or that is different from state legislation puts into doubt whether many of these ordinances are properly understood as valid laws.\(^{92}\) Notably, in Amesbury, Massachusetts, voters passed Ordinance 2006-013 in an attempt to restrict eminent domain for private transfer, given the absence of successful legislation on the state level.\(^{93}\) In Massachusetts, however, the ordinance required the state

\(^{87}\) See, e.g., Res. 299, Organizational Meeting, Del. Cnty. Bd. of Supervisors (N.Y. 2005) (on file with authors); Memorandum from the Office of the City Manager of Simi Valley, Cal., to the City Council of Simi Valley, Cal. (June 11, 2007) (on file with authors) (“On May 8, 2006, the City Council adopted a resolution that prohibits the use of eminent domain to acquire real property designated or occupied for residential purposes for purposes other than right-of-way, public infrastructure, or public facilities.”).

\(^{88}\) Minutes, Dutchess County, N.Y., Legislature, Regular Bd. Meeting (Sept. 19, 2005) (on file with authors).

\(^{89}\) E-mail from Shannon LaFrance, Drafter & Sponsor of Dutchess County Resolution No. 205257, to author (Nasser-Ghodsi) (Feb. 6, 2014, 3:37 PM) (on file with authors).


legislature's approval. The governor of Massachusetts ultimately vetoed the petition. Massachusetts is generally known as a flexible state with respect to a municipality’s right to home rule, thereby casting doubt on the effectiveness of comparable laws in more restrictive states.

Even where municipal legislation may have been effectively passed, there is varying strength among those ordinances. Newport Beach, California, successfully amended its charter to include limitations on eminent domain, but created a sizeable loophole in stating, “The City of Newport Beach and/or any City-affiliated agency shall not exercise the power of eminent domain to acquire any property from the owner of the property, without the owner’s consent, for the sole purpose of transferring the property to another person to further private economic development.” Consequently, the practical impact of the Newport Beach amendment and similar legislation is likely very small. Most anti-Kelo municipal ordinances generally prohibit the use of eminent domain for private transfer, leaving gaps in the definition of private transfer and not touching blight definitions. We therefore interpret the majority of these ordinances as codifying a general pro-property rights sentiment.


94. See Krane et al., supra note 92.
98. See, e.g., Wasilla, Alaska, Ordinance 05-78 (Oct. 24, 2005) (“The city may exercise the powers of eminent domain and declaration of taking in the performance of an authorized power of function of the city [(municipality)], in accordance with AS 09.55.240 through 09.55.460; provided that the city may exercise the powers of eminent domain or declaration of taking to acquire property only if the city will own, or if the public will have the legal right to use, the property, and the city may not exercise the powers of eminent domain or declaration of taking to provide property for private economic development. The exercise of the power of eminent domain or declaration of taking shall be by resolution of the council.” (citation omitted)).
IV. EMPIRICAL ANALYSIS

We saw in the previous Part the theoretical analysis of the effect of *Kelo* and the subsequent state responses on the housing market. In this empirical Part, we seek to (1) measure analytically the importance of the *Kelo* decision on housing prices and (2) measure how the state responses to *Kelo* affected those prices.

A. Data

We built a data set for all fifty states in the United States between the years 1997 and 2011. The database contains the Housing Price Index (HPI), gross domestic product, unemployment, total personal income, population, real estate earnings, income taxes, state building permit construction of nonresidential buildings, poverty rates, state revenues, state debt, and state expenditures per state over the period of interest. The data set also contains information about the states’ responses to *Kelo*: We report the state’s grade of the *Kelo* response, whether or not the law was the result of a citizen initiative, and whether or not the veto by the governor of a given state was overruled. We also report the potential existence of multiple responses to *Kelo*, given that some states have experienced more legislative activity in response to *Kelo* than others. Description of the data is discussed in greater detail in the following Subparts.

1. Housing Price Index

We collected both yearly and quarterly data on the HPI from the Federal Housing Finance Agency from 1997 to 2011. The HPI is a broad measure of the movement of single-family house prices.

The HPI is a weighted, repeat-sales index, meaning that it measures average price changes in repeat sales or refinancings on the same properties. This information is obtained by reviewing repeat mortgage transactions on single-family properties.

The HPI serves as a timely, accurate indicator of house price trends at [the state] level[]. Because of the breadth of the sample, it provides more information than is available in other house price indexes.

99. Our main analysis will include the HPI, *Kelo* variables, GDP, unemployment, total personal income, rental earnings, poverty line, and permit building construction. The other variables do not affect or change our results.


101. *Id.*
The index controls for any particular variation of housing determinants and minimizes the heteroskedasticity in the variance of the error terms.102

2. Judicial and Legislative Variables

The *Kelo* decision is assigned a dummy variable that takes a value of one for the two quarters following the decision’s publication on June 25, 2005.103 The opinion was released at the end of the second quarter of 2005, so the third and fourth quarters of that year are grouped together to reflect the short-run effect of *Kelo*. This approach controls for any time lags in education among the population about the opinion and is justified by the national surveys taken in the third quarter of 2005 to assess the public’s reaction.104

We reviewed indices created105 or suggested106 by others before constructing a novel index to represent the strength of each state’s legislative response to *Kelo* (2005 to 2011). The Castle Coalition established a comprehensive fifty-state grading scheme to evaluate state legislative activity. The Castle Coalition is a pro-property rights organization founded in 2002 to combat “eminent domain abuse” and is the Institute for Justice’s “nationwide grassroots property rights activism project.”107 The Castle Coalition provides a grade (A through F) to each state according to its legislative response to *Kelo*. The Castle Coalition’s grading scheme, while thorough, fails to include the role of the judiciary in forming a state’s eminent domain legal landscape. In addition, their grading scheme also does not adjust as the laws change over time. The Castle Coalition released a *50 State Report Card* in August 2007 with its grades at that point in time.108 It


104. The Zogby Survey (American Farm Bureau Survey) was taken from October 29 to November 2, 2005. The Saint Index Poll (Center for Economic and Civic Opinion, University of Massachusetts/Lowell) was taken in October-November 2005. See PROPERTY RIGHTS: EMINENT DOMAIN AND REGULATORY Takings RE-EXAMINED 104 (Bruce L. Benson ed., 2010); Somin, supra note 97, at 2109.


106. See Somin, supra note 97, at 2100.


also has an active website that grades the states based on their most recent legislative changes.\textsuperscript{109} Many states passed one law prior to August 2007, such that the grade they were given in the Castle Coalition’s original report remains the same today.\textsuperscript{110} Some states passed one law after August 2007.\textsuperscript{111}

Given the Castle Coalition’s potential bias, we could not rely on their grades. We consequently were compelled to create an original index. Our index is similarly predicated on a 4.0 grade scale, but is based on the risk that eminent domain will be used for private transfer without any comment on whether the state uses eminent domain efficiently or inefficiently. If a state fails to respond to \textit{Kelo}, it is given a failing grade, based on the assumption that voters expected some form of legislative response as an assurance that eminent domain would not be used for private benefit.\textsuperscript{112} Legislative responses are awarded an above-failing grade depending on whether they address two issues and the extent to which they address them: (1) the definition of blight\textsuperscript{113} and (2) the explicit prohibition of eminent domain for private transfer. A perfect score (4.0) requires a constitutional amendment that prohibits private transfer and restricts blight to safety hazards for all home owners. A constitutional amendment is the strongest legislative protection due to the difficulty in changing it in the future. State intervention that closes one opening (blight or economic development) but leaves the other open is given a low grade (2.75 or 2.5) depending on the strength of the closed route. States that close both routes for the majority of (but not all) residents are given a relatively high grade (3.0-3.5). Depending on the state, multiple grades may be assigned over the time period from 1997 to 2011 because states might have passed multiple laws.

We treat judicial intervention as a substitute for legislative action. Four state supreme courts have made significant anti-\textit{Kelo} rulings.
since 2005: New Jersey, Ohio, Oklahoma, and South Dakota. The South Dakota ruling, though strong, had no effect on the data set because the opinion was entered on January 24, 2006, and the South Dakota constitutional amendment was passed on February 17, 2006, both within the first quarter of that year. New Jersey and Oklahoma's judicial responses were given a 0.7 score because they left open blight. By contrast, Ohio's judicial response was sufficiently strong to warrant a 3.3 grade.

As discussed above, there was some legislative activity on the municipal level following *Kelo*, but we exclude those effects for purposes of our empirical analysis. Empirically, there are too few municipalities that passed ordinances to have an impact on the quarterly or annual HPI at the state level. On a theoretical basis, there are two general scenarios that occurred. First, the state enacted relatively stronger anti-*Kelo* legislation, but local governments maintained weak laws on their books. In that case, the local governments are bound by the stricter state requirements on the basis of state preemption of local laws. Second, the state enacted relatively weak anti-*Kelo* legislation but local governments enacted stronger laws. In that case, our empirical results of the effect of the relative strength of a state's law is, in fact, a lower bound, given that even where there are weak state laws, there may have been stronger protections in some municipalities.


3. Additional Controls

We collected data on gross domestic product (GDP) on a yearly basis from the Bureau of Economic Analysis between 1997 and 2011.\textsuperscript{118} We retrieved yearly and quarterly unemployment rates from the Bureau of Labor Statistics over the period from 1997 to 2011.\textsuperscript{119} In addition, we collected yearly and quarterly data on total personal income per state from the Bureau of Economic Analysis for the period from 1997 to 2003. Personal income represents the income received by all persons of the state from all sources during each year or quarter. Personal income is calculated as the sum of net earnings by place of residence, property income, and personal current transfer receipts.\textsuperscript{120} We considered the annual poverty rate by state, from United States Census data, yearly between 1997 and 2011.\textsuperscript{121} We also controlled for yearly building permits per state over the same period using Census data. The building permit construction data covers all “permit-issuing places,” which are jurisdictions that issue building or zoning permits within the states.\textsuperscript{122} This data is helpful for controlling for a state’s participation in the real estate market on a yearly basis. We also used in-state governments’ expenditures data, from the United States Census Bureau, during the years 1997 to 2011. We considered the state revenue, state expenditure, and state debt during that same period.

\begin{itemize}
\item \textsuperscript{118} \textit{Regional Economic Accounts: Download, BUREAU ECON. ANALYSIS (Aug. 7, 2014)}, http://www.bea.gov/regional/downloadzip.cfm (select “NAICS Real GDP” from “Gross Domestic Product (GDP) by State” toolbar).
\item \textsuperscript{120} \textit{Regional Economic Accounts: Download, supra note 118 (select “Annual state personal income and employment, all tables and areas” from “State Personal Income accounts” toolbar). Note that personal income is measured before the deduction of personal income taxes and other personal taxes and is reported in current dollars (no adjustment is made for price changes). To control for the potential effect of taxes, we collected the taxes on production and imports yearly over the period from 1997 to 2011. This tax data was collected from the Bureau of Economic Analysis. These taxes consist mainly of general sales and property taxes. They are measured in millions of dollars.}
\item \textsuperscript{122} \textit{Building Permits Survey, U.S. CENSUS BUREAU}, http://www.census.gov/construction/bps/historical_data/ (last visited Oct. 14, 2014). As the Census Bureau indicates: “Zoning permits are used only for areas that do not require building permits but require zoning permits. Areas for which no authorization is required to construct a new privately-owned housing unit are not included in the survey.” \textit{Building Permits Survey: How the Data Are Collected, U.S. CENSUS BUREAU}, http://www.census.gov/construction/bps/how_the_data_are_collected (last visited Sept. 28, 2014).}
\end{itemize}
time period.123 We also added the real estate, rental, and leasing earnings per state and quarter for 1997 to 2011, from the Census Bureau, to take into account potential substitutions between owning and renting.124 We also got the population for each state from Census Bureau data.125

To make sure our analysis is not affected by the early 2000s’ housing bubble and the 2008 financial crisis, we used state and year fixed effects. State and year fixed effects ensure that our analysis controls for potential differing effects of a given crisis in a state at a particular point in time.126 We can therefore reliably examine the impact of the Kelo decision on the change in price index in the following Subpart; then we will turn to the effect of the response to Kelo.127

The following table (Table 2) shows the summary statistics of our sample.

Table 2: Sample Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation: Overall</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House Price Index (HPI)</td>
<td>180.63</td>
<td>45.59</td>
<td>82.02</td>
<td>344.07</td>
</tr>
<tr>
<td>Quarterly Change in HPI</td>
<td>1.18</td>
<td>4.29</td>
<td>-25.28</td>
<td>25.99</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelo</td>
<td>0.43</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>GDP</td>
<td>9.7</td>
<td>2.33</td>
<td>3.95</td>
<td>18.11</td>
</tr>
<tr>
<td>Unemployment</td>
<td>5.4</td>
<td>2.04</td>
<td>2.1</td>
<td>14.1</td>
</tr>
<tr>
<td>Total Personal Income</td>
<td>2.03</td>
<td>2.44</td>
<td>0.12</td>
<td>17.1</td>
</tr>
<tr>
<td>Rental Earnings</td>
<td>2.92</td>
<td>4.21</td>
<td>0.73</td>
<td>29.1</td>
</tr>
<tr>
<td>Poverty Line</td>
<td>12.22</td>
<td>3.24</td>
<td>4.5</td>
<td>23.1</td>
</tr>
<tr>
<td>Permit Buildings Construction</td>
<td>42.05</td>
<td>45.02</td>
<td>11.6</td>
<td>335.81</td>
</tr>
</tbody>
</table>


127. We also use a cross-effect variable multiplying state and time specific dummies as a robustness check. Our results remain unchanged.
B. Estimation of the Impact of Kelo on Housing Prices

We will first estimate the direct impact of Kelo on the change in housing prices using a quarterly data set. We will then test if the state response to Kelo had a sizeable effect on the real estate market for each state during the post-Kelo period.

To directly measure the impact of Kelo on the change in the HPI, we consider the following model:

$$\Delta HPI_{it} = \alpha K_i + \beta X_{it} + \epsilon_{it}$$

$\Delta HPI_{it}$ is the quarterly change in the HPI in state $i$ at time $t$. $K_i$ is a discrete variable indicating Kelo in state $i$ at time $t$. (For the quarterly data, the value 1 for $K$ corresponds to the third and fourth quarters of the year 2005 to highlight the fact that the surveys and application of the Kelo decision would be best reflected in the prices of houses sold after the decision and that it might take two quarters for home prices to adjust to the announcement of the Kelo decision.) It is important to use the change in the HPI to measure the change in real estate prices between periods.

$X_{it}$ represents the matrix of covariates (GDP, unemployment, construction, personal income, poverty rates, rental earnings, which were developed in the previous Subpart of this Article) and a constant. As mentioned earlier, all specifications include year fixed effects and state fixed effects to make sure we control for any potential state- and year-specific swings in the housing market. We add a robustness check by crossing the state and time effect in our model to better capture the effect of any potential shock in a given state during a period of time. In other words, we control for any and all effects of the recession and the housing crisis or the prerecession bubble.

Table 3: Regression Results with Pooled OLS (Time and State FE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelo</td>
<td>-1.53 (0.49)**</td>
<td>-1.57 (0.48)**</td>
<td>-1.57 (0.56)**</td>
</tr>
<tr>
<td>GDP</td>
<td>-1.70 (1.16)**</td>
<td>-1.91 (0.09)**</td>
<td>-2.71 (1.32)**</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.83 (0.08)**</td>
<td>-0.73 (0.09)**</td>
<td>-0.68 (0.10)**</td>
</tr>
<tr>
<td>Total Personal Income</td>
<td>-5.56 (1.38)**</td>
<td>-8.57 (1.94)**</td>
<td>-4.65 (3.06)**</td>
</tr>
<tr>
<td>Rental Earnings</td>
<td>6.08 (1.19)**</td>
<td>3.55 (1.37)**</td>
<td>0.06 (0.05)</td>
</tr>
<tr>
<td>Poverty Line</td>
<td></td>
<td></td>
<td>3.18 (0.75)**</td>
</tr>
<tr>
<td>Permit Building Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>5.43 (1.13)**</td>
<td>5.21 (1.19)**</td>
<td>4.66 (1.70)**</td>
</tr>
</tbody>
</table>

$R^2$=0.28 $R^2$=0.28 $R^2$=0.30

128. Correcting for potential heteroskedasticity.
We see in Table 3 that the results of the regression seem to indicate that *Kelo* had a potential negative and significant, but small, effect on the change in the HPI over time, irrespective of the specification. The coefficient is \(-1.57\), reflecting that the expected difference between a pre- and post-*Kelo* average home price in a given state would be discounted by 1.57% if we were holding all of the other potential determinants of the change in the HPI constant. This effect is all the more emphasized by the difference over the entire period from 1997 to 2011, pre- and post-*Kelo*, by a similar negative impact of \(-1.57\) in the change in a given state’s HPI when holding everything else constant. All of these results show that *Kelo*, despite being only a reaffirmation of the existing law, contributed to a statistically significant decrease, albeit very small, in the change of housing prices in the real estate market in any state over the post-*Kelo* era.

We also ran a similar regression using fixed effects to control for the effects of time-invariant variables with time-invariant effects. We find the following results in Table 4.

Table 4: Regression Results with Fixed Effects (Time and State FE)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelo</td>
<td>-1.54 (0.35)**</td>
<td>-1.57 (0.35)**</td>
<td>-1.57 (0.35)**</td>
</tr>
<tr>
<td>GDP</td>
<td>-1.70 (1.75)</td>
<td>-1.91 (1.15)</td>
<td>-2.71 (2.01)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.83 (0.12)**</td>
<td>-0.73 (0.08)**</td>
<td>-0.68 (0.14)**</td>
</tr>
<tr>
<td>Total Personal Income</td>
<td>-5.56 (2.64)**</td>
<td>-8.57 (1.43)**</td>
<td>-4.65 (7.98)</td>
</tr>
<tr>
<td>Rental Earnings</td>
<td></td>
<td>6.08 (0.88)**</td>
<td>3.55 (2.04)*</td>
</tr>
<tr>
<td>Poverty Line</td>
<td></td>
<td></td>
<td>0.06 (0.07)</td>
</tr>
<tr>
<td>Permit Building Construction</td>
<td></td>
<td></td>
<td>3.18 (1.51)**</td>
</tr>
<tr>
<td>Constant</td>
<td>7.57 (1.75)**</td>
<td>6.04 (1.17)**</td>
<td>5.10 (2.01)**</td>
</tr>
</tbody>
</table>

R² = 0.25 R² = 0.34 R² = 0.30

Note that we obtain similar results when we consider the fixed effect estimator. *Kelo* had a negative significant effect on the change in the HPI. It leads to a decrease of \(-1.57\) in the change of the HPI, controlling for the determinants of the housing pricing.

Overall our empirical analysis of the effect of *Kelo* shows that we are not in the upper-left corner of our table presenting the eminent domain trade-offs (Table 1): the negative effect of *Kelo* seems to show that the effect of the condemnation risk discount value and of the relevant real estate market could not have both been positive right after

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129. These results are also robust to a tighter quarter state fixed effects.
130. Correcting for potential heteroskedasticity.
131. We tested for potential heteroskedasticity for the fixed effect model, using a modified Wald test. We concluded that heteroskedasticity was present and we controlled for it in our analysis.
**Kelo.** Based on the fact that the decision reinforced some negative prior probability distributions for both the market and the risk of condemnation, we expect that the bottom left of our matrix in Table 1 best reflects the short-run environment.

**C. Estimation of the Impact of State Responses to Kelo on Housing Prices**

In the previous section we showed on a panel data set that *Kelo* had a small, significant negative effect on the HPI for states over the period from 1997 to 2011. As a result of *Kelo*, some states enacted laws to provide their constituents with a commitment not to increase eminent domain usage, at diverse levels of efficacy. We use panel data analysis in this Subpart to understand the potential effects of the strength of the state laws in the post-*Kelo* world on the HPI.

We consider the effect of the grades that we constructed and assigned to each state from the time period those laws, if any were passed in a given state, were implemented, and a range of control variables on the HPI real estate index change:

\[ \Delta HPI_{jt} = \alpha \text{Grades}_i + \beta X_t + \lambda_i + \theta_t + \epsilon_{it} , \]

where *i* indexes represent states and *t* represents time. The years considered, as they are responses to *Kelo*, are 2005 through 2011.

The left-hand side is the change in the HPI as in the precedent regression, per state and time period (yearly or quarterly). Our measure of grades is taken from the grades from our index. The control variables are the same as the ones in the previous section (GDP, unemployment, construction, personal income, poverty rates, rental earnings, and a constant). We include state and time fixed effects. All regressions are weighted least squares with weights based on state populations. All of the estimates in the table are adjusted for potential serial correlation in the panel data. The summary statistics are presented in Table 5.
Table 5: Sample Statistics After Kelo

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation:</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td>Overall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>House Price Index (HPI)</td>
<td>213.07</td>
<td>38.5</td>
<td>109.8</td>
<td>344.07</td>
</tr>
<tr>
<td>Quarterly Change in HPI</td>
<td>-0.4</td>
<td>7.23</td>
<td>-31.91</td>
<td>33.74</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>11.76</td>
<td>2.17</td>
<td>3.95</td>
<td>181.13</td>
</tr>
<tr>
<td>Unemployment</td>
<td>6.42</td>
<td>2.47</td>
<td>2.3</td>
<td>14.1</td>
</tr>
<tr>
<td>Total Personal Income</td>
<td>2.42</td>
<td>2.83</td>
<td>0.21</td>
<td>17.1</td>
</tr>
<tr>
<td>Rental Earnings</td>
<td>30.47</td>
<td>43.16</td>
<td>1.41</td>
<td>308.7</td>
</tr>
<tr>
<td>Income Tax</td>
<td>19.72</td>
<td>23.81</td>
<td>2.31</td>
<td>133.61</td>
</tr>
<tr>
<td>Poverty Line</td>
<td>12.73</td>
<td>3.1</td>
<td>5.4</td>
<td>21.5</td>
</tr>
<tr>
<td>Permit Buildings Construction</td>
<td>45.34</td>
<td>48.18</td>
<td>1.68</td>
<td>335.81</td>
</tr>
</tbody>
</table>

**Kelo Response (After Kelo)**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State Grade</td>
<td>1.69</td>
<td>1.43</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Citizen Intervention</td>
<td>0.05</td>
<td>0.21</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Veto Overrule</td>
<td>0.003</td>
<td>0.06</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>State Response</td>
<td>0.71</td>
<td>0.45</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

We notice that around 71% of our sample made an intervention against Kelo, with different degrees of severity against it. Of those, the average state grade is 2.36 with a variance of 1.13. Note that in our summary table above, as it includes the failing grades, the overall response grades were on average low, with a 1.69 mean.

We show in Table 6 the pooled ordinary least squares (OLS) results of the regression of the state grades on the change in the HPI. The grades are from the highest (4.0) to the lowest (0.0). We control for potential heteroskedasticity of our data. We also have some controls for each year and each state to make sure that we tease out the effect of any potential housing or financial crisis during the period when the grades were set. We also ran a robustness check by using quarter- and state-specific fixed effects.

The empirical analysis indicates that in a post-Kelo world, the higher a state legislation’s grade, the greater the decrease in a change in the HPI, on average. Specifically, an increase in one GPA point leads to a decrease of -1.14 in the change in the HPI on average, holding everything else constant. This result means that, on average, the better the protection a state law offers, the more the HPI suffers as a consequence. The empirics are consistent with the eminent domain trade-off discussed in Part II and establish that the market interprets private transfer via eminent domain to have a positive expected value on housing prices, the condemnation risk discount notwithstanding.
Home owners integrate the relative lost opportunity for a better surrounding neighborhood using eminent domain if a state tries to commit itself to protect home owners against any risk of condemnation.

Table 6: Regression Results with Pooled OLS (Time and State FE)\(^{132}\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelo Grade</td>
<td>-1.18 (0.17)**</td>
<td>-1.14 (0.17)**</td>
<td>-1.14 (0.17)**</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.90 (0.26)**</td>
<td>-0.98 (0.26)**</td>
<td>-1.02 (0.27)**</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.09 (0.8)</td>
<td>-0.05 (0.8)</td>
<td>-0.13 (0.09)</td>
</tr>
<tr>
<td>Total Personal Income</td>
<td>-2.90 (0.73)**</td>
<td>-1.96 (0.98)**</td>
<td>-1.89 (0.96)**</td>
</tr>
<tr>
<td>Rental Earnings</td>
<td>7.90 (2.34)**</td>
<td>7.90 (2.34)**</td>
<td>7.71 (2.34)**</td>
</tr>
<tr>
<td>Poverty Line</td>
<td></td>
<td></td>
<td>0.18 (0.12)</td>
</tr>
<tr>
<td>Permit Building Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>16.28 (2.87)**</td>
<td>17.75 (3.04)**</td>
<td>13.05 (2.81)**</td>
</tr>
</tbody>
</table>

In order to fully confirm this result, we used a fixed effect regression with robustness adjustments to check if our results were consistent. The same effect is found in the fixed effect regression as reported in Table 7 below.

Table 7: Regression Results with Fixed Effects Panel Data (Time and State FE)\(^{133}\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelo Grade</td>
<td>-1.18 (0.30)**</td>
<td>-1.14 (0.28)**</td>
<td>-1.14 (0.28)**</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.90 (0.40)**</td>
<td>-0.98 (0.42)**</td>
<td>-1.02 (0.43)**</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.09 (0.14)</td>
<td>-0.05 (0.15)</td>
<td>-0.13 (0.18)</td>
</tr>
<tr>
<td>Total Personal Income</td>
<td>-2.90 (0.93)**</td>
<td>-1.96 (1.00)**</td>
<td>-1.89 (1.04)**</td>
</tr>
<tr>
<td>Rental Earnings</td>
<td>1.01 (0.17)**</td>
<td>7.90 (2.33)**</td>
<td>7.71 (2.41)**</td>
</tr>
<tr>
<td>Poverty Line</td>
<td></td>
<td></td>
<td>0.18 (0.19)</td>
</tr>
<tr>
<td>Permit Building Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>16.09 (3.88)**</td>
<td>14.54 (4.03)**</td>
<td>14.54 (4.03)**</td>
</tr>
</tbody>
</table>

In the post-\textit{Kelo} world, stronger protection against condemnation by states seems to lead to potential decreases in the change in the HPI, i.e., the level of price of the real estate within a state is subject to less variation than in a state that has a clear protection against \textit{Kelo}.

In addition, we investigated further the potential gap between the two extreme cases, where no law was passed as a response versus the ones that had the strongest of responses: post-\textit{Kelo}, the states that

\(^{132}\) Correcting for potential heteroskedasticity.
\(^{133}\) Correcting for potential heteroskedasticity.
passed the most aggressive laws had a smaller negative change in the HPI when compared to those states that passed low-protection laws. Thus, there is a clear divide between the two extreme cases, which again indicates the inevitable trade-offs between condemnation risk discount and relevant real estate market value.

When we consider the effect of each particular grade by grouping grades into five groups by strength (3.75 to 4.0, 3.0 to 3.75, etc.), we have some other revealing results: states with a good to average grade (2.75 to 3.5)—that is, with some form of commitment on challenging the law but not a total commitment—see on average a greater decrease in the HPI (-2.16) compared to the states with low grades (0.0 or 0.75 grades), significant at the 95% level of confidence. The effect is even stronger when we consider only the failing grades: a failing grade leads to an increase in the HPI of 1.32, significant at the 90% level of confidence. Grades that are 3.0 on average lead to a decrease of -2.22 in the change in the HPI. The other grades do not have as significant of an effect.

Low to failing grades (0 to 2.75) lead to an overall increase in the difference in the HPI change of 1.89 compared to the higher grades (3.0 to 4.0). This substantiates our conjecture that higher grades, originally seen as a better protection against the condemnation risk, potentially decrease the confidence (and therefore prior probability distribution) of potential buyers or sellers due to the lack of potential growth in the relevant real estate market. Moderate responses to Kelo provide more leeway for states to adjust to a downward sloping neighborhood quality. With a strong protection, the state is left out of levers to make needed adjustments over time.

We also considered the determinants of a given response based on the characteristics of a given state. A strong response usually happens in states where rental earnings have a negative effect and where personal income has a positive effect. An average response usually happens in states with negative rental earnings but also negative personal income, positive GDP levels, and a positive effect on unemployment levels. A weak response (0.75 or below) has the complete opposite characteristics: rental earnings are positive, personal income is positive, and unemployment is negative.

If we take into account the other determinants of a state's decision on post-Kelo legislative development, notably the passage of subsequent legislation, the origin of the law (politician or citizen initiative), and the potential for governor veto, we find that our results are consistent with the previous regression results.
We use a probit estimation to determine significant triggers of a state response to *Kelo*. Our estimation of the determinants of a state response to *Kelo* gave two main indicators of the increased probability of a state response: the rate of unemployment and the poverty level. Both of those indicators seem to be consistent with the general complaint about how eminent domain is used relatively more in low-income areas than in high-income areas. We find that an increase of 1% of the unemployment rate raises the probability of a state response by 4% and that an increase of 1% of the poverty rate raises it by 1.8%. This relates to the fact that the probability of condemnation is usually seen as higher in areas where economic development is needed.

Another important component of our research was to analyze the effect of the potential veto overrule by the governor of a specific state or whether or not the response to *Kelo* resulted from a citizen initiative within the state. Even if the amount of data is fairly small (one veto overrule and seventeen citizen initiatives), we find that the state grade still has a negative effect on the change in the HPI, at -0.83 and that these variables have an insignificant effect. It may be due to the small sample effect in our data of these variables.

D. Discussion and Implications

The empirical results suggest that *Kelo* had a negative effect on the change in house prices. The expected decrease of one point of the change in the HPI due to *Kelo*’s information flare-up is fairly consistent with the low probability of seizure happening overall in the states. This result is consistent with our condemnation risk discount theory. *Kelo* caused an increase in condemnation risk discounts and, therefore, a decrease in fair market value. During this period, home owners anticipated that the likelihood of condemnation increased and updated their condemnation risk discounts at a higher level to provide themselves greater intertemporal price transfers.

Given that the overall effect of *Kelo* is negative, it suggests two possible underlying mechanisms within the relevant real estate market. *Kelo* may have caused a negative effect on fair market value if the market interpreted eminent domain as an inefficiently exercised tool. Even if the market interpreted eminent domain as positive or neutral, such that *Kelo* caused an increase in fair market value, we argue that those effects were outweighed by the impact on condemnation risk discounts.

Turning now to the state responses, the effect of the response to *Kelo* by the states on market price can be understood as the sum of
both the negative effect of the condemnation risk discount and the relevant real estate market on the change in house prices. Our analysis yields the interesting result that states’ legislative reactions against *Kelo* may have further decreased the change in prices of the houses for states with the strongest laws. It makes intuitive sense that those states with the strongest protection against private transfer experienced the greatest decrease in house prices. Strong anti-*Kelo* legislation constrained local governments from making improvements to the relevant real estate market in the face of holdouts or other impediments to organic economic development. Alternatively, states with no real response to *Kelo* experienced an increase in the change in house prices, which demonstrates that their markets integrated the potential positive effects of private transfer via eminent domain.

Our empirical results reflect long-term effects of *Kelo* and state legislation on the change in overall state house prices. As a consequence, any short-run behavioral biases—notably the ambiguity or belief biases previously identified—are smoothed out of the market for purposes of our discussion.134

Having empirically shown the market’s sensitivity to the likelihood of condemnation for private transfer, we recommend that the market failures identified in this Article be corrected through improved information. Specifically, state and local governments should make readily available data on the usage of eminent domain for private transfer. Such data will allow home owners to estimate more accurately the likelihood of condemnation, thereby avoiding reliance on the weak information provided by news coverage and changing legislation. Though more challenging, further research should be done into the marginal effect of eminent domain on large-scale redevelopment projects. Despite the highly politicized nature of the topic, the market would benefit from clarity on whether eminent domain increases the likelihood of successful large-scale redevelopment projects.

V. CONCLUSION

Justice O’Connor’s fear that the “specter of condemnation hangs over all property” has been empirically shown. State and local governments are encouraged to correct for the market failures that

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134. Even in the short run, we expect similar results despite the existence of ambiguity or belief biases. Those biases may create modest short-run fluctuations consistent with our results. In essence, the markets still clear, but at a price that reflects those biases.
have been caused by the housing market's lack of reliable information about the usage and efficiency of eminent domain. Not only will such information assuage the fear of many opponents of eminent domain that private transfers are susceptible to poor planning and corruption, but it will also help stabilize the housing market in response to potential legislative and judicial changes in the future.