Business Formation in the Wake of States' Responses to *Kelo*

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The U.S. Supreme Court ruling in Kelo v. New London (2005) allows governments to take private property for transfer to new private owners to promote "economic development". Our theoretical model shows that business creation can be encouraged, unaffected, or discouraged as the probability of takings increases, depending on the level of compensation and the owners' public use benefits. Empirical results indicate that states can pass laws protecting property rights without fear of retarding business formation, so long as compensation is economically fair. We explain why Kelo and these laws do not measurably affect business formation in our empirical work.

INTRODUCTION

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 v. City of New* London, 505 U.S. 469 (2005), hereafter, *Kelo*, coupled with individual state's different responses to this decision, provides a natural experiment to answer that question. We find no empirical evidence that the rate of formation of new firms depends on a state's legislative response to *Kelo*. We identify several potential reasons for this finding and outline extensions of our work for future research.[2]

On June 23, 2005, the U.S. Supreme Court ruled in *Kelo* that the Public Use Clause 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 response. Somin says that, "The Kelo backlash probably resulted in more new state legislation than any other Supreme Court decision in history" (Somin 2008). 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 give the example of West Virginia, which permits takings of "blighted" properties (López, Jewell and Campbell 2009). 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 claim that such loopholes entrust private property protections to city councils

and laws featuring them provide little or no protection of property rights (López, Jewell and Campbell 2009).

PREVIOUS LITERATURE

Garrett and Rothstein discuss the evolution of U.S. law regarding eminent domain and provide a concise background of the *Kelo* decision (Garrett and Rothstein 2007). Their discussion also entails a good review of public and private goods. Garrett and Rothstein suggest that forced transfers of property are unlikely to improve social welfare in the aggregate. In fact, they argue, society may well be worse off because competing interests are sure to expend resources to sway politicians and bureaucrats to rule in their favor.

López and Totah provide an overview of the backlash to *Kelo* at the state level (López and Totah 2007). They 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. Sandefur 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"(Sandefur 2006). Such language provides virtually no protection of property rights.

Some states enacted a law permitting takings for reasons of blight or public good. The problem is that almost any shopping mall will produce more tax revenue than the residential property that it replaces. Any law that opens the door for decisions 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, because 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 work identifies a potential problem with endogeneity between eminent domain takings and state-level laws (López and Totah 2007). 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. We argue below that this endogenous relationship has potentially important implications for our empirical work.

López, Jewell and Campbell explore the determinants of legislative action at the state level in response to *Kelo* (López, Jewell and Campbell 2009). They find that whether or not legislation is enacted is a function of voter backlash against *Kelo*, but whether the law has teeth is unrelated to voter backlash. 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 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 (Alesina, Baqir and Easterly 2000). Consistent with this, Glaeser and Saks find that corruption of public officials is greater in U.S. states with greater racial fragmentation (Glaeser and Saks 2006). 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 minority property owners and tenants. This is especially pronounced if the stated reason for the taking is economic development (López, Jewell and Campbell 2009).

López, Jewell and Campbell follow López and Totah's in identifying the importance of the strength of a law that restricts eminent domain takings (López and Totah 2007; López, Jewell and Campbell 2009). They report a case in Los Angeles in which property was deemed blighted because it lacked sufficient parking. Clearly, local politicians can easily pierce the protective cloak that vague or ambiguous anti-takings laws ostensibly provide. Stronger laws might rule out economic development as a reason for taking (Florida), while other stronger laws explicitly exclude aesthetic considerations in determining blight (Georgia). Some states require the taker to pay a premium over fair-market price. Even so, this ignores any nonpecuniary value that the current owners may derive from the property and leaves open how that fair-market price is determined.[3]

Lu and Zelder 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 (Lu and Zelder 2008). They find 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 say that 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.

Unlike our paper, Carpenter and Ross do not develop a formal model. However, they produce results that are similar to ours. Carpenter and Ross use hierarchical linear models to study the effect of state property rights legislation on construction employment, building permits and property taxes (Carpenter and Ross 2010). They find that state trends in construction employment, building permits and property taxes were essentially the same after eminent domain legislation as before. They also find that the strength of property rights legislation does not affect this conclusion.

MODEL

We model eminent domain takings beginning with the entrepreneur's utility function as a function of his investment in his business, x:

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

where: p = probability of the government taking the business,
$v(x)$ = a function giving the value of the business if it is not taken,
$\gamma * v(x)$ = compensation for the business if it is taken, as a function of $v(x)$. The parameter γ is a scalar representing the compensation per dollar of investment. If $\gamma = 1$ then the entrepreneur is exactly compensated for the market value of the business he loses because of the taking. If γ exceeds (is less than) unity, then he is overcompensated (undercompensated).
B = the entrepreneur's share of the benefits of the public project resulting from the taking, less his share of its public costs, which we call the *excess public use benefits,*
x = the entrepreneur's investment.

Equation (1) writes utility in terms of x, the entrepreneur's investment in his business and other unobservable exogenous variables. The Kauffman Index of Entrepreneurial Activity does not report either utility or the entrepreneur's investment. Rather, it reports the percentage of the adult, non-business-owner population that starts businesses each month during the period from 1996 to 2008. We model this as:

$$KIEA = U(x) + g(z) \quad (2)$$

where *g(z)* is a function with arguments *z*, which we specify later. The function *g(z)* controls for factors that affect the rate of business formation other than the entrepreneur's utility. Substituting for *U(x)* and rearranging we obtain:

$$KEIA = [v(x)-x] + [(\gamma-1) * v(x) + B] * p + g(z). \quad (3)$$

We next let the probability of a taking, *p*, be a function of the Kelo decision and state property rights laws, such that

$$p = c_0 + c_1 Kelo + c_2 Statelaw + e, \quad (4)$$

where *e* reflects other factors that determine takings. Substituting this into Equation (3) yields:

$$KEIA = [v(x)-x] + [(\gamma-1) * v(x) + B]*c_0 + [(\gamma-1) * v(x) + B] * c_1 Kelo + [(\gamma-1) * v(x) + B] * c_2 Statelaw + [(\gamma-1) * v(x) + B] * e + g(z) . \quad (5)$$

Now let $\delta_1 = [(\gamma-1) * v(x) + B] * c_1$ and $\delta_2 = [(\gamma-1) * v(x) + B] * c_2$. Then

$$KEIA = \{[v(x)-x] + [(\gamma-1) * v(x) + B]*c_0\} + \delta_1 Kelo + \delta_2 Statelaw + [(\gamma-1) * v(x) + B] * e + g(z) . \quad (6)$$

We next specify the function *g(z)*, which controls for factors that affect the rate of business formation other than the entrepreneur's utility:

$$g(z) = \beta_0 + \beta_1 ln(income) + \beta_2 Taxburden + \beta_3 Unemploymentrate + \beta_4 Meanage + \beta_5 Gender + \beta_6 Race + \beta_7 Highschooldegree + \beta_8 Collegedegree$$

where

KEIA represents the percentage of the adult, non-business-owner population that starts a business in a given year;
ln(income) is the natural log of the yearly state per capita income from 1996 to 2008;
Taxburden is the percentage of per capita income spent on federal, state, and local taxes;
Unemploymentrate is the percentage of the labor force that is unemployed;
Meanage is the average age of the state population;
Gender is the percent of labor force that is male;
Race is the percent of the population that is Caucasian;
Highschooldegree is the percent of the population receiving a high school degree as its highest level of education; and
Collegedegree is the percent of population receiving a four-year college degree as its highest level of education.
Substituting *g(z)* into Equation (6) and rearranging obtains:

$$KEIA = \beta_0 + \{[v(x)-x] + [(\gamma-1) * v(x) + B]*c_0\} + \delta_1 Kelo + \delta_2 Statelaw + \beta_1 ln(income) + \beta_2 Taxburden + \beta_3 Unemploymentrate + \beta_4 Meanage + \beta_5 Gender + \beta_6 Race + \beta_7 Highschooldegree + \beta_8 Collegedegree + [(\gamma-1) * v(x) + B] * e. \quad (7)$$

Our model holds for state *i* and time *t*, so:

$$KEIA_{it} = \beta_0 + \{[v(x)-x] + [(\gamma-1) * v(x) + B]*c_0\} + \delta_1 Kelo_{it} + \delta_2 Statelaw_{it} + \beta_1 ln(income)_{it} + \beta_2 Taxburden_{it} + \beta_3 Unemploymentrate_{it} + \beta_4 Meanage_{it} + \beta_5 Gender_{it} + \beta_6 Race_{it} + \beta_7 Highschooldegree_{it} + \beta_8 Collegedegree_{it} + [(\gamma-1) * v(x) + B] * e_{it}. \quad (8)$$

The resulting regression model is

$$KEIA_{it} = \beta + \delta_1 Kelo_{it} + \delta_2 Statelaw_{it} + \beta_1 ln(income)_{it} + \beta_2 Taxburden_{it} + \beta_3 Unemploymentrate_{it} + \beta_4 Meanage_{it} + \beta_5 Gender_{it} + \beta_6 Race_{it} + \beta_7 Highschooldegree_{it} + \beta_8 Collegedegree_{it} + \varepsilon_{it} \quad (9)$$

where $\beta = \beta_0 + \{[v(x)-x] + [(\gamma-1) * v(x) + B]*c_0\}$ and $\varepsilon_{it} = [(\gamma-1) * v(x) + B] * e_{it}$.

Because we are interested in the effects of Kelo and state laws, which are captured by c_1 and c_2 in Equation (4), we would prefer to estimate c_1 and c_2 directly. However, these parameters are subsumed in δ_1 (which equals $[(\gamma-1) * v(x) + B] * c_1$) and δ_2 (which equals $[(\gamma-1) * v(x) + B] * c_2$). This means that the economic implications of δ_1 and δ_2 are subtle. For example, if δ_1, the coefficient on *Kelo*, is statistically insignificantly different than zero, then we cannot conclude that *Kelo* itself is unrelated to the business creation rate. Instead, δ_1 might equal zero because $[(\gamma-1) * v(x) + B]$ equals zero. In that case, the economic interpretation would be that the entrepreneur's loss is offset by the sum of his excess public use benefits and government compensation for the taking.[4]

Estimating the direct influence of the Kelo decision or the state laws would be a useful exercise, but this is impossible in the context of our model. This is because the influence of these factors is embedded in the coefficients δ_1 and δ_2 and there is no good way to disentangle their influence from the rate of compensation, the value of the business, and the size of the public benefits relative to their costs. What we can say, though, is that a nonzero coefficient implies that government has erred in some way. For example, a negative coefficient could trace to γ being less than one (the government errs by underpaying for the taking), coupled with $v(x) > 0$ and the entrepreneur's share of the excess public benefits, B, being small. The only way a nonzero estimate of δ_1 or δ_2 can reflect proper government behavior is if either the entrepreneur's share of B is large enough to be detectable in the data and c_2 (the influence of the state laws) is positive. Even in this case, to conclude that government has acted correctly we must assume that governments compensate fairly (i.e. $\gamma=1$).

We believe that the entrepreneur's excess share of the public benefits from takings is very rarely large. The entrepreneur's share of the excess value of even a badly needed road or bridge would be hard to detect, and the public benefits of many projects born of takings, such as the view from high-rise condominiums, accrue to the developer.

Our treatment of δ assumes that $v(x)-x$, the value of the business if it is not taken less the entrepreneur's investment in the business, is constant. Because of this, the composition of the error term, ε_{it}, might appear to cause econometric problems. However, there is no obvious reason for the compensation per dollar of investment, γ, to vary across states or time periods because our model assumes that *Kelo* and state laws enacted to restore property rights affect the probability of takings, not the compensation per dollar of investment paid for those takings. Similarly, treating $v(x)$ and B as constants is also reasonable. This means that ε_{it} is in fact well-behaved. Specifically, if $e_{it} \sim N(0,\sigma^2)$ then only the variance is affected, because $\varepsilon_{it} \sim N(0,[(\gamma-1) * v(x) + B]^2 \sigma^2)$.[5]

Our model allows us to identify the circumstances under which *Kelo* and subsequent state laws, along with the rates of government compensation for takings and the entrepreneur's share of excess public use benefits, affect business formation. We show that business creation can be encouraged, unaffected, or

discouraged as the probability of takings increases, depending on the level of compensation for the takings and the magnitude of the owners' public use benefits.

Comparative statics show that:

$$\frac{\partial u(x)}{\partial p} = -v(x) + [\gamma * v(x) + B] = (\gamma - 1) * v(x) + B$$

This equation and the utility function (1) offer several insights:

A. When $\gamma < 1$, and if $(\gamma - 1) * v(x) + B \geq 0$, then $\frac{\partial u(x)}{\partial p} \geq 0$.

When governments insufficiently compensate the entrepreneur and the entrepreneur's loss is no more than his excess public use benefits, then the entrepreneur's utility increases or remains unchanged as the probability of taking increases. Most people would consider Case *A* to be a desirable outcome. Not only does society enjoy the excess public benefits of the government project, but these benefits are so great that the entrepreneur's share of them overcomes the loss he suffers when the government underpays for the business.

B. When $\gamma < 1$, and if $(\gamma - 1) * v(x) + B < 0$, then $\frac{\partial u(x)}{\partial p} < 0$.

When governments insufficiently compensate the entrepreneur, and entrepreneur's loss is more than his excess public use benefits, utility decreases as the probability of taking increases. Property rights proponents fear this case. The entrepreneur is worse off if his property is taken. This happens if governments honestly underestimate the value of the enterprise, but could also trace to corrupt officials punishing political enemies through takings.

C. When $\gamma \geq 1$, $\frac{\partial u(x)}{\partial p} > 0$.

When governments overcompensate for the taking, utility increases as the probability of taking increases. The entrepreneur misses the excess public use benefits and possibly a premium over the market value of his business if it is not taken. Taxpayers fear this case. The entrepreneur is better off if his business is taken, but taxpayers are harmed even if governments act honestly and simply overestimate the value of the business. Worse still, corruption is also possible. Interest groups might make large campaign contributions to help corrupt politicians win reelection, and then be repaid with taxpayer dollars by having their businesses taken at a premium.

Taking the first derivative of utility *u(x)* with respect to other parameters also yields insights. The first derivative with respect to γ is:

$$\frac{\partial u(x)}{\partial \gamma} = v(x) * p \geq 0$$

D. The business owner's utility increases as governments pay a higher price for the business.

Taking the first derivative of utility *u(x)* with respect to B, we obtain:

$$\frac{\partial u(x)}{\partial B} = p \geq 0$$

E. The business owner's utility increases as his excess public use benefits increase.

Maximizing the entrepreneur's utility (equation 1) with respect to his investment, *x*, we obtain:

$$(1-p)*v'(x)+p*\gamma*v'(x)=1\ , \tag{10}$$

which implies:

$$v'(x)=\frac{1}{1-p+p*\gamma}=\frac{1}{1+(\gamma-1)*p} \tag{11}$$

Equation (11) indicates that to maximize his utility, a business owner chooses a project which satisfies the following:

$$v(x)=\theta*x+C \tag{12}$$

where we have assumed linearity , $\theta=\frac{1}{1+(\gamma-1)*p}$ and C is a constant.

Comparative statics also show that

$$\frac{\partial\theta}{\partial P}=\frac{1-\gamma}{[1+(\gamma-1)*p]^2}$$

1. When $\gamma=1$, meaning that a business owner is fairly compensated, then $v'(x)=1$. Thus $v(x)=x+C$. This indicates that when the business owner is fairly compensated, he can maximize his utility by investing in a business which offers a return on equity equal to the market rate. In addition, because $\frac{\partial\theta}{\partial P}=0$, the return on equity that the entrepreneur seeks is unaffected by the probability of taking if he is fairly compensated.
2. When $\gamma>1$, suggesting that a business owner is over compensated relative to fair market value, then $v'(x)<1$. This indicates that when the business owner is over compensated, he can increase his utility by growing the business even if the return on his marginal investment is below the market rate. Over compensating the entrepreneur creates incentives to grow the business beyond what is socially optimal. In addition, because $\frac{\partial\theta}{\partial P}<0$, the return on equity that the owner requires decreases as the probability of taking increases, given that he is overcompensated if his property is taken. The more likely that his business is taken, the lower the return on equity the entrepreneur requires.
3. When $\gamma<1$, suggesting that a business owner is under compensated relative to fair market value, then $v'(x)>1$. When the business owner is under compensated, he must invest in a business which offers a return on equity that is greater than the market rate. This is also socially suboptimal, because businesses that are merely good – not great -- may never be started. Because $\frac{\partial\theta}{\partial P}>0$, the higher the probability of taking, the higher return on equity the entrepreneurs requires.

Comparative statics also show that $\frac{\partial\theta}{\partial P}=\frac{-p}{(1-p+p*\gamma)^2}$

4. When p = 0 (the probability of taking is zero) the return on equity that the entrepreneur seeks is not affected by the compensation.
5. When p > 0 (the probability of taking is greater than zero) the return on equity that the entrepreneur requires is a decreasing function of the proportion of compensation received, γ.

Our theory suggests that the entrepreneur's utility can be increased, unaffected, or decreased as the probability of taking his business increases depending on the level of compensation for the takings and the magnitude of the owners' excess public use benefits. Because the utility of owning a business is not observable empirically we use the business creation rate as a proxy for utility in our empirical study and

examine the relation between the business creation rate and the probability of taking. We also control for other factors that could affect the business creation rate.

Our data include the variable *Index* from the Kauffman Index of Entrepreneurial Activity (hereafter, KIEA. See Fairlie 2008 for a detailed description of the data). *Index* represents the percentage of the adult, non-business-owner population that starts a business in a given year. The variable *enlaw* is a binary variable that equal one if a state enacted legislation in year *t* to restore property rights endangered by *Kelo* and 0 otherwise, *enlawl1* is a binary variable that equals 1 if the state updates its eminent domain law in the year *t*-1 and 0 otherwise, *enlawl2*, is equal to 1 if the state updates its eminent domain law in year *t*-2 and 0 otherwise. *Enlawl3* is equal to 1 if the state updates its eminent domain law in year *t*-3 and 0 otherwise. *Stronglaw* is a dummy variable that equals 1 if the law update is meaningful according to Lopez et al. and 0 otherwise (Lopez, Jewell, and Campbell 2009). *Kelo* is a dummy variable that equals 1 when the year is 2005 or 0 otherwise. *lnincome* is the natural log of the yearly state per capita income from 1996 to 2008, *taxburden* is the percentage of per capita income spent on federal, state, and local taxes, and *unemploymentrate* is the percentage of the labor force that is unemployed. *Meanage* is the average of the state population. *Gender* is the percent of labor force that is male. *Race* is the percent of the population that is Caucasian. *Highschooldegree* is the percent of the population receiving a high school degree as its highest level of education and *Collegedegree* is the percent of population receiving a four-year college degree as its highest level of education.

We expect more entrepreneurial activity in states that have lower tax burdens. Kreft and Soble find the state entrepreneurial growth is positively related to the all-government economic freedom index, which is a decreasing function of government taxation (Kreft and Soble 2005). We also expect more entrepreneurial activity in states that have higher unemployment rates. We expect people in states that have higher personal income to be more entrepreneurial because they are less financially constrained and more able to bear risk. However, if states with high unemployment rates tend to have low per capita income, then they may also have more entrepreneurial activity. We control for demographic characteristics of the state population, such as average age, gender, and race, because we expect males and younger people to be less risk-averse and more entrepreneurial. Kreft and Sobel find that states with younger populations have higher entrepreneurial growth. They also find state entrepreneurial growth is negatively related to the percent of the population with a college degree. Many minority immigrants chose to start their own small businesses because of language and education barriers. Therefore, we expect more entrepreneurial activities in states with higher minority populations. Finally, we expect people with high school and college educations to have more of the skills required to start businesses.

DATA

We collect data on entrepreneurial activity from the Kauffman Index of Entrepreneurial Activity. The KIEA reports the percentage of the adult, non-business-owner population which starts businesses each month during the period from 1996 to 2008. Our dependent variable is the average monthly Kauffman Index by year from 1996 to 2008 for all 50 states. Thus, there are 650 observations on the Kauffman Index in our sample. We also collect the annual per capita income and annual percentage of per capital income spent on federal, state, and local taxes (tax burden) for each state during the period from 1996 to 2008 from the Tax Foundation.[6] As a result, we have 650 observations for these two variables. We rely on Lopez, Jewell, and Campbell for data on whether and when states change their eminent domain laws to restrict development takings after *Kelo* in 2005 (Lopez, Jewell, and Campbell 2009). They also classify these states' laws as being meaningful or merely symbolic. We also collect the average age of the population, percent of population receiving a high school degree as its highest level of education, percent of population receiving a 4-year college degree as its highest level of education, percent of the labor force that is male, and percent of the labor force that is Caucasian from the Census Bureau.

Table 1 gives summary statistics for these variables. We have data for all 50 states plus the District of Columbia for the 13 years from 1996-2008, for a total of 650 state-year observations. The mean index level 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). Annual income averages $32,902, with a range from $18,658 (Mississippi, 1996) to $63,160 (Delaware, 2008). The tax burden as a percentage of income averages 9.4 percent, ranging from 5.73 percent (Alaska, 2004 and 2005) to 12.01 percent (New York, 1996). The average unemployment rate is 5.14 percent, ranging from 1.60 percent (Iowa, 1997) to 10.40 percent (Louisiana, 2003). The population's average age is 36.47 years, with a range from 29.60 (Alaska, 1996) to 41.60 (West Virginia, 2007). The percentage of the labor force that is male averages 48.47 percent, with a range from 44.8 percent (Mississippi, 2008) to 52.5 percent (Alaska, 1997). Caucasians constitute an average of 84.06 percent of the population, with a range from 20.30 percent (Hawaii, 2007) to 99.20 percent (New Hampshire, 1996). The percentage of the population receiving a high school degree as its highest level of education averages 63.75 percent, with a range from 52.30 percent (Louisiana, 1996) to 72.80 percent (Maine, 2008). In contrast, the percentage of the population with a college degree as its highest level of education averages only 24.02 percent, with a range from 13.50 percent (Arkansas, 1997) to 35.60 percent **(**Massachusetts, 2006).

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, though. The annual standard deviation is never more than 0.11.

Table 3 gives the results of a *t*-test comparing the individual state levels of the KIEA before and after 2005, the year of the decision. The *t*-ratio is 0.65, so the test fails to reject that the values are identical. Table 4 reports a test of the difference in the KIEA from 2005 and after versus before 2005 for states that did not enact legislation to restrict eminent domain. The *t*-ratio is a significant 2.62. This means that the level of new business formation is reliably higher after the *Kelo* decision. Table 5 reports similar tests for states that did enact such legislation. The *t*-ratio is an insignificant -0.81. This means that the level of new business formation is lower after the *Kelo* decision but the difference is likely due to chance.

RESULTS

Table 6 contains the regression results of different model specifications. Model 1 shows the regression result of equation 5. The coefficient of *enlaw*, the contemporaneous enactment of a state-level law restricting takings, is not statistically different from zero. The coefficients of the binary variables, *enlawl1*, *enalwl2, and enalwl3,* indicating whether or not states enacted property rights laws in the previous year, two years ago, or three years ago**,** are insignificantly negative, positive, and negative, respectively. These results suggest that levels of business creation are not affected by the enactment of a state-level law restricting takings or enactment in the previous 3 years. One explanation of these results is that it might take more than three years for entrepreneurs to observe the effects of *Kelo* and a state's legislative response to it on takings. Therefore, entrepreneurs who have prepared to open business for years will carry on their plans without being affected by *Kelo* and the states' responses to it. We might have to wait longer to observe the impacts of *Kelo* and the states' enactment.

The coefficient of the binary variable *stronglaw,* indicating whether or not the state's legislative response is meaningful, is positive and statistically significant at better than the 5 percent significance level. However, it is uncertain that these states have more entrepreneurial activities because they passed meaningful laws to restrict takings. For example, it could be that states that passed meaningful legislation are traditionally good at protecting private property. As a result, we would observe more entrepreneurial activities in these states. The coefficient of *Kelo* is not statistically different than zero at better than the 5 percent significance level, suggesting that the level of business creation is not sensitive to the U.S. Supreme Court ruling on *Kelo*.

Model 1 also shows that an increase in a state's per capita income is reliably associated with lower levels of business formation. The coefficients of the state's tax burden and unemployment rate are not statistically different from zero at better than the 5 percent significance level. Consistent with our

prediction, we find business creation is negatively related to the average age of the state's population, but positively related to the percentage of the state's population that is male. However, we find business creation is not related to the percentage of the state's population that is Caucasian and the population that receives high school and college as their highest education.

The levels of business creation could be more related to the tax burden, the unemployment rate, and the per capita income of the previous years than those of the current year. Therefore, we replace $taxburden_t$, $unemploymentrate_t$, and $\ln income_t$ with their one year lag terms, $taxburden_{t-1}$, $unemploymentrate_{t-1}$, and $\ln income_{t-1}$ in model 2. The regression result of model 2 is similar to that of model 1. Model 2 finds no evidence that either *Kelo* or state level property rights operate with a lag.

Model 3 adds three interaction terms to Model 1. These are interaction terms between the contemporaneous enactment of a state-level law restricting takings, and the contemporaneous tax burden, the contemporaneous unemployment rate, and the contemporaneous log of income. We obtain similar results to those of model 1. The interaction terms are not associated with the levels of business creation.

We also estimated regressions using interaction terms between the tax burden, the unemployment rate, income and the second and third lags of the contemporaneous enactment of a state-level law restricting takings. These terms do not affect our results. We also estimated our models using fixed effects. Those results are generally similar, as well. In some specifications, the contemporaneous enactment of a state-level law restricting takings, is negative and statistically significant, suggesting that business formation declines when states pass laws protecting property rights. However, this result is not robust in other specifications. To save space we do not report these reports in tabular form.

DISCUSSION

Our theoretical model identifies the circumstances under which *Kelo* and subsequent state laws affect business formation. We show that business creation can be encouraged, unaffected, or discouraged as the probability of takings increases, depending on the level of compensation for the takings and the magnitude of the entrepreneurs' excess public use benefits. We empirically examine the impact of *Kelo* and the states' subsequent legislative response to it on the state-level business creation. Our empirical work does not find evidence that business creation is associated with *Kelo* and the states' subsequent legislative response to it. Why might this be so? We can think of several reasons, including insufficient data, incomplete econometric model specifications, and states of the world that indeed reflect no influence of either *Kelo* or state-level laws. We discuss each in turn.

First, any change in the rate of business formation might simply be too small to be detectable in the data. Given that *Kelo* was decided in June 2005 and our annual data end in 2008, we only have three observations per state that are from the post-*Kelo* era. It is also likely that new business formation has some inertia. Potential entrepreneurs may have already incurred a good portion of the startup costs of a new business by the time *Kelo* was decided, and even the reduced value of the new business in the wake of *Kelo* might exceed the marginal cost of proceeding with the startup. If this is the case, it may require a few more years' worth of data to make it possible to detect any reduction in business formation. A third reason that the data may be insufficiently informative is that entrepreneurs may lack the ability to locate their new business in a state that has enacted *Kelo* protection. While an entrepreneur in Vermont might find it easy to locate his business in another state, his counterpart in Hawaii or Central Texas might not. This would slow the rate of adjustment to *Kelo* and any new state laws designed to counter it.

The second category of explanations for our result is that our econometric model is incomplete. The most obvious candidate is an omitted variable, and the most obvious omitted variables are compensation for the business if it is taken and the entrepreneur's share of the excess benefits of the public project resulting from the taking. Our theoretical model identifies these two important factors and their roles in determining if business creation can be encouraged, unaffected, or discouraged as the probability of takings increases. However, we do not have access to these data. Another possible candidate to explain our result is endogeneity. If there is no possibility of the government taking private property (perhaps

because of the threat of a political backlash to a taking) then there is no need for protection at the state level. The result is that no law is passed to counter *Kelo* and yet business formation proceeds unaffected, despite the reduced property protection at the federal level. At the other end of the spectrum, if the probability of takings is high, then even if state legislation is enacted to restore property rights, the proportion of takings is probably still high because these laws are probably less effective than a federal law (Somin, 2009). If this state of affairs reduces new business formation, then the enactment of state-level laws would be associated with fewer startups.

The third category of explanations for our result is that neither *Kelo* nor state-level laws affect business formation. For example, state eminent domain laws may in fact provide no protection against takings. If so, then it is not surprising that we can find no evidence of their influence in the data. Alternatively, *Kelo* may do no harm and have no influence. Conceivably, *Kelo* may reduce business formation directly but also provide some other indirect influence that counteracts this. For example, a taking might deter a would-be entrepreneur from starting a business, but the property taken might be used as an input for a new business that might otherwise not have been started. Finally, governments may compensate business owners fairly, so that business formation is neither encouraged nor discouraged.

Our paper abstracts from any disciplinary or monitoring function that eminent domain takings might offer.[7] Businesses that operate efficiently tend to have high market values while inefficient companies tend to have low market values. These low-value companies are often targets of takeover bids by private sector firms. High-value companies tend to pay more taxes than inefficient companies, so they are unlikely to be victims of an eminent domain taking. Taken together, eminent domain proponents could argue that takings are simply the public manifestation of this takeover mechanism.

We think, though, that this interpretation probably gives politicians and bureaucrats too much credit. First, we believe that private-sector entities, funded by shareholders, are better equipped to determine value than public-sector entities funded by taxpayers. Second, forced sales, even at market value, ignore nonpecuniary benefits that might make the property more valuable to the current owners.

CONCLUSION

We theoretically identify the circumstances under which *Kelo* and subsequent state laws affect business formation. We show that business creation can be encouraged, unaffected, or discouraged as the probability of takings increases, depending on the level of compensation for the takings and the magnitude of the owners' excess public use benefits. Regression with robust standard errors and panel data shows that *Kelo* and subsequent state-level legislation do not affect business formation to a measurable extent. Sensitivity checks that include additional interaction terms between the unemployment rate, per capita income, the tax burden, and dummy variables to control for the enactment of state-level property rights laws yield similar results. We interpret our results in terms of three insights. First, states and municipalities can pass laws protecting property rights without fear of retarding business formation. Second, we identify explanations why *Kelo* and these laws do not measurably affect business formation. Specifically, we believe that either government entities correctly compensate entrepreneurs who lose their businesses through eminent domain legislation, or that the change in the probability of such takings is very small in an absolute sense, so that any effect on business formation is too small to measure. Third, takings open the possibility for political corruption and distortions in the economy by encouraging overpayment or underpayment for takings. Under this interpretation, laws protecting property rights are neither pro-business laws nor anti-business laws. Rather, they are anti-corruption laws.

ENDNOTES

1. Preliminary. The views expressed here are the authors'. Any errors are the authors' responsibility. We thank Edward Lopez and seminar participants at Middle Tennessee State University for the helpful suggestions. We also thank session discussants at the 2nd Annual *International Council for Small Business Global Entrepreneurship Research & Policy Conference* and session participants at the *Association of*

Private Enterprise Education conference 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 author(s) and do not necessarily reflect the views of Robert Fairlie or the Ewing Marion Kauffman Foundation.

2. Strictly speaking, eminent domain takings claim property, not the business per se. At minimum, though, the entrepreneur must relocate which incurs costs and surely affects the value of the business itself.
3. Our model also shows that overpaying for takings can be a source of political corruption. See Case C in the Model section.
4. To simplify the exposition we will use the term "fair" to describe either of two conditions. First, if $\alpha = 1$, then the entrepreneur is compensated fully for the value of the business. Second, if $[(\alpha - 1) * v(x) + B] = 0$, then the entrepreneur is indifferent to having his business taken, even though α may be less than one. This can happen if *B*, the excess public use benefits of the project resulting from the taking, offsets the underpayment for the business itself. Speaking somewhat loosely, in one case the entrepreneur is indifferent excluding his share of the excess public benefits, and in the other he is indifferent including his share of the excess public benefits. In most cases this distinction is irrelevant to the discussion, so we opt for simplicity.
5. Adding an error term to *g(z)* would not cause econometric problems, either. Suppose we called that term e_1. Then $\varepsilon = e + e_1$. If $e \sim N(0,\sigma^2)$ and $e_1 \sim N(0,\sigma_1^2)$, then $\varepsilon \sim N(0, \sigma^2+\sigma_1^2)$.
6. Unfortunately, we cannot obtain per capita income and the tax burden for the District of Columbia.
7. We thank Craig Richardson for this insight.

TABLES

TABLE 1
SUMMARY STATISTICS OF KEY VARIABLES

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Index (%)	650	0.30	0.29	0.10	0.08	0.72
Income ($)	650	32,902	31,880	7,394	18,658	63,160
***Taxburden* (%)**	650	9.40	9.50	1.12	5.73	12.01
Unemploymentrate (%)	650	5.14	5.05	1.46	1.60	10.40
Meanage	650	36.47	36.60	1.76	29.60	41.60
Gender (%)	650	48.47	48.50	1.12	44.80	52.50
Race (%)	650	84.06	87.25	12.34	20.30	99.20
Highschooldegree (%)	650	63.75	64.20	3.66	52.30	72.80
Collegedegree (%)	650	24.02	23.70	4.26	13.50	35.60

Index represents the percentage of the adult, non-business-owner population that starts a business from 1996 to 2008 in each of all 50 states. *Income* is the state yearly per capita income in dollars from 1996 to 2008. *Taxburden* is the percentage of per capita income spent on federal, state, and local taxes. *Unemploymentrate* is the percent of labor force that is unemployed. *Meanage* is the average age of the population. *Gender* is the percent of the labor force that is male. *Race* is the percent of the population that is Caucasian. *Highschooldegree* is the percent of the population receiving a high school degree as its highest level of education. *Collegedegree* is the percent of population receiving a 4-year college degree as its highest level of education.

TABLE 2
SUMMARY STATISTICS OF AGGREGATE KAUFFMAN INDEX OF ENTREPRENEURIAL ACTIVITY PER YEAR FROM 1996 TO 2007

Variable	N	Mean	Std Dev	Minimum	Maximum
***Index96* (%)**	50	0.33	0.11	0.15	0.62
***Index97* (%)**	50	0.30	0.11	0.12	0.61
***Index98* (%)**	50	0.31	0.11	0.12	0.69
***Index99* (%)**	50	0.28	0.09	0.12	0.51
***Index00* (%)**	50	0.30	0.10	0.14	0.66
***Index01* (%)**	50	0.27	0.09	0.12	0.46
***Index02* (%)**	50	0.28	0.08	0.13	0.48
***Index03* (%)**	50	0.30	0.10	0.09	0.72
***Index04* (%)**	50	0.31	0.09	0.15	0.56
***Index05* (%)**	50	0.31	0.10	0.16	0.55
***Index06* (%)**	50	0.30	0.09	0.16	0.60
***Index07* (%)**	50	0.30	0.09	0.08	0.46
***Index08* (%)**	50	0.31	0.11	0.14	0.59

Variables *index96* through *index08* are the percentage of the adult, non-business-owner population that starts a business from 1996 through 2008. The mean is the equally weighted average of the 50 states.

TABLE 3
***T*-TESTS. MEAN KIEA OF ALL 50 STATES, BEFORE 2005 VERSUS 2005 AND AFTER**

Variable	N	Mean	Std Dev
Index 2005 and after	200	0.30	0.10
Index before 2005	450	0.30	0.10
Difference		0.005	0.008
***t*-Value**		0.65 (p>0.516)	

The data contain 650 state-year observations. We compare the average entrepreneurial index of all 50 states prior to 2005 to the index from 2005 and after. The *t*-test result shows that the difference is not significantly different from zero.

TABLE 4
***T*-TESTS. MEAN KIEA BEFORE 2005 VERSUS 2005 AND AFTER**
States that did not enact laws to limit eminent domain takings

Variable	N	Mean	Std Dev
Index before 2005	162	0.28	0.08
Index 2005 and after	72	0.31	0.09
Difference		0.031	0.012
		2.62	
***t*-Value**		(p>0.0095)	

A total of 18 states did not enact laws to limit eminent domain takings. Table 4 includes 234 state-year observations. We compare the average entrepreneurial index of the non-response states prior to 2005 to the index from 2005 and after. The *t*-test shows that the entrepreneurial index before *Kelo* is significantly lower than it is after *Kelo* in these states.

TABLE 5
***T*-TESTS. MEANS BEFORE 2005 VERSUS 2005 AND AFTER**
States that Enacted Laws to Limit Eminent Domain Takings

Variable	N	Mean	Std Dev
Index before 2005	288	0.30	0.11
Index 2005 and after	128	0.30	0.10
Difference		-0.009	0.011
		-0.8112	
t-Value		(p> 0.4177)	

A total of 32 states enacted laws to limit eminent domain takings. Table 5 includes 416 state-year observations. We compare the average entrepreneurial index of these states prior to 2005 to the index from 2005 and after. The *t*-test shows that the entrepreneurial index before *Kelo* is not significantly different from the level after *Kelo* in these states.

TABLE 6
REGRESSION RESULTS

	Model 1	**Model 2**	**Model 3**
enlaw	-0.0001 (-0.77)	-0.0002 (-0.98)	0.0109 (1.20)
enlawl1	-0.0000 (-0.11)	-0.0001 (-0.33)	-0.0000 (-0.13)
enlawl2	0.0002 (1.15)	0.0002 (1.15)	0.0002 (1.12)
enlawl3	-0.0001 (-0.55)	-0.0001 (-0.44)	-0.0001 (-0.62)
Stronglaw	0.0002 (2.15)*	0.0001 (1.32)	0.0002 (2.16)*
Kelo	0.0002 (1.74)	0.0002 (1.46)	0.0002 (1.72)
ln*income*	-0.0007 (-3.20)**		-0.0007 (-3.00)**
taxburden	-0.0063 (-1.74)		-0.007 (-1.78)
unemploymentrate	0.0045 (1.73)		0.0049 (1.89)
lnincome (1 year lag)		-0.0005 (-2.38)*	
Taxburden (1 year lag)		-0.0051 (-1.39)	
Unemploymentrate (1 year lag)		0.0042 (1.47)	
meanage	-0.0001 (-3.15)**	-0.0001 (-2.79)**	-0.0001 (-3.13)**
gender	0.0181 (4.58)**	0.0215 (5.37)**	0.0182 (4.61)**
race	-0.0000 (-0.05)	-0.0002 (-0.46)	-0.0000 (-0.06)
highschooldegree	-0.0005 (-0.27)	-0.0006 (-0.29)	-0.0006 (-0.35)
collegedegree	0.0014 (1.05)	0.0011 (0.82)	0.0013 (1.03)
enlaw**ln*income			-0.0010 (-1.14)
enlaw*taxburden			0.0033 (0.25)
enlaw*unemploymentrate			-0.0201 (-1.59)
constant	0.0049 (1.61)	0.0014 (0.45)	0.0046 (1.49)
Observations	650	600	650
***R*-squared**	0.15	0.15	0.15

Robust *t*-statistics in parentheses; * significant at 5%; ** significant at 1%.

index = yearly level of Kauffman Index of Entrepreneurial Activity (decimal).
enlaw = 1 if the state enacted an eminent domain law in the same year, 0 otherwise.
enlawl1= 1 if the state enacted an eminent domain law in the previous year, 0 otherwise.
enlawl2= 1 if the state enacted an eminent domain law two years ago, 0 otherwise.
enlawl3= 1 if the state enacted an eminent domain law three years ago, 0 otherwise.

lnincome =	log of individual states' annual per capita income (dollars).
taxburden =	proportion of annual per capita income spent on federal, state, and local taxes (decimal).
unemploymentrate=	the percent of the labor force that is unemployed.
Meanage=	the average age of the population.
Gender=	the percent of labor force that is male.
Race=	the percent of the population that is Caucasian.
Highschooldegree=	the percent of the population receiving a high school degree as its highest level of education.
Collegedegree=	the percent of population receiving a 4-year college degree as its highest level of education.
*enlaw**ln*income*=	the interaction term between *enlaw* and *lnincome.*
*enlaw*taxburden*=	the interaction term between *enlaw* and *taxburden.*
*enlaw*unemploymentrate* =	the interaction term between *enlaw* and *unemploymentrate*.

REFERENCES

Alesina, A., Baqir, R. and Easterly, W. (2000). Redistributive Public Employment. *Journal of Urban Economics, 48*, 219-241.

Kreft, S. F., and Sobel, R.S. (2005). Public Policy, Entrepreneurship, and Economic Freedom. *Cato Journal*, 25, 3.

Glaeser, E. L., and Saks, R.E. (2006). Corruption in America. *Journal of Public Economics, 90*, 1053-1072.

Sandefur, T. (2006). The 'Backlash' So Far: Will Citizens Get Meaningful Eminent Domain Reform? *Michigan State Law Review,* 3, 709–777.

Garrett, T. A., and Rothstein, P. (2007). The Taking of Prosperity? Kelo vs. New London and the Economics of Eminent Domain. *The Regional Economist*, January, Federal Reserve Bank of St. Louis.

López, E. J., and Totah, S.M. (2007). Kelo and Its Discontents: The Worst (or Best?) Thing to Happen to Property Rights. *The Independent Review XI,* 3, 397-416.

Fairlie, R. W. (2008). *Kauffman Index of Entrepreneurial Activity. 2008*. Ewing Marion Kauffman Foundation and Angel Capital Education Foundation.

Lu, C., and Zelder, M. (2008). Have Housing Prices Changed After State Legislative Responses to *Kelo*? *Working paper*.

López, E. J., Jewell, R.T., and Campbell, N.D. (2009). Pass a Law, Any Law, Fast! State Legislative Response to the *Kelo* Backlash. *Review of Law & Economics*, 5, 1, 99–133.

Somin, I. (2009). The Limits of Backlash: Assessing the Political Response to Kelo. *Minnesota Law Review*, 93, 6, 2100-78.

Carpenter II, D. M., and Ross, J.K. (2010). Do Restrictions on Eminent Domain Harm Economic Development? *Economic Development Quarterly,* 24, 337.