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Does Tort Reform Affect The Market For Lawyers? Evidence From The U.s States.

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DOES TORT REFORM AFFECT THE MARKET FOR LAWYERS? EVIDENCE FROM THE U.S STATES

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DEDICATION

To our brother Zuzu,

And to our father Papa.

You left the biggest space in our hearts.

A notre frere ZuZu,

Et a notre pere Papa

Vous avez laissez un espace enorme dans nos coeurs.

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CHAPTER 1 INTRODUCTION AND OBJECTIVE

In the United States and in most Western nations, economic advancement and the creation of wealth and prosperity have been based on established legal systems that provided protection for all the market's participants (individual, businesses, and governments). These legal systems made changes based on the evolution of the societies as they strengthened the rights of individuals. One feature of those legal systems is called "Tort." Tort is defined as a wrongful act, not including a breach of contract or trust, that results in injury to another's person, property, reputation, or the like, and for which the injured party is entitled to compensation. The laws of torts have provided a way for consumers to be awarded for damages caused to them by other parties (individuals, businesses, governments).

In the United States, this system has long benefited both plaintiffs and their lawyers because the awards were subjectively decided by the jury. Therefore, many organizations (hospitals, individual doctors) that are subject to these lawsuits, buy sometimes high cost insurance to mitigate the risk associated with their practice. A study has shown that because of high insurance cost, some physicians either stop practice or relocate to particular states where insurance premiums are not as high (Mello et al. 2005). This study also asserts that physicians, who remain in a particular state, reduce their willingness to undertake high risk-procedures (obstetrics, back surgery).

Between 1940 and 2010 the Number of Lawyers in the United States increased by more than 6 folds while the population of the United States only increased by 2.3 folds (Table 10 Appendix A). Thus, the Number of Lawyers per Capita nearly tripled in those 70 years. However, during the period between 1980 and 2010, characterized by many legal reforms (tort reforms), the

Number of Lawyers per Capita increased only by a factor of 1.56 although Real GDP per Capita increased by a factor of nearly 1.7.

Since many state legislatures adopted tort reforms, research has focused on the impact of these law changes on insurance market variables including insurance costs, frequency of claims, claim amounts, and sometimes on the physicians' market. Some studies have shown that some tort reforms such as the Caps on Noneconomic Damages increased the number of physicians in a state (Jonathan Click and Thomas Stratmann, 2005 Kessler et al. 2005). Others have investigated the impact of tort reform on the health outcome. Shepherd (2008) looked at the impacts of tort reforms on the death rates and concluded that tort reforms in one state are associated with increased deaths in neighboring non-tort reform states.

However, this study explores a different aspect of these law changes; their impacts on the market for lawyers. Because tort lawsuits generally require the services of attorneys, the demand for lawyers in a state should depend to some extent not only on the number of expected recoveries for torts, but also on the expected recovery per lawsuit. This study is designed to investigate the determinants of the market for lawyers as previously done by Peter Pashigian (1977) although the emphasis will be on the demand variables. The study will examine the impact of these reforms not only on the Number of Lawyers but also on the Earnings of Lawyers.

My hypothesis is that tort reforms that put caps on awards, as well as other measures that favor defendants, will (1) affect the Number of Lawyers demanded and therefore the equilibrium number of lawyers, and (2) affect the Earnings of Lawyers.

CHAPTER 2 THEORY OF SUPPLY AND DEMAND FOR LAWYERS

This section develops the theoretical model of the market for lawyers. In studying the market for lawyers, I assumed that the equilibrium Number of Lawyers and the Earnings are determined by the general theory of supply and demand as previously done by Pashigian (1977) and Pashigian (1978). The figure below from Pashigian (1978) illustrates the multiple relationships between all the variables described in this section.
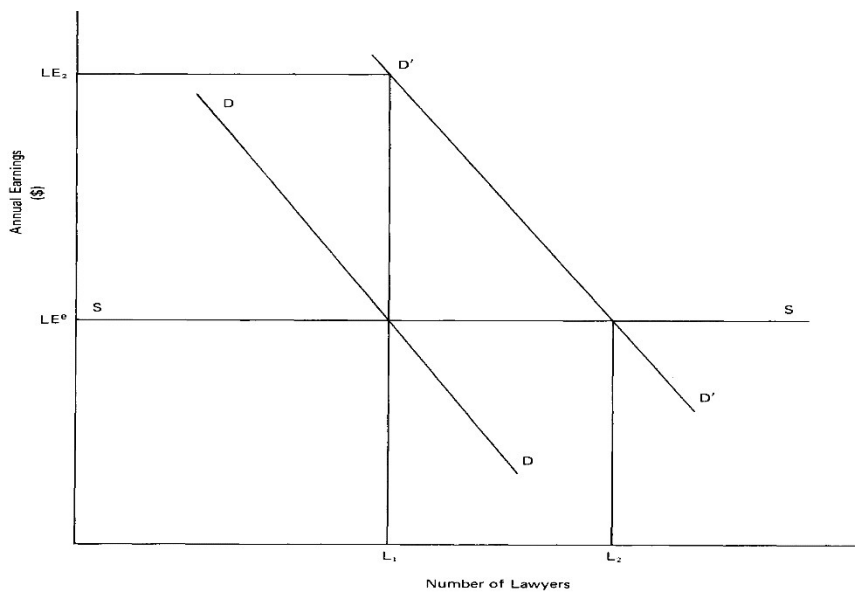
Figure 1: The Market for Lawyers Pashigian (1978)

2.1. Demand for Lawyers

The demand for a good or service represents the relationship between the prices of a good (or service) and the quantity demanded. The demand curve generally slopes downward as it reflects the negative relationship between price and quantity demanded.

The demand for lawyers is assumed to behave per this general theory. Pashigian (1978) assumed that the demand for lawyers depended inversely on the annual Earnings of Lawyers. Other

things equal, as the Earnings of Lawyers increases, individuals, businesses, and governments will reduce the quantity demanded of legal services. Individuals, firms, and government institutions hire lawyers to represent them in litigation, contract drafting, negotiation, representation, etc. However, these economic agents must take into consideration the compensation required by the lawyers and law firms for the services being rendered. At high level of compensation, the above-mentioned economic agents reduce their quantity of legal services demanded. This is represented by a movement along the DD demand curve (figure 1).

The demand for a good or service also depends on a set of exogenous variables. A change in the exogenous variables, such as the number of buyers, the price of related goods, expectation of future prices, and income, lead to a shift of the demand curve.

In the market for lawyers, the exogenous determinants include the amount of transactions of consumers, businesses and governments in which lawyers are likely needed. These include proxy variables such as housing mortgage loans, divorce, real losses paid by insurance companies, real gross national product, the number of active corporations, the number of new cases filed in federal district courts, the number of bankruptcies filed and the total real budget of federal regulatory agencies (Pashigian 1977). Theoretically, any change in one these variables leads to shift in the demand curve from DD to D'D' or from DD' to DD. For instance, Pashigian (1978) argued that real gross national product is directly related to the quantity demanded of lawyers. An increase in the gross national product leads to a rightward shift in the demand for lawyers. This means that the quantity demanded for lawyers will increase at every price (earnings) levels. Formally, the demand for lawyers can be represented by the following function:

$$Q = f(E, A) \text{ and } Q_D = A - a * E \text{ (linear form)}$$

$$dQ/d(\text{Earnings}) < 0 \text{ and } dQ/d(A) = x \text{ (all real numbers)},$$

where Q= Quantity Demanded of Lawyers; E = Earnings of Lawyers; A = Exogenous Variables.

2.2. Supply of Lawyers

Supply describes the relationship between the price of a good and the quantity supplied. Based on the law of supply, this curve generally slopes upward indicating that the quantity supplied of a good rise when the price of the good increases. For lawyers' market, an increase in the Earnings of Lawyers induces lawyers to supply more labor. This represents a movement along the supply curve.

Just like the demand curve, the supply curve also depends on a set of exogenous variables such as technology and input prices. Changes in these variables shift the supply curve. Formally, the supply of lawyers can be represented by:

$$Q_S = f(E, B) \text{ and } Q_S = B + b* E \text{ (linear form)}$$

$$dQ/d(\text{Earnings}) > 0. \quad dQ/d(A) = x \text{ belongs to } \{R\},$$

where Q= quantity supplied of lawyers; E = earnings of lawyers; B = Exogenous variables.

Per Pashigian (1978), the shape of the supply curve for lawyers depends on the time horizon. He suggested that supply L_1 of lawyers in the short run is perfectly inelastic or vertical. In the short term the Number of Lawyers may not be responsive to the change in wages. The author noted that this is an approximation and that there is a possibility that some former lawyers may revert into the law profession if the offer (earnings) for lawyers is larger than the earnings of their current professions.

Pashigian assumed the long-run supply curve to be perfectly elastic or horizontal. Therefore, over the relevant range of price, no change is necessary for the quantity supplied of lawyers to increase. Pashigian explained this by the fact that law schools will continue to confer degrees to graduates who eventually pass the bar exam for potential future practice. This is true in

that students that are already in law schoo, do not need another incentive (higher earnings for lawyers) to become lawyers. The decision to go to law school had already been made based on many determinants including the three-year lagged value of earnings in other professions.

Short-run movements in quantity supplied happen along the short run vertical supply curve as more or less licensed lawyers readily compete for open positions. However, movements along the long-run supply curve may take years. For instance, Pashigian suggested that a "*50% increase in the number of lawyers could take 15 to 20 years depending on how rapidly the number of enrollments in law schools increased.*"

Although the movement along the long-run supply curve is not rapid, the level of this supply curve depends on the Earnings of Four-year Degree Holders. The level corresponds to a point where the earnings offered to lawyers is equal to the three-year discounted value of the Earnings of Bachelor Degree Holders (Pashigian 1978). At this level, a person will be indifferent between going to law school and getting a job right after the four-year degree.

2.3. Equilibrium in the Market for Lawyers

The equilibrium price or market-clearing price indicates the price at which the quantity demanded is equal to the quantity supplied of the good. In the market for lawyers, the demand curve slopes downward while the supply curve is "approximately" vertical (perfectly inelastic) in the short run and horizontal (perfectly elastic) in the long run.

In the short run, the equilibrium Earnings of Lawyers and the Number of Lawyers are determined at the intersection between the downward sloping demand curve DD and the short run vertical supply curve L_1. At this level, as Pashigian (1978) noted, the Earnings of Lawyers is assumed equal to the three-year discounted value of the Earnings of Bachelor Degree Holders. Theoretically, at this point, the wages offered to lawyers make it so that the Number of Lawyers

demanded and the Number of Lawyers supplied, are equal. But this state of equilibrium can be disturbed by events that shift the demand curve, the supply curve, or both curves simultaneously. A change in any exogenous variable will lead to a new short run equilibrium. However, a long-run equilibrium will be eventually reached after a time of adjustment. This adjustment will happen along the demand curve (Pashigian 1978).

For instance, a change in law that shifts the demand curve to the left leads to a new equilibrium where the Earnings of Lawyers will go below the equilibrium earnings. This level of earnings is less than the discounted value of the Earnings of Bachelor Degree Holders. New students will find professions requiring just a college degree more attractive than law school. This will decrease the number of students going to law school and eventually the number of new law graduates three years later. The Number of Lawyers will continue to decrease until the Earnings of Lawyers rise to equal the discounted value of the Earnings of Bachelor Degree Holders. This point becomes the new short run equilibrium with a new vertical supply of lawyers. These multiple short run equilibria will indicate the earnings LE^e at which students will be indifferent between law school and a job right after college. It is a level at which the long run supply curve SS will be located.

An increase in demand was illustrated by Pashigian (1978) showing that the short run equilibrium shifts to a point above the discounted value of the Earnings of Bachelor Degree Holders. At this point the author suggests that law becomes attractive to new students who will enroll to increase the supply of lawyers three years later. As supply increases, the Number of Lawyers increases through the adjustment process which pushes the Earnings of Lawyers down towards the discounted value of the Earnings of Bachelor Degree Holders. Pashigian specified that

the speed of adjustment to reaching this new equilibrium depends on whether the change is permanent and on how fast law schools can respond to the changes in the market.

Pashigian asserted that although this model can be refined by considering the experience of lawyers, and the depreciation rate (death and retirement) of lawyers, "the direction of the change in the number of lawyers due to the shift in demand is clear." Therefore, if I consider the supply curve to be "approximately" perfectly inelastic or perfectly inelastic, an increase in demand should have increasing effects on the Number of Lawyers and the Earnings of Lawyers. Also, events, such as tort reforms that decrease demand, should have decreasing effects on both the Number of Lawyers and the Earnings of Lawyers. Although these changes in the Number of Lawyers are going to be relatively low because of the extreme inelasticity (steepness) of the supply curve, the changes in the Earnings of Lawyers may be substantial. However, events that lead to the shifts in the supply curve will have the opposite effects. In this case, the market may experience a change in the Number of Lawyers with relatively smaller changes in the Earnings of Lawyers.

CHAPTER 3 LITERATURE REVIEW

This paper focuses on the determinants of supply and demand in a new context that considers all the legal reforms that have taken place in the last three decades. In fact, relatively little research has been done on the determinants of supply and demand of lawyers although there is a growing literature on the impact of tort reform. Freeman (1975), Pashigian (1977) and Pashigian (1978) are some of the few papers addressing this topic of the "Determinants of the Market for Lawyers" in the context of interest to this paper.

3.1. Non-Tort Determinants of the Market for Lawyers

Richard B. Freeman (1975) used an incomplete data set between 1929 and 1970 to apply a recursive model of supply and salary adjustments to the market of lawyers. Looking closely at the data, the author noticed cyclical fluctuations of law school enrollments although the number of college graduates with Bachelor degrees fluctuated with "peak to trough" of about 4 to 5 years. He characterized these fluctuations to be of a "cobweb" type as they created endogeneity between the number of graduates and first year enrollments. Freeman however noted that these fluctuations can also be due to other exogenous variables. As measures of the demand for legal services, Freeman used the ratio of consumer spending on legal services to total expenditures and the legal service share of the Gross National Product. Using the data, he noted that the legal profession experienced some fluctuations during the period of 1929-1970. The profession suffered less than other fields during the beginning of the "Great Depression" although it expanded less rapidly than other sectors during World War II. The profession however, experienced significant growth after World War II.

To account for all these changes in the market for lawyers, Freeman used a recursive model of supply and salary adjustments. Freeman used the sum of the number of new entrants and the number of graduates as the total supply of lawyers. On the demand side, he used the number of

LLBs (Legum Baccalaureus) although he differentiated between the stock and flow of lawyers. Since the "stock model" allows for perfect "substitutability" between experienced lawyers and new lawyers, the author assumed that the recursive method will lead to endogeneity between the salaries and the number of graduates and therefore the number of first year students. Although Freeman suggested that more complex models may lead to better results, he used a model that consisted of three equations:

➢ Equation (A): The number of first-year enrollees as a function of the number of new entrants in the previous year, the salary of young attorneys and the salaries of professional workers.

➢ Equation (B): Supply of graduates was a function of the number of new entrants at t-3, the salaries of young attorneys and alternative occupations at t-2, and t-1.

➢ Equation (C): Salary determination was a function of the number of LLB (stock), of law school graduates (flow) and the output of legal services.

Freeman used both the least square and the non-linear search procedures to estimate these equations. The OLS estimations of equations (A) and (B) indicated that the salaries of young attorneys, along with that of "salaried professionals" explained about 50% of the changes in the number of first year students. The elasticity of the number of students entering law school with respect to the salaries of lawyers was approximately equal to 1 in the short run and between 3 and 4 in the long run. These results were questionable as Freeman recognized, since the estimations were subject to considerable serial correlation of the residuals. Therefore, he used a partial adjustment model by adding the lagged number of new enrollees and a nonlinear search method for better specifications and to control for serial correlation. These specifications revealed a negative but small coefficient of alternative occupation salaries. Freeman concluded that it may be revealing that neither of the two salaries were correct measures of variables that enter the decisions

to enter law school. For the closeness of the two coefficients, the author, however, was not able to reject the hypothesis that both of those variables (salary of young attorneys and alternative occupation) had the same effects on the decision to enter law school.

Freeman extended the estimation by adding the number of men in the military and the unemployment rate as proxies for the draft of the business cycle. These variables can test the effect of external shocks on this market. Both variables proved to be insignificant. Freeman concluded in this model that the changes in supply had been mainly motivated by the desire to study law and not any other exogenous variables. He also concluded that the stock of LLBs had a negative, significant, and sizable impact on lawyer salaries when the alternative wages were part of the model. Using the cobweb estimation, the OLS results indicated that 1% increase in law school graduates reduced enrollment by 0.4%. Salaries of new attorneys and alternative occupations seemed to have a joint effect with non-negligible coefficients.

Peter Pashigian used data from 1920 to 1970 to study the determinants of demand and supply of lawyers using an adaptive expectation theory and the Hildrith-Lu search process. His model was initiated from the point of view of the demand supply for legal services. Using those simple equations, Pashigian came up with reduced forms for the Number of Lawyers, the number of First-year law students, and the number of those newly admitted to the bar, as functions of the number of lawyers in the previous period, the income of college graduates at time t-3, and series of exogenous variables at time t-3. The equations are the following:

$$L_t = (1 - \omega)L_{t-1} + \frac{\omega}{\beta_2} D_t + g_t,$$

$$NA_t = \frac{\omega}{\beta_2} D_t + \frac{(d - \omega)L_t}{(1 - d)} + g'_t,$$

$$F_{t-3} = \frac{\omega D_t}{(1-d)c_t \beta_2} + \frac{(d-\omega)L_{t-1}}{(1-d)c_t} + g''_t$$

,

$$D_t = (\alpha_0 - \beta_0) + \alpha_2{}_{t-3}Z_t + (\alpha_1 - \beta_1)(1+r)^3 H_t{}_{t-3}U_t.$$

.

In the above formulas Omega (ω) is the speed of adjustment to changes in the demand of lawyers. If Omega =1 the actual number of first year law students equals the equilibrium number of new lawyers. L_t, NA_t, F_t respectively represent the Number of Lawyers, the Number of new admissions to the Bar and the number of First Year Students at time t-3. Small cap (d) represents the depreciation rate which quantifies death and attrition rates. Small c_t is the portion of the First-year students who have completed law school and passed the Bar exam. However, the discounted value of the Earnings of the College Graduate is:

$$(1+r)^3 H_t{}_{t-3} U_t,$$

where r is the interest rate is U_t is the Earnings. For H_t, the author developed a comprehensive equation that involved probabilities of completing the school and that of passing the Bar (see Pashigian 1977). Z_t represents the series of exogenous variables which were classified in three categories:

1.   Consumer: Nonfarm housing mortgage loans to measure the volume of transaction, Real losses incurred by insurance companies in automobile accidents

2.   Business: Gross national product, Number of active firms.

3.   Judicial and regulatory activity court activity Federal regulatory agency budgets.

Pashigian evaluated the equation of the Number of Lawyers with the assumption that the predicted values for forecasted variables are equal to their realized values. He justified the above estimation because the series were "smooth' and that errors associated were likely to be small. Using the Hildrith-Lu search method that minimizes the sum of the squared errors, he estimated

the equations of the number of lawyers and the new admissions. He found that the Number of Lawyers at time t -1 is positively related to the Number of Lawyers at time t and negatively related to the number of new admissions. He mentioned that the coefficients were consistent with a very slow adjustment process with values of omega between 0.03 and 0.17.

Pashigian found that a rise in "Earnings per Full-time Employee (all industries)" decreases the Number of Lawyers with a real "product elasticity"[2] of 0.52. This means that 1% increase in "Earnings per Full time Employee" (all industries) leads to 0.52% decrease in the Number of Lawyers. Given this level of earnings outside of the legal profession, Pashigian concluded that an increase in Real Gross National Product per Capita also reduced the Number of Lawyers through a rise in opportunities offered in the overall private sector (product elasticity of 1.52). However, the results of the estimations show that Gross National Product was the most important determinant of the demand for lawyers with a product elasticity of 1.80.

Pashigian also found that the Divorce Rate was statistically significant even though the coefficient was very small and its product elasticity was 0.32. Additionally, he found that the number of court cases was positively related to the demand for lawyers and that this was an important determinant in the market for lawyers only if Gross National Product per capita was excluded. Moreover, when he used the budget for regulatory agencies as the proxy for regulatory activities, it resulted in a positive impact on the number of lawyers demanded. Finally, Pashigian found that the number of active corporations was a rather unclear determinant of the demand for lawyers while the insurance losses were not significant. Although, he noted the significance of other variables, he found that the Gross National Product was the most important determinant of the demand for lawyers.

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[2] Elasticity measured at the mean value of the variable (Pashigian 1977).

Herbert M. Kritzer (1999) considered multiple issues that were shaking the institutional foundations of the legal profession in the U.S. He found that the legal profession, despite its successes in litigation (tobacco, firearms), was increasingly facing such challenges as multidisciplinary professional practices, encroachments by a variety of service providers (accountants, consultants, paralegal) and political pressure. The latter is attributed to the fact that lawyers are viewed as "greedy and arrogant**.**" Many of the services rendered by lawyers can in some way be provided by other professionals. Therefore, the Kritzer concluded that all these factors were leading the U.S to a period in which this profession may be in decline, which he called a "*post-professional era*."

3.2. Tort Determinants of the Market for Lawyers

Although I found only one academic article directly linking tort reform to the number of lawyers by Browne and Schmit (2008), some papers have linked tort reforms to topics and issues that may have implicit or indirect impact on the market for lawyers.

Browne and Schmit (2008) used third-party automobile bodily injury liability claims data from the American Institute for Chartered Property Casualty Underwriters and the Insurance Institute of America to analyze the changes in the use of attorneys and claims filings. The study consisted of claims data, with closed payment between the period 1977 and 1997, provided by insurance companies that account for more than 60% of the automobile insurance market including State Farm and All State. The authors conducted the study by estimating a two-stage logistical regression model in which the first equation was that of the likelihood of hiring a lawyer when the plaintiff requests compensation from the defendant. The second equation, which contained the first equation as an explanatory variable, was that of the likelihood of filing a claim. The authors also included a vector of demographic variables to control for differences in resource availability, in

attitude towards risk, and biases associated with gender. They additionally classified injuries per the severity based on two measures. The first measure, done by the claim adjuster, classifies the claimants as temporary disable, permanent partial-disable, permanent total-disable, and not-disable. The second classification consists of the claimants being scored based on the relative value of the medical expenses with respect to the average medical expenses of all claimants for the year. The authors moreover used analyses based on state identifiers to address the collinearity issue with tort reform within the data. The authors finally analyzed the data by including both state identifiers and interaction terms between reforms and other variables.

The estimations concluded that both tort reforms and the year variables were significantly correlated with the use of attorneys and claim filings. They further asserted that, with exception to the No-Fault Reform that had a positive impact, tort reforms performed as expected by theory as they "dampened" the increase in the use of attorneys and claim filings during the period of 1977-1997. The time fixed effect estimation revealed that attorney use was slightly higher in 1997 than 1987 and that claim filings were higher in 1977. The results for state identifiers indicated that it was a better fit model than that of tort variables alone. The results for the third model show that attorney use increased between 1977 and 1997 while claim filings increased between 1977 and 1987. Although the coefficients were smaller for year 1977, most reforms had performed according to expectation. With exception to No-Fault and Punitive Damages Caps, which showed mixed effects, these tort reform laws decreased the use of attorneys and claim filings. Overall, the authors asserted that the results of the research suggest that "*tort reforms generally have been successful in achieving their stated goals of dampening litigation.*"

Gracer et al. (2012) studied the impact of tort reform statuses based on their constitutionality and found that permanent tort reform lowered the medical malpractice insurance

losses and premiums. It also increased the profitability of the insurance companies. They however found no significant impact of temporary tort reforms on these variables. They concluded that the impact of tort reform depended on whether it would be challenged.

Lee and Schmit (1994) tested the impact of Joint and Several Liability Reform on the frequency of tort case filings by using the National Center for State Courts data from 19 states over a period of six years (1987-1989). They regressed the number of tort filings on three tort-related dummy[3] variables and a set of control variables. The first tort variable consists of whether the state had a Joint and Several Lability at the time of the enactment of the reform (abolition of the law). The second considers whether the state was partially applying Joint and Several Liability at the time of the enactment of the reform. The third consists of whether the state had other reforms in effect at the time of the enactment of the reform.

For good estimation, Lee and Schmit (1994) used the Number of Lawyers per Capita, Population living in urban areas, Population density, Surgical operations per capita, Vehicle miles of travel per mile of roadway, No-fault insurance law and State unemployment rate as control variables. They estimated three equations of which the first does not have a time control variables. The second equation includes the year at which the law was passed to control for the surge in the number of claims that occurred by the deadline of the "pre-reform[4]." The third includes the lagged variable for the Joint and Several Liability to control for all possible legal challenges that the reform may face before full implementation.

The authors found that the models explained more than 60% of the changes in claim filings and that the population density was a more significant predictor of the Number of filings than the Number of lawyers per capita or the number of people living in urban areas. Although they found

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[3] Variables that take the value of 1 if statement is true and 0 other wise.
[4] Period before the Joint and Several Liability Rules reform are implemented.

that other "tort reforms" were not statistically correlated with the number of claim filings, the authors contended that Joint and Several Liability is a statistically significant determinant of the number claim filings. They also found that the number of claims did not increase in states that abolished Joint and Several Liability. However, this increase in the rate of claim filings may have been a response to the enactment of the law. The authors finally explained these results by that Joint and Several Liability, at the time, was a more recent law and that its effects were not known yet. Their also asserted that Joint and Several Liability claims were just a portion of the total claims, that laws were too weak and that the enactment of the laws decrease the deterrent effect by increasing the number if injuries.

Browne and Puelz (1996) used a large sample of individual bodily injury liability claims from 21 states collected by a major insurance firm to test the marginal impact of tort reforms on the number of claims and their severity. Although 10% of the claims were opened before 1989, they were all paid and closed in 1989. The authors estimated the impact of these tort reforms using a log linear regression model with the net individual loss[5] as the dependent variable. The independent variables include the tort dummy variables consisting of the Joint and Several Liability, Collateral Source Rule, Noneconomic Damages, and Punitive Damages. Another independent variable called Minor Reforms[6], which is a count variable, represents the number of already implemented reforms at the time of the loss. Browne and Puelz also included the Verbal

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[5] Net individual loss is the total claim cost less administrative and investigative expenses (Browne and Puelz 1996). Net individual loss is normalized using the average cost of a semi-private room in the state in which the loss occurred.

[6] Minor Reforms = Prejudgment interest, provisions for periodic payment, sanctions on frivolous lawsuits or defenses.

threshold[7], the Low dollar threshold[8] and the High dollar threshold[9] to control for the type of No-fault policy existing in the state. They finally included variables like the degree of urbanization, the unemployment rate, the injury type, the duration (opening to close) of the claim and policy type (personal coverage or commercial coverage).

Browne and Puelz found that "attorney use" in claims procedure was associated with larger loss payment with elasticity of 64. They explained this effect in that lawyers can educate their clients on how to maximize the amount of the settlement. They also found that Noneconomic Damages are correlated with reduced claim severity with an elasticity of 62. But Joint and Several Liability was associated with an increase in the severity of claims. Partial differentiation of the model revealed that Punitive Damages are associated with a reduction in claim severity by 40%. However, claim severity is increased by 126% when partial differentiation is applied to the "insurable Punitive Damages. "Although the majority of the control variables were significant, they finally found that the Low Dollar Threshold and the Minor Reforms were associated with increase in claim sizes with respective elasticities of 27 and 115.

Ronen Avraham (2007) studied the impact of six tort reforms on the frequency, size and number of total annual settlements in medical malpractice cases between 1991 and 1998 collected from the National Practitioner Data Bank. To avoid overrepresentation of settled cases, and outlier issues with cases involving smaller damages, the author only considered settlements in 50 states between the periods of 1991 and 1998 although the original data span to 2005. He estimated the effects of medical malpractice reforms on the size of individual payments using December 2005 as the base year. He also estimated their effects on the sum of payments per doctor, a state-level

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[7] Verbal Threshold: Lawsuits are allowed only in severe cases (death, dismemberment, disfigurement, loss of body function).

[8] Low Dollar Threshold: Compensatory damages can be lower than 1000 dollars. [9] High dollar Threshold: Compensatory damages are greater than 1000 dollars.

variable that measures the total payment per state per year. Avraham extended the estimation to seek the effects of these reforms on the number of cases per thousand doctors, a measure of frequency of medical malpractice payments. The author used five different variations of the tort variables by collapsing them by category. In the last estimation, the author collapsed all of the tort reforms together although he noted that this might provide a bias effect without any distinction between the individual effects.

With the state-level analysis of the model, Avraham found that the Caps on Pain and Suffering Damages as well as the Periodic Payment were associated with a 10 to 13% reduction in the number of cases and 15% to 20% reduction in total annual payment per doctor although the latter was only significant in one of the models used. However, Avraham found that Joint and Several Liability Reform was statistically significant in decreasing the number of cases by 8 to 9% while Periodic Payment decreased it by 5 to 7%. He concluded that the rest of tort reforms, including the Caps on Noneconomic Damages were not statistically significant. He also noted that the joint effect of all the six tort reforms reduced the number of cases but not the average awards.

Finally, Avraham used a data composed of 100,000 individual cases for 50 states over a period of eighth years to test the model at the individual level. He found that Caps on Noneconomic Damages decreased the average awards per settlements with an elasticity of 65 to74. He also found that Collateral Source Reform decreased the average awards per settlements by 17 to 32% while Periodic Payment decreased this average by 38 to 54%. However, Avraham found that Joint and Several Liability and Caps on Punitive Damages, though not statistically significant, increased the average awards per settlement.

Rubin and Shepherd (2007) explored a theory that tort reform could increase accidents because the Tortfeasor, who internalizes the cost, has less incentive to reduce risks or decrease

accidents because lower prices could lead to the purchase of risk reducing products. The authors tested this theory by studying a state level panel data set of non-motor vehicle accidental death rates between 1981 and 2000. They provided the results of two estimations. In the first estimation, they compared the death rates of "before tort reform" to the death rates of "after tort reform." In the second estimation, the authors compared the death rates of non-tort reform states to those of the tort reform states.

Analyzing these death rates, Rubin and Shepherd asserted that death rates clearly decreased in the years during which five of the seven tort reform laws were passed and implemented. They also noted that there was a larger increase or a smaller decrease in these death rates in the years following the passage of five of the seven tort reform laws. In the model, they included variables to control for race, age, gender, employment status and income. The results suggest that Caps on Noneconomic Damages, Caps on Punitive Damages, a higher Evidence standard for Punitive Damages and Prejudgment Interest Reform are all negatively correlated with accidental death rates. However, they found that Collateral Source Rule was associated with increased deaths, which Rubin and Shepherd explained by the negative sum of "externality-increasing effect[9] and the safety-increasing effect[10]." Finally, in calculating the real coefficients of these effects, Rubin and Shepherd concluded that tort reforms can be associated with about 2000 fewer deaths in year 2000 and 24000 between years 1981 and 2000.

Born et al. (2009) evaluated the effects of tort reforms on the profitability of insurance companies by using data collected by the National Association of Insurance Commissioners. These data from a sample of medical malpractice insurance writings between 1984 and 2003 contain such information as the state premiums and losses incurred. Combining this dataset with annual

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[9] Tort reform can increase accidents because Tortfeasor has less incentive to reduce risk.
[10] Tort reform can decrease accidents because lower prices could lead to the purchases of risk-reducing products.

statements of these companies, the authors were able get more information on the premiums earned and the contemporaneous losses incurred for each year. To avoid the possible bias effect of outliers, the authors excluded firms with less than one million dollars in insurance premiums.

Although Born et al. (2009) analyzed the effects of malpractice reforms on insurer performance, they also examined their effects on loss ratios to test their profitability. In doing so, the authors began with an OLS regression. Based on prior research approach, they assumed that endogeneity was not a problem for tort reforms and either losses or premiums. They extended the model by including time fixed effects and firm fixed effects to capture significant effects that are specific to an organization. The authors estimated OLS, OLS with year fixed effects, OLS with year and firm fixed effects and quantile regressions. As did previous studies, they found that Noneconomic Damages Caps are associated with the reduced payments for medical malpractice and the increased profitability of insurers. They also found that Punitive Damages Caps are correlated with Insurance Losses. However, the coefficient for this reform was smaller. Born et al. (2009) additionally found, at their surprise, that Joint and Several Liability had a positive effect on the Losses. Although this is the case, they noted that this finding is "*consistent with the mixed performance of this reform type in previous studies.*"

Using quantile regressions, the authors analyzed the effects of the reforms on the different percentile of the loss distribution. They found that for Noneconomic Damages Caps, insurance companies that are above the 50th percentile in the loss distribution have coefficients that are negative, statistically significant and larger in magnitude. For Punitive Damages Caps, this significance is above the 25th percentile. However, Joint and Several Liability along with Collateral Source Rule have ambiguous results. The results suggested that tort reforms had the largest impacts on insurance companies with the largest losses.

CHAPTER 4 ANALYSIS

4.1. Data

The data were collected through the U.S Census Bureau and the American Community Survey (population, earnings of people with 4 year degree), the Bureau of Labor Statistics (Number of Lawyers, Earnings of Lawyers), the Federal Bureau of Investigation (Violent Crime, Property Crime), the Center for Disease Control (Divorce Rate), U.S States Courts (number of Bankruptcy Filings), FRED Saint Louis Fed (Real GDP, consumer price index), National Association of Insurance Commissioners (Amount of Insurance Losses) and the Tort Reform database developed by Avraham of the University of Texas (Tort Reform activities).The model will examine a panel data of 50 U.S states plus the District of Columbia between 1998 and 2012.

For best results, I deflated Number of Lawyers, Violent Crime, Property Crime, Number of Firms, and Number of Bankruptcy Filings by the state population. I also transformed Earnings and Alternative Earnings data into real terms by using the Consumer Price Index (1982 base year). In addition, I deflated Amount of Insurance Losses and GDP by both the CPI and state population. Finally, except for tort reform laws that are represented by dummy[11] variables, all the variables were log linearized.

4.2. Non-Tort Variables

➢ **Real GDP Per Capita**

This represents the per person total value of all final goods and services produced within the state during a specific year. This is a good measure of the level of economic activity occurring in a state. These economic activities include many transactions between individuals, businesses and governments that require the services of legal professionals. Lawyers can draft contracts, draft

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[11] Dummy variables: Value is 1 if law is enacted in the state and 0 otherwise.

patent applications, and represent entities in the buying, selling and reorganization of companies. A higher real GDP per capita may have a positive effect on the demand for lawyers. However, it may also have a negative effect on the supply of lawyers because a higher GDP is a good indication of good prospects for all professions in the nation.

Per Pashigian (1977), Real Gross National Product (GNP), the total value of all final goods and services produced by "domestically owned factors"[12] of production during a given year, is the most significant determinant of the demand for lawyers. Pashigian (1978) also indicated that National Income (NI), the sum of the values of all final goods and services produced domestically and the values of all final goods produced by domestically owned factors of production abroad, is directly related to the quantity demanded of lawyers. For this study, I use the Real GDP per Capita as it is the per person value of all final goods and services "produced domestically"[13] during a given year. Although NI, GNP, and GDP all measure the values of the final product of a nation, I use Real GDP per Capita because it is the more commonly used measure of the standard of living of a nation and therefore its economic strength.

Another reason for this choice is that this is a state-level study as we cannot calculate GNP or NI for states in the U.S where there are "residents of states but not citizens of states."[14] Therefore, I assume that Real GDP per Capita may be directly related to the quantity demanded of lawyers. Real GDP per Capita is the per person sum of private consumption (C) spending, business investment spending (I), government spending (G) and net exports (NX): $Y = C + I + G + NX$.

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[12] Land, labor, and capital owned by Americans regardless of their place of residence.
[13] Regardless of the citizenship of the owner of the factor: This includes a U.S citizen working at Ford Motor Company as well as the German doctor working at the University of Michigan Hospital.
[14] States in the U.S have residents. But there only citizens of the U.S.

The components of GDP involve transactions that vary in type, complexity and size. Small business transactions and individual transactions may be small but they require, in many cases, the understanding of local, state, and federal laws.

John Flood (2007) noted that, in the search of low-cost labor and cheap raw materials, businesses have multiplied their international transactions. These transactions are very large and complex and sometimes with severe time constraints (Flood 2007). The author gave an example of such a transaction of 9 billion dollars that consisted of the exploitation of an offshore oil and gas reserves on the island of Sakhalin in Russia. These transactions involve multiple dimensions as experienced lawyers were needed to study, interpret and reconcile local laws with international laws.

Drew Combs (2015), described that the increases in both GDP (2.4%) and Standard and Poor 500 stock index reflected opportunities for law firms, particularly the top 100 grossing law firms in the United States. He noted that the demand for lawyer services increased as the number of financial transactions increased in New York. He also noted that in Texas, the oil industry opened opportunities for law firms as more energy transactions took place. In Washington DC, the demand for regulatory work and government contracts allowed law firms to increase their revenues as well. Finally, Combs noted that in Silicon Valley, law firms increased their profits as venture capital funding made capital available for internet and mobile apps companies.

Any increase in these components of real GDP can lead to, a shift of the demand curve from D_0 to D_1 which leads to the increase in the Number of Lawyers demanded at every price level. However, its impact on the supply will start to be realized three years later. Therefore, a rise in GDP will only immediately shift the demand curve while the shift in supply gradually happens three years later.

➢ **Earnings of Bachelor Degree Holders at time t-3**

This is the earnings of people who hold a 4-year degree. Both Pashigian (1977) and Freeman (1975) noted that people choose to go to law school based on many variables including the discounted value of the earnings of lawyers as well as the discounted value of the earnings of alternative professions which do not require education beyond a 4-year degree. One can assume that the higher these earnings, the fewer people will go to law school. This variable directly affects the supply of lawyers and eventually both the equilibrium Number of Lawyers and the Earnings of Lawyers (http://www.bls.gov/careeroutlook/2000/Winter/art03.pdf).

➢ **Alternative Earnings**

This is the average earnings for "Alternative Professions"[15] to the legal profession. I used the Occupational Employment Statistics (OES) data of the Bureau of Labor Statistics to average the earnings of all occupations except those of attorneys. I use this variable for two reasons. The first reason is because the Earnings of Bachelor Degree's Holders data provided by the U.S Census Bureau is limited to only few years. The second reason is that these Earnings are very close to those of the Bachelor's Degree's Holders. The mean log value of the Earnings of the Bachelor Degree's Holders is 3.03 while that of the "Alternative Earnings" is 2.89. Their respective maximum values, minimum values, and standard deviations are also very close (see summary Statistics). Additionally, a similar variable used by Freeman (1975) used Earnings of "Alternative Occupation" as an independent variable in the modeling of the supply of lawyers. This is a group made of salaried professionals. Moreover, these earnings are more comprehensive as they reflect a good number of potential professions that people may choose instead of becoming a lawyer.

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[15] Alternative career: All salaried professions other than "attorney."

> **Crime Rates**

Violent Crime describes the number of violent crimes per 100,000 people in the state per year and includes crimes committed with force such as murder and rape. Property Crime describes the number of crimes committed without the use of force in the state per year; it includes burglary, theft and auto-theft, larceny and arson. Not all crimes are prosecuted. However, in case of a prosecution, involved parties may benefit from professional legal representations. This is true even for those who do not have the means to pay for these services. In fact, public defense is a common part of the US justice system. For instance, based on the US Census Bureau data, the State of Alabama indigent defense budget was approximately 60 million dollars in 2012 (https://www.bjs.gov/content/pub/pdf/idsus0812.pdf). Therefore, an increase in crime may have an increasing effect on the demand for criminal lawyers' services.

Per Huang (2004) high crime, low level of education, long spells of unemployment and poverty are correlated. Hsieh et al. (1993) also noted that poverty and inequality are associated with violent crime. Therefore, high crime rates may mean that people are less wealthy and this may translate into less business for lawyers as a profession. This may reduce the supply of lawyers.

Per Lawedu.org, an organization that encourages people to choose the field of law, criminal lawyers earn the least compared to the rest of the profession. Although criminal lawyers handle many cases at the same time, their income ranges between 45,000 and 130,000 dollars with an average of 78,000 dollars (http://www.lawyeredu.org/criminal-defense.html). This also may reduce the supply of criminal lawyers in the long run. An increase in the Crime Rate may lead to an immediate upward shift in the demand curve and a slight leftward shift in the supply curve Therefore, Crime Rate may be positively correlated with the earnings of Lawyers although its impact on the Number of Lawyers may be ambiguous.

> **Divorce Rate**

This variable is collected from the Center for Disease Control and is defined as the number of divorces per 1000 people per year in the state. Per the Federal Bureau of Investigation Statistics, between the periods of 1980 and 2015, divorce rates had been steadily declining with slight changes in the tendency. This study considers Divorce Rate as an independent variable for two reasons. Firstly, a study done by Pashigian (1977) found it to be a statistically significant although it is a positive determinant of the demand for lawyers. Secondly, Divorce Rate can be a good indicator of contentious relationships that may lead to higher demand for lawyers, especially if the case involves property, debts and children.

Per Stanton (1959), divorce lawyers take into account the ability for the client to pay the fees that are involved in difficult cases. As he explained the difference between the specialist and the generalist, Stanton estimated that divorce lawyers earn higher fees in reconciliation cases than they do in actual divorce cases. The author asserted that the reason is because they spend more time in divorce cases. Although that may be corrected today by "hourly fees," protracted litigation may be very expensive for clients.

Yegge (1994) also reported that although the income of Americans increased in the 1980's, many people were unable to afford legal services. He noted that many suggested that only a small portion of the 1. 175 million people who divorced in 1990 used representation. Although free legal representation was available to income-based qualified people, many moderate-income people used self-representation. He asserted that these people were likely to self-represent in future cases as well. The author added that among the people who self-represent, only 20% could afford to pay the fees while 30% could not afford to pay the fees. Yegge noted that the decision to self-represent depended on having no children, no real estate, limited property, income of less than

50,000, and less than 10 years of marriage. This phenomenon may lead to a reduction in demand for lawyers' services.

➢ **Amount of Insurance Losses per Registered Vehicle**

This is the amount of insurance losses in the year per state reported by the National Association of Insurance Commissioners. Accidents frequently lead to litigation that determines the amount of damages for which victims will be compensated. The Amount of Insurance Losses can be a good indicator of the number of claims filed during a specific period. I assume that insurance companies' profitability is negatively correlated to the number of claims filed and the amounts paid per claim. Per Browne and Puelz (1996), attorney involvement in claims increases the size of the claim. Therefore, Insurance Losses may have a positive effect on the Number of Lawyers demanded.

4.3. Tort Reform Variables

Among the different reforms enumerated by Ronen Avraham in his database, the ones most widely adopted are enumerated below. However, other reforms such as Split Recovery Reform, Patient Compensation Fund and Punitive Evidence Reform are worth noting because they either put restrictions on awards or made other changes in the law that adversely affect plaintiffs.

➢ **Caps on Non-Economic Damages**

These are damages for pain and suffering, emotional distress, loss of consortium or companionship, and other intangible injuries (http://atra.org/issues/noneconomic-damagesreform). They are generally hard to value. Therefore, the awards are determined with little guidance established by law. Consequently, these awards can be erratic and are therefore very attractive to plaintiffs' lawyers. Caps on Noneconomic Damages have therefore been a subject of contentious disputes between legislators, lawyers, insurance companies and medical practitioners.

For example, the American Tort Reform Association contends the cap should be at 250,000 dollars because otherwise it leads to greater inefficiencies and inequities in the tort system (American Tort Reform Association. 2016 http://www.atra.org/node/54). The plaintiffs' lawyers argue the awards should be set on a case by case basis by the jury per the merits and the extent of the pain and suffering which is intangible. As of 2016, 30 states had enacted a Cap on Noneconomic Damages with awards varying between 250,000 and 1.5 million dollars (http://www.atra.org/node/54).

➢ **Caps on Punitive Damages**

Punitive Damages are awarded to punish the defendant for intentional or malicious misconduct. These damages are not awarded frequently. However, when they are, the sizes tend to be large and trending in that direction (http://www.atra.org/issues/punitive-damages-reform). The American Tort Reform Association contends that there should be an establishment of a clear evidence that there was malice and intent involved and that the damages should be proportional to the offenses (http://www.atra.org/issues/punitive-damages-reform). The plaintiffs' lawyers argue that this should be done on a case by case basis and that the jury should be able to punish the defendants to discourage such behaviors in the future. By the year 2014, 36 states had passed laws putting caps on punitive damages. Most of these states now require that the plaintiffs prove with "clear and convincing evidence" that there was malice, intent, fraudulent, or grossly negligent action by the defendant. In some cases, a portion of the damages are paid by state funds.

➢ **Collateral Source Reform**

Per the Collateral Source Rule of the common law, any evidence showing that the plaintiff has been or will be compensated for damages by a source other than the defendant, was inadmissible. This mainly applied to payments to the plaintiff from their own insurance coverage. Proponents of this reform argued that the Collateral Source rule permitted some plaintiffs to get

more than the compensatory damages. Abrogation of the collateral Source Rule lead to the reduction of the awards by the amount already recovered through other means such as their insurance claims. At this point, about 26 states have adopted this reform.

➢ **Punitive Damages (Evidence) Rule**

Punitive Damages (Evidence) Rule sets a higher evidentiary threshold for the plaintiff. The language of this requirement differs from state to state. For instance, in the state of Arizona, Punitive Damages (Evidence) Rule requires a plaintiff to show with clear and convincing evidence that the defendant acted with an "evil" mind. However, in Kansas this law requires that the plaintiff shows that the defendant acted with wanton (deliberate, malicious) disregard for the plaintiff's rights (Avraham 2014). Since this law requires more clear and convincing evidence from the plaintiffs, it may certainly decrease the demand for lawyers. However, from the point of view of the law firms, there might be an increase in the number of lawyers in order to increase the chances of winning. Law firms may appoint quality lawyers to these cases, but they may also increase the time allocated to these cases.

➢ **Joint and Several Liability Reform**

The common-law rule of Joint and Several Liability allows the plaintiff to collect damage awards from any of multiple defendants who are found liable. The plaintiff may collect any percentage of the awards from individual defendants so long as the total amount collected does not exceed 100 percent. Reform statutes limit the collection damages per the percentage of the defendant culpability. For instance, if a jury establishes that two defendants are jointly liable for a tort case, under Joint and Several Liability, the plaintiff can sue either or both defendants for the full damages. However, under the proportionate liability, the plaintiff can only sue each defendant based on their liability in the case. If the jury establishes defendant's liability at 10%, the defendant

can only be responsible for 10% of the awarded damages. Therefore, reform may reduce the amount that may be collected overall by the plaintiff. As of 2016, 41 states have adopted this reform. However, some states have done so with exceptions and with stipulations on the percentages of responsibility for the offense.

> **Contingency Fee Rule**

Contingency Fee is the percentage-base fee that lawyers get once a case is resolved by verdict or settlement. This is often one third of the total amount awarded to the plaintiffs. For bearing the risks and expenses of the lawsuits, plaintiff's lawyers receive a large percentage of the total awards. Some commentators suggest that this is unfair in that it permits lawyers not only to receive unreasonably high awards, but to seek cases that can easily be settled**.**

> **Split Recovery Rule**

Split Recovery are statutes that allow States to collect a portion of the amounts awarded to the plaintiffs (White 2002). These funds are run as a judicially administered fund and states collect them in two different ways. Some states collect them as a percentage of the total damages awarded. Other states allow the judge to determine the amount to be collected by the states. Although the first mode of collection is most popular, the percentages vary from state to state. For instance, the State of Iowa collects 75% of the awards after attorney fees are deducted while the State of Utah collects 50% in excess of 20,000 dollars awarded after attorney fees. This suggests that plaintiffs' awards can be seriously reduced by the enactment of this law especially after collection of attorney fees and other costs.

> **Tort Reform and the Market for Lawyers**

In this study, I assume that tort reform leads to a downward shift in the demand curve along the short-run approximately "perfectly inelastic" supply curve. This shift, at least in the short run,

decreases the Earnings of Lawyers. The decrease in the Earnings of Lawyers, leads to a movement towards the long-run horizontal supply curve. It is important to note that the adjustment period will depend on how fast people realize whether the change in demand is permanent, and on the capacity of law schools. But it is also important to note that the decrease in the Number of Lawyers as a response to lower earnings may not take too long. This is because law firms can let employees go, or even close practice, if there is not enough business. Therefore, lower Earnings for Lawyers decreases the Number of Lawyers while wages rise. This process continues until the long run equilibrium, located on the long-run supply curve, is reached. Whether the change in demand is temporary, the new equilibrium will be located in the quadrant below and to the left of the old demand curve. This means that there may just be a decrease in the Earnings of Lawyers or situations in which both the Number of Lawyers and the Earnings of Lawyers decrease.

CHAPTER 5 THE MODEL

Does Tort reform affect the market for lawyers? Since the demand for lawyers and their income depend both on the number of potential claims and the average awards from lawsuits, it is conceivable that any change in the tort laws will influence these two variables. Consider the following variables:

L_{it} = Equilibrium number of lawyers per capita at time t,

$L_{i\,t-1}$ = Equilibrium number of lawyers per capita at time t -1,

$I_{i\,t}$ = Median Earnings of Lawyers at time t,

$D_{i\,t}$ = Demand for Lawyers at time t,

$S_{i\,t}$ = Supply of Lawyers at time t,

$T_{i\,t}$ = Tort Reform Activities at time t,

$G_{i\,t}$ = Real earnings of College Graduates (4-year degree) at time t-3,

$Z_{i\,t}$ (Demand) = Exogenous variables, $E_{i\,t}$ (Supply) = Exogenous variables,

x , y, p, and f are the error terms.

Based on theory, the demand and supply functions are:

$$D_{i\,t} = D\,(I_{i\,t}\,,\,T_{it}\,,\,Z_{it}\,) \text{ and } S_{it} = S\,(I_{i\,t}\,,\,G_{i\,t}\,,\,E_{i\,t}\,),$$

$$D_{i\,t} = b_i + b_1\,I_{i\,t} + b_2\,T_{i\,t} + b_3\,Z_{i\,t} + x_{i\,t}\ (1),$$

$$S_{it} = c_i + c_1\,I_{i\,t} + c_2\,G_{i\,t} + c_3\,L_{i\,t-1} + c_4\,E_{i\,t} + y_{i\,t.}\ (2).$$

Equations (1) and (2) state that as income increases, the demand for Lawyers decreases. But Tort Reforms are negatively correlated with the Number of Lawyers in the long-run. Although the supply of lawyers is positively correlated with the Earnings of Lawyers, the demand is negatively correlated with these earnings. However, the income of College Graduates has a decreasing effect

on the supply of lawyers. The equilibrium condition requires that the demand for lawyers be equal

to the supply of lawyers. Therefore,

$$D_{it} = S_{it} ; \quad c_i + c_1 I_{it} + c_2 G_{it} + c_3 L_{it-1} + c_4 E_{it} + y_{it} = b_i + b_1 I_{it} + b_2 T_{it} + b_3 Z_{it} + x_{it}.$$

Thus, the equilibrium Earnings is the following:

$$I_{it} = \{ (c_i - b_i) + c_3 L_{it-1} + c_2 G_{it} - b_3 Z_{it} + c_4 E_{it} - b_2 T_{it} \} / (b_1 - c_1) \quad (3)$$

$$I_{it} = d_i + d_1 L_{it-1} + d_2 G_{it} + d_3 Z_{it} + d_4 E_{it} + d_5 T_{it} + f_{it} \quad (\text{reduced form}) \ (3),$$

where

$$d_i = (c_i - b_i)/(b_1 - c_1)$$

$$d_1 = c_3/(b_1 - c_1)$$

$$d_2 = c_2/(b_1 - c_1)$$

$$d_3 = - b_3/(b_1 - c_1)$$

$$d_4 = c_4/(b_1 - c_1)$$

$$d_5 = - b_2/(b_1 - c_1)$$

$$f_t = (y_{it} - x_{it})/(b_1 - c_1).$$

Plugging equation (3) into equation (1), we get the following equation:

$$L_{it} = g_i + g_1 L_{it-1} + g_2 G_{it} + g_3 Z_{it} + g_4 E_{it} + g_5 T_{it} + p_{it} \quad (4),$$

where

$$g_i = (b_1 c_i - b_i c_i)/(b_1 - c_1)$$

$$g_1 = b_1 c_3/(b_1 - c_1)$$

$$g_2 = b_1 c_2/(b_1 - c_1)$$

$$g_3 = - b_3 c_1/(b_1 - c_1)$$

$$g_4 = b_1 c_4/(b_1 - c_1)$$

$$g_5 = - b_2 c_1 /(b_1 - c_1)$$

$$p_t = (b_1\, y_{it} - c_1\, x_{it})/(b_1 - c_1).$$

This study will consist of estimating equations (3) and (4). The Number of Lawyers per 100,000 people is a function of the number of lawyers per 100,000 people at time t-1 (L_{it-1}), the real Earnings of 4-year College Graduates at time t-3 (G_{it-3}), the exogenous variables Z_{it} (the Real GDP per Capita, the Number of New Firms incorporated per 100,000 people, the Number Violent Crimes per 100,000 people, the number of Property Crime per 100,000 people, the number of Bankruptcy Filings per 100,000 people, the Amount of Insurance Losses per Registered Vehicle) and the tort laws T_{it} (0 = no reform, 1= year after reform).

5.1. Model Specification

Although this paper focuses on the impacts of tort reform on the market for lawyers, the two models used also evaluate the impact of non-tort determinants on this market. Model A is an extension of the model used by Pashigian. This model adds tort variables as proxies for the legal activities within states. I further extend the research by testing the impact of tort reforms on the Earnings of Lawyers in Model B. These two points will be the specific contributions of the paper.

In estimating the equation of the Number of Lawyers, I used some standard tests for good model specification. The xtserial test for equation (4) resulted in a presence of autocorrelation in the panel data {F (1, 50) = 28.385 with prob > F = 0.000}. The xtserial test also resulted in a presence of a serial correlation in equation (3) {F (1, 44) = 71.348 with prob> F= 0.0000}. Although autocorrelation is present in the data for both models (3) and (4) the standard Pesaran test shows no contemporaneous correlation in the data. For the model (3) however, the Testparm test revealed a presence of time fixed effect in the model with the following F statistics and probability: F (1, 528)=1.74 ; Prob > F = 0.0615. The xttest3 tests also revealed the presence of heteroscedasticity for both equations (3) and (4) with Prob> chi2 = 0.000.

I assumed, based on previous research of tort reforms (Born et al. 2009) that there is no endogeneity issues between the Number of Lawyers and tort reform. Although tort reform may have an impact on the Number of Lawyers, I have seen no evidence that the Number of Lawyers affect tort reform.

CHAPTER 6 THE NUMBER OF LAWYERS

6.1. Estimation

Table 4: Number of Lawyers per 100,000 People.					
	(Elasticities)* p<0.05 ** p< 0.01, ***p< 0.001				
	OLS	FGLS2	FGLS3	FGLS4	FGLS5
Non-Tort Variables					
Number of Lawyers t-1	0.965***	0.965***	0.978***	0.981***	0.981***
L3 AlternativeEarnings	- 0.132*	- 0.132*	-0.149***	- 0.157***	-0.151***
Real GDP per Cap	0.0833**	0.0833**	0.0809***	0.0769**	0.0771***
Violent Crime	- 0.00810	- 0.00810	-0.00742	- 0.00729	-0.0116
Property Crime	0.0147	0.0147	-0.00257	- 0.00398	-0.00025
Divorce	- 0.0371	- 0.0371	-0.0261	- 0.0263	-0.0282*
Number of Firms	0.0149	0.0149	0.0209	0.0201	0.0135
Insurance Losses	0.0313*	0.0313*	0.0347***	0.0348**	0.0344***
Bankruptcy Filings	0.0231*	0.0231*	0.0362***	0.0363***	0.0360***
Tort-variables					
Noneconomic	0.3576	0.3576	1.816	0.1581	0.238
PunitiveDamages	- 0.8637	- 0.8637	- 0.944	- 0.8758	0.863
TotalDamages	0.8052	0.8052	- 0.151	- 0.1071	0.137
SplitRecovery	- 1.1465	- 1.1465	- 0.812	- 0.7760	0.57
CollateralSource	- 0.0459	- 0.0459	- 0.014	- 0.0344	0.253
PunitiveEvidence	0.5475	0.5475	0.036	0.0233	0.126
PeriodicPayment	0.3015	0.3015	0.462	0.4952	0.405
ContingencyFee	0.3687	0.3687	- 0.561	- 0.5465	0.411
JointSeveralLiability	- 0.6541	- 0.6541	- 0.755	- 0.7458	0.785
PatientCompensationFund	- 0.3877	- 0.3877	0.367	0.2874	0.576
ComparativeFault	0.0300	0.0300	- 0.066	- 0.0428	0.078
Year Effect					0.004
State Effect					0.0289

Table 4 presents the results of the estimations using the Generalized Least Squared method. I start with the basic regression of the Number of Lawyers on all the independent variables. This basic OLS model estimated 20 coefficients for a total of 500 observations and an $F_{(20,479)}=1347$ Prob> F=0.000. The corresponding R squared, the explanatory power of the model, is approximately the same as the adjusted R squared of 98%. However, the Root MSE was 78.25%. The results indicate that the Lagged Number of Lawyers, the Lagged Earnings of Alternative Professions, the Real GDP per Capita, the Divorce Rate, the Amount of Insurance Losses, and the Number of Bankruptcy filed were the only significant determinants of the Number of Lawyers. All tort reform variables appear insignificant in the OLS model.

Since previous tests indicated the presence of heteroscedasticity and autocorrelation in the data, I estimated the model by using the Generalized Least squared method. The results of the plain Generalized Least Squared method are presented in Column 2 (FGLS2). For 500 observations and 49 groups, the Wald Chi 2 (20) = 28140.58 with Prob > chi2 =0.00. The results of this estimation are identical (significance level and coefficients) to the OLS' results although most of the standard errors are slightly smaller. After controlling for heteroscedasticity alone, the results presented in Column 3 (FGLS 3), show a Wald Chi 2(20) = 81853.60 with a Prob > Chi 2= 0.000. The significant variables are the Lagged Number of Lawyers, the Lagged Earnings of Alternative Professions, the Real GDP per Capita, the Amount of Insurance Losses, and the Number of Bankruptcy filed in the Federal District Courts. The coefficients are larger in all cases with much smaller standard errors. For instance, the elasticity for the Lagged Number of Lawyers improved from 0.965 to 0.978 at the 1%significance level. But the standard error decreased from 0.012 to 0.0098.

To improve on the outcome of this model, I controlled for the existing autocorrelation between the error terms. The results of this estimation that control for both heteroscedasticity and autocorrelation are presented in Column 4 (FGLS4). The estimates show the same five variables to be significant all at the 1% level with smaller standard errors. The coefficients, in absolute value, slightly increased for the Lagged Number of Lawyers the Lagged Earnings of Alternative Professions, the Insurance Losses, and the Number of Bankruptcy filed although it slightly decreased for the Real GDP per Capita. The resulting Wald Chi 2 (20) =101496.18 is larger than in the previous three estimations while the standard errors are slightly smaller.

I further improved the model by including year and state fixed effect terms to control for any variations that are inherent to specific year or to particular states. The results of this estimation are presented in column 5 (FGLS5). Although these estimates have approximately the same standard errors as in column 4, the variables that are significant are identical to those in the previous estimation except that one more variable is again significant. They are the Lagged Number of Lawyers, the Lagged Earnings of the Alternative Professions, the Real GDP per Capita, the Divorce rate, the Amount of Insurance Losses, and the Number of Bankruptcy filed. All these variables have the same signs in all cases, but their coefficients are slightly lower in FGLS4 except for that of the Lagged Number of Lawyers which remained the same (0.981) while Real GDP per Capita slightly increased from 0.0769 to 0.0771.

Although these five estimations show that non-tort variables have some impacts on the Number of Lawyers, they do not show any evidence that tort reform has an impact on the Number of Lawyers. All tort reform variables appear to have an insignificant impact on the Number of Lawyers.

The Generalized Least Squared method described above gave results for non-tort variables that agree with the theory described in Chapter 2. But the results are not conclusive for tort reform variables as there is no evidence that these reforms have any impact on the Number of Lawyers. However, because of the presence of the lagged dependent variable in the equation, I estimated the model using a new version of the Hildrith-Lu search method applied by Pashigian. The Panel Corrected Standard Error method uses the Prais-Winsten estimation to search for any autocorrelation parameter that minimizes the sum of squared errors. The PCSE method is also appropriate for it does not have any restriction on the number of variables while the FGLS restricts the number of independent variables to be smaller than the number of periods (N< T).

Table 5: Number of Lawyers per 100,000 People.					
	(Elasticities)* p<0.05 ** p< 0.01, ***p< 0.001				
	Prais 1	Prais 2	PCSE3	PCSE4	PCSE5
Non-Tort Variables					
Number of Lawyers t-1	0.973***	0.975***	0.965***	0.970***	0.969***
L3 AlternativeEarnings	- 0.145***	- 0.149***	-0.132**	- 0.139**	-0.140**
Real GDP per Cap	0.0752***	0.0735***	0.0833***	0.0787***	0.0788***
Violent Crime	- 0.008108	- 0.008120	-0.00810	- 0.00814	-0.0116
Property Crime	0.0109	0.00993	0.0147	0.0126	0.0184
Divorce	- 0.0355*	- 0.0352*	-0.0371*	- 0.0362*	-0.0376*
Number of Firms	0.0149	0.0109	0.0149	0.0131	0.0151
Insurance Losses	0.0116	0.0300**	0.0313**	0.0306**	0.0310**
Bankruptcy Filings	0.0302**	0.0234***	0.0231**	0.0232**	0.0250***
Tort-variables					
Noneconomic	0.298	0.283	0.864	0.327	0.45
PunitiveDamages	-0.717	-0.682	-0.81	-0.785	-0.851
TotalDamages	0.799	0.795	1.147	0.804	0.698
SplitRecovery	-1.136	-1.126	-0.046	-1.136	-0.995
CollateralSource	-0.029	-0.025	-0.55	-0.037	-0.149
PunitiveEvidence	0.501	0.49	0.301	0.522	0.241
PeriodicPayment	0.367	0.383	0.369	0.337	0.256
ContingencyFee	0.369	0.371	0.654	0.369	0.392
JointSeveralLiability	-0.656	-0.656	-0.388	-0.655	0.726
PatientCompensationFund	-0.494	-0.522	-0.03	-0.443	0.157
ComparativeFault	0.084	0.096	0.03	0.006	0.141
Year Effect					0.065
State Effect					0.029

Similar to the FGLS processes, I started with the Prais-Winsten estimation of the Number of Lawyers with respect to the independent Variables. The calculation is based on six iterations for a rho value of - 0.13, $F_{(20,479)}$ = 1956.59, R squared and adjusted R squared of 98.7%. The results in column 1 (Prais 1) show that the Lagged Number of Lawyers, the Lagged Earnings of

Alternative Professions, the Real GDP per Capita, the Divorce rate, the Insurance Losses as well as the Number of Bankruptcy filed are significant determinants of the Number of Lawyers. They also agree with the theory as described in chapter 2. But the tort reform variables are all insignificant. Using the SSE search option with Prais-Winsten, the results were the same as far as variables that are significant determinants of the Number of Lawyers although this method computed 14 different iterations (rho = - 0.17) and R squared of 98.85 in minimizing the sum of the squared errors. These results are in column 2 (Prais 2).

I also estimated the model using PCSE corrected for heteroscedasticity. The results in column 3 (PCSE3) show similar results as those in the previous columns. However, the coefficients are slightly different although the standard errors slightly decreased with a Wald Chi2 (20) = 62954.16 and R squared of 98.25%. I continued by estimating the model with a PCSE that controlled for both heteroscedasticity and autocorrelation. The results in Column 4 (PCSE4) show slight changes in the coefficients although the standard errors decreased while the significance of all the variables remain the same. This slightly improved the explanatory power R squared from 98.25 to 98.52% with a Wald Chi 2 (20) = 76593.44. I finally improved the PCSE model by including the control variables for year and state effects. Although the results in column 5 (PCSE5) show the same signs and levels of significance for the same variables as in the previous column, the coefficients slightly changed. The explanatory power improved to 98.54% with a Wald Chi 2 (20) = 77854.34 and rho of -0.07.

Both the FGLS (Table 4) and the PCSE (Table 5) are consistent estimators although the FGLS coefficients are more efficient (http://www.stata.com/manuals13/xtxtpcse.pdf). However, in this study, the PCSE results are chosen because the PCSE appropriately deals with the Lagged value of the dependent variable while controlling for heteroscedasticity and autocorrelation. It also

passes the test of feasibility for the FGLS requires the number of periods to be greater than the number of independent variables. Considering all the characteristics of this dataset, I will report the results in column 5 of Table 5 as the outcome of this study. This is the one based on the PCSE that controlled both for heteroscedasticity and autocorrelation. This means that the results are going to be both unbiased and efficient. In this column, I also isolate the effects that may be specific to a particular state or to a particular year. This provides a better understanding of the impacts of each determinant on the Number of Lawyers.

6.2. Estimation Results

6.2.1. Non-tort Reform Variables

Column 1 of Table 5 shows that the Number of Lawyers is strongly determined by the Lagged Number of Lawyers at the 1% significance level, the Lagged Earnings of Alternative Professions at the 5% significance level, the Real GDP per Capita at the 1% significance level, the Divorce Rate at the 10% significance level, and Insurance Losses at the 5% significance level, and the Number of Bankruptcy Filed at the 1% significance level. But there is no evidence that Violent Crime, Property Crime, or the Number of Firms have any impacts on the Number of Lawyers.

➢ **Lagged Number of Lawyers (t - 1)**

The estimates in column 1 of Table 5 indicate that a 1% increase in the Lagged Number of Lawyers leads to approximately a 0.967% increase in the Number of Lawyers. This finding is in accordance with Pashigian (1977) and Pashigian (1978) as it explains the very low speed of adjustment towards the long run equilibrium of the Number of Lawyers. This low speed of adjustment referred to the fact that the change in the Number of Lawyers does not only depend on the change in demand, but also on the capacity of the law schools to graduate students. To be a lawyer, one must complete law school and eventually pass the bar. Therefore, law schools cannot immediately fulfill a rise in demand for lawyers because it takes at least three years to go through the process of becoming a lawyer. An increase in supply of lawyers, for instance, may take an adjustment period of more than two decades (Pashigian 1978).

➢ **Lagged Alternative Earnings (t -3)**

The Lagged Earnings of Alternative Professions, a supply-side variable, has a negative sign as shown in column 1 of Table 6. This indicates that an increase in the Lagged Earnings of Alternative Professions leads to a decrease in supply of lawyers as more potential workers choose

alternative careers instead of going through the three years of law school and the mandatory bar exam. If a construction management profession, for instance offers a relatively higher wage rate, this attracts more people including those who would consider attending law school. The elasticity table (Table 6 –Column 1) of the Number of Lawyers with respect to the Earnings of Alternative Professions shows that, given Real GDP per Capita, a 1% increase in the Earnings of Alternative Professions decreases the Number of Lawyers by 0.14%. These results also agree with the findings of both Pahigian (1977) and Freeman (1975).

> **Real GDP per Capita**

The results (Table 6 column 1) of the estimation that used the PCSE method conclude findings that are different than those of Pashigian (1977). Pashigian used both the Gross National Product and the Gross National Product per Capita in his model. He found the Gross National Product per Capita is negatively correlated with the Number of Lawyers when the Gross National Product is included. However, the model in this paper normalized most of the variables by the population. Therefore, it is evaluating the Number of Lawyers per 100,000 people as opposed to the nominal Number of Lawyers as done by Pashigian (1977). Pashigian also probably assumed that the change in supply may be immediate although I assume that prosperity leads to increase opportunities for all sectors of the economy including the law profession.

Column 1 of Table 6 shows that the Number of Lawyers is positively correlated with GDP per Capita and that a 1% increase in GDP per Capita leads to 0.08% increase in the Number of Lawyers. Although it is significant at the 5% level, this coefficient is small.

GDP may be used as a good measure of the volume of economic activity in the nation. A rise in GDP may be a sign of increase opportunities in most sectors of the society including the law profession. This leads to an increase in the demand for lawyers' services and a potential future

decrease in the supply of lawyers. The increase in demand is represented by an upward shift in the demand curve. Although the Number of Lawyers is, in approximation, "perfectly inelastic" in the short-run, this change in demand may be partially fulfilled by the existing pool of lawyers who may take on few more cases. It can also be partially fulfilled by the entry into the market of those lawyers who have law degrees but are not practicing at the time as mentioned by Pashigian. However, the decrease in supply will not be immediate as this will be reflected in the enrollments in law school first and may take at least three years before it starts to slowly materialize. The speed of this process certainly depends on the law schools' capacity to graduate "new lawyers" (Pashigian 1978).

Additionally, since practicing lawyers earn more on average than people in alternative professions (Summary Table Appendix B), the existing pool of lawyers is not likely to decrease during economic expansion. Therefore, in the short run, the Number of Lawyers will modestly increase while relatively more people opt for alternative professions as they enter college. This increase is rather negligible because the increase in demand is very low.

➢ **Divorce Rate**

The estimation results in column 1 of Table 6 show that Divorce Rate is negatively correlated with the Number of Lawyers at the 5% significance level. A 1% increase in Divorce Rate leads to a negligible (0.04%) decrease in the Number of Lawyers. Although Pashigian found a positive and negligible correlation for Divorce, the results I found in this research are supported by theory (chapter 2) as well as Stanton (1959) and Yegge (1994) findings.

➢ **Amount of Insurance Losses per Registered Vehicle**

The elasticity table (Table 6 column 1) shows that the Amount of Insurance Losses per Registered Vehicle is positively correlated with the Number of Lawyers at the 10% significance

level. However, the elasticity of Insurance Losses with respect to the Number of Lawyers is very small, showing that a 1% increase in the Amount of Insurance Losses per Registered Vehicle is correlated with an approximately 0.03% increase in the Number of Lawyers. These results support the findings of Browne and Puelz (1996), that attorney involvement in claims increases the size of the claims. This may lead to a slight increase in the demand for lawyers; however, the impact of this variable is negligible.

➢ **Bankruptcy Filings**

Like the Insurance Losses per Registered Vehicle, the Number of Bankruptcy Filings at the Federal District Court is positively correlated with the Number of Lawyers at the 5% significance level with a very small elasticity as well (Table 6 column 1). A 1% increase in the Number of Bankruptcy filings leads to a 0.025% increase in the Number of Lawyers. Although statistically significant, this elasticity is also negligible because it barely shifts the demand curve upward.

6.2.2. Tort Reform Variables

Based on the PCSE model, column 5 of Table 5shows that no tort reform variables is significantly correlated with the Number of Lawyers. This is also true for the estimations done under the FGLS method (Column 5 Table 4). This model's findings in column 1 of Table 5 also show that there is no evidence of specific state or year effect on the Number of Lawyers.

6.2.3 Other Estimations

Table 6: Other Estimations The Number of Lawyers (PCSE)						
	PCSE	PCSE	PCSE	PCSE	FGLS	FGLS
	1	2	3	4	5	6
Non-Tort Variables						
Number of Lawyers t-1	0.969***	0.920***	0.985***	0.972***	0.42***	0.984***
L3 AlternativeEarnings	-0.140**		-0.0769	-0.130**		-0.144***
Real GDP per Cap	0.079***	0.120***		0.0734***	0.103***	0.0713***
Violent Crime	-0.0116	-0.0188	-0.0005		-0.180	
Property Crime	0.0184	0.0303	0.0146	0.00179	0.0106	-0.0166
Divorce	-0.0376*	-0.0237	-0.0395**	-0.0313*	-0.00611	-0.0203
Number of Firms	0.0151	0.0300	0.0351		0.0266	
Insurance Losses	0.0310**	0.0327**	0.0234*	0.0233*	0.0252**	0.026***
Bankruptcy Filings	0.025***	0.0168	0.0186	0.0221**	0.025***	0.0334***
Tort-variables						
Noneconomic	0.45	1.82	0.019	0.26	1.31	0.077
PunitiveDamages	-0.85	-1.98**	-0.886	-0.86	-1.81	-0.95
TotalDamages	0.698	1.99	1.20	0.94	0.85	0.47
SplitRecovery	-0.99	1.73	-0.98	-1.03	1.44	-0.55
CollateralSource	-0.149	-0.75	-0.31	-0.039	-0.28	-0.19
PunitiveEvidence	0.241	1.22	0.52	0.33	0.88	0.1
PeriodicPayment	0.256	-0.75	0.14	0.26	-0.6	0.38
ContingencyFee	0.392	1.70	0.72	0.31	0.67	-0.32
JointSeveralLiability	-0.73	- 0.89	-0.63	-0.61	-0.76	-0.66
PatientCompensationFund	-0.157	0.3	-0.24	-0.34	1.35	0.35
ComparativeFault	0.141	-0.58	0.14	0.21	0.53	0.12
Year Effect	0.065	-0.23	0.099	0.022	-0.09	-0.36
State Effect	-0.029	-0.015	-0.03	-0.022	-0.03	-0.03

Although, these results are not in line with expectations, I estimated the model by using four other combinations of the given independent variables. The results are presented in columns 1 through 4 in Table 6. Column 2 of Table 6 presents the estimates of the model without the

Lagged Earnings of Alternative Professions. These estimates show that the Lagged Number of Lawyers, the Real GDP per Capita, and the Insurance Losses are the only non-tort variables that are significant. The Real GDP per Capita as well as the Insurance Losses increased in elasticity while the Lagged Number of Lawyers decreased. This increase in the Real GDP per Capita is significant enough to support 0.68 correlation between the two variables (Correlation Matrix Appendix B). In fact the Earnings of Alternative Professions may highly depend on the Gross Domestic Product.

However, two out of the eleven tort variables are significant under these conditions. Caps on Noneconomic Damages is positively correlated with the Number of Lawyers the 10% level although the Punitive Damages Caps shows a negative sign at the 5% significance level. But the standard errors increased tremendously compared to the baseline model. This shows that Lagged Earnings of Professions is a very important determinant of the Number of Lawyers.

Column 3 of Table 6 shows the estimates of the model without Real GDP per Capita although column 4 shows its estimates without Violent Crime and the Number of Firms. Although both of these improve the results as the standard errors decreased, the estimates are not as efficient as the ones in Column 1 of Table 6. The estimates without real GDP per Capita show that the Lagged Number of Lawyers is significant at the 1% level although the Lagged Earnings of Alternative Professions is not significant. But the Divorce Rate, the Insurance Losses and the Number of Bankruptcy filed are all significant. The estimates in Column 4 of Table 6 show approximately the same results as those in column 1 of Table 6.

Using the same series of combinations of variables, the FGLS gave similar results except that Punitive Damages is the only tort reform that is significant when Real GDP per Capita is removed and when the Number of Firms and the Violent Crime are removed.

➢ **Caps on Punitive Damages Rule**

In agreement with theory, the Caps on Punitive Damages results in a decrease in the Number of Lawyers by 0.95% under the FGLS method. This result is only significant at the 10% level and excludes two variables (Number of Firms and Violent Crime) out of the model. The Caps on Punitive Damages puts a cap on the awards of the plaintiffs. This decreases the potential revenue of law firms especially if they are paid on a contingency fee basis. Therefore, this reform may lead to a shift in the demand of lawyers downward along the approximately inelastic short-run supply curve. Consequently, it may lead to a decrease in the Number of Lawyers. However, this decrease is very small with an elasticity of 0.95 and the results cannot be reliable because the FGLS restricts the number of periods to be greater than the number of independent variables.

6.3. Lagged Effects of Tort Reform Variables

I estimated the impacts of the lagged values of tort variables to see if these law changes had any effects on the Number of Lawyers through time. Since this method involves different lagged values of the variables, I used the Dynamic Panel Data (DPD) analysis. Therefore, I ran multiple regressions of the Number of Lawyers on the independent variables. For the first series of estimations, I assumed no endogeneity between the variables. In the second set of regressions, I assumed that there is a possible endogeneity issue between tort variables and the Number of Lawyers. The results of these estimations show that only the lagged Number of Lawyers is a significant determinant in this market. A 1% increase in the lagged Number of Lawyers increased the Number of Lawyers by 1%. This is significant at the 1% level. The other non-tort variables, tort variables and their respective lagged 1 and lagged 2 values are either insignificant or significant with extremely small elasticities. But more research is needed to validate these results.

CHAPTER 7 THE EARNINGS OF LAWYERS

7.1 Estimation

Although the aim of this paper was to estimate the Number of Lawyers, I estimated the Earnings of Lawyers to see if the results are consistent with the both previous findings and those in this study.

Table 7: Real Earnings of Lawyers.				
	(Elasticities) * p<0.05 ** p< 0.01, ***p< 0.001			
	OLS	FE	FE (robust)	FE -Year
Non-Tort Variables				
Number of Lawyers t-1	0.0428**	- 0.00815	- 0.00815	-0.0138
L3 AlternativeEarnings	0.330***	0.191**	0.191**	0.178***
Real GDP per Cap	0.198***	0.0488	0.0488	0.00299
Violent Crime	- 0.00305	0.0507	0.0507	0.0488
Property Crime	0.0702**	0.0398	0.0398	0.0567
Divorce	- 0.141***	- 0.0421	- 0.0421	-0.0281
Number of Firms	- 0.364***	-0.133	-0.133	-0.0301
Insurance Losses	0.0669***	-0.00420	-0.00420	-0.00623
Bankruptcy Filings	0.00731	-0.0242*	-0.0242	-0.0211
Tort-variables				
Noneconomic	- 3.306***	- 6.237**	- 6.237	-0.0625
PunitiveDamages	0.948	0.230	0.230	0.087
TotalDamages	7.101***	0.000	0.000	0
SplitRecovery	2.788*	-17.00***	-17.00***	-17.59***
CollateralSource	2.706**	7.412	7.412	7.35
PunitiveEvidence	4.144***	- 10.054	- 10.054 *	-10.18*
PeriodicPayment	1.430*	0.777	0.777	0.815
ContingencyFee	9.713***	14.912***	14.912**	13.5***
JointSeveralLiability	- 5.654***	- 3.066	- 3.066	-3.02
PatientCompensationFund	- 2.051	- 5.243	- 5.243	-5.39
ComparativeFault	- 0.066	0.000	0.000	0
Year Effect				0.24

Table 7 presents the results of the estimations of the Earnings of Lawyers. I start with the basic OLS estimation shown in column 1 (OLS). The estimation yielded an $F_{(20, 480)} = 59.64$ and an R squared and an adjusted R squared of approximately 71%. The results show that the Earnings of Lawyers is strongly and positively correlated with the Lagged Number of Lawyers, the Lagged Alternative Earnings, the Real GDP, Property Crime, and Insurance Losses. The significant tort variables include Total Damages, Punitive Damages (Evidence) Rule, Collateral Source Rule, Periodic Payment Reform, and Contingency Fee Rule. The basic OLS results also show that Earnings of Lawyers is negatively correlated with the Divorce Rate, the Number of Firms, and the tort variables Noneconomic Damages, Joint Several Liability.

Columns 2 through 4 of Table 7 present the results of the Fixed Effect (FE) models that correct for heteroscedasticity and autocorrelation. Column 2 (FE) presents the estimations results for the basic Fixed Effect model although column 3 (FE robust) present the Fixed Effect model that controls for heteroscedasticity. These two estimations (FE and FE robust) show that Split Recovery is negatively correlated with the Earnings of Lawyers although Lagged Earnings of Alternative Profession and Contingency Fee Rule are positively correlated with the Earnings of Lawyers. However, the basic FE model also shows that Caps on Noneconomic Damages is negatively correlated with the Earnings of Lawyers. I improved the model by including both the year fixed effect. The estimates of this alternative model are presented in column 4 (FE -Year). The explanatory power of the model increased from 0.83 for the FE to 0.85 for the FE that included the year effect. The estimates presented in this column show that Violent Crime and Contingency Fee Rule increase the Earnings of Lawyers. However, Noneconomic Damages, Split Recovery, Punitive Damages (Evidence) Rule decreased the Earnings of Lawyers.

For its completeness in dealing with the issue of heteroscedasticity, and because of the inclusion of the year effect term that expand the understanding of the model, the estimates in column 4 (FE -Year) will be used in this paper.

7.2. Results

7.2.1. Non-Tort Variables

Column 4 (FE interact) of Table 7 shows that the Earnings of Lawyers is strongly correlated with the Lagged Earnings of Alternative Professions at the 1% significance level. However, there is no evidence that other non-tort variables have any impact on the Earnings of Lawyers.

➢ **Lagged Number of Lawyers per Capita**

There is no evidence that the Lagged Number of Lawyers is correlated with the Earnings of Lawyers. This result supports the findings in the previous chapter. The Number of Lawyers is positively and directly correlated with its lagged value at approximately 1 to 1. This is what explains the slow adjustment to any change in the market for Lawyers. Since an increase in the Lagged Number of Lawyers almost increases the Number of Lawyers by the same amount, this explains the slow response of this market to new shocks. Lawyers are generally enrolled for three years, and they have to generally pass a bar exam in order to practice. Consequently, the "newly admitted lawyers" represent a response to previous shocks in the market. This may not have any impact on the Earnings of Lawyers.

➢ **Real GDP per Capita**

There is no evidence that Real GDP per Capita is correlated with the Earnings of Lawyers. Although Real GDP per Capita increases the demand for Lawyers' services as noted by Combs (2015), its impact on the Number of Lawyers is not large enough to change the equilibrium wage offered. This may be because the law profession has different specializations (divorce, business, criminal etc.). An increase in real GDP per Capita may lead to an increase in demand for Business Lawyers' services while other (divorce, criminal, public policy) lawyers' services may or may not decrease. This is understandable because the change in demand may be more from the business

transactions; however, it involves lawyers that are specialized in business law. Consequently, this increase in demand for lawyers' services generated by a rise in GDP is not large enough to warrant an increase in Earnings of Lawyers.

➢ **Lagged Earnings of Alternative Professions**

The results in column 4 of Table 7 show that Earnings of Lawyers is positively correlated with the Lagged Earnings of Alternative Professions at the 1% significance level. They also show that a 1% increase in the Earnings of Alternative Professions is correlated with a 0.178 % increase in the Earnings of Lawyers. This finding agrees with theory in that an increase in the earnings of other professions make these professions relatively more attractive. Therefore, fewer people may enroll in law school. This will affect the supply of lawyers three years later. A shift in the supply of lawyers to the left will lead to a new equilibrium whereas the Earnings of Lawyers is higher.

➢ **Other variables**

The estimates show no evidence that Crime Rates, Divorce Rate, Insurance Losses, and the Number of Bankruptcy Filed, are significant determinants of the Earnings of Lawyers. Similarly to the Real GDP, these variables have negligible elasticities with respect to the number of Lawyers. Their elasticities are less than 0.05. Therefore, the shifts in demand that result from their individual increases are not large enough to warrant a change in the Earnings of Lawyers.

7.2.2. Tort Variables

The estimates in column 4 (FE -Year) of Table7 show that the Earnings of Lawyers is strongly correlated with the enactments of Split Recovery Rule, Punitive Damages (Evidence) Rule and Contingency Fee Rule. Except for the positive sign of the Contingency Fee Rule, the findings agree with theory.

➢ **Split Recovery**

The estimates in column 4 of Table 7 show that the enactment of Split Recovery has the highest impact on Earnings of Lawyers with an elasticity of 17.6% at the 1% significance level. This finding also confirms the theory as explained in Chapter 2. Split Recovery is a reform that allows States to collect a portion of the punitive damages awarded to plaintiffs. For instance, in 1998, the Missouri Supreme Court upheld a judgement allowing the State of Missouri to collect 50% of the punitive damages awarded to plaintiffs (White 2002). For states that have enacted Punitive Damages Reform, Split Recovery further decreases the potential awards plaintiffs may receive. This reform will naturally have a larger impact on the demand for lawyers' services although the short run supply remains inelastic. Therefore, Split Recovery Reform shifts the demand curve downward along the inelastic short-run supply curve. This leads to a substantial decrease in the Earnings of Lawyers although the Number of Lawyers may not be affected.

➢ **Punitive Damages (Evidence) Rule**

The estimates show that Punitive Damages (Evidence) Rule is negatively correlated with the Earnings of Lawyers at the 5% significance level. The enactment of this law decreases the Earnings of Lawyers by approximately 10.2%. These findings agree with theory because the law puts some requirements on the plaintiffs to prove that the defendant acted maliciously.

Consequently, the enactment of this law shifts the demand curve for lawyers downward along the short-run supply curve which leads to a considerable decrease in the Earnings of Lawyers.

> **Contingency Fee Rule**

Contrary to expectations, the estimates show that Contingency Fee Rule is positively correlated with the Earnings of Lawyers at the 1% significance level. The enactment of this law leads to a 13.5% increase in the Earnings of Lawyers. This may be because most of the attorney fees are collected before the application of any other rule. For instance in the case of Split Recovery, attorney fees are collected before the collection of any portion of the awards. Since this caps most contingency fees at 30 to 33%, law firms may appoint the best lawyers to cases that have the potential of earning them larger revenues. Finally, there is a possibility for lawyers may find ways to circumvent this rule by charging the plaintiffs for special services or even increasing the hourly rates because of the complexity of the cases. In any case, this reform may lead to an upward shift in the demand curve. This results in higher Earnings of Lawyers.

7.2.3. The Impact of all Torts

Table 8: Impact of all Tort reforms and Total Punitive Damages						
(Elasticities) * p<0.05 ** p< 0.01, ***p< 0.001						
	Number of Lawyers				Earnings of Lawyers	
Non-Tort Variables	FGLS	FGLS	PCSE	PCSE	FE	FE
Number of Lawyers t-1	0.98***	0.984***	0.970***	0.970***	-0.012	-0.0104
L3 AlternativeEarnings	- 0.16***	- 0.164***	-0.155***	- 0.146***	0.132***	0.198***
Real GDP per Cap	0.079***	0.0663***	0.0811***	- 0.078***	0.007	-0.0221
Violent Crime	- 0.012	- 0.00698	-0.0122	-0.009	0.055	0.0802*
Property Crime	- 0.0023	-0.00695	0.0230	- 0.0127	0.047	0.0248
Divorce	- 0.0292*	- 0.0366**	-0.0391*	- 0.04**	-0.042	-0.0453
Number of Firms	0.015	0.0182	0.0151	0.0188	-0.0616	-0.0955
Insurance Losses	0.036***	0.0356***	0.0328**	0.0346***	0.0013	0.0119
Bankruptcy Filings	0.036***	0.0330***	0.0254***	0.0256***	-0.0203	-0.0166
Tort-variables						
Noneconomic	0.29		0.603		-4.945	
TotalDamages	-0.44		0.369		0	
CollateralSource	-0.21		-0.126		44.603	
PeriodicPayment	0.411		0.252		0.612	
ContingencyFee	-0.51		0.334		13.43***	
JointSeveralLiability	-0.90		-0.875		-2.65	
PatientCompensationFund	0.57		-0.186		-3.52	
ComparativeFault	0.14		0.205		0	
PunitiveDamagestotal	-0.57	----	-0.532		-6.29***	
Alltort	---	0.068	----	-0.025	---	-2.092*
State Effect	-0.031	-0.0295	-0.034	-0.0315	----	----
Year Effect	-0.002	-0.04	0.0685	0.0405	0.166	0.062

The results in Table 5, Table 6 and Table 7 show that some individual tort reforms have an impact on the Earnings of Lawyers although there is no evidence that they affect the Number of Lawyers. They distinctly show that Split Recovery and Punitive Damages (Evidence) Rule decrease the Earnings of Lawyers. Since Split Recovery Rule and Punitive Damages (Evidence)

Rule are both additions to Caps on Punitive Damages, I estimated the model with a new variable. The PunitiveDamagesTotal is the sum of all three aspects of Punitive Damages. This variable will capture the total impact of Punitive Damages and all its additional reforms. I also evaluated the impact all tort reforms together. Alltort is a variable that captures the combined impacts of all tort reforms in the state. The results of these estimations are presented in Table 8 in which the first four columns show the estimates of the Number of Lawyers and the last two columns show those of the Earnings of Lawyers.

Based on the FGLS method, Columns 1 and 2 of Table 8 show that there is no evidence that PunitiveDamagesTotal nor Alltort have any effect on the Number of Lawyers. The PCSE estimation results in Columns 3 and 4 also show that neither one of these variables has an impact on the Number of Lawyers. These findings agree with the findings in Table 4 and 5 as there was no evidence that any reform had an impact on the number of Lawyers.

Columns 5 of Table 8 shows the results of the estimations of the Earnings of Lawyers. The findings show that PunitiveDamagesTotal significantly decreases the Earnings of Lawyers at the 1% level. States that enact all three Punitive Damages reforms are likely to see the Earnings of Lawyers reduced by 6.29% although those who enact the Contingency Fee Rule may experience an increase in the Earnings of Lawyers by 13.5%. This decrease in the Earnings of Lawyers is much smaller than the individual impact displayed in Table 7. But one should understand that Split Recovery for instance, is a law that is enacted as part of Punitive Damages laws. Therefore, if a state has caps on Punitive Damages, the enactment of the Split Recovery will further decrease the potential plaintiffs' awards. The results may be similar for the Punitive Damages (evidence) Rule. So these the large impacts these reforms may be inflated by the impact of the existing Caps on Punitive Damages.

Column 6 of Table 8 shows that Alltort significantly decreases the Earnings of Lawyers at the 10% level. States that enact all tort laws are likely to experience a decrease in the Earnings of Lawyers by 2.1%. This finding agree with the fact some reforms such as the Contingency Fee Rule may increase the Earnings of Lawyers although Split Recovery, and Punitive Damages (Evidence) rule decreases the earnings of Lawyers. There is an offsetting effect overall in the market for lawyers.

CHAPTER 8 CRITIQUE AND CONCLUSION

8.1. CRITIQUE

The focus of this paper was to study the impact of tort reforms on the market for lawyers. I evaluated this market by using variables used in prior research. I added the tort variables to the model in order to gage their respective impacts. Although I found significant results, this paper does not address the possibility of the impact of the Number of Lawyers and the Earnings of Lawyers on tort reforms. There is a possibility that lawyers can impact legislation, particularly, tort reforms. One can argue that the number of lawyers, their earnings and whether they are organized in lobbies, can affect legislation. Perhaps future research can address this problem including a variable like the number of state legislators and governors that are businessmen or lawyer.

This paper also considers the population of lawyers homogeneously. Because of specializations within the law profession, this paper fails to address the impact of these law changes on specific types of law practice. For instance, a change in law can have an effect on a specific type of practice by decreasing it. But if these lawyers can practice in another field by accepting the wages offered, they may simply have a decreasing effect on the Earnings of Lawyers but not the Number of Lawyers. Therefore, future research can definitely seek to isolate the impact of law changes on specific types of practices.

8.2. CONCLUSION

The objective of this paper was to evaluate the determinants of the market - supply and demand- for lawyers, including the specific impacts of tort reform. Tort is a wrongful act, not including a breach of contract or trust, that results in injury to another's person, property, reputation, or the like, and for which the injured party is entitled to compensation. These laws

provide a way for plaintiffs to be awarded for damages caused to them by other parties (Individuals, businesses, governments). Since the demand for lawyers in a state depends to some extent on the number of expected recoveries for torts and the expected recovery per lawsuit, I assume that tort reform laws that put caps on awards, as well as other measures that favor defendants, will (1) affect the Number of Lawyers, and (2) affect the Earnings of Lawyers.

I used the basic model established by Pashigian (1975) to develop the relationships between the Number of Lawyers, the Earnings of Lawyers, the Earnings of Alternative Professions, the Real GDP per Capita, the tort reform variables, and a set of other exogenous variables. I used the Feasible Generalized Least Squared as well as the Panel Corrected Standard Error methods to estimate the equation of the Number of Lawyers although I used the Fixed Effect Model to evaluate the equation of the Earnings of Lawyers. Some research, including Freeman (1971) and Pashigian (1975), evaluated the non-tort determinants of the market for lawyers including but not limited to GNP, GNP per Capita, Divorce Rate, number of New Firms, number of Bankruptcy Filed, number of New Cases filed, Insurance Losses per Registered Vehicle and Budget of Federal Regulatory agencies. Except for Browne and Schmit (2008), who evaluated the impact of tort reform on the use of attorneys and claim filings, other studies only addressed the impact of tort reforms on topics that may indirectly affect the market for lawyers. These studies included the impact of tort reform on the frequency of case filings (Lee et al. 1994), the number of claims and claims filings (Browne and Puelz 1996), the size and number of settlements in medical malpractice cases (Avraham 2007), and the number of accidental death rates (Rubin and Shepherd 2007). Although this paper addresses the impacts of non-tort determinants on the market for lawyers, its contribution perhaps is that it is the first, to my knowledge, to establish the direct impacts of tort reform laws on both the Number of Lawyers and the Earnings of Lawyers.

Consistent with theory and prior research, the results show that the Lagged Number of Lawyers is positively correlated with the Number of Lawyers at the 1% significance level although it shows no effect on the Earnings of Lawyers. The 0.969 elasticity of this variable with respect to the Number of Lawyers confirms Pashigian's findings and supports the theory that the Number of Lawyers adjusts slowly to the changes in the market for Lawyers.

Also, consistent with Freeman's findings, I found that Lagged Alternative Earnings is negatively and significantly correlated with the Number of Lawyers at the 1% level with an elasticity of 0.140. This indicates that an increase in opportunities in Alternative Professions three years earlier affects the supply of lawyers as relatively fewer people enroll in law schools in favor of four-year degree professions. This research also found that the three-year Lagged Alternative Earnings increases the Earnings of Lawyers with an elasticity of 0.178. This finding is also in agrees with theory because this is supply side variable.

Additionally, Real GDP per Capita, Divorce Rate, the Amount of Insurance Losses per Registered Vehicle, and the Number of Bankruptcy Filed at the Federal District Courts are significantly correlated with the Number of Lawyers although their impacts are statistically negligible[16]. But I found no evidence that any of these variables have an impact on the Earnings of Lawyers.

Although none of the basic estimations (FGLS and PCSE) revealed a significant impact of tort reform on the Number of Lawyers, combination of independent variables that excluded the Lagged Alternative Earnings show that Punitive Damages Caps negatively affected the number of Lawyers. But this result cannot be reliable because the difference in standard errors exposed the

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[16] Elasticity is less than 0.05.

importance of this variable (Earnings of Alternative Professions) as a determinant of the Number of Lawyers.

To capture the total impact of Punitive Damages as a reform that encompasses Caps on Punitive Damages, Split Recovery and Punitive Damages (Evidence) Rule, I included PunitiveDamagesTotal. A similar variable, Alltort, was included to capture the total impact of all tort reforms. I found no evidence that PunitiveDamagesTotal, nor Alltort have any impacts on the Number of Lawyers. This means that states that have implemented all "three Punitive Damages Reforms," or all tort reforms combined, experienced no change in the Number of Lawyers.

Moreover, I found Split-Recovery Rule and Punitive Damages (Evidence) Rule are significant and negatively correlated with the Earnings of Lawyers. The enactment of the Split Recovery Rule decreases the Earnings of Lawyers by 17.6% although Punitive Damages (Evidence) Rule decreases the Earnings of Lawyers by 10.2%. However, I found that Contingency Fee Rule increases the Earnings of Lawyers by 13.5%. Perhaps, this is because attorneys' fees are usually collected before the application of any existing rule such as the Split recovery Rule. Punitive Damages (Evidence) Rule and Split-Recovery Rule have the largest impacts on the Earnings of Lawyers because they both add new rules to the Caps on Punitive Damages. Split-Recovery, specifically, allows some states to collect between 50 and 75% of Punitive Damages awarded to plaintiffs even though Punitive Damages may already have caps.

Finally, I found that when states pass all three Punitive Damages reforms, the Earnings of Lawyers decrease by 6.29% although States that pass all tort reform only see a decrease in the Earnings of Lawyers by 2.1%. These two results show that in the market for lawyers, individual tort reform may affect the market in one direction or another. However, their total impacts show that they may be offsetting each other.

APPENDIX A

THE STATE OF THE LEGAL PROFESSION IN THE US

A. The Number of Lawyers per Capita

Table 10: Number of Lawyers and U.S GDP per Capita

Year	Number of Lawyers	U.S population (Millions)	GDP per Capita	Real GDP per Capita (2009 dollars)
1940	181,220	132.2	1.4	
1950	221,605	151.3	1.5	14,886
1960	285,933	179.3	1.6	16,938
1970	326,842	203.2	1.6	22,841
1980	574,810	226.5	2.5	28,957
1990	755,694	248.7	3.0	35,941
2000	1,022,462	281.4	3.6	44,721
2010	1,203,097	308.7	3.9	48,074

Sources:
The American Bar Association: National Lawyer Population Survey (Historical Trend in Total National Lawyer Population 1878-2016)
http://www.americanbar.org/content/dam/aba/administrative/market_research/total-national-lawyer-population-1878-2016.authcheckdam.pdfUS Population:
Real GDP /Capita FRED Saint Louis:
https://fred.stlouisfed.org/series/A939RX0Q048SBEA.

Between 1940 and 2010, the numbers of lawyers in the United States increased by more than 6 folds while the population of the United States only increased by 2.3 folds. Thus, the number of lawyers per capita nearly tripled in those 70 years. However, during the period between 1980 and 2010, the number of lawyers per capita increased by a factor of 1.56. This period was also characterized many legal reforms. Many states made changes to the tort laws. During the same period the Real GDP per Capita in the United States increased by a factor of nearly 1.7. As a significant determinant of the demand for lawyers (Pashagian 1977), the growth of the Real GDP per Capita mirrored that of the number of lawyers per capita.

B. Lawyers Demographics.

The statistics described and cited in this section are based on the American Bar Association reports (http://www.americanbar.org/content/dam/aba/administrative/market_research/lawyerdemographics-tables-2016.authcheckdam.pdf).

Although the Number of Lawyers has increased over the last two decades, the legal profession has become a lot more diverse over time. Firstly, the profession has seen an increase in the number of women over the last 10 years. Based on the figures provided by the American Bar Association the percentage of women in legal profession increased from 29% to 31% between 2000 and 2010. In year 2016, this figure stands at 36%. Although the ratio of women has increased over time, the percentage of women that are equity partners stood only at 17.4% in 2015 (NALP bulletin March 2016.http://www.nalp.org/0316research).

Secondly, the profession has also seen an increase in the ratio of its minority population over the last decade. The ratio of African American has increased from 4% in 2000 to 5% in 2010 while that of Hispanic has increased from 3 to 4% over the same decade. Other minorities including Asian Pacific American, not Hispanic American Indian, not Hispanic native Hawaiian and Pacific Islander not Hispanic still represent less than 2% of the overall population of lawyers. Although underrepresented in the total lawyer population, the NALP bulletin of March 2016 shows that all minorities account for 5.6% of equity partners in law firms.

The age distribution in the legal profession has changed over the last two decades. The lawyers' population between the age 45 and 54 years old increased while other age ranges decreased. This ratio went from 16% in 1980 to 28% in 2000. In 2005 the median age of a lawyers was 49 years old. This increased from 45 years old in year 2000 and 39 years old in 1980. This

may be indicative of the experience level of the typical lawyer and can be considered as a potential determinant of the earnings of individual lawyers (Rosen 1992).

The distribution of the lawyer population by practice type has been steady in the United States. In 1980, the private sector employed 68% of all lawyers while the government, private industry, the judiciary and education employed 9, 10, 4 and 1% respectively. Although private practice increased slightly by 1%, the sectors of government, private industry and judiciary each decreased by 1% by year 2000. The sector of Education remained at 1%.

Solo practitioners consistently represented the largest portion (45 to 49%) of private practitioners between 1980 and 2005. The practices with 2 to 5 lawyers represented 15% of all private practitioners in 2005, down from 22% in 1980. Between 1980 and 2005, this ratio decreased from 9 to 6% for practices with 6 to 10 lawyers. Over the same period, this ratio for practices of 11 to 20 lawyers decreased from 7% to 6% while that for practices with 21 to 50 lawyers remained at 6%. Although the ratio for practices of 51 to 100 lawyers decreased from 7% to 4% in the interval, it is important to note that the largest firms (101 of more lawyers) grew as portion of private practitioners from 13% in 1991 to 16% in 2005.

The largest number of law firms was within practices with 2 to 5 lawyers and represented 76% of all law firms in 2005. This was followed by practices with 6 to 10 lawyers representing 13% of the total number of firms. The large law firms (21 or more employees) represented only 5% of the total number of firms although the largest law firms, particularly the firms with 101 or more lawyers, represented 1% of the total number of law firms.

C. The Number of First Year Law Students

Table 11: Legal Education and Admission to Bar

Year	Number of Law Schools	First Year Enrollment	Total J.D Enrollment	Total Law School Enrollment	J.D or LL.B Awarded
1970	146	34,289	78,018	82,041	17,477
1980	171	42,296	119,501	125,397	35,059
1990	175	44,104	125,261	132,433	36,385
2000	183	43,518	125,173	132,464	38,157
2010	200	52,488	147,525	157,298	44,258
Sources: Enrollment and Degrees Awarded 1963-2012 American Bar Association (Section of Legal Education and Admission to the Bar) http://www.americanbar.org/content/dam/aba/administrative/legal_education_and_ad mi ssions_to_the_bar/statistics/enrollment_degrees_awarded.authcheckdam.pdf.					

During the las three decades characterized by the increase in Real GDP per Capita, both the number of law schools and the number of first year students also increased. In the last four decades leading to 2010, the number of law schools increased from 146 to 200 (or a 36%). Particularly, between 1980 and 2010 the number of law schools increased from 171 to 200; this is a 17% increase. During that period, the number of First-year students increased by 24% although the enrollment in law schools increased by 25.4%. However, in the same period, the number of J. D or LL.Bs awarded also increased by approximately 26%. These numbers are consistent with the idea that real GDP may be a determinant of the demand of lawyers. On one hand, the higher demand may have led to higher earnings for lawyers. On the other hand, the increase in the number

of law schools and first year students may have been a response to this increase in the earnings for lawyers. Therefore, the supply of lawyers increased through higher number of JD and LL.Bs.

D. Employment and Salary Trends for New Lawyers

Table 12: Salary Trends for New Lawyers

Employment	Full Time	All	Academic	Business	Judicial Clerkship	Government	Private Practice	Public Interest
92%	82%	25.5	23.2	27.5	21.9	22.5	29.5	17.5
90%	82%	30.6	26.8	32.1	22.9	23	38.3	19.8
87%	71%	26.2	23	28.2	22.3	21.7	32.8	19.2
92%	77%	30.1	23.2	34.8	23.7	23.3	50	20
90%		30.7	23	30.7	23	23.7	43.5	20.5
88%		28.9	21.5	29.8	23.8	23.8	47.7	19.7
Sources: *National Association of Law Placement (Salary Trends for New Lawyers)*. http://www.nalp.org/0115research http://www.nalp.org/1016research								

After law schools, and in most cases the bar exam, lawyers take employment in academic, judicial, government, private and public interest practices. Based on the surveys done by the National Association of Law Placement, the employment of newly graduated lawyers had been high between the 1985 and 2010. In 1985, 91.50 % of newly graduated lawyers were employed and 81.60 % were employed full time. By 1995, this employment rate decreased to 86.70% (70.77% full time) before increasing to 91.50% (77.30% full time) in 2000. The employment rate decreased to 87.60% by 2010. The average annual real full time salary was nearly 25,500 dollars for new lawyers in 1985 (CPI 1986). This salary increased by 20% to nearly 31,000 dollars in 1990. In 1995, the real full time salary had decreased back to nearly 27,000 dollars before increasing to its 1990 level of between 29 and 31,000 dollars. These patterns of employment and salary can attest to the behavior of the supply and demand of lawyers. Between 1990 and 2000 the

legal profession had seen high wages while the periods of low employment rates had seen relatively lower wages.

E. Earnings of Lawyers by Firm Size

Evans and Leighton (1989) found that better educated and more stable workers work in larger firms. Per Bruck and cantor (2008), law firms grew as they competed for top dollar and clients and big profitable projects. In responding to the demand of the clients, these law firms had to compete for talented new graduates although, elite law schools were not adequately responding to this demand. Therefore, the authors noted, that this scarcity created a seller's market for elite new graduates which led to a spiraling starting salaries for those large law firms.

Garoupa and Gomez-Pomar (2008) argued that large law firms hire graduate students from the best law schools as they serve corporate clients in difficult and complex transactions. Although they are perceived as prestigious law firms, they charge high hourly fees leading to high revenues.

F. Earnings of Lawyers by Geography

Table 13: Median Starting Salaries for First Year Associates

Median Starting Salaries for First Year Associates by Firm Size						
Year	**2 to 10**	**11 to 25**	**26 to 50**	**51 to 100**	**101 to 250**	**251 or more**
1995	29,475	29,475	32,750	38,973	38,318	45,850
2000	34,798	34,798	36,538	40,597	43,497	64,086
2005	34,538	34,538	40,933	43,492	46,050	61,400
2010	33,029	33,029	43,579	43,579	48,167	59,635
2014	29,825	29,825	46,053	48,246	46,053	57,018
Sources: *National Association for Law Placement.* http://www.nalp.org/1014research?s=How%20much%20do%20Law%20firms%20pay%20ass ociates%3F.						

Based on the tables provided by the National Association of Law Placement, the salaries of First Year Associates (lawyers) increased between 1995 and 2010 for all firm sizes. During that period, practices with 2 to 25 employees increased their starting salaries by 12% while practices with 26 to 50 employees saw an increase of 33%. Although the starting salaries in firms with 51 to 100 employees grew by 11%, those of the largest firms (101 and more) increased by 25 to 30% between 1995 and 2010. It is important to note that starting salaries are much larger in larger size firms. The differential gap is noticeably clear as one move from smaller size firms to larger size firms. For instance, in 1995 the starting salary for law firms with 26 to 50 employees was $32,750. This was 11% higher than that of firms with 25 or less employees. During the same year, firms with 51 to 250 employees had a starting salary 30 to 32% higher than that of the smaller firms.

However, the starting salary of the largest firms (251 or more) was $45,850. This was 55% greater than the starting salary of the smallest firms (2 to 25).

Table 14: Median Starting Salaries for First Year Associates in Largest Firms

Median Starting Salaries for First Year Associates in Largest Firms				
Year	Chicago	Los Angeles	New York	Washington DC
1995	N/A	45,850	55,675	46,996
2000	68,145	72,495	72,495	66,145
2005	63,958	63,958	63,958	63,958
2010	61,929	66,516	73,397	66,516
2014	66,667	63,596	70,175	69,079
Sources: *National Association for Law Placement http://www.nalp.org/1014research?s=How%20much%20do%20Law%20firm.*				

Heinz et al. (2006) argued that based on the data of "Urban Lawyers," a greater proportion of lawyers in Chicago were dedicating their time to corporate clients. They noted that this phenomenon may be due to the increase in corporate interests in North American society. Firms in the four largest employment markets are in Chicago, Los Angeles, New York and Washington D.C (http://www.nalp.org/1014research). In 2016, these four markets represent 30% of the top 350 largest law firms in the U.S with the city of New York representing 13% (https://www.ilrg.com/nlj250?utf8=%E2%9C%93&q%5Bname_cont%5D=&q%5Boffice_in%5D=&q%5Boffice_state_in%5D=&commit=Search). In those markets, the nominal salaries have consistently increased over the last 20 years (1995-2014). In fact, all the salaries had nominally doubled in Chicago, Los Angeles and Washington DC. However, in New York, the nominal

salaries have not doubled during that period because the median had been considerably higher than those of the other three cities. In 1995 the median starting salary for New York was 21% higher than that of Los Angeles and 18% higher than that of Washington DC (http://www.nalp.org/1014research). However, these salaries were considerably higher than the average for the industry. The starting salary for New York was 2.1 times higher than the average for the industry while Los Angeles and Washington DC were 1.75 and 1.79 times higher than the average industry respectively.

G. Law Firms Revenues

Table 15: Revenues of Offices of Lawyers

Revenues of Offices of Lawyers (Millions)		
Year	Revenues (Millions)	Percentage change
1998	142,495	
1999	151,303	6.2
2000	158,951	5.1
2001	162,958	
2002	170,808	4.8
2003	186,044	8.9
2004	193,499	4
2005	201,717	4.2
2006	212,524	5.4
2007	227,768	5.9
2008	232,770	2.1
2009	226,033	-3
2010	229,082	
2011	237,082	
2012	239,312	
2013	233,576	

Base on the data by the U.S census Bureau, the annual revenues of law firms consistently increased between 1998 and 2012. They have increased by more than 67% over that period from nearly 143 billion dollars to nearly 240 billion dollars in 2012. However, the largest law firms account for a considerable portion of the total law firms' revenues. In 2014 for instance, per Chris Johnson (May 2005), the top 100 firms had a total revenue of 81 billion dollars with an average revenue per lawyer of $871,958 and an average profit per partner of 1.5 million dollars. Based on

Chris Johnson's report, in 2013 the total revenue of the top law firms stood at 77.43 billion dollars which accounted for nearly 33% of the total revenues of the industry in the U.S.

APPENDIX B

TABLES AND FIGURES

Table 1: Description of variables	
Non-tort variables	Description
Number of Lawyers	Dependent variable. The number of lawyers per 100,000 people at time t.
Earnings of Lawyers	Dependent variable. The real earnings of lawyers.
LagNumberLawyers	Number of Lawyers per 100,000 people at time t-1
Earnings Alternative	Earnings of Alternative Professions.
Real GDP per Cap	Real Gross Domestic Product per Capita
Violent crime	Number of violent crime per 100,000 People
Property Crime	Number of property crime per 1000,000 People
Divorce	Number of divorce
Number of Firms	Number of new firms incorporated during the year.
Insurance Losses	Amount of insurance losses per registered vehicle
Bankruptcy Filings	Number of bankruptcy filed at the federal district courts per 100,000 people.
Description of Tort reform variables	
	Definition
Noneconomic	Caps on noneconomic damages awards
PunitiveDamages	Caps on punitive damages awards
TotalDamages	Caps on total damages awards
Split Recovery	Split recovery rule
CollateralSource	Collateral Source Rule
PunitiveEvidence	Punitive damages (evidence) rule
PeriodicPayment	Periodic payment rule
ContingencyFee	Contingency fee rule
JointSeveralLiability	Joint and several liability rule
PatientCompensationFund	Patient compensation fund
ComparativeFault	Comparative fault rule
PunitiveDamagesTotal	Sum of all punitive damages reforms
Alltort	Sum of all tort reforms

Table 2: Summary statistics (non-tort reform variables).

Variable	Obs	Mean	Std. Dev.	Min	Max
number_law~s	860	5.06083	.5588771	3.935303	8.505065
earnings_l~s	861	3.759795	.201705	3.175922	4.29064
alt_earnin~2	867	2.894528	.1153567	2.641918	3.279234
violent_cr~e	867	5.911473	.5063812	4.203382	7.449234
prop_crime	867	8.057749	.2696012	7.329324	8.870244
realgdp_cap	867	3.822602	.2515826	3.363293	5.130741
divorce	782	1.324062	.2485681	.4054651	2.292535
number_firms	816	7.667795	.1819182	7.301538	8.150354
insurance_~s	612	5.496794	.3627028	4.459054	6.712271
bankruptcy~d	867	5.993302	.4651388	4.129815	7.032542

Table 3: Summary statistics (tort reform variables).

Variable	Obs	Mean	Std. Dev.	Min	Max
noneconomi~s	765	.4156863	.4931624	0	1
punitive_d~s	765	.5202614	.4999162	0	1
total_dama~s	765	.1176471	.3224005	0	1
split_reco~y	765	.1346405	.3415625	0	1
collatera_~e	765	.6379085	.4809195	0	1
evidence_p~e	765	.6771242	.4678816	0	1
periodic_p~t	765	.9673203	.8892781	0	2
contingenc~e	765	.3633987	.4812929	0	1
joint_seve~l	765	.7424837	.4375522	0	1
patientcom~d	765	.2470588	.4315834	0	1
comp_fault	765	1.941176	1.037486	0	3

Table 9: Correlation Matrix

	numbe~rs	ear~yers	L3_alt~2	realgd~p	numbe~ms	divorce	violen~e	prop_c~e	insura~s	bankru~d
number_law~s	1.0000									
earnings_l~s	0.5432	1.0000								
L3_alt_ear~2	0.5901	0.6460	1.0000							
realgdp_cap	0.8203	0.5754	0.6850	1.0000						
numberfirms	0.3050	-0.1903	0.1391	0.3660	1.0000					
divorce	-0.4049	-0.3822	-0.4072	-0.4519	-0.1250	1.0000				
violent_cr~e	0.4147	0.4828	0.2576	0.3765	-0.3436	-0.0574	1.0000			
prop_crime	0.1690	0.2125	-0.0054	0.0715	-0.2838	0.2294	0.6362	1.0000		
insurance_~s	0.4227	0.5354	0.5337	0.3387	-0.2035	-0.0138	0.4731	0.1995	1.0000	
bankruptcy~d	-0.2026	0.0032	-0.1303	-0.3608	-0.3877	0.3551	0.0958	0.3092	0.0323	1.0000

Figure 2: Number of Lawyers and real GDP per Capita (log)- All states
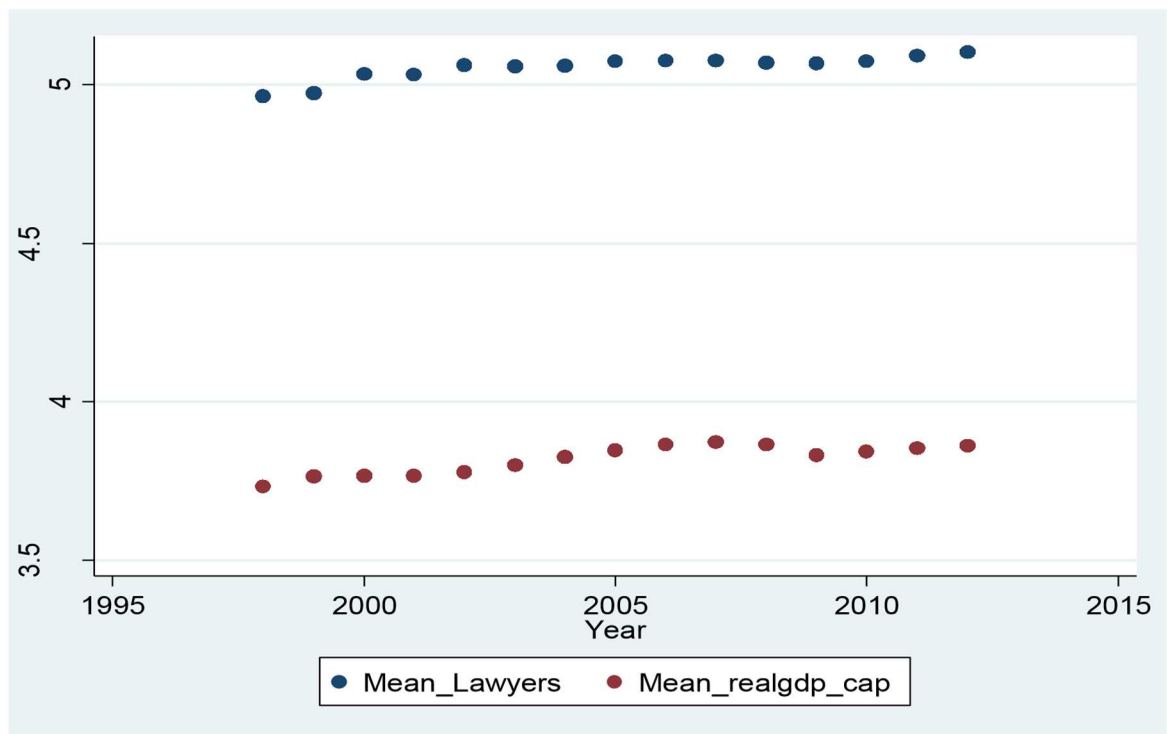
Figure 3: Log Mean Number of Lawyers (All States)
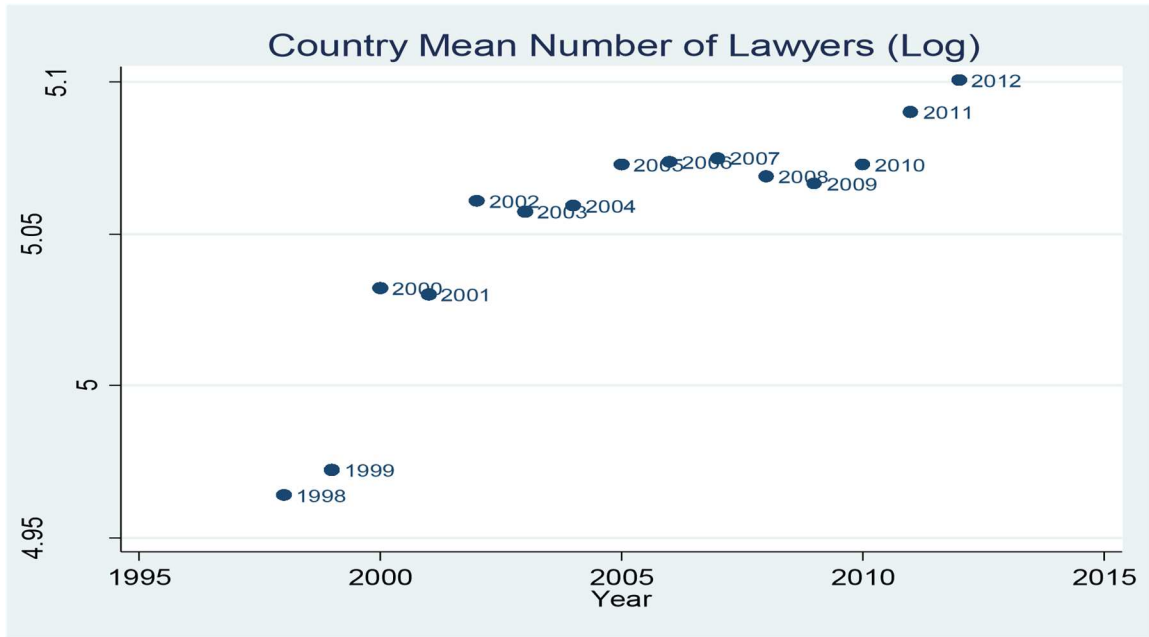

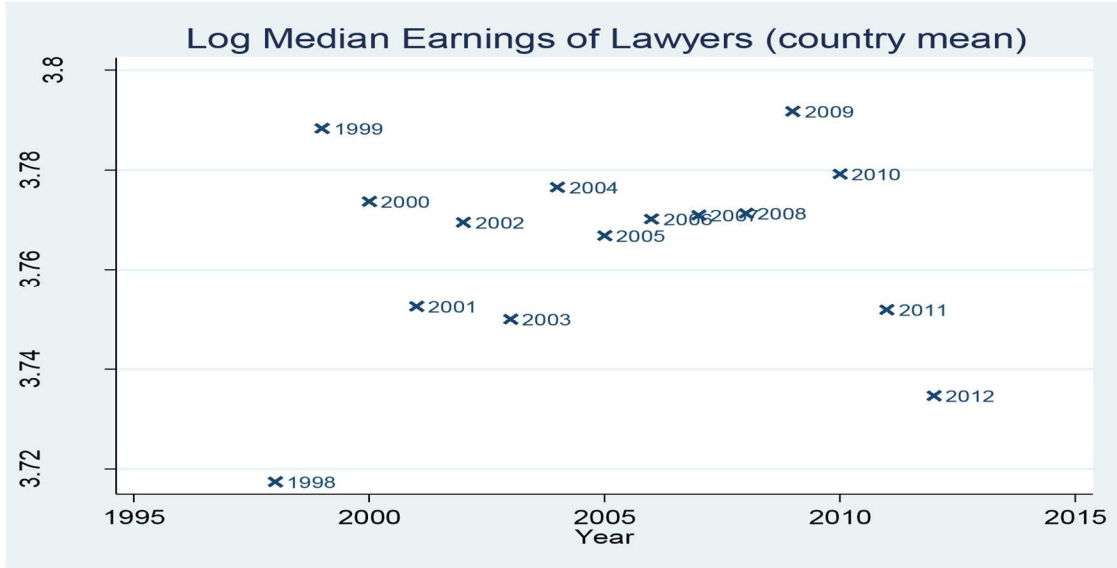**Figure 4: Log Real Median Earnings of Lawyers – All states.**

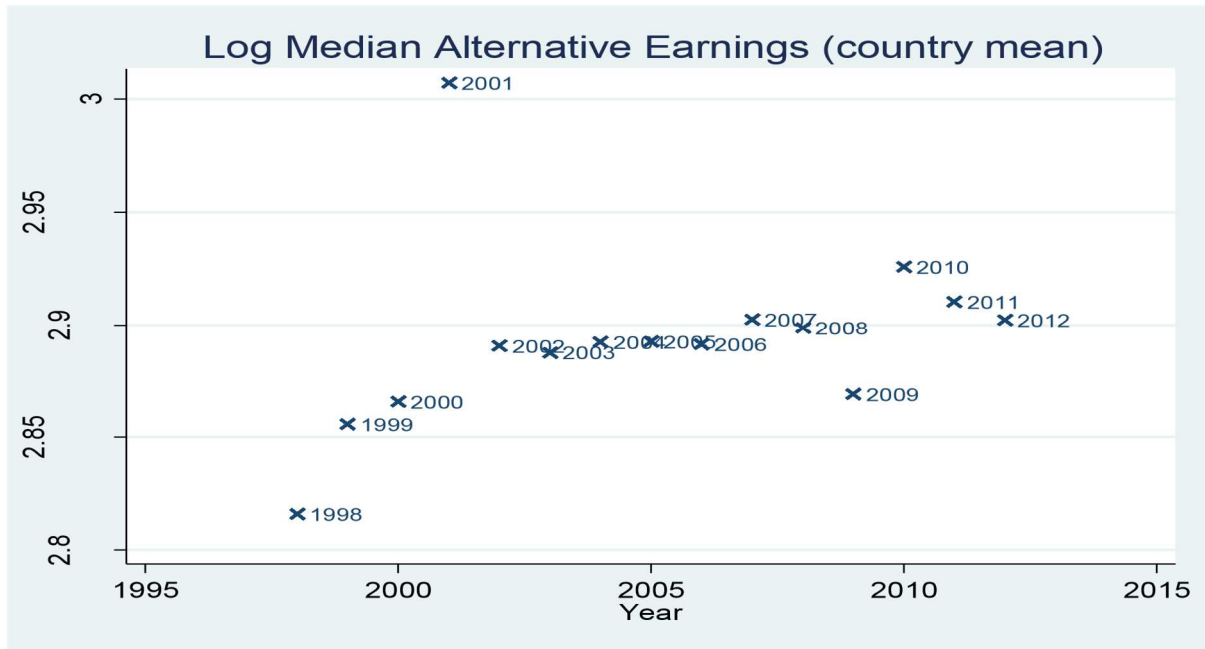**Figure 5: Log Median Earnings of Alternative Professions**

Figure 6: Log Median Earnings of Bachelor degree Holders –All States

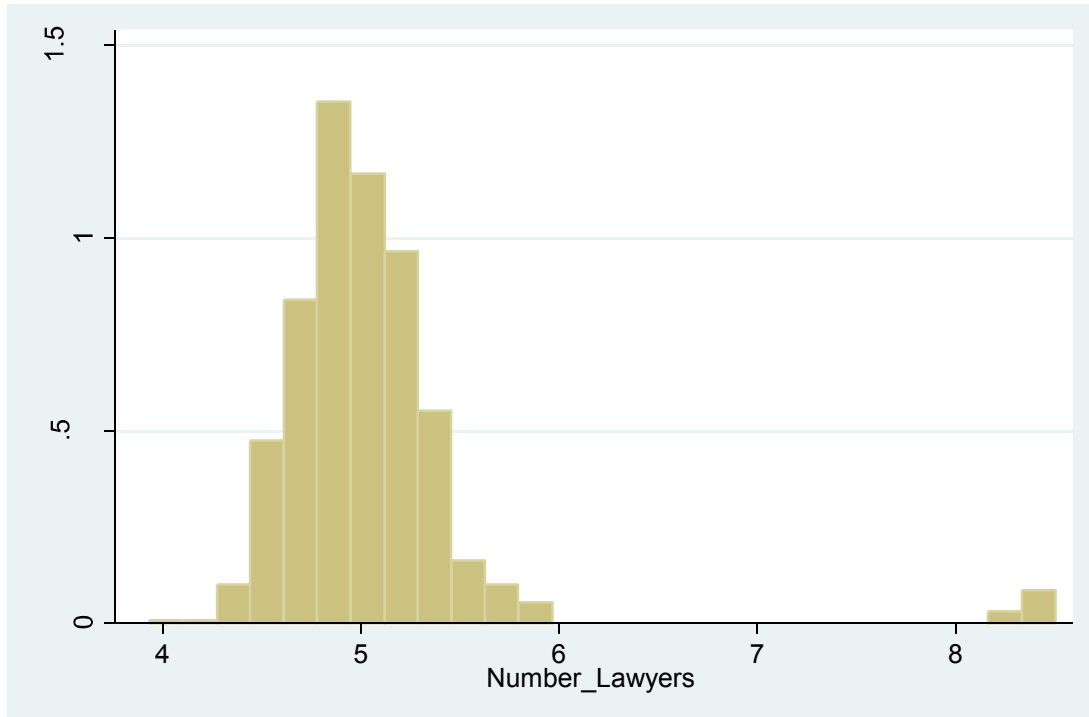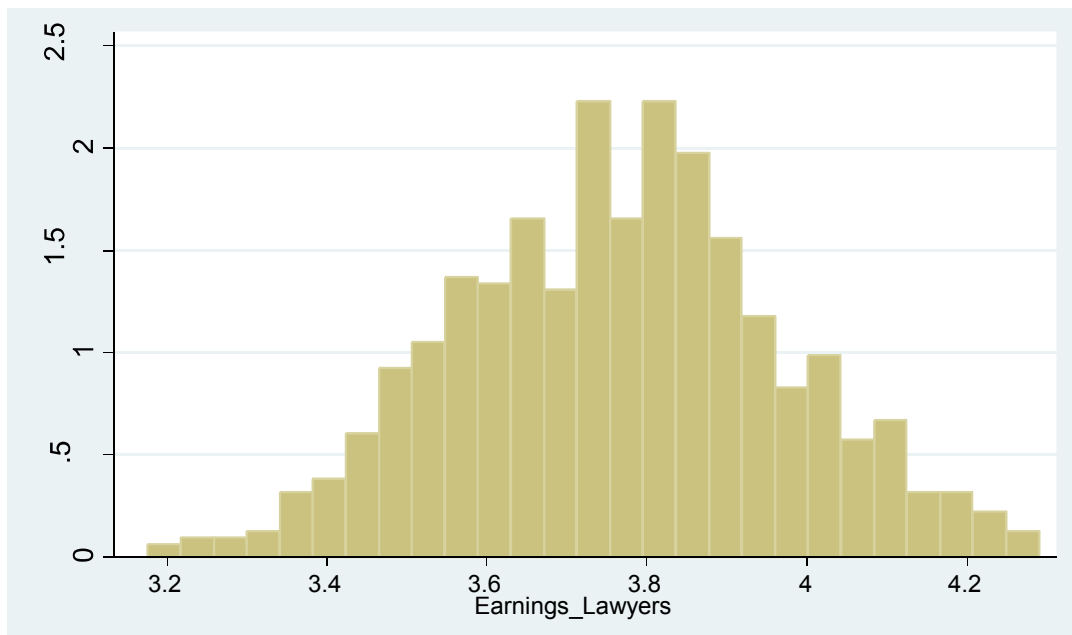**Figure 7: Distribution of the Number of Lawyers – All states.**

Figure 8: Distribution of the Earnings of Lawyers –All states

APPENDIX C

ESTIMATIONS RESULTS

Estimation Results: Number of Lawyers (FGLS).

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. esttab, star ( * 0.10 ** 0.05 *** 0.01 ) compress
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	(1) number_~s	(2) number_~s	(3) number_~s	(4) number_~s	(5) number_~s
Lag1numb~s	0.965*** (77.69)	0.965*** (79.37)	0.978*** (99.69)	0.981*** (107.05)	0.981*** (107.52)
L3_alt_e~2	−0.132** (−2.39)	−0.132** (−2.44)	−0.149*** (−3.31)	−0.157*** (−3.58)	−0.151*** (−3.46)
realgdp_~p	0.0833*** (2.62)	0.0833*** (2.67)	0.0809*** (3.11)	0.0769*** (3.12)	0.0771*** (3.14)
violent_~e	−0.00810 (−0.64)	−0.00810 (−0.65)	−0.00742 (−0.69)	−0.00729 (−0.73)	−0.0116 (−1.11)
prop_crime	0.0147 (0.69)	0.0147 (0.71)	−0.00257 (−0.15)	−0.00398 (−0.25)	−0.000252 (−0.02)
divorce	−0.0371* (−1.80)	−0.0371* (−1.84)	−0.0261 (−1.46)	−0.0263 (−1.56)	−0.0282* (−1.66)
numberfi~s	0.0149 (0.51)	0.0149 (0.52)	0.0209 (0.95)	0.0201 (0.98)	0.0135 (0.60)
insuranc~s	0.0313** (2.26)	0.0313** (2.31)	0.0347*** (3.03)	0.0348*** (3.20)	0.0344*** (3.19)
bankrupt~d	0.0231** (2.32)	0.0231** (2.37)	0.0362*** (4.89)	0.0363*** (5.17)	0.0360*** (4.90)
nonecono~s	0.00357 (0.42)	0.00357 (0.43)	0.00180 (0.25)	0.00158 (0.23)	0.00238 (0.35)
punitive~s	−0.00860 (−1.09)	−0.00860 (−1.12)	−0.00940 (−1.53)	−0.00872 (−1.51)	−0.00860 (−1.50)
total_da~s	0.00802 (0.56)	0.00802 (0.57)	−0.00151 (−0.11)	−0.00107 (−0.08)	−0.00137 (−0.11)
split_re~y	−0.0114 (−0.95)	−0.0114 (−0.97)	−0.00809 (−0.83)	−0.00773 (−0.85)	−0.00569 (−0.61)
collater~e	−0.000459 (−0.05)	−0.000459 (−0.05)	−0.000149 (−0.02)	−0.000344 (−0.04)	−0.00253 (−0.32)
evidence~e	0.00546 (0.54)	0.00546 (0.55)	0.000362 (0.04)	0.000233 (0.03)	−0.00126 (−0.15)
periodic~t	0.00301 (0.65)	0.00301 (0.66)	0.00461 (1.13)	0.00494 (1.29)	0.00404 (1.04)
continge~e	0.00368 (0.39)	0.00368 (0.40)	−0.00560 (−0.68)	−0.00545 (−0.71)	−0.00410 (−0.53)
joint_se~1	−0.00652 (−0.65)	−0.00652 (−0.67)	−0.00753 (−0.96)	−0.00743 (−1.00)	−0.00782 (−1.05)
patientc~d	−0.00387 (−0.40)	−0.00387 (−0.41)	0.00367 (0.49)	0.00287 (0.41)	0.00574 (0.78)
comp_fault	0.000300 (0.07)	0.000300 (0.07)	−0.000668 (−0.21)	−0.000428 (−0.14)	0.000795 (0.26)
year					−0.0000381 (−0.04)
stateid					−0.000289 (−1.24)
_cons	−0.201 (−0.70)	−0.201 (−0.71)	−0.221 (−0.97)	−0.185 (−0.87)	−0.0673 (−0.03)
N	500	500	500	500	500

```
t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01
```

Estimation Results: Number of Lawyers (PCSE)

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. esttab, star ( * 0.10 ** 0.05 *** 0.01 ) compress
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	(1) number_~s	(2) number_~s	(3) number_~s	(4) number_~s	(5) number_~s
Lag1numb~s	0.973*** (87.79)	0.975*** (90.57)	0.965*** (86.66)	0.970*** (93.02)	0.969*** (93.26)
L3_alt_e~2	-0.145*** (-2.77)	-0.149*** (-2.88)	-0.132** (-2.26)	-0.139** (-2.46)	-0.140** (-2.51)
realgdp_~p	0.0752*** (2.62)	0.0735*** (2.63)	0.0833*** (2.71)	0.0787*** (2.71)	0.0788*** (2.71)
violent_~e	-0.00818 (-0.72)	-0.00820 (-0.75)	-0.00810 (-0.63)	-0.00814 (-0.68)	-0.0116 (-0.92)
prop_crime	0.0109 (0.57)	0.00993 (0.54)	0.0147 (0.67)	0.0126 (0.61)	0.0184 (0.86)
divorce	-0.0355* (-1.91)	-0.0352* (-1.95)	-0.0371* (-1.76)	-0.0362* (-1.82)	-0.0376* (-1.88)
numberfi~s	0.0116 (0.45)	0.0109 (0.43)	0.0149 (0.56)	0.0131 (0.53)	0.0151 (0.56)
insuranc~s	0.0302** (2.40)	0.0300** (2.44)	0.0313** (2.21)	0.0306** (2.28)	0.0310** (2.33)
bankrupt~d	0.0233*** (2.59)	0.0234*** (2.66)	0.0231** (2.41)	0.0232** (2.55)	0.0250*** (2.64)
nonecono~s	0.00298 (0.39)	0.00283 (0.39)	0.00357 (0.41)	0.00326 (0.40)	0.00449 (0.54)
punitive~s	-0.00715 (-1.02)	-0.00680 (-1.00)	-0.00860 (-1.06)	-0.00782 (-1.03)	-0.00847 (-1.12)
total_da~s	0.00796 (0.62)	0.00792 (0.64)	0.00802 (0.50)	0.00801 (0.53)	0.00696 (0.47)
split_re~y	-0.0113 (-1.06)	-0.0112 (-1.09)	-0.0114 (-1.05)	-0.0113 (-1.11)	-0.00990 (-0.95)
collater~e	-0.000291 (-0.04)	-0.000254 (-0.03)	-0.000459 (-0.05)	-0.000366 (-0.04)	-0.00149 (-0.16)
evidence~e	0.00500 (0.56)	0.00489 (0.56)	0.00546 (0.55)	0.00521 (0.55)	0.00241 (0.25)
periodic~t	0.00367 (0.89)	0.00383 (0.96)	0.00301 (0.61)	0.00336 (0.73)	0.00256 (0.54)
continge~e	0.00369 (0.44)	0.00370 (0.46)	0.00368 (0.38)	0.00368 (0.41)	0.00391 (0.43)
joint_se~l	-0.00654 (-0.73)	-0.00654 (-0.76)	-0.00652 (-0.67)	-0.00653 (-0.71)	-0.00723 (-0.79)
patientc~d	-0.00493 (-0.57)	-0.00521 (-0.62)	-0.00387 (-0.43)	-0.00442 (-0.52)	-0.00157 (-0.18)
comp_fault	0.000838 (0.22)	0.000955 (0.26)	0.000300 (0.08)	0.000600 (0.16)	0.00141 (0.37)
year					0.000647 (0.53)
stateid					-0.000294 (-1.06)
_cons	-0.115 (-0.45)	-0.0945 (-0.38)	-0.201 (-0.73)	-0.154 (-0.60)	-1.488 (-0.58)
N	500	500	500	500	500

```
t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01
```

Estimation Results: Number of Lawyers (PCSE)

. esttab, star (* 0.10 ** 0.05 *** 0.01) compress

	(1) number_~s	(2) number_~s	(3) number_~s	(4) number_~s	(5) number_~s	(6) number_~s	(7) number_~s	(8) number_~s
Lag1numb~s	0.969*** (93.26)	0.920*** (60.37)	0.985*** (118.32)	0.972*** (100.71)	0.981*** (107.52)	0.942*** (72.02)	0.998*** (138.99)	0.984*** (114.82)
L3_alt_e~2	-0.140** (-2.51)		-0.0769 (-1.56)	-0.130** (-2.31)	-0.151*** (-3.46)		-0.0832** (-2.10)	-0.144*** (-3.31)
realgdp_~p	0.0788*** (2.71)	0.120*** (3.34)		0.0734*** (2.62)	0.0771*** (3.14)	0.103*** (3.50)		0.0713*** (2.98)
violent_~e	-0.0116 (-0.92)	-0.0188 (-1.10)	-0.000543 (-0.04)		-0.0116 (-1.11)	-0.0180 (-1.33)	-0.00164 (-0.16)	
prop_crime	0.0184 (0.86)	0.0303 (1.16)	0.0146 (0.67)	0.00179 (0.11)	-0.000252 (-0.02)	0.0106 (0.52)	-0.00196 (-0.12)	-0.0166 (-1.32)
divorce	-0.0376* (-1.88)	-0.0237 (-1.02)	-0.0395** (-1.97)	-0.0313* (-1.71)	-0.0282* (-1.66)	-0.00611 (-0.31)	-0.0301* (-1.74)	-0.0203 (-1.29)
numberfi~s	0.0151 (0.56)	0.0300 (0.89)	0.0351 (1.32)		0.0135 (0.60)	0.0266 (0.94)	0.0228 (1.03)	
insuranc~s	0.0310** (2.33)	0.0327** (2.42)	0.0234* (1.85)	0.0233** (2.00)	0.0344*** (3.19)	0.0252** (2.15)	0.0237** (2.30)	0.0260*** (2.71)
bankrupt~d	0.0250*** (2.64)	0.0168 (1.30)	0.0186** (2.06)	0.0221** (2.48)	0.0360*** (4.90)	0.0253*** (2.63)	0.0289*** (4.11)	0.0334*** (4.80)
nonecono~s	0.00449 (0.54)	0.0180* (1.71)	-0.000198 (-0.02)	0.00263 (0.33)	0.00238 (0.35)	0.0130 (1.52)	-0.00245 (-0.37)	0.000767 (0.11)
punitive~s	-0.00847 (-1.12)	-0.0196** (-2.02)	-0.00882 (-1.17)	-0.00864 (-1.14)	-0.00860 (-1.50)	-0.0180** (-2.40)	-0.00896 (-1.54)	-0.00950* (-1.65)
total_da~s	0.00696 (0.47)	0.0197 (1.09)	0.0120 (0.83)	0.00933 (0.65)	-0.00137 (-0.11)	0.00842 (0.53)	0.00851 (0.70)	0.00471 (0.39)
split_re~y	-0.00990 (-0.95)	0.0172 (0.90)	-0.00984 (-0.94)	-0.0102 (-0.98)	-0.00569 (-0.61)	0.0143 (1.01)	-0.00400 (-0.43)	-0.00544 (-0.59)
collater~e	-0.00149 (-0.16)	-0.00749 (-0.71)	-0.00309 (-0.33)	-0.000397 (-0.04)	-0.00253 (-0.32)	-0.00277 (-0.31)	-0.00587 (-0.74)	-0.00186 (-0.23)
evidence~e	0.00241 (0.25)	0.0121 (1.11)	0.00514 (0.54)	0.00333 (0.35)	-0.00126 (-0.15)	0.00873 (0.92)	0.00192 (0.23)	0.00104 (0.13)
periodic~t	0.00256 (0.54)	-0.00747 (-1.39)	0.00143 (0.30)	0.00261 (0.54)	0.00404 (1.04)	-0.00597 (-1.26)	0.00300 (0.77)	0.00382 (0.98)
continge~e	0.00391 (0.43)	0.0169 (1.32)	0.00714 (0.79)	0.00314 (0.34)	-0.00410 (-0.53)	0.00670 (0.67)	-0.000591 (-0.08)	-0.00318 (-0.42)
joint_se~l	-0.00723 (-0.79)	-0.00880 (-0.79)	-0.00627 (-0.68)	-0.00612 (-0.67)	-0.00782 (-1.05)	-0.00755 (-0.82)	-0.00643 (-0.85)	-0.00659 (-0.90)
patientc~d	-0.00157 (-0.18)	0.00330 (0.33)	-0.00238 (-0.27)	-0.00340 (-0.40)	0.00574 (0.78)	0.0134 (1.55)	0.00232 (0.32)	0.00350 (0.53)
comp_fault	0.00141 (0.37)	-0.00581 (-1.18)	0.00143 (0.37)	0.00206 (0.54)	0.000795 (0.26)	-0.00531 (-1.32)	0.000961 (0.31)	0.00117 (0.38)
year	0.000647 (0.53)	-0.00228 (-1.60)	0.000994 (0.82)	0.000222 (0.19)	-0.0000381 (-0.04)	-0.000932 (-0.89)	0.000304 (0.33)	-0.000363 (-0.41)
stateid	-0.000294 (-1.06)	-0.000146 (-0.43)	-0.000252 (-0.91)	-0.000219 (-0.83)	-0.000289 (-1.24)	-0.000345 (-1.25)	-0.000266 (-1.15)	-0.000261 (-1.17)
_cons	-1.488 (-0.58)	3.928 (1.32)	-2.255 (-0.88)	-0.430 (-0.18)	-0.0673 (-0.03)	1.338 (0.60)	-0.751 (-0.38)	0.788 (0.43)
N	500	544	500	500	500	544	500	500

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01

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Estimation Results: Earnings of Lawyers (FE)

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. esttab, star ( * 0.10 ** 0.05 *** 0.01 ) compress
```

	(1) earn~yers	(2) earn~yers	(3) earn~yers	(4) earn~yers
Lag1numb~s	0.0428** (2.52)	-0.00815 (-0.22)	-0.00815 (-0.10)	-0.0138 (-0.17)
L3_alt_e~2	0.330*** (4.38)	0.191*** (3.04)	0.191*** (3.90)	0.178*** (3.70)
realgdp_~p	0.198*** (4.54)	0.0488 (0.53)	0.0488 (0.46)	0.00299 (0.02)
violent_~e	-0.00305 (-0.17)	0.0507 (1.53)	0.0507 (0.97)	0.0488 (0.93)
prop_crime	0.0702** (2.42)	0.0398 (0.77)	0.0398 (0.41)	0.0567 (0.60)
divorce	-0.141*** (-5.04)	-0.0421 (-0.81)	-0.0421 (-0.79)	-0.0281 (-0.54)
numberfi~s	-0.364*** (-9.11)	-0.133 (-1.27)	-0.133 (-0.62)	-0.0301 (-0.10)
insuranc~s	0.0669*** (3.53)	-0.00420 (-0.13)	-0.00420 (-0.14)	-0.00623 (-0.20)
bankrupt~d	0.00731 (0.54)	-0.0242* (-1.83)	-0.0242 (-1.53)	-0.0211 (-1.47)
nonecono~s	-0.0301*** (-2.59)	-0.0605** (-2.51)	-0.0605 (-1.40)	-0.0620 (-1.40)
punitive~s	0.00944 (0.88)	0.00230 (0.09)	0.00230 (0.07)	0.000869 (0.02)
total_da~s	0.0686*** (3.47)	0 (.)	0 (.)	0 (.)
split_re~y	0.0275* (1.68)	-0.157*** (-4.47)	-0.157*** (-4.01)	-0.162*** (-4.02)
collater~e	0.0267** (2.20)	0.0715 (1.43)	0.0715 (1.19)	0.0710 (1.18)
evidence~e	0.0406*** (2.95)	-0.0958 (-1.35)	-0.0958* (-1.75)	-0.0970* (-1.75)
periodic~t	0.0142** (2.25)	0.00774 (0.46)	0.00774 (0.45)	0.00812 (0.47)
continge~e	0.0927*** (7.21)	0.139*** (2.96)	0.139*** (6.13)	0.135*** (5.20)
joint_se~l	-0.0550*** (-4.02)	-0.0302 (-1.03)	-0.0302 (-0.89)	-0.0298 (-0.86)
patientc~d	-0.0203 (-1.52)	-0.0511 (-0.88)	-0.0511 (-1.12)	-0.0525 (-1.15)
comp_fault	-0.000658 (-0.11)	0 (.)	0 (.)	0 (.)
year				0.00239 (0.50)
_cons	3.817*** (9.72)	3.739*** (5.14)	3.739*** (3.91)	-1.754 (-0.16)
N	501	501	501	501

```
t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01
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Estimations: Number and Earnings of Lawyers (Total Punitive Damages and Alltorts)

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. esttab, star ( * 0.10 ** 0.05 *** 0.01 ) compress
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	(1) number_~s	(2) number_~s	(3) number_~s	(4) number_~s	(5) earn~yers	(6) earn~yers
Lag1numb~s	0.981*** (107.53)	0.984*** (113.09)	0.970*** (93.30)	0.970*** (95.93)	-0.0120 (-0.15)	-0.0104 (-0.13)
L3_alt_e~2	-0.159*** (-3.76)	-0.164*** (-4.31)	-0.155*** (-2.90)	-0.146*** (-3.01)	0.192*** (3.52)	0.198*** (3.23)
realgdp_~p	0.0786*** (3.21)	0.0663*** (2.95)	0.0811*** (2.80)	0.0780*** (2.89)	0.00727 (0.05)	-0.0221 (-0.16)
violent_~e	-0.0121 (-1.18)	-0.00698 (-0.77)	-0.0122 (-0.98)	-0.00924 (-0.77)	0.0553 (1.10)	0.0802* (1.70)
prop_crime	0.00225 (0.14)	-0.00695 (-0.52)	0.0230 (1.10)	0.0127 (0.66)	0.0477 (0.53)	0.0248 (0.31)
divorce	-0.0292* (-1.73)	-0.0366** (-2.39)	-0.0391* (-1.96)	-0.0396** (-2.09)	-0.0420 (-0.75)	-0.0453 (-0.70)
numberfi~s	0.0151 (0.69)	0.0182 (0.91)	0.0151 (0.57)	0.0188 (0.70)	-0.0616 (-0.19)	-0.0955 (-0.30)
insuranc~s	0.0363*** (3.46)	0.0356*** (3.74)	0.0328** (2.55)	0.0346*** (2.82)	0.00129 (0.04)	0.0119 (0.31)
bankrupt~d	0.0360*** (4.91)	0.0330*** (4.90)	0.0254*** (2.68)	0.0256*** (2.84)	-0.0203 (-1.39)	-0.0166 (-1.13)
nonecono~s	0.00289 (0.45)		0.00602 (0.77)		-0.0483 (-1.04)	
total_da~s	-0.00435 (-0.38)		0.00368 (0.27)		0 (.)	
collater~e	-0.00210 (-0.27)		-0.00126 (-0.13)		0.0450 (1.31)	
periodic~t	0.00411 (1.11)		0.00252 (0.55)		0.00610 (0.37)	
continge~e	-0.00507 (-0.70)		0.00334 (0.38)		0.126*** (4.67)	
joint_se~l	-0.00898 (-1.27)		-0.00871 (-0.99)		-0.0262 (-0.72)	
patientc~d	0.00566 (0.78)		-0.00186 (-0.22)		-0.0346 (-1.06)	
comp_fault	0.00137 (0.46)		0.00205 (0.56)		0 (.)	
TotalPun~e	-0.00566 (-1.62)		-0.00531 (-1.21)		-0.0610*** (-3.15)	
stateid	-0.000306 (-1.34)	-0.000295 (-1.48)	-0.000340 (-1.27)	-0.000315 (-1.33)		
year	-0.0000238 (-0.03)	-0.000404 (-0.46)	0.000685 (0.56)	0.000405 (0.34)	0.00166 (0.33)	0.000624 (0.12)
Alltort		-0.000610 (-0.62)		-0.000247 (-0.19)		-0.0207* (-1.94)
_cons	-0.116 (-0.06)	0.741 (0.40)	-1.574 (-0.61)	-1.007 (-0.40)	-0.0944 (-0.01)	2.370 (0.20)
N	500	500	500	500	501	501

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01

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ABSTRACT

DOES TORT REFORM AFFECT THE MARKET FOR LAWYERS? EVIDENCE FROM THE U.S STATES

by

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May 2017

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Major: Economics

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This paper investigates the determinants of the market for lawyers with a focus on demand variables including tort reform laws. In this study, I used the Feasible Generalized Least Squared method and a Panel Corrected Standard Error method, with year and State identifiers applied to a panel of U.S states, to estimate the determinants of the Number of Lawyers. I also used the Fixed Effect model with year and state identifiers to evaluate the effects of these determinants on the Earnings of Lawyers.

The findings show that the Lagged Number of Lawyers and the Lagged Alternative Earnings are both significant non-tort determinants of the Number of Lawyers. Other non-tort determinants such as Real GDP per Capita, Divorce Rate, the Amount of Insurance Losses per Registered Vehicle, and the Number of Bankruptcy Filed at the Federal District Courts have negligible impacts. I also found evidence that the three year lagged of the Earnings of Alternative Professions is the only non-tort determinant that has a significant increasing impact on the Earnings of Lawyers. Additionally, I found no evidence that any of the tort reforms affect the Number of Lawyers.

However, I found that Split Recovery Rule and Punitive Damages (Evidence) Rule significantly decreased the Earnings of Lawyers although Contingency Fee Rule increased the earnings of Lawyers.

I further investigated the impact of passing all three Punitive Damages reforms and all tort reforms. I found that states that passed all three Punitive Damages reforms or all tort reforms experienced no change in the Number of Lawyers although the Earnings of Lawyers significantly decreased. However, the individual impacts of these reforms seem larger than their combined effects. This may be because Split Recovery and Punitive Damages (Evidence) Rule are picking up the impact of previously implemented Caps on Punitive Damages. Perhaps, different reforms such as Contingency Fee Rule that increases the Earnings of Lawyers, are being offset by other reforms such as the Split Recovery that decreases the Earnings of Lawyers. In any case, the combined negative effects of tort reforms are greater than their combined positive effects on the market for lawyers.

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