

How Did *Kelo* Affect Business Formation?

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October 2010

Abstract

On June 23, 2005, the U.S. Supreme Court ruled in *Kelo v. City of New London*, 505 U.S. 469 (2005) that the Public Use Clause allows governments to take private property for transfer to new *private* owners for the purpose of promoting “economic development.” We show theoretically that this reduces the value of businesses. We argue that this in turn reduces the incentives to start new businesses, particularly in states that did not enact legislation to restore property rights at the state level. Our preliminary empirical work supports this. The point estimate implies that passing a state-level law restricting eminent domain taking is associated with an increase in the rate of business formation of about 10 percent. Our results show that policy makers may enact state-level eminent domain restrictions to protect property rights without fear of retarding business formation. Business formation may even benefit.

Very preliminary. Please do not quote without permission. We thank seminar participants at Middle Tennessee State University for helpful comments. Certain data included herein are derived from the Kauffman Index of Entrepreneurial Activity release 1.0. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of Robert Fairlie or the Ewing Marion Kauffman Foundation. Any errors are the authors’ responsibility. We thank Edward Lopez for helpful suggestions.

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“While most constitutional decisions affect a small number of people, this decision undermines the rights of every American, except the most politically connected. Every home, small business, or church would produce more taxes as a shopping center or office building. And according to the Court, that’s a good enough reason for eminent domain.”

-- Dana Berliner, Institute for Justice, on *Kelo v. City of New London*, 505 U.S. 469 (Berliner, 2005).

“[I]f we don’t use this power, cities will die.”

-- Mayor Michael Brown, Riviera Beach, Florida, justifying attempts to condemn homes for conversion into luxury condos and a yacht marina (Price, 2005).

I. Introduction

On June 23, 2005, the U.S. Supreme Court ruled in *Kelo v. City of New London*, 505 U.S. 469 (2005) (hereafter, *Kelo*), that the Public Use Clause of the United States’ Constitution allows governments to take private property for transfer to new *private* owners for the purpose of promoting “economic development.” Few court decisions have provoked such a heated controversy, especially given that the decision was widely anticipated (see, for example, Garrett and Rothstein (2007) or Salkin (2005)). Somin (2009) says that, “The *Kelo* backlash probably resulted in more new state legislation than any other Supreme Court decision in history.” Since *Kelo*, over forty states have passed legislation to protect property rights by limiting government takings via eminent domain.

Not all states have enacted such legislation, though, and some states passed laws that are essentially symbolic. López, Jewell and Campbell (2007) give the example of West Virginia, which permits takings of “blighted” properties. The West Virginia Code’s definition of “blighted” areas and properties requires about 200 words, with exceptions for street layout, lot

layout, deterioration of improvements, unusual title conditions, economic or social liabilities, or even deterioration of the property or site that might cause danger through fire or “other causes” (Code of West Virginia, 1931, Chapter 16, Article 18, Section 16-8-3 as amended by H.B. 4048, March 11, 2006). López, Jewell and Campbell (2009) claim that such loopholes entrust private property protections to city councils and therefore laws featuring them provide little or no protection of property rights.

Do entrepreneurs start fewer businesses if the chance of losing their business through an eminent domain taking increases? The U.S. Supreme Court’s decision in *Kelo*, coupled with individual state’s different responses to this decision, provides a natural experiment to answer that question. Our preliminary results find evidence that the rate of formation of new firms does depend on a state’s legislative response to *Kelo*. States that enact legislation protecting residents from eminent domain takings tend to experience an increase in the rate of business formation of about 10 percent. Although our empirical results use data from the United States and therefore may not apply internationally, the question of whether public takings assist or retard economic development is important world-wide.

The paper proceeds as follows. Section II reviews relevant literature. We develop our model in Section III and Section IV describes the data. We present our results in Section V. Section VI outlines our future research to complete this preliminary work. Section VII contains a summary.

II. Previous Literature

López and Totah (2007) provide an overview of the backlash to *Kelo* at the state level. López and Totah point out that many states engaged in what they call “symbolic politics.” That is, they enacted laws with loopholes that weaken the protection of property rights that the

legislation ostensibly was to provide. West Virginia's law discussed above is one example. López and Totah say that the laws enacted by Alabama, Maine, Minnesota, Nebraska, Texas, Vermont and Wisconsin have similar vagaries and offer similarly weak protection. Sandefiar (2006) reports that Alabama's eminent domain law allows politicians to declare an area blighted "whenever it fails to perform economically up to a standard that they would prefer to see." Such language provides virtually no legal protection of property rights.

Some states enacted a law permitting takings for seasons of blight or public good. The problem is that almost any shopping mall will produce more tax revenue than the housing development that it replaces. Any law that permits taking decisions to be based on taxes is toothless. Missouri's law is relatively weak because it bans takings if economic development is the *sole* reason for the taking; creative politicians can easily invent a second reason. A tougher law might specifically exclude economic development as a reason for taking.

López and Totah's (2007) work identifies a potential problem with endogeneity between eminent domain takings and state-level laws. For example, they report that there had been a trend toward more takings prior to *Kelo*. They claim that Utah and Nevada passed laws restricting takings before *Kelo* was decided because lawmakers viewed the threat of potential takings via eminent domain to be too great. After *Kelo*, local governments rushed to take property before state governments could enact restrictions to reinforce the property rights that *Kelo* had weakened.¹

López, Jewell and Campbell (2009) explore the determinants of legislative action at the state level in response to *Kelo*. They find that whether or not legislation is enacted is a function of voter backlash against *Kelo*, but whether the law had teeth is unrelated to voter backlash.

¹ The next version of this paper will control for endogeneity in our tests.

López, Jewell and Campbell find that the strength of the enacted legislation is instead related to political economy variables: States with more economic freedom, greater value of new housing construction, less racial homogeneity and more income equality are more likely to have enacted stronger restrictions. Further, states with these traits tend to pass the law sooner. López, Jewell and Campbell report that legislative responses do not depend on measures of policymaker behavior, such as corruption or dependence on property taxes, presidential voting patterns, population density, or political institutions.

The finding that racial homogeneity is related to legislative action is not completely surprising. Alesina, Baqir and Easterly (2000) find that greater ethnic fragmentation, defined as more minority groups and larger numbers of members of these minority groups, tends to cause political conflicts to be resolved along racial lines. Consistent with this, Glaeser and Saks (2006) find that corruption of public officials is greater in U.S. states with greater racial fragmentation. The legislative response to *Kelo* is apparently no exception. López, Jewell and Campbell say that eminent domain takings tend to redistribute wealth from poor and ethnic minorities to property owners and tenants. This is especially pronounced if the stated reason for the taking is economic development.

López, Jewell and Campbell (2009) follow López and Totah's (2007) in identifying the importance of the strength of a law that restricts eminent domain takings. They report a case in Los Angeles in which property was deemed blighted merely because it lacked sufficient parking. Clearly, local politicians can easily pierce any protective cloak that the anti-takings law ostensibly provides. Stronger laws might rule out economic development as a reason for taking (Florida), while another approach to strengthening laws explicitly excludes aesthetic

considerations in determining blight (Georgia). Some states require the taker to pay a premium over fair-market price (which of course still leaves open how that price is determined).

Lu and Zelder (2008) study the effect of *Kelo* on housing prices. They conjecture that housing prices should decline in states that fail to enact protections against eminent domain takings relative to states that do enact such legislation. They estimate several regressions of the form:

$$\ln(\text{price})_{it} = \beta_1 \ln(\text{income})_{it} + \beta_2 \text{taxburden}_{it} + \beta_3 \text{edlaw}_{it} + \beta_4 \ln(\text{regionalhouseprice}_{it}) + v'_{it},$$

where the variables have been mean-adjusted (i.e. $x' = x - \bar{x}$). *Price* equals existing single-family house prices estimated by Moody's Economy.com. State estimates are a weighted average of the state's counties, using home sales as the weight. *Income* equals personal income; *taxburden* is the federal, state, and local tax burden as a proportion of income; *edlaw* is a dummy variable equal to unity if a state has enacted a law limiting eminent domain (zero otherwise); and *regionalhouseprice* is a measure of housing prices within regions.

Lu and Zelder (2008) report an insignificant negative coefficient on *edlaw*. Taken at face value, this means that state-level eminent domain legislation has no reliable effect on housing prices. This result is robust to including the political party of the governor in the specification and to using a one-year lag in housing price adjustments. Lu and Zelder identify some endogeneity issues that might be relevant but endogeneity alone is unlikely to explain the counter-intuitive sign. Collinearity tests cast doubt on the conjecture that collinear regressors are responsible for the result.

Lu and Zelder (2008) report some evidence that eminent domain laws tend to be enacted in states with low housing prices (not necessarily states in which housing prices have fallen). If states with lower housing prices tend to enact eminent domains laws more often than states with high housing prices, though, then that would possibly explain the negative regression coefficient.

This is because lower-priced housing is more likely to be affected by takings – high-value properties are less threatened, if for no other reason than they are typically owned and occupied by wealthier people with greater political influence.

Carpenter and Ross (2008) study the level of construction jobs, building permits and property tax revenues before and after state-enacted legislation aimed at counteracting *Kelo*. They find no difference in the level of these variables before and after enactment. Carpenter and Ross (2008) argue that although politicians claimed that state-level laws would do harm, in fact they did no harm at all. They suggest that state legislatures can enact laws protecting property rights without fear of hurting the state economy.

III. Model

We begin by writing the entrepreneur’s utility as a function of his investment in his business, x :

$$U(x) = p * v(x) + (1 - p) * [c(x) + B] - x, \quad (1)$$

where:

p = probability of the government not taking the business,

$v(x)$ = value of the business if it is not taken,

$c(x)$ = compensation for the business if it is taken,

B = the “public use” benefit to the entrepreneur from the taking,

x = the investment by the entrepreneur.

Let c , the compensation for the taking, be a function of the actual value of the business that is taken, such that $c(x) = \gamma v(x)$; $\gamma \geq 0$. Substituting yields:

$$U(x) = p * v(x) + (1 - p) * [\gamma * v(x) + B] - x.$$

Maximizing with respect to the entrepreneur’s investment, x , we obtain:

$$p * v'(x) + (1 - p) * \gamma * v'(x) - 1 = 0, \quad (2)$$

which implies:

$$v'(x) = \frac{1}{(1 - \gamma) * p + \gamma}. \quad (3)$$

Therefore, an increase in the probability of retaining the business increases the value of the business, $v'(x)$. Following Lu and Zelder (2008), this means that x increases so long as $v(x)$ is concave in x . To see this, let $v(x) = x^\alpha$, where $0 < \alpha < 1$. In words, the value of the business increases at a decreasing rate as investment in the business increases. This implies that

$$x^* = \left(\frac{1}{\alpha p}\right)^{\frac{1}{\alpha-1}} \text{ and } \frac{dx^*}{dp} = \frac{\left(\frac{1}{\alpha p}\right)^{\frac{2-\alpha}{\alpha-1}}}{(1-\alpha)\alpha p^2} > 0, \text{ where } p > 0 \text{ and } 0 < \alpha < 1. \text{ Thus, as } p \text{ increases, } x^*,$$

the optimal amount invested in the business, also increases. This result is intuitive – the entrepreneur invests more if he is more likely to keep the property. Also note that $\gamma = 1$ means that $v'(x) = 1$. Economically, if the state pays the full value of the property it takes, then the entrepreneur's investment is not affected by the probability of losing his business.²

Equation (1) writes utility in terms of x , the entrepreneur's investment in his business. The Kauffman Index of Entrepreneurial Activity does not report this value. Rather, it reports the percentage of the adult, non-business-owner population that starts businesses each month during the period from 1996 to 2007. Because utility is an increasing function of the value of the

² Whether compensation for eminent domain takings is equal to the value of the property taken is an important question, although beyond the scope of our paper. We note, though, that the market price is determined as before the project announcement date and courts typically do not consider future profits of businesses when determining fair compensation. This means that firms with large intangible assets – those more likely to be growth firms -- are more likely to be compensated at below market value.

business, though, entrepreneurs start more businesses when the value of these businesses is high and the proportion of startups should increase with stronger property rights.

Other factors can influence business formation besides the strength of property rights. We control for the log of per capita income because it is highly correlated with wealth. We expect people in states that have higher personal income (and wealth) to be more entrepreneurial because they are less financially constrained and more risk-tolerant (see Shane, 2009). We control for the tax burden because lower taxes allow entrepreneurs to keep more of the cash flows from their businesses; we expect more entrepreneurial activity in states that have lower tax burdens. We control for the state-level unemployment rate because we expect more entrepreneurial activity in states that have higher unemployment rates. According to DeGennaro (2009), the unemployed often start businesses to earn income while looking for another job.

Kreft and Sobel (2005) use the percentage of whites in the state's population. We call this variable *white*. Minorities are known to have lower wealth on average and tend to have more problems obtaining credit. To the extent that our other variables do not control for the underlying reasons for this, *white* may have explanatory power. In addition, recent immigrants frequently start a small business because it is their best way to avoid language and other employment barriers. Recent immigrants are mostly minorities. *Male*, defined as the percentage of state population that is male, controls for potential differences in risk preferences between men and women and *Meanage*, the average age of the population in years, does the same for age.

Kreft and Sobel (2005) argue that the percentage of the population holding a college degree tends to be negatively related to entrepreneurship. They claim that college gives an individual specialized knowledge which may be better suited for a salaried position. In contrast, they argue that high school provides the basic training and understanding needed to start a

business without specifying a specific of performing tasks. They propose a positive relation between entrepreneurial activity and the percentage of the population with a high school degree as its highest education level. Blau (1987) makes a similar argument. Finally, entrepreneurship is more common in service and retail sectors. Therefore, we expect the sign of *services*, defined as the percentage of the labor force employed in service industries, to be positive.

Our most general specification in this version of our paper is:

$$\begin{aligned}
 index_{it} = & \beta_0 + \beta_1 taxburden_{it} + \beta_2 taxburden_{i(t-1)} + \beta_3 \ln income_{it} + \beta_4 \ln income_{i(t-1)} \\
 & + \beta_5 unemployment_{it} + \beta_6 unemployment_{i(t-1)} + \beta_7 white_{it} + \beta_8 male_{it} + \beta_9 College_{it} \\
 & + \beta_{10} HS_{it} + \beta_{11} meanage_{it} + \beta_{12} services_{it} + \beta_{13} Enact_{it} + \beta_{14} Enact_{i(t-1)} + \varepsilon_{it}
 \end{aligned} \tag{1.1}$$

ε_{it} is the disturbance term, which may be heteroskedastic and autocorrelated. We use robust standard errors to allow for this.

IV. Data

We collect data on business formation from the 2007 Kauffman Index of Entrepreneurial Activity (hereafter, KIEA. See Fairlie (2008) for a detailed description of the data). The KEIA reports the percentage of the adult, non-business-owner population which starts businesses each month during the period from 1996 to 2007. KIEA uses the rate of business formation. That is, it measures the percentage of people who *act* rather than the percentage who *consider* acting. This is better than a survey of intent for our purposes because we are interested in action, not in intent. The tradeoff of using action rather than intent is that it might react slowly to a change like *Kelo*. *Kelo's* effect, if any, may not be detectible for several periods. For this reason we also use lagged values of certain variables.

Our dependent variable is the average monthly Kauffman Index by year from 1996 to 2007 for all 50 states and the District of Columbia. Thus, there are 612 observations on the Kauffman Index in our sample. We also collect the annual per capita income and annual

percentage of per capita income spent on federal, state, and local taxes (tax burden) for each state during the period from 1996 to 2007 from the Tax Foundation. Unfortunately, we cannot obtain per capita income and the tax burden for the District of Columbia. As a result, we only have 600 observations for these two variables. In addition, we collect the annual state-level unemployment rate as a percentage of the state's labor force from the U.S. Census Bureau. We rely on Lopez, Jewell, and Campbell (2009) for data on whether and when states change their eminent domain laws to restrict development takings after *Kelo* in 2005. They also classify these states' laws as meaningful or merely symbolic.

Table 1 gives summary statistics for the variables we use. All statistics are equally weighted by state. Our dependent variable is the KIEA, or *Index* in Table 1. The KIEA represents the percentage of the adult, non-business-owner population that starts a business in a given year. The mean level of the KIEA is 0.3 percent, meaning that on average about three out of every 1000 adult, non-business-owners start a business each year. The lowest level is 0.08 percent (West Virginia, 2007) and the highest is 0.72 percent (Montana, 2003). The variable *Income* is the natural log of the yearly state per capita income from 1996 to 2007; it averages \$32,147 with a range from \$18,658 (Mississippi, 1996) to \$60,764 (Connecticut, 2007). The *taxburden* is the percentage of per capita income spent on federal, state, and local taxes. *Taxburden* averages 9.4 percent of income, with a range from 5.7 percent (Alaska, 2004 and 2005) to 12.0 percent (New York, 1996). *Unemployment* is the state-level unemployment rate as the percentage of the state's labor force. It averages 5.30 percent. The lowest value is 2.0 percent for Connecticut in 2000 and Hawaii in 2006 and the highest is 10.3 percent, for Alaska in 1997. The percentage of white state residents ranges from a low of 19.3 percent in Hawaii (2003) to a high of 99.3 percent in Maine in 1998. The mean is 83.6 percent.

Male is the percentage of the state's population that is male. The District of Columbia records the lowest value, 43.3 percent, in 1997. Women rarely outnumber men in any state in any year except for Alaska, which records the maximum of only 52.5 percent in 2007. The mean is the same as the median, 48.4 percent. The mean percentage of the population holding a college degree is 23.3 percent and the range of education is wide. Only 12.7 percent of the population held a college degree in West Virginia in 1996 while 41.4 percent held degrees in the District of Columbia in 2007. Terminal education at the high-school level is much more common, with a mean of 62.4 percent, and the variation among states and years is less than for college degrees. Louisiana recorded the low of 51.4 percent in 1996 while Montana (2005) and Vermont (2007) recorded the highest, 70.0 percent. Alaska reports the lowest mean age of just 28.9 years in 1997 while West Virginia reports the highest of 41.3 years in 2005. The overall mean is 36.1 years. North Carolina in 1998 and Wisconsin in 2000 had the lowest percentage of people working in the service sector (52.3 percent). Not surprisingly, the District of Columbia records the highest level of people working in the service sector, 77.3 percent in 2006. The medians are close to the means for all of these variables in Table 1.

The variable *Enlaw* equals one if a state enacted legislation in year t to restore property rights endangered by *Kelo* and 0 otherwise. Its mean is only 0.06, meaning that only three states enacted such a law in any given year. The median is zero, meaning that in most years no states enacted a law. The variable *Stronglaw* equals 1 if the law update is meaningful according to Lopez, Jewell, and Campbell (2009) and 0 otherwise. Its mean is 0.07, meaning that an average of about 3.5 states had enacted meaningful legislation limiting eminent domain takings by the year of the observation.

Table 2 gives the level of the average of the state's values of the KIEA through time. The average's highest value is the first year of our data; this is 3.3 percent in 1996. From there, the value declines fairly steadily until it reaches its minimum of 2.7 percent in 2001. The mean KIEA rebounds slightly by 2003 and remains fairly steady at about 3 percent for the rest of the sample period. All in all, the index does not vary too much. This is consistent with Kedrosky and Stangler (2010). They report that the number of new firms (defined as starting in year i or being less than five years old in year i) is roughly constant from 1977-2005.

V. Preliminary Results

Table 3 contains our preliminary regression results. The first column of results (second column in the table, labeled Model 1) reports the results of estimating Equation (1.1) excluding the binary variables for state-level property rights laws. Model 1 shows that an increase in a state's tax burden in the previous year is reliably associated with lower levels of business formation, which is consistent with the intuition that lower taxes allow entrepreneurs to keep more of the cash flows from their businesses, increasing the incentive to start a business. The coefficient on contemporaneous log income is smaller in magnitude and statistically insignificant. Model 1 also shows that business formation is positively related to the natural log of income in the year of the observation. The coefficient is significant at better than the 5 percent level. The log of income in the previous year, though, has a negative coefficient. This result is counterintuitive in some sense because Shane (2009) reports that angel investment, likely a good proxy for business formation, is positively correlated with wealth. Of course, income is not wealth. Individuals with high-paying jobs are probably less likely to quit and risk starting their own business. The negative coefficient on log income in the previous year and the positive coefficient in the current year is consistent with DeGennaro (2009). When jobs are

scarce and incomes are low, people tend to start more new businesses. However, they probably do not do so immediately. Most likely they would look for another job while drawing unemployment benefits. The effect on business formation may not appear until the following year. In our data in a multivariate regression, though, neither the contemporaneous level of state unemployment nor the lagged level is significantly related to business formation. The proportion of whites in the state's population has no explanatory power.

In our data, the percentage of the state's population that is male is reliably associated with the level of business formation. This is consistent with other research. The estimated coefficient of 0.02 is very large. A one-percentage point increase in the percentage of males is associated with a 0.02-percentage point increase in the rate of business formation. Given that the rate of business formation is on the order of 0.3 percent, this would represent about a six-percent increase.

The education level of the workforce is in general not a good predictor of business formation in our data. Point estimates suggest that the percentage of the population with college degrees is positively associated with a higher the rate of business formation, and the percentage of the population with high-school degrees as its highest education level is negatively associated with the rate of business formation. Neither coefficient is statistically significant, though. The mean age of the population has much more reliable explanatory power. Unsurprisingly, older populations start fewer businesses and the effect is economically important. The coefficient estimate of about 0.001 implies that a one-year increase in the mean age of the population decreases the rate of business performance by about 0.001, or 0.1 percentage points. This is about a third of the mean KIEA level.

Finally, the higher the percentage of the labor force employed in the service sector, the higher the rate of business formation. The estimated coefficient of 0.0048 implies that a one-percentage point increase in the level of the labor force employed in the service sector is associated with an increase in the rate of business formation of 48 basis points.

The third column of Table 3 drops variables that do not reach even the 15 percent critical value and adds variables that control for the enactment of state-level property rights legislation. These are binary variables that equal one if such legislation was enacted during the year of the observation ($enact_t$) and during the previous year ($enact_{t-1}$). Incorporating these lags reduces the number of observations to 550. The coefficients of variables that are in both models have very similar coefficients and significance levels. No signs reverse and significance levels never cross the critical one-percent or five-percent levels. The coefficient on the binary variable controlling for the enactment of a state-level law in the year of the observation is small and insignificant. The coefficient on the binary variable controlling for the enactment of a state-level law in the previous year is five times larger in magnitude and although insignificant at the five-percent level, the coefficient has a p -value of 0.059. The point estimate suggests that the rate of business formation increases by 0.03 percentage points in the year after these states enact laws restricting takings. Although this may sound small, Table 1 shows that the mean KIEA value is 0.3. Thus, our results suggest an increase of about 10 percent of the mean value of the KIEA over the sample period, which is in fact a fairly large response. Model 2's adjusted R^2 is actually a bit higher than Model 1, despite using two fewer variables.

Model 3 drops the statistically insignificant variable *College* from Model 1 as well as other insignificant variables, and Model 4 adds the variables to control for state-level legislation

to Model 3. The coefficients and significance levels results do not change much. The biggest change is that the p -value of the contemporaneous value of *Enact* rises from 0.059 to 0.101.

Our interpretation of these results is that potential entrepreneurs tend to react to the enactment of legislation to restrict takings in the year following the law's enactment, increasing the rate of business formation by about 10 percent. The one-year lag makes sense because the KIEA is a measure of business formation, not a survey of the intent to start a business.

Entrepreneurs need time to act. The policy implication of our results is that, to the extent that business formation proxies for economic activity, the enactment of state-level laws to restrict takings clearly do no harm and probably provide some benefit.³

Why are the coefficients on state-level laws only marginally statistically significant? One answer is that our model is poorly specified. We have not yet checked for endogeneity, for example. We may have omitted variables. Conceivably we need more and better data, in particular more observations since Kelo. We plan to explore these possibilities in future versions of this paper.

It is also possible that the taking authorities pay fair value for the property. For example, suppose that the entrepreneur expects to receive about \$500,000 for a business worth about \$500,000 in the event his property is taken. If the nonpecuniary benefits of owning a business are small then even a large change in the risk of taking is unlikely to matter. Along these lines, if the likelihood of a taking is small, then even a proportionately large increase in that risk is also small. For example, suppose that the likelihood of a taking is 0.00001, or one in 100,000. Even

³ Robustness tests to be detailed in the next version are consistent with these results. These include use of the property crime rate as an independent variable (insignificant; no other major changes); including a variable to control for the strength of the enacted law (a little less significant); and a dummy variable for the year in which *Kelo* was decided (insignificant).

if *Kelo* doubles those odds, then entrepreneurs are unlikely to change their behavior enough for us to detect it. Detecting a corresponding decrease in the likelihood of a taking because of state-level laws is similarly difficult.

VI. Future Research

We are collecting data on additional variables for two reasons. First, we need excluded variables to control for endogeneity in two-stage least squares, which is a standard approach to handle endogeneity. Second, we want to confirm that our model does not suffer from omitted variables. Among these variables are the Castle Coalition's State Report Card for eminent domain legislation, the state index of economic freedom and its components from the Fraser Institute, and the property crime rate. See Kreft and Sobel (2005) for the economic justification for using these variables. We also plan to obtain data used in Turnbull and Salvino (2009), who use a binary variable separating states whose statutes or constitutions expressly authorize takings for economic development purposes.

VII. Summary

Our theoretical model shows that states which enact legislation to restore property rights in the wake of *Kelo* should have higher rates of new business formation than states that do not enact such legislation. Our preliminary empirical work supports this result. We show that levels of new business formation tend to be about 10 percent higher in the year after a state enacts legislation to protect property rights than they would be in the absence of this legislation. Our evidence suggests that policy makers may enact state-level eminent domain restrictions to protect property rights without fear of retarding business formation. Business formation may even benefit.

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Table 1
Summary Statistics of Key Variables

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
<i>Index (%)</i>	612	0.30	0.286	0.10	0.08	0.72
<i>Income (\$)</i>	600	32147	31205	6961.4	18658	60764
<i>Taxburden (%)</i>	600	9.40	9.50	1.12	5.7	12.01
<i>Unemployment (%)</i>	612	5.30	5.3	1.14	2.0	10.3
<i>White</i>	612	0.836	0.870	0.139	0.196	0.993
<i>Male</i>	612	0.484	0.484	0.0131	0.433	0.525
<i>College</i>	612	0.233	0.231	0.0426	0.127	0.414
<i>HS</i>	612	0.624	0.627	0.0355	0.514	0.70
<i>Meanage</i>	612	36.106	36.200	1.867	28.900	41.30
<i>Services</i>	612	0.617	0.616	0.0378	0.523	0.773
<i>Stronglaw</i>	600	0.07	0	0.25	0	1
<i>Enlaw</i>	600	0.06	0	0.24	0	1

Index is the percentage of the adult, non-business-owner population that starts a business each year from 1996 to 2007 in 50 states and the District of Columbia taken from the Kauffman Foundation’s Index of Entrepreneurial Activity. *Taxburden* is the percentage of per capita income spent on federal, state, and local taxes. *Income* is the state yearly per capita income in dollars from 1996 to 2007. *Unemployment* is the state-level unemployment rate as a percentage of the state’s workforce. *White* is the proportion of the population that is white. *Male* is the proportion of the population that is male. *College* is the proportion of the population receiving a college degree, while *HS* is the proportion of the population receiving a high-school degree as the highest education. *Meanage* is the mean age of the population in years. *Service* is the percentage of the labor force employed in service industries. The variable *Stronglaw* equals 1 if the property-rights law updated by the year of the observation is meaningful according to Lopez, Jewell, and Campbell (2009) and 0 otherwise. The variable *Enlaw* is a binary variable that equals one if a state enacted legislation in year *t* to restore property rights endangered by *Kelo* and 0 otherwise. *Income* and *Taxburden* do not have any observations for the District of Columbia.

Table 2
Summary Statistics of the Aggregate Kauffman Index of
Entrepreneurial Activity Per Year From 1996 to 2007

Variable	N	Mean	Std Dev	Minimum	Maximum
<i>Index96</i> (%)	51	0.33	0.11	0.15	0.62
<i>Index97</i> (%)	51	0.30	0.11	0.12	0.61
<i>Index98</i> (%)	51	0.31	0.11	0.12	0.69
<i>Index99</i> (%)	51	0.28	0.09	0.12	0.51
<i>Index00</i> (%)	51	0.30	0.10	0.14	0.66
<i>Index01</i> (%)	51	0.27	0.09	0.12	0.46
<i>Index02</i> (%)	51	0.28	0.08	0.13	0.48
<i>Index03</i> (%)	51	0.30	0.10	0.09	0.72
<i>Index04</i> (%)	51	0.31	0.09	0.15	0.56
<i>Index05</i> (%)	51	0.31	0.10	0.16	0.55
<i>Index06</i> (%)	51	0.30	0.09	0.16	0.60
<i>Index07</i> (%)	51	0.30	0.09	0.08	0.46

The variables *Index96* through *Index07* are the percentage of the adult, non-business-owner population that starts a business each year from 1996 through 2007. The mean is the equally weighted average of the 50 states plus the District of Columbia.

Table 3
Regression Results

$$\begin{aligned} index_{it} = & \beta_0 + \beta_1 taxburden_{it} + \beta_2 taxburden_{i(t-1)} + \beta_3 \ln income_{it} + \beta_4 \ln income_{i(t-1)} \\ & + \beta_5 unemployment_{it} + \beta_6 unemployment_{i(t-1)} + \beta_7 white_{it} + \beta_8 male_{it} + \beta_9 College_{it} \\ & + \beta_{10} HS_{it} + \beta_{11} meanage_{it} + \beta_{12} services_{it} + \beta_{13} Enact_{it} + \beta_{14} Enact_{i(t-1)} + \varepsilon_{it} \end{aligned}$$

	Model 1	Model 2	Model 3	Model 4
<i>Constant</i>	0.00744 (2.20)*	0.00861 (2.42)*	0.00455 (1.81)	0.00513 (1.94)
<i>Taxburden_{it}</i>	0.0334 (1.60)	0.0400 (1.94)	0.0357 (1.75)	0.0395 (1.93)
<i>Taxburden_{i(t-1)}</i>	-0.0412 (-2.01)*	-0.0474 (-2.35)*	-0.0415 (-2.07)*	-0.0453 (-2.27)*
<i>ln(Income_{it})</i>	0.00365 (2.11)*	0.00409 (2.74)**	0.00410 (2.81)**	0.00421 (2.85)**
<i>ln(Income_{i(t-1)})</i>	-0.00498 (-2.84)**	-0.00553 (-3.68)**	-0.00520 (-3.53)**	-0.00536 (-3.61)**
<i>Unemployment_{it}</i>	-0.000556 (-0.13)			
<i>Unemployment_{i(t-1)}</i>	0.00378 (1.03)			
<i>White_{it}</i>	0.000121 (0.43)			
<i>Male_{it}</i>	0.0205 (5.09)**	0.0203 (5.60)**	0.0217 (5.86)**	0.0215 (5.81)**
<i>College_{it}</i>	0.00273 (1.46)	0.00217 (1.37)		
<i>HS_{it}</i>	-0.000771 (-0.42)			
<i>Meanage_{it}</i>	-0.0000953 (-3.28)**	-0.000105 (-4.04)**	-0.00010 (-3.83)**	-0.000102 (-3.38)**
<i>Services_{it}</i>	0.00477 (3.57)**	0.00525 (4.35)**	0.00531 (4.43)**	0.00542 (4.49)**
<i>Enact_{it}</i>		-0.00006 (-0.43)		-0.00009 (-0.64)
<i>Enact_{i(t-1)}</i>		0.000299 (1.89)		0.000268 (1.64)
Observations	550	550	550	550
R-squared	0.227	0.229	0.222	0.226

** significant at the one-percent level. * significant at the five-percent level.

See Table 1 for definitions of these variables. Robust *t*-statistics in parentheses.