

# The Optimum Number of Lawyers and a Radical Proposal for Legal Change

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## Abstract

This is an empirical paper estimating the positive facilitative effects and the negative redistributive effects of lawyers across countries. Facilitative legal actions increase wealth while the redistributive actions reduce wealth

Three datasets covering 27, 33 and 40 countries covering 37 years of economic growth from 1970 through 2007 indicates that there is an economically optimum number of lawyers. Approximately 32% of US lawyers put the US above the economic optimum. United States has more lawyers per capita than all other countries in the sample except for Uruguay and four times the world's average. International data shows a negative linear relationship between lawyers as a percent of lower houses of parliaments but it is statistically insignificant.

The broader policy question that the entire redistributive question raises is the absence of property rights and the rule of law at the group level in the formation of government policies. This vacuum prevents Coasian solutions to the creation of government policies which have redistributive effects. The public purse is a tragedy of the commons for which demand so exceeds supply so that the US has experienced government budget deficits for 54 (?) of the last 60 years. James Madison raised this question of government corruption in Federalist paper number 10. The framers of the American constitution attempted to resolve it via the separation of powers.

The problem is an absence of property rights at the group level. This would suggest legal reform that would recognize that lobbying and all large scale redistributive activity is not in the collective interest of the country. It will take someone smarter than me to figure out this might be done. An endogenous policy impossibility theorem states that it could not be done within the current structure because the existing system is in a power equilibrium.

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## The Optimum Number of Lawyers and a Radical Proposal for Legal Change

Stephen P. Magee

The lawyers of the United States form a party ... which adapts itself with greater flexibility to the exigencies of the time and accommodates itself without resistance to all of the movements of the social body. But this party extends over the whole community and penetrates into all of the classes which compose it; it acts upon the country imperceptibly, but finally fashions it so suit its own purposes. Alexis de Tocqueville (1832)

Among the numerous advantages promised by a well-constructed Union, none deserves to be more accurately developed than its tendency to break and control the violence of factions. ... A pure democracy, can admit no cure for the mischiefs of faction. ... such democracies have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security or the rights of property; and have in general been as short in their lives as violent in their deaths. James Madison, Federalist Paper #10 (178)

First will come the conclusions and a radical proposal for legal change. That will be followed by the empirical evidence for the theory. The final section will present the theory underlying the estimates.

Lawyers create positive facilitative benefits known as property rights and social order. Legal systems not under civilian control generate negative redistributive effects which are the antithesis of their facilitative functions. This negative redistributive activity is called rent seeking, which is investment in transfers which reduce aggregate wealth. Rent seeking has two economic costs: the resources used to secure the transfer and the distortionary effects of the redistributive policies themselves (Sutter, 2002). They exist in equilibrium because the costs of rent seeking are generalized while the benefits are particularized.

There have been centuries of work on political economy, culminating in over a half century of work on public choice in the seminal papers and books by James Buchanan of this university. The insight from that work is that the constitutions of successful countries align private incentives with social ones efficiently. My own work was built on these foundations.

My own work emphasizes the special-interest side of public choice theory. My experience as a White House staff member in the Richard Nixon administration taught me that apparently stupid and inefficient government policies were brilliant and effective wealth-enhancers for the special interests. If one looks long enough, all policies make sense to some group. If they don't, they are

politically inefficient and will disappear a la Gary Becker. My views are closer to the negative end of the public choice spectrum, held down by James Madison's quote above: "A pure democracy can admit no cure for the mischiefs of faction."

If James Madison did not believe in a cure for special interests, what options do we have at this conference to cure the inefficient redistributive-rent seeking elements within our legal system? We must consider several elements.

First, the groups who gain the most from failing institutions will spend the most to block reform. This is a constraint imposed by the Gordian knot of special interest politics. Money creates power and power creates money. It is this mutual attraction between power and money that drives redistributive activity in democracies. Predatory groups will invest in lobbying, redistribution and corruption so long as the benefits exceed the costs. The political recipients require these funds to achieve their own ends, such as winning elections. This contest between organized and disorganized groups is mediated by the membrane of public institutions. The sad fact is that in equilibrium, little can change. (Magee, Brock and Young, 1989)

Second, legal institutions, like all public institutions are flawed by the tragedy of the commons. The tragedy exists because public services are largely free: national defense, roads, highways, public schools, libraries, the federal budget and the right to sue others. As with all free things, they are underprovided. Individuals sue excessively because they do not have to pay the full costs of their imposition on the legal system and the prisoners' dilemma means encourages venue shoppers to gain by being the first to sue. Thus the court system is overly clogged.

A third problem comes from David Ricardo's insight two centuries ago that rents (rates of return above market) accrue to the primary factors of production. Applied to law, lawyers and the legal system are the primary controllers of who owns what. As such, when there are disputes, lawyers have powers as a primary factors of production to determine ownership. Asymmetric information over clients also gives attorneys power to gain a sizable portion of ownership transfers in legal conflict. Plus, bilateral monopoly relationships between opposing counsel in lawsuits and attorney client lock-in generate opportunistic attorney behavior.

Four, institutions age. Mancur Olson wrote that as public institutions age, they get sclerotic like the human body. Through time, there is growing inefficiency, not of the law, which evolves, but of our legal institutions. Institutional perversion takes the form of Stigler's capture theory, in which the system governing the courts comes to be dominated not by the public interest or civilian control but by the economic interests of the legal profession, eg, judges setting legal fees in cases. With sclerosis and capture, rates of return to lawyers rise, entry occurs and an excess supply of lawyers is created. Excessive lawyers mean excessive lawsuits, lobbying for complex regulations and general inefficiency. A Texas statistic is that over 80 percent of the medical malpractice lawsuits filed against physicians come away with zero damages. This paper reports data across countries showing that countries with excessive lawyer densities have slower growth.

Fifth, would limiting the number of lawyers be a solution? This reform that would be favored even by some lawyers. Free marketers occasionally complain to me that the market forces of supply and demand should be allowed to regulate numbers. But the market is not the cause of the

problem. The market simply responds to excess returns caused by a lawyer-dominated bureaucratic legal institution. The result is excessive entry. The real problem is the sclerosis of the institution, not the market for lawyers. In this case, second-best changes would be some of the efficient and rent-seeking reducing reforms discussed at this conference. Given these, these market would adjust and the excess supply of lawyers would be reduced.

#### The Fundamental Flaw in American Law

America's legal system is flawed in that the rule of law does not apply to redistributive political groups. Property rights are almost non-existent at the level of political lobbying groups. The US Corrupt Practices Act of 1934 made it illegal for banks, corporations and labor unions to contribute to political campaigns. Ronald Coase could have predicted that since the benefits so far outweigh the costs, this law and its successors, are just a small transaction cost on the super highway of indirect bank, corporate and union contributions in Washington.

Lobby groups in Washington can take from disorganized voters, taxpayers, and future generations by passing special-interest legislation. The wholesale looting of the public purse in Congress dwarfs individual criminal activity. The problem is that the public purse is a commons which encourages a feeding frenzy by organized lobbies. The result is collective irresponsibility manifested by federal budget deficits for 53 out of the last 60 years. It is said that if US federal tax rates rose to 100 percent and remained there forever and there were no drop in projected future US national income, it would still not cover US future social security obligations.

The federal budget is about \$1.7 trillion annually (call it the US Congress), but even more money is demanded by organized groups than is available. Since a major driver of election success is money, the problem is obvious.

#### Radical Reform

America needs institutional reform to help face its new global economic and political challenges, particularly from Asia. Recall Madison's admonition to "break and control the violence of factions" so that America will not be "as short in our remaining life and violent in our death," as other democracies. Recall that that both ancient Rome and Greece fell partially due to government sclerosis and deficits.

The problem of special interests in America is that the system is bankrupting the country. This is not because of vice but because of an absence of well-defined rights among lobbying groups. The result is inefficient scramble competition for resources.

I leave it to real legal scholars to figure out how this might work. Political economists have worked for nearly a half century on the question of rent seeking so the expertise exists to identify unacceptable behavior in that realm. The problem is in constitutional architecture required to define property rights among groups.

Assume away for a moment the political impossibility of getting a constitutional change to

outlaw redistributive rent seeking. The current system does not work because precisely detailed prohibitions (as in the Corrupt Practices Act of 1934) are so endogenous that imaginative minds can easily skirt them.

The ideal might be a new supreme court for group rights that would exist above the current three branches of government. It would outlaw predatory group economic activity. Unfortunately, all government policies have redistributive effects so the problem will be to define where on the continuum of rent seeking to draw the line between acceptable vs unacceptable activity. The group rights supreme court would have the power to declare as unconstitutional any laws, legal decisions or executive activity obtained which unacceptably benefits some groups at the expense of the rest of the country. This would provide protection to heretofore unorganized groups such as voters and future generations. There would be no direct freedom of speech or lobbying restrictions as those would continue as at present. But, laws passed with unacceptable redistributive consequences would be overturned so that groups would have to anticipate this as they lobbied.

The problem of government deficits would require some reasonable moving average balanced budget formula that would allow for deficit spending in troughs of business cycles that must be made up with surpluses in peaks. This would protect future generations from the current practice of growing deficits.

#### Four Means of Reform

One would be a Constitutional Amendment. Sensible reforms will never be adopted. Corruption will not be stopped by a corrupt system. Constitutional change was made difficult by the founding fathers to protect the country from corruptors. But when the system becomes corrupted, the barriers to amendments are an impediment to progress. The traditional adoption of constitutional amendments requires both houses of Congress proposing and approving it by a 2/3 majority and then 3/4 of the state legislatures approving it. This will never happen.

Number two would be is a "popular amendment," even more remote than the first because it is not mentioned in the Constitution and thus is without force. It was endorsed by James Wilson, a framer of the Constitution, who said in 1787 "...the people may change the constitutions whenever and however they please. This is a right of which no positive institution can ever deprive them."<sup>ii</sup>

A third option would be a voter uprising along the lines of the Tea Party, but with much wider voter appeal. But voters are both short sighted and have short attention spans. But the voter uprising would have to be so complete as to take over 2/3 of both houses of Congress and 3/4 of the state legislatures and get the amendment passed before the Democrats and Republicans woke up. Probability of this is zero.

Option four can be done. Get the piecemeal but realistic and sensible reforms of the type proposed at this conference and find those well-organized economic interests that would benefit

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<sup>ii</sup> US Constitution Online, <http://www.usconstitution.net/constam.html>

sufficiently to push them through the system. Unfortunately, that idea will not work for the reform proposed in this paper.

A final note on the economics of lawsuits. One direct measure of the reduction in wealth is legal income charged in purely redistributive or rent seeking lawsuits. When a redistributive lawsuit transfers wealth from one party to another, typically 30 percent of that transfer is a conversion of wealth into plaintiff lawyer income and assume that 80 percent lawyer income is consumed. Thus, 24 percent of the wealth conversion is extinguished; double that to account for defendant legal costs so that almost half (48 percent) of purely redistributive lawsuit wealth transfers are wealth reducing. The irony is that in periods of high redistributive activity, national income rises by the full amount of the payments to redistributive attorneys.

#### An Older Literature on the effects of lawyers on the economy

The efficiency of a country's legal system is an important determinant of its economic performance. A legal system provides both the positive externality of property rights and social coordination and the negative externality of redistributions through involuntary transfers. The positive facilitative effects of legal systems have been described by Demsetz (1967), Stigler (1970), Kitch (1977) and Posner (1992).

The negative redistributive effects of both rent seeking and legal predation have been explored by Buchanan, Tollison and Tullock (1980), Olson (1982), Brock and Magee (1984), Rowley, Tollison and Tullock (1988) and Tollison and Congleton (1995). We view predatory and rent seeking legal activity behavior as a transaction cost of democracy. Legal systems facilitate greater economic activity because reduced rent seeking lowers the transaction costs of enforcing property rights.

While the positive and negative effects of legal systems have been widely discussed, there have been few attempts to quantify them. Virtually all of the empirical estimates of the economic effects of lawyers and legal systems have found only negative effects. Such efforts include Datta and Nugent (1986), who found a negative relationship between lawyers and growth by regressing the rate of growth of per capita GNP between 1960 and 1980 on the share of each country's lawyers in its national labor force. Laband and Sophocleus (1988) found the same result in a time-series analysis of United States data. Magee, Brock and Young (1989, chp. 8) reported that GNP growth across thirty-four countries in the period 1960-1980 was negatively correlated with the ratio of lawyers to physicians. Courbois (1991) found that the number of lawyers per capita had a negative impact on saving and investment in U.S. households. Murphy, Shleifer and Vishny (1991) showed that cross-national growth rates of real GDP per capita between 1970 and 1985 were negatively related to the country's ratio of college enrollment in law to total college enrollments in 1970.

All of these empirical studies share three problems. They all contain the unacceptable implication that the optimum number of lawyers is zero. With the exception of Murphy, Shleifer and Vishny, none of the estimates are based on a theoretical model. And, with the exception of Magee(1992), none of the early papers estimated both positive and the negative effects.

## Empirical Section

In 1975, the United States had the highest number of lawyers in the world per capita out of 54 countries, with 2.15 lawyers per thousand of population. That compared with a world average at the time of .48 per thousand. The number around 2000 is now at 3.65 lawyers per thousand. America has slipped to second place, having been replaced at the top by Uruguay.

### A Guide to the Exhibits

**Exhibit 1** shows the number of lawyers per thousand of population around 2000. The years vary by country because of data availability. Notice that the US has the second highest lawyer density out of 50 countries while China is last, with Japan next to it. There have been controversies over the number of lawyers in America and whether they have positive or negative impacts. Some of my own work from before the information revolution indicates that they had both positive and negative impacts. The reports of their negative effects were less warmly received in the legal community than elsewhere. The difficulty empirically of finding the two effects in the data is illustrated in **Exhibit 2** - Chart 1, an early scatter diagram of mine from the late 1980s. Without dummies for the rapidly growing Asian countries, some researchers had reported that there were significantly negative relationships between lawyer densities and growth (see the in the chart).

It was somewhat easier in that earlier period to find a negative relationship between growth of GDP per capita and lawyers as a percent of the lower houses of national parliaments in the late 1960s (see Pedersen, 1968).

In **Exhibit 2** - Chart 2, there is a statistically significant negative relationship between of lawyers in parliaments in that data, but only if Japan and Hong Kong were dummied out. Absent that, there is no relationship. I have not succeeded in obtaining lawyers as a percent of contemporary lower houses of Congress to compare with more current data. We will return later to estimating an optimum lawyer curve with more contemporary data at the end. **Chart 3** again shows the difficulty in getting a lawyer optimum in current data.

**Exhibit 3** shows some of my early work on pre-information revolution data that an optimum lawyer curve exists.

**Exhibit 4** is a preview of work that follows showing that the optimum lawyer curve relationship still holds even over the period of the information revolution beginning in earnest around 1980.

**Exhibit 5** shows the tightest relationship (Regression 4 in Appendix 1) between lawyer and lawyer squared densities required to calculate the optimum lawyer curve across countries. The graph is of residuals from a reduced form equation on all variables that explain lawyers and economic growth per capita across countries. Notice the P-values in the right hand column indicating that all causal variables, including instrumented lawyers and lawyers squared, are significant except for GDP per capita in 1970.

**Exhibits 6 and 7** show plots of growth residuals against lawyer densities, both with and without instrumental variable controls for simultaneity. All four charts show a similar pattern both both

the 27 and the 33 country samples. The 33 country sample contains the 27 countries plus 5 Eastern European countries and China.

**Exhibit 8** summarizes the one of six regression equations in Appendix 1 that shows the lowest number of excess US lawyers and the lowest value of the presumed redistributive harm of the legal system to the US economy. Critical results

- 32% of US lawyers are above the world optimum density
- Net, the US Legal system contributed to 34 percentage points of US growth, 1970-2007
  - 42% of US growth from 1970-2007 can be attributed to the US legal system due to the positive facilitative effects of our legal system
  - but US growth was 8 percentage points lower because of negative effects
  - subtracting 8% from 42% yields the net contribution of 34 percentage points
- 2007 US GDP, was 22.5% higher (\$3.16 trillion) because of the US legal system
  - But it was 4% lower (\$565 billion)
- 2007 US wealth was \$12.4 trillion higher because of US legal activity over the 37 years from 1970-2007
  - but US wealth would have been \$2.2 trillion higher in 2007 were it not for the negative redistributive legal activity over the 37 years from 1970-2007

**Exhibit 10** shows how the US legal system stacks up quite positively relative to other countries on most positive dimensions, especially property rights.

**Exhibit 11** contains a series of statistical relationships between lawyers and economic and social variables. The table is a correlation matrix of 31 variables across anywhere from 18 to 109 countries, depending on the variable and data availability. The first seven variables are ones that I have collected or which come from an earlier data archive. Almost all of the other variables come from a dataset from Djankov, et al (2003). This was a study comparing dispute resolution over methods and procedures involving litigants and courts when tenants are evicted in each of the 109 nations for nonpayment of rent. The economic stakes are small but the issue the researchers chose was sufficiently homogeneous across countries to give relatively clean comparisons of cross-national legal system behavior.

Recall that correlation coefficients in this table have no causal implications. We generally do not know whether the causation runs from variable A to B or vice versa – correlations simply tell you whether they tend to move together or in opposite directions and the chance that the relationship is random. The 31 variables are numbered and I will refer to various correlations in one of two ways. A reference like 19-1 would refer to variable 19 (row) vs variable 1 (column) which is legal system consistency vs lawyers per thousand of population around the year 2000. If I refer to the same correlation as C29, that refers to column C and row number 29 on the edges of the sheet. That coefficient in question is  $-.37$ , meaning that a high lawyer density is associated with a less consistent legal system.

The number of observations for each variable are given at the bottom of the columns. The number of observations for a particular coefficient is the minimum of the number of observations for the pair. For example, variable 1 has 49 observations and variable 19 has 65 (page 2 of the



table), so that correlation has 49 observations. Significance levels are given at the bottom of each page of the table. This case is closest to 50, which requires that the correlation be at least .231 ignoring the sign to be significant at the 10 percent level.

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# Exhibits

Exh 1

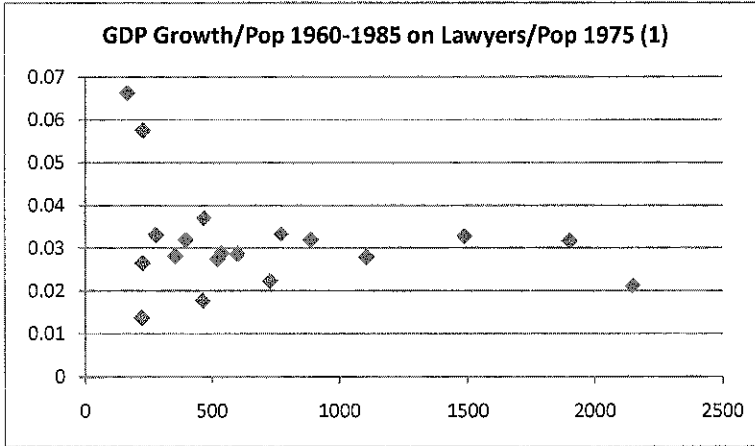
Text Table 1  
Lawyers per 1,000 Population circa 2000

Rank		Lawyers per 1,000 Population	Rank		Lawyers per 1,000 Population
1	Uruguay	4.17	26	Switzerland	1.07
2	USA	3.65	27	Jamaica	0.96
3	Costa Rica	3.63	28	Hungary	0.84
4	Colombia	3.53	29	Thailand	0.84
5	Argentina	3.40	30	Singapore	0.79
6	Spain	3.36	31	Denmark	0.78
7	Greece	2.96	32	Turkey	0.75
8	Israel	2.92	33	Honduras	0.74
9	Dom Republic	2.58	34	Bulgaria	0.71
10	Italy	2.33	35	Netherlands	0.69
11	Canada	2.20	36	Guatemala	0.67
12	Iceland	2.11	37	France	0.64
13	Ireland	2.09	38	Romania	0.58
14	Australia	1.85	39	Malaysia	0.53
15	Cyprus	1.84	40	Austria	0.50
16	Mexico	1.82	41	Sweden	0.41
17	Luxembourg	1.75	42	South Africa	0.40
18	UK	1.75	43	Nigeria	0.37
19	Portugal	1.62	44	Finland	0.30
20	Paraguay	1.54	45	Pakistan	0.30
21	Germany	1.34	46	India	0.25
22	Chile	1.26	47	Poland	0.18
23	Belgium	1.23	48	Bangladesh	0.17
24	Jordan	1.17	49	Japan	0.16
25	Norway	1.16	50	China	0.09

Source: FINAL REGRESSIONS 27 & 33 countries 12-1-2010

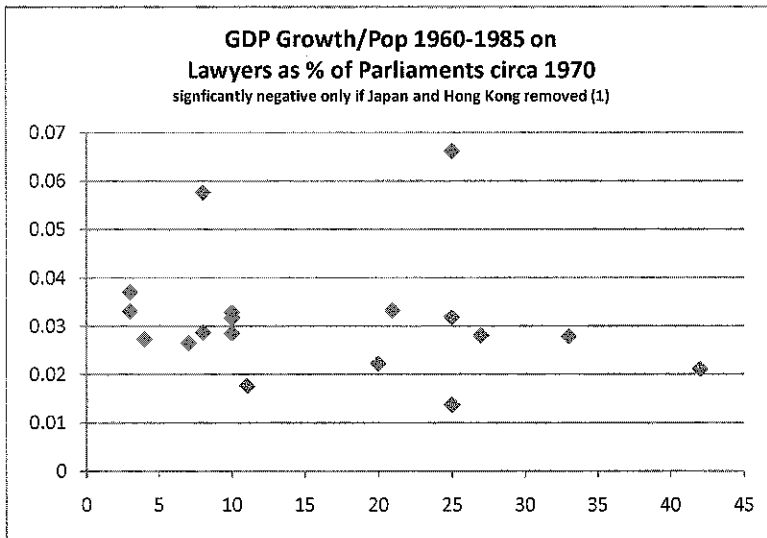
# Exh 2

Chart 1



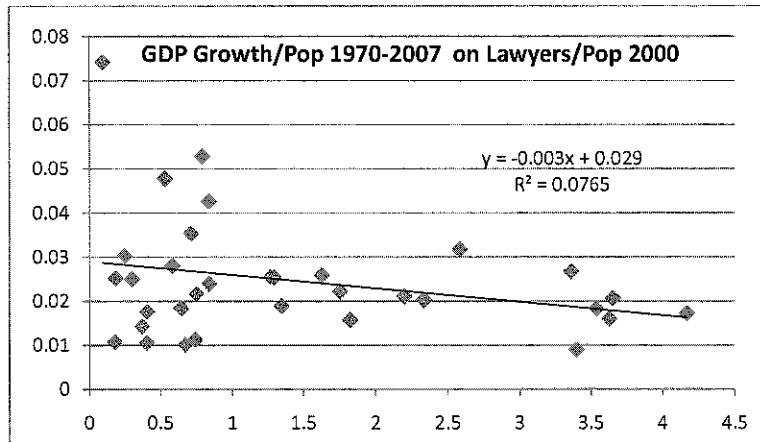
source: (1) OPT LAW LAW % PARL Steve 11-27-2010

Chart 2



source: (1) OPT LAW LAW % PARL Steve 11-27-2010

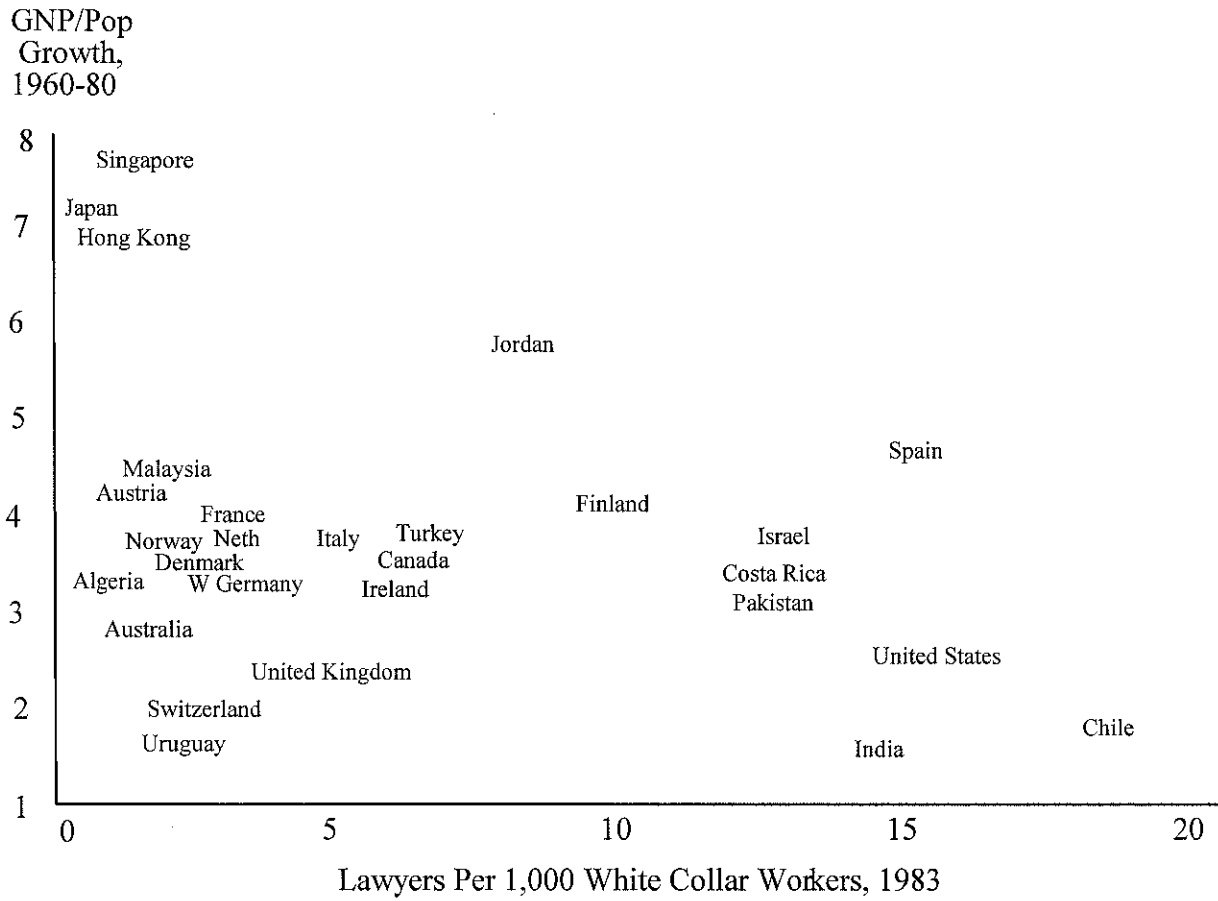
Chart 3



Source: "FIVE OF THE FINAL 7 REGRESSIONS"

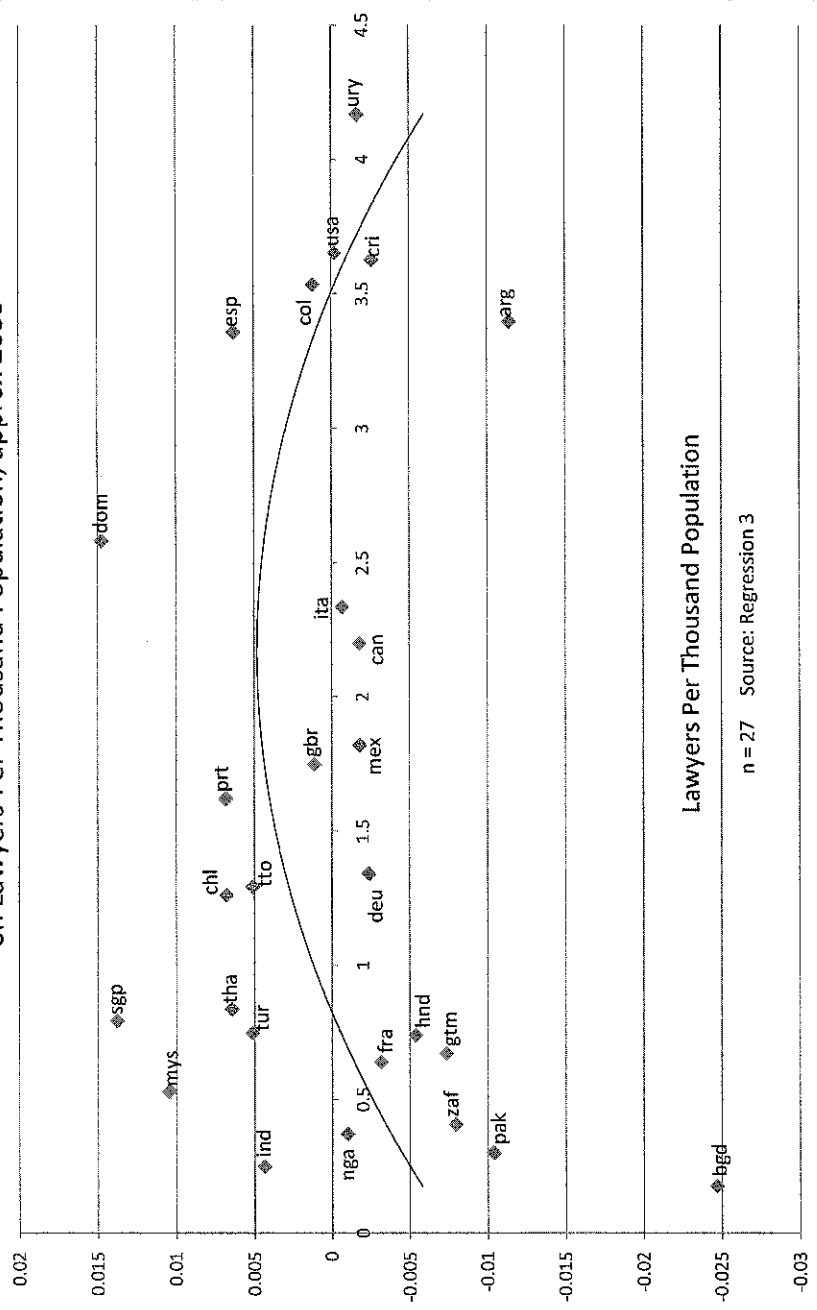
Exh 3

Lawyer Densities and Economic Growth  
Before the Information Revolution



Exh 4

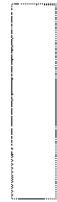
GPD Growth Per Capita Residuals 1970-2007  
on Lawyers Per Thousand Population, approx 2000



Lawyers Per Thousand Population

n = 27 Source: Regression 3

- arg Argentina
- bgd Bangladesh
- can Canada
- chl Chile
- col Colombia
- cri Costa Rica
- deu Germany
- dom Dom Rep
- esp Spain
- fra France
- gbr UK
- gtm Guatemala
- hnd Honduras
- ind India
- ita Italy
- mex Mexico
- mys Malaysia
- nga Nigeria
- pak Pakistan
- prt Portugal
- sgp Singapore
- tha Thailand
- tto Trinidad
- tur Turkey
- ury Uruguay
- usa United States
- zaf South Africa





# Exh 5

## 33 Country Regression Results Explaining GDP Growth per Capita, 1970-2007 Related to Lawyers

Structural Equation Results for Growth 1970-2007 on Instrumented L, L^2 and Exogenous Drivers of Growth

### Structural Equation Explaining Growth

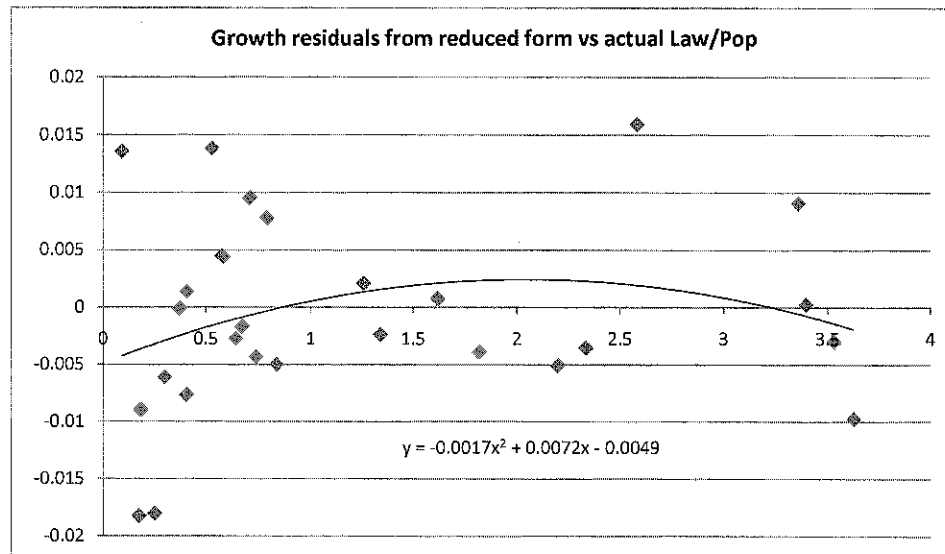
#### SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.8
R Square	0.6401
Adjusted R Square	0.557
Standard Error	0.009
Observations	33

#### ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	6	0.0038	0.0006	7.7057	8E-05
Residual	26	0.0021	8E-05		
Total	32	0.0059			

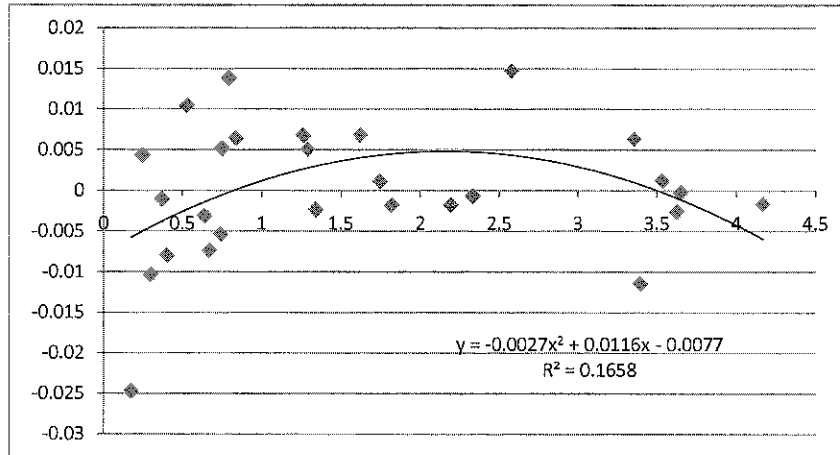
	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-0.016	0.0123	-1.328	0.1959
Predicted L/POP	0.0683	0.0231	2.9532	0.0066
Predicted L/POP^2	-0.018	0.0062	-2.921	0.0071
GDP per capita 70	-5E-07	4E-07	-1.115	0.2749
ASIAN	0.0201	0.0064	3.1365	0.0042
EASTERN EUROPE	0.0132	0.0065	2.05	0.0506
pop 1970	6E-08	2E-08	3.8892	0.0006



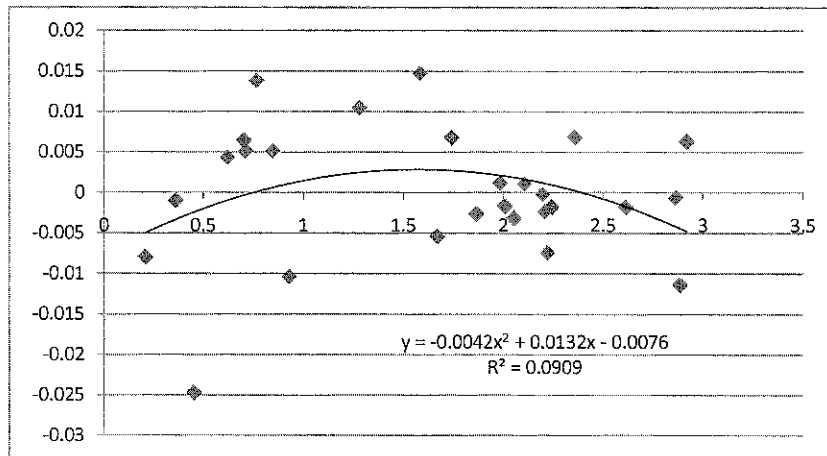
# Exh 6

## Plots of Growth Residuals 1970-2007 with and Without Instruments for Law/Pop 2000

### 27 WITHOUT INSTRUMENTS



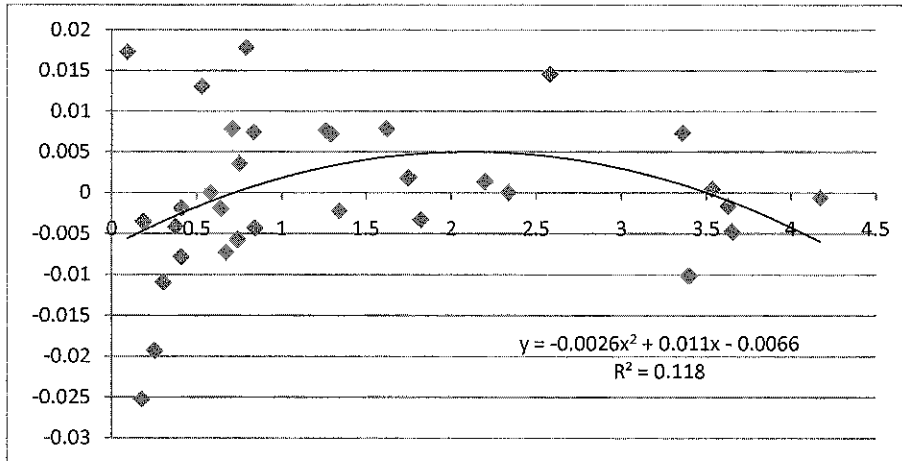
### 27 WITH INSTRUMENTS



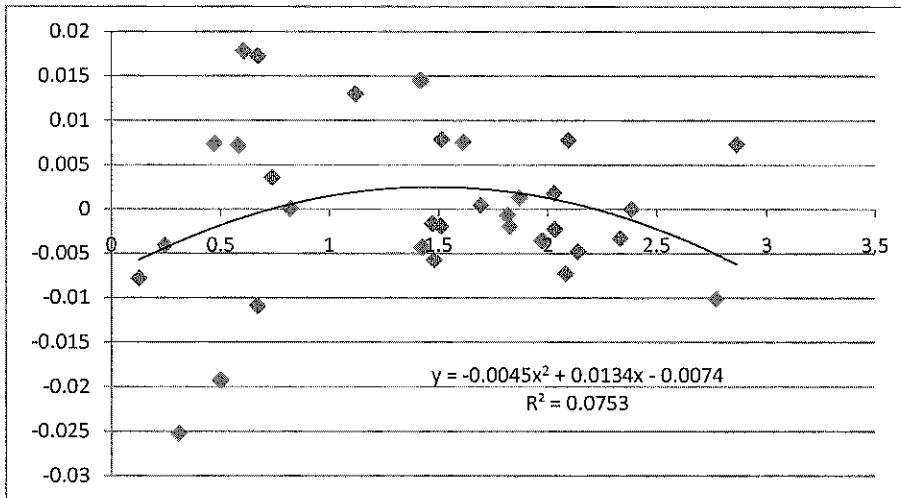
# Exh 7

## Plots of Growth Residuals 1970-2007 with and Without Instruments for Law/Pop 2000

### 33 WITHOUT INSTRUMENTS



### 33 WITH INSTRUMENTS



Exh 8

## Summary of the Effects of American Law on the US Economy Based on Growth, 1970-2007

Results Here Based on Regression 1 from the Summary Table

n = 40 countries

### PERCENT OF US LAWYERS ABOVE THE OPTIMUM

$\frac{-(US-Optimum)}{US}$  (G2-C)/G2 **32%**

### Effects of lawyers

NEG: US resid minus opt resid H -0.001625  
POS: resid at opt minus resid at constant I 0.010625

### TOTAL FACTORS DRIVING GROWTH 1970-2007

OTHER FACTORS **66%**  
POS as % of total growth N % of R S **42%**  
NEG % of total growth M of of R T **-8%**

### LAW PLUSSES AND MINUSES FROM US GDP 2007 BASED ON LAST 37 YEARS IN %

(this is lower than the growth percentages because of the size of the US economy before 1970)

NEG % of GDP in 2007 M % of Q U **4.0%**  
POS % of GDP in 2007 N % of Q V **22.5%**

### LAW PLUSSES AND MINUSES FROM US GDP 2007 BASED ON LAST 37 YEARS IN \$

NEG \$ in 2007 in billions U times \$14,062 W **\$565 billion**  
POS \$ in 2007 in billions V times \$14,062 X **\$3,164 billion**

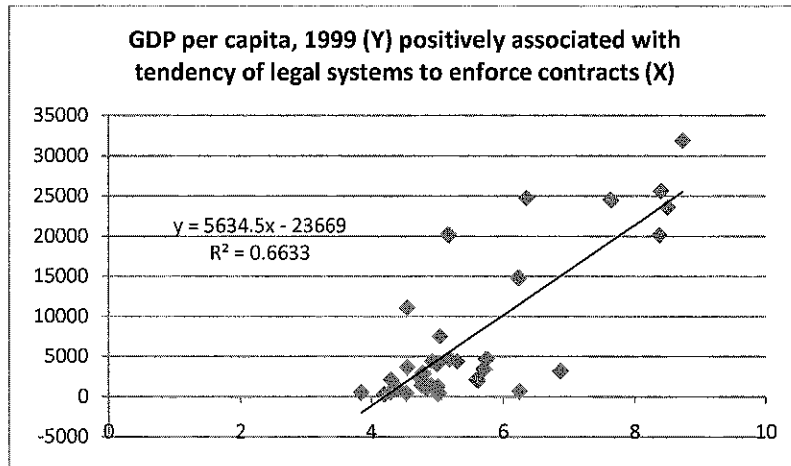
### LAW PLUSSES AND MINUSES FROM US WEALTH IN 2009 BASED ON LAST 37 YEARS IN \$

NEG \$ in 2009 in trillions U\*\$55 trillion Y **\$2.2 trillion**  
POS \$ in 2009 in trillions V\*\$55 trillion Z **\$12.4 trillion**

US household wealth \$55 trill 2009 [http://en.wikipedia.org/wiki/Wealth\\_in\\_the\\_United\\_States](http://en.wikipedia.org/wiki/Wealth_in_the_United_States)

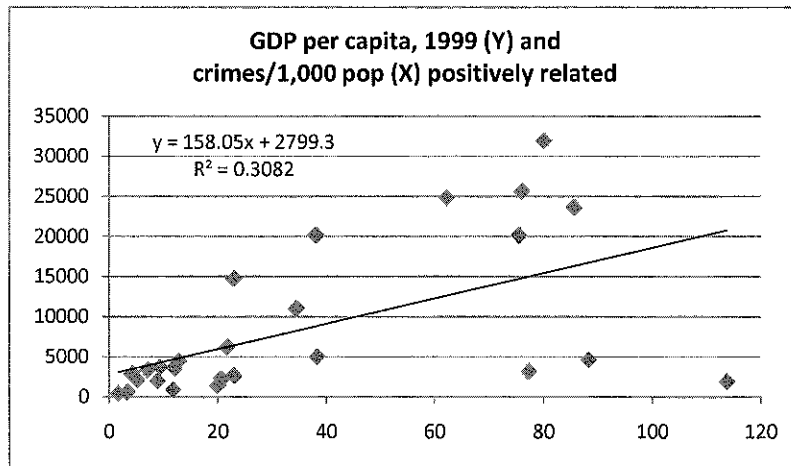
# Exh 9

Chart 4



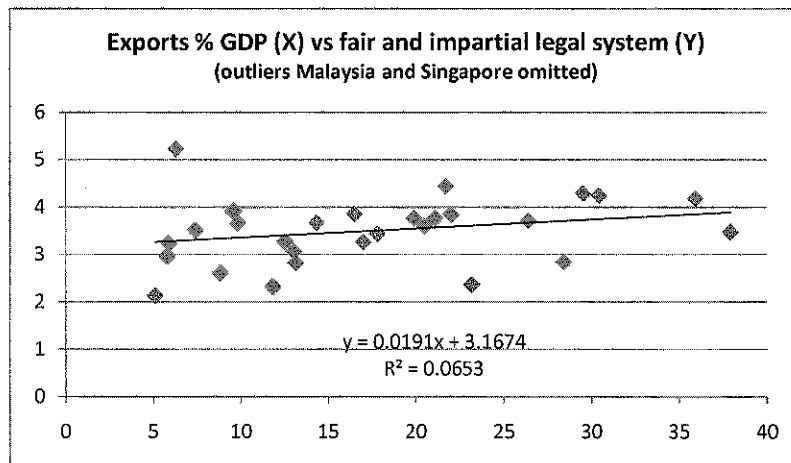
Source: OPTIMUM 5 SCATTERPLOTS DEVRIM 12-1-2010 (2)

Chart 5



Source: OPTIMUM 5 SCATTERPLOTS DEVRIM 12-1-2010 (2)

Chart 6



Source: OPTIMUM 5 SCATTERPLOTS DEVRIM 12-1-2010 (2)

Exh 10

	A	B	C	D	E	F	G	H
1	<b>Summary of US Ranking on Key Variables Relative to the Other Countries</b>							
2								
3		Except for numeric data, higher values are associated with the statement in the Variable Names being true						
4								
5	Variable #	Variable Name	Countries with a Lower Value than the US	Total Number of countries with nonzero values	US percentile	US value of the Variable	Average Value of the Variable	Comments
6								
7	A	B	C	D	E	F	G	H
8								
9	1	lawyers/pop 2000	47	49	96	3.65	1.4	
10	2	lawyers % congress	17	18	94	42.00	15.4	
11	3	growth income/pop	22	50	44	0.02	0.0	
12	4	gdp per capita	103	109	94	31,910	9,447	
13	5	income of top 20%	16	28	57	41.9	43.05	
14	6	exports % GDP	4	48	8	7.4	27.34	
15	7	freedom index (low is freer)	2	41	95	1.9	2.68	
16	8	govt % gdp	22	49	45	15.88	16.58	
17	9	crimes/1,000 pop	39	46	85	80.1	38.38	
18	11	formalism index	23	109	21	2.62	3.53	
19	12	loser pay	see comments	109	bottom 44%	0	0.55	44.44%=0
20	13	contracts enforced	50	52	96	8.73	6.07	
21	14	not corrupt	70	86	81	8.63	6.24	
22	15	law & order high	89	90	99	10	6.96	
23	16	fair impartial	32	65	49	3.51	3.43	
24	17	honest system	37	65	57	3.66	3.35	
25	18	expensive high	10	65	15	2.51	3.07	
26	19	consistent	35	65	54	3.12	3.13	
27	20	confidence in system	45	65	69	4.15	3.79	
28	21	common law	see comments	109	top 39%	1	0.39	61.11%=0
29	22	latitude	72	109	66	0.42	0.33	
30	23	high ethnic fractions	60	101	59	0.49	0.39	
31	24	school avg years	96	97	99	12.25	6.96	
32	25	justify complaint	see comments	109		0	0.5	48.15%=0
33	26	justify judgment	see comments	109		0	0.8	22.22%=0
34	27	law not equity decisions	see comments	109		1	0.6	37.04%=0
35	28	Q by judge only	see comments	109		0	0.2	84.26%=0
36	29	mandatory conciliation	see comments	109		0	0.1	92.59%=0
37	30	dispute duration in days	5	109	5	17	122.3	
38	31	dispute duration total	6	109	6	54	234.1	

Exh 11 (p. 1 of 2)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1		Correlation Matrix of Law and Economics Variables for Approximately 109 Countries													
2		if the description is true for a country, the variable has a higher value													
3	<b>Var #</b>	page 1 of 2													
4															
5		1	2	3	4	5	6	7	8	9	10	11	12	13	
6															
7	1	1.00													
8	2	0.52	1.00												
9	3	-0.08	-0.01	1.00											
10	4	0.05	-0.36	0.12	1.00										
11															
12	5	0.21	0.35	0.05	-0.54	1.00									
13	6	-0.24	-0.26	0.59	0.28	0.23	1.00								
14	7	-0.05	0.09	-0.46	-0.79	0.02	-0.60	1.00							
15	8	0.01	-0.41	0.01	0.54	-0.50	0.10	-0.35	1.00						
16															
17	9	-0.08	-0.15	-0.29	0.48	-0.69	-0.15	-0.14	0.31	1.00					
18	10	0.05	0.22	0.31	-0.50	0.16	0.16	0.23	-0.36	-0.93	1.00				
19	11	0.30	-0.38	-0.03	-0.36	0.32	-0.48	0.47	-0.24	-0.24	0.12	1.00			
20	12	-0.03	-0.40	0.16	-0.16	0.08	-0.19	0.03	-0.06	-0.16	0.19	0.32	1.00		
21															
22	13	0.02	-0.22	-0.05	0.90	-0.50	0.28	-0.75	0.51	0.65	-0.63	-0.59	-0.10	1.00	
23	14	0.02	-0.39	0.08	0.79	-0.50	0.29	-0.69	0.62	0.58	-0.61	-0.45	-0.12	0.89	
24	15	0.01	-0.20	0.22	0.69	-0.54	0.26	-0.68	0.47	0.45	-0.48	-0.28	0.00	0.68	
25	16	-0.37	-0.02	0.48	0.23	-0.10	0.51	-0.33	0.15	0.24	-0.17	-0.56	-0.28	0.46	
26															
27	17	-0.10	-0.21	0.33	0.37	-0.20	0.43	-0.42	0.15	0.36	-0.32	-0.49	-0.29	0.61	
28	18	-0.18	0.24	0.10	-0.29	0.48	0.24	0.28	-0.43	-0.34	0.32	-0.17	-0.15	-0.04	
29	19	-0.37	0.19	0.41	0.20	-0.06	0.53	-0.28	-0.04	0.19	-0.15	-0.42	-0.27	0.46	
30	20	-0.08	0.29	0.46	0.23	0.25	0.43	-0.32	-0.17	0.24	-0.10	-0.24	-0.33	0.37	
31															
32	21	-0.09	0.51	0.12	-0.02	0.09	0.34	-0.21	-0.19	0.03	0.08	-0.57	-0.31	0.19	
33	22	-0.08	-0.30	-0.04	0.51	-0.76	-0.12	-0.31	0.57	0.42	-0.56	-0.06	0.08	0.60	
34	23	0.02	0.72	-0.04	-0.35	0.38	-0.05	0.25	-0.29	-0.17	0.29	0.02	-0.15	-0.32	
35	24	0.12	-0.11	0.07	0.61	-0.44	0.23	-0.71	0.53	0.43	-0.51	-0.26	-0.02	0.77	
36															
37	25	0.21	0.03	-0.02	-0.21	0.07	-0.36	0.48	-0.14	-0.11	0.06	0.65	0.19	-0.38	
38	26	0.14	-0.53	-0.04	-0.21	0.01	-0.44	0.42	-0.12	-0.22	0.17	0.55	0.47	-0.47	
39	27	-0.04	-0.15	-0.19	-0.06	0.05	-0.48	0.25	0.05	-0.21	0.06	0.38	0.29	0.07	
40	28	-0.11	-0.18	0.13	0.08	0.00	0.13	-0.26	0.04	0.05	-0.11	0.22	0.24	-0.01	
41															
42	29	0.08	#DIV/0!	0.28	-0.02	0.27	0.26	-0.11	-0.08	-0.13	0.16	0.12	-0.03	-0.11	
43	30	-0.03	0.04	0.00	-0.11	0.10	-0.28	0.18	0.08	-0.08	-0.05	0.33	0.12	-0.31	
44	31	0.15	0.04	0.02	-0.11	0.22	-0.33	0.23	0.02	-0.15	0.01	0.39	0.17	-0.34	
45															
46	number of observations	49	18	50	109	28	48	41	49	46	46	109	109	52	
47															
48		Two tail significance levels for Pearson correlation coefficients at the 10% level: 20 obs (.36); 30 obs (.296); 50 obs (.231); 70 obs (.195) and 100 obs (.164)													

lawyers/pop 2000  
 econ growth 1970-07  
 lawyers % congress  
 gdp per capita 1999  
 income of top 20%  
 exports % GDP  
 freedom index  
 gov't % gdp  
 crimes/1,000 pop  
 crime rank 1-41  
 formalism index  
 loser pay  
 contracts enforced  
 not corrupt  
 law & order high  
 fair impartial  
 honest system  
 legal costs cheap  
 consistent  
 confidence in system  
 common law  
 latitude  
 high ethnic fractions  
 school avg years  
 justify complaint  
 justify judgment  
 law not equity based  
 Q by judge only  
 mand conciliation  
 trial duration long  
 total duration long  
 number of observations

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Correlation Matrix of Law and Economics Variables for Approximately 109 Countries																			
2	if the description is true for a country, the variable has a higher value																			
3	Variable																			
4																				
5		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
6																				
7																				
8	not corrupt	1.00																		
9	law & order high	0.69	1.00																	
10	fair impartial	0.38	0.35	1.00																
11																				
12	honest system	0.52	0.41	0.93	1.00															
13	legal costs cheap	-0.05	-0.08	0.49	0.47	1.00														
14	consistent	0.42	0.35	0.90	0.91	0.60	1.00													
15	confidence in system	0.31	0.20	0.68	0.72	0.35	0.74	1.00												
16																				
17	common law	0.01	0.01	0.53	0.44	0.21	0.40	0.28	1.00											
18	latitude	0.68	0.62	0.01	0.12	-0.09	0.07	-0.08	-0.36	1.00										
19	high ethnic fractions	-0.38	-0.37	-0.12	-0.25	-0.06	-0.23	-0.18	0.26	-0.47	1.00									
20	school avg years	0.71	0.56	-0.03	0.05	-0.19	-0.02	0.05	-0.14	0.67	-0.42	1.00								
21																				
22	justify complaint	-0.27	-0.15	-0.31	-0.28	-0.21	-0.23	-0.08	-0.44	0.00	-0.08	-0.21	1.00							
23	justify judgment	-0.28	-0.09	-0.52	-0.55	-0.19	-0.54	-0.47	-0.46	0.07	-0.01	-0.23	0.30	1.00						
24	law not equity based	0.06	-0.08	-0.08	-0.02	-0.12	-0.03	-0.04	-0.20	0.18	-0.21	0.09	0.15	0.21	1.00					
25	Q by judge only	0.01	0.01	-0.20	-0.17	-0.09	-0.16	-0.26	-0.24	0.05	0.00	-0.03	0.11	0.11	0.12	1.00				
26																				
27	mand conciliation	-0.07	-0.10	0.15	0.09	0.17	0.13	0.18	-0.01	-0.08	0.12	-0.03	-0.01	-0.01	-0.07	0.27	1.00			
28	trial duration long	-0.14	-0.02	-0.17	-0.16	-0.39	-0.12	-0.16	-0.23	0.09	-0.08	-0.10	0.30	0.28	0.08	-0.02	-0.07	1.00		
29	total duration long	-0.14	-0.06	-0.21	-0.19	-0.35	-0.15	-0.19	-0.26	0.11	-0.05	-0.08	0.36	0.33	0.14	0.02	-0.10	0.92	1.00	
30																				
31	number of observations	86	90	65	65	65	65	65	109	109	101	97	109	109	109	109	109	109	109	
32																				
33																				
34																				
35																				

not corrupt  
law & order high  
fair impartial  
honest system  
legal costs cheap  
consistent  
confidence in system  
common law  
latitude  
high ethnic fractions  
school avg years  
justify complaint  
justify judgment  
law not equity based  
Q by judge only  
mand conciliation  
trial duration long  
total duration long  
number of observations

Two tail significance levels for Pearson correlation coefficients at the 10% level: 30 obs (.296); 50 obs (.231); 70 obs (.195) and 100 obs (.164)

Data Source for some of the law variables: Data underlying "Courts" (with S. Djankov, R. La Porta, and F. Lopez-de-Silanes), Quarterly Journal of Economics, May, 2003.





# Appendix 2

## 33 Country Regression Results Explaining GDP Growth per Capita, 1970-2007 Related to Lawyers Structural Equation Results for Growth 1970-2007 on Instrumented L, L^2 and Exogenous Drivers of Growth

### Structural Equation Explaining Growth

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.800036609
R Square	0.640058575
Adjusted R Square	0.55699517
Standard Error	0.009029008
Observations	33

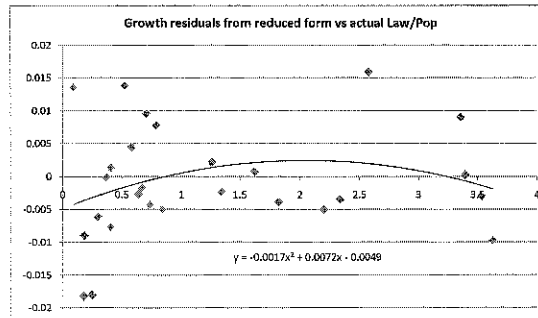
ANOVA					
	df	SS	MS	F	Significance F
Regression	6	0.003769	0.000628	7.705663	7.93E-05
Residual	26	0.00212	8.15E-05		
Total	32	0.005889			

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.016380652	0.012339	-1.32752	0.195876
Predicted L/POP	0.068347033	0.023145	2.953241	0.006591
Predicted L/POP^2	-0.018089199	0.006192	-2.92116	0.007121
GDP per capita 70	-4.71631E-07	4.23E-07	-1.1548	0.27485
ASIAN	0.02009194	0.006403	3.136461	0.004215
EASTERN EUROPE	0.013226089	0.006452	2.049989	0.050576
pop 1970	6.0764E-08	1.56E-08	3.889165	0.000824

### Stage 1 Equations for 33 countries Exogenous variables: GDP/cap 70, Pop 1970, Asia, etc etc

country	Actual			Predicted			Residuals		
	L	L	s L	L^2	L^2	s L^2	Actual Growth	Predicted Growth	Residuals
Argentina	3.3958	2.686239	0.70951	11.5311	8.564	2.967007	0.008855	0.008601	0.000254
Bangladesh	0.1748	0.1897	-0.0149	0.03056	-0.498	0.528963	0.010788	0.02904	-0.01825
Bulgaria	0.7069	0.686472	0.02038	0.49966	0.954	-0.45438	0.03534	0.025792	0.009548
Canada	2.1974	2.157947	0.03946	4.82858	5.448	-0.61967	0.021076	0.026154	-0.00508
Chile	1.263	1.821872	-0.5589	1.5951	4.532	-2.93657	0.025527	0.023407	0.00212
China	0.0914	0.284577	-0.1992	0.00835	0.674	-0.66533	0.074119	0.060561	0.013558
Colombia	3.5333	2.071503	1.46177	12.484	5.716	6.76784	0.018257	0.021254	-0.003
Costa Rica	3.6257	1.972786	1.6529	13.1456	4.962	8.18846	0.016019	0.025748	-0.00973
Dominican Republic	2.5801	1.742495	0.83765	6.65713	4.744	1.913564	0.031701	0.015783	0.015918
France	0.6389	1.9883	-1.3494	0.40825	5.227	-4.81842	0.018406	0.021134	-0.00279
Germany	1.3413	2.098004	-0.7495	1.79922	5.679	-3.88003	0.018907	0.021268	-0.00236
Guatemala	0.67	2.233852	-1.5638	0.44892	6.793	-6.34418	0.010097	0.011772	-0.00167
Honduras	0.7384	1.820456	-1.0821	0.54519	5.054	-4.50881	0.011356	0.015652	-0.00432
Hungary	0.8408	0.486077	0.34472	0.70694	-0.047	0.753764	0.023917	0.028924	-0.00501
India	0.2484	0.202585	0.04584	0.06172	0.13	-0.06804	0.030247	0.048282	-0.01803
Italy	2.3358	2.696356	-0.3625	5.44674	7.799	-2.35254	0.020216	0.023734	-0.00352
Malaysia	0.5279	0.863705	-0.3359	0.27863	1.552	-1.27529	0.047797	0.038889	0.013849
Mexico	1.8197	2.543058	-0.7233	3.31148	7.634	-4.32276	0.015736	0.01862	-0.00288
Nigeria	0.3711	0.749917	-0.3789	0.13768	1.284	-1.14638	0.014239	0.014828	-9E-05
Pakistan	0.2988	0.593435	-0.2946	0.08928	0.906	-0.81703	0.025088	0.0312	-0.00611
Poland	0.182	1.09886	-0.9279	0.03311	2.097	-2.06343	0.0251	0.084092	-0.08089
Portugal	1.6201	2.33802	-0.7179	2.62486	6.371	-3.74638	0.025853	0.025117	0.000737
Romania	0.5796	0.016826	0.56281	0.33597	-1.428	1.764045	0.02797	0.023519	0.00445
Singapore	0.7919	0.422179	0.36974	0.62713	-0.846	1.473194	0.052803	0.043009	0.007794
South Africa	0.4042	0.571899	-0.1677	0.16388	0.142	0.021559	0.010521	0.018201	-0.00768
Spain	3.3575	2.702746	0.65474	11.2727	8.143	3.129754	0.026681	0.01765	0.009031
Sweden	0.4063	1.59256	-1.1863	0.16505	3.799	-3.63401	0.017573	0.016214	0.001359
Thailand	0.836	0.413006	0.42301	0.69889	-0.123	0.821531	0.042699	0.035495	0.007198
Trinidad and Tobago	1.291	0.954807	0.33622	1.66674	1.578	0.089181	0.025375	0.015684	0.00969
Turkey	0.7464	1.125048	-0.3767	0.56009	2.359	-1.79846	0.021696	0.018408	0.003288
United Kingdom	1.7471	2.017099	-0.27	3.05239	5.344	-2.29112	0.022165	0.021606	0.000559
United States	3.6507	1.976415	1.67432	13.3279	5.806	7.522294	0.020617	0.016831	0.003786
Uruguay	4.1686	2.048356	2.12028	17.3775	5.573	11.80467	0.017096	0.019781	-0.00268

country	Growth Residuals		Actual	
	s	Actual L	L^2	L^2
Argentina	0.000254	3.395751	11.53112	11.53112
Bangladesh	-0.01825	0.174817	0.030561	0.030561
Bulgaria	0.009548	0.706863	0.499655	0.499655
Canada	-0.00508	2.197402	4.828577	4.828577
Chile	0.00212	1.262975	1.595105	1.595105
China	0.013558	0.091358	0.008346	0.008346
Colombia	-0.003	3.53327	12.484	12.484
Costa Rica	-0.00973	3.625681	13.14556	13.14556
Dominican Republic	0.015918	2.580141	6.657126	6.657126
France	-0.00273	0.638947	0.408253	0.408253
Germany	-0.00236	1.34135	1.799219	1.799219
Guatemala	-0.00167	0.670018	0.448923	0.448923
Honduras	-0.00432	0.738372	0.545194	0.545194
Hungary	-0.00501	0.840796	0.706938	0.706938
India	-0.01803	0.248428	0.061716	0.061716
Italy	-0.00352	2.333826	5.446745	5.446745
Malaysia	0.013849	0.527851	0.278626	0.278626
Mexico	-0.00288	1.819748	3.311482	3.311482
Nigeria	-9E-05	0.371054	0.137681	0.137681
Pakistan	-0.00611	0.298801	0.089282	0.089282
Poland	-0.00899	0.18197	0.033113	0.033113
Portugal	0.000737	1.620141	2.624855	2.624855
Romania	0.00445	0.579631	0.335973	0.335973
Singapore	0.007794	0.791915	0.62713	0.62713
South Africa	-0.00768	0.404198	0.163376	0.163376
Spain	0.009031	3.357489	11.27273	11.27273
Sweden	0.001359	0.406268	0.165034	0.165034
Thailand	0.007198	0.836018	0.698926	0.698926
Trinidad and Tobago	0.00969	1.291022	1.666738	1.666738
Turkey	0.003288	0.748391	0.56009	0.56009
United Kingdom	0.000559	1.747109	3.052389	3.052389
United States	0.003786	3.650738	13.32789	13.32789
Uruguay	-0.00268	4.168638	17.37755	17.37755



# Appendix 3

## DATA SOURCES

Variable Name	Source	Explanationss/Special Notes	URL
Real GDP per capita	Penn World Tables	Available 1950-2007	<a href="http://pwt.econ.upenn.edu/php_site/pwt_index.php">http://pwt.econ.upenn.edu/php_site/pwt_index.php</a>
Growth Rate of Real GDP per capita	Penn World Tables	Compounded growth rate is used between 1960 and 2007	<a href="http://pwt.econ.upenn.edu/php_site/pwt_index.php">http://pwt.econ.upenn.edu/php_site/pwt_index.php</a>
Population	Penn World Tables	In thousand, available 1950- 2007	<a href="http://pwt.econ.upenn.edu/php_site/pwt_index.php">http://pwt.econ.upenn.edu/php_site/pwt_index.php</a>
Corruption Index	"The Quality of Government" by Andrei Shleifer, R. La Porta, F. Lopez-de-Silanes, and R. Vishny), Journal of Law, Economics and Organization, 1999	This index scales from 0 to 10, higher numbers means less corruption. Authors collected this data set using <i>Political Risk Services</i> database, and used the average monthly index between 1982 and 1995. For more information : <a href="http://www.economics.harvard.edu/faculty/shleifer/files/Quality_Govt_1LEO.pdf">http://www.economics.harvard.edu/faculty/shleifer/files/Quality Govt 1LEO.pdf</a>	<a href="http://www.economics.harvard.edu/faculty/shleifer/dataset">http://www.economics.harvard.edu/faculty/shleifer/dataset</a>
G/GDP	World Development Indicators	General government final consumption expenditure (% of GDP), used year 2003	<a href="http://data.worldbank.org/data-catalog/world-development-indicators">http://data.worldbank.org/data-catalog/world-development-indicators</a>
SSER	World Development Indicators	Secondary School Enrollment Rate (Gross), used year 2003	<a href="http://data.worldbank.org/data-catalog/world-development-indicators">http://data.worldbank.org/data-catalog/world-development-indicators</a>
Occupation by type	International Labor Organization	Sum of the two classified groups <i>Legislators, senior officials and managers</i> and <i>Professionals</i> is used as a proxy for the number of "White Collar" workers. For each country the year for which the number of lawyers data is available is used.	<a href="http://laborsta.ilo.org">http://laborsta.ilo.org</a>

# Appendix 4

Description of Variables from Dataset underlying "Courts" written by Andre Shleifer, S. Djankov, R. La Porta, and F. Lopez-de-Silanes, Quarterly Journal of Economics, May, 2003.

Eviction Case

Dataset name	Description of Variable
country	Country Name
flopsobs	Unique identification code
jud_court_e	General jurisdiction court
jud_profe_e	Professional vs. non-professional
jud_repre_e	Legal representation is mandatory
jud_index_e	Index Judges and Lawyers
wrt_filin_e	a. Filing
wrt_servi_e	d. Service of process
wrt_oppos_e	e. Opposition
wrt_evide_e	g. Evidence
wrt_finar_e	h. Final Arguments
wrt_judge_e	i. Judgment
wrt_notif_e	j. Notification of judgment
wrt_enfmt_e	k. Enforcement of judgment
wrt_index_e	Index Oral-Written
leg_compl_e	Complaint must be legally justified
leg_legal_e	Judgment must be legally justified
leg_julaw_e	Judgment must be on law (not on equity)
leg_index_e	Index Legal Justification
evi_evi_e	Judge can not introduce evidence
evi_rej_e	Judge can not reject irrelevant evidence
evi_ofc_e	Out-of-court statements are inadmissible
evi_preq_e	Mandatory pre-qualification of questions
evi_int_e	Oral interrogation only by judge
evi_orig_e	Only original documents and certified copies are admissible
evi_auth_e	Authenticity and weight of evidence defined by law
evi_rec_e	Mandatory recording of evidence
evi_index_e	Index Statutory Regulation of Evidence
rev_enf_e	Enforcement of judgment is automatically suspended until resolution of the appeal.
rev_capp_e	Comprehensive review in appeal
rev_lapp_e	Interlocutory appeals are allowed
rev_index_e	Index Superior Review / Control
sta_concl_e	Mandatory pre-trial conciliation
sta_sepro_e	Service of process by judicial officer required
sta_notju_e	Notification of judgment by judicial officer required
sta_index_e	Index Engagement Formalities
stp_sfise_e	Filing and Service
stp_strju_e	Trial and Judgment
stp_sexju_e	Enforcement
stp_indexn_e	Independent procedural actions
all_indexn_e	Formalism Index
mand_judge_e	mandatory time limit for admission
mand_evid_e	mandatory time limit to present evidence
mand_def_e	mandatory time limit to present defense
mand_jugmt_e	mandatory time limit for judgment
mand_notif_e	mandatory time limit for notification of judgment
mand_index_e	index mandatory time limits
quota_proh1_e	Quota litis prohibited
loser_pay_e	Loser pays rule
dur_sepro_e	Duration until completion of service of process
dur_trial_e	Duration of trial
dur_enfor_e	Duration of enforcement (from notification to actual enforcement)
dur_total_e	Total Duration
enforce	Enforceability of contracts
corav_ic	Corruption
law_order	Law and Order
fair_imp	Legal system is fair and impartial
hon_unc	Legal system is honest and uncorrupt
affordable	Legal system is affordable
consistent	Legal system is consistent
confidence	Confidence in legal system
log_gnppc	Log of GNP per capita
leg_origin	Legal origin
common_law	dummy variable equal to one if common law and equal to zero if civil law country
lat_abst	Latitude
ethnic	Ethnic fractionalization
aysch_00lacs	Average years of schooling of population over 25 years of age in 2000 or last year available (1990 for Estonia, Kazakhstan, Latvia, Lithuania and Vietnam, and 1980 for St. Vincent) from Barro and Lee database. The data for Cote d'Ivoire, Lebanon, Morocco, Nigeria and Tanzania are from the Human Development Report 1994. The number for Belize comes from <a href="http://www.ethnologue.com/">http://www.ethnologue.com/</a> . The number for Ukraine is the value for mean actual years of schooling in 2000 from Gorodnichenko and Sabirianova's working paper "Returns to Schooling in Russia and Ukraine: A Semiparametric Approach to Cross-Country Comparative Analysis," University of Michigan working paper, September 2004.