

Market-Based System, Bank-Based System, or Legal System: What Matters When it Comes to Economic Development in the Individual States within the U.S.?

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Abstract

This research focuses on the question regarding the effects, if any, that the financial system and / or legal system have on economic development. Looking at the individual states, I find that the more market-based, rather than bank-based, a financial system is, then the higher levels of economic development. In regards to determining rather a financial system is market-based or bank-based, I use a different measure than Beck and Levine 2002 measure, by focusing on financing which is of greater importance to new businesses, the Small Business Ratio.

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1. Introduction

Economic activity is important for national, regional, and local economies. Countries, regions, and individual states and municipalities are constantly competing for new firms and expansions of additional firms. Financial systems can be seen to be either a bank-based or market-based systems, often with varying degrees of both systems. Likewise, the efficiency of the legal system to enforce contracts effectively can also play a significant role in economic development and efficiency.

The question of whether or not the design of financing and legal systems can affect real economic activity is unresolved. Stulz (2002) and other proponents for bank-based systems argue that banks provide better staged financing to businesses. Rajan (1992) supports a market-based system and argues against the efficiency of a bank-based system. La Porta et al. (2000) find that neither a market-based or bank-based system drove economic development, but rather legal system efficiency. Beck and Levine (2002) find that the legal system is significant, but neither the fact that a country's system was market-based or bank-based was significant.

Most prior research of financial system effects on economic activity focused on cross country comparisons. The purpose of this research is to determine what system, or systems, is more important for a geographic unit when it comes to promoting increases in economic activity: market-based system, bank-based system, or the legal system within the geographic unit. I focus on the financial and legal environment for states within the

United States to mitigate the effects of externalities on economic development. In this way, I am able to investigate whether or not there is a relation between financial and legal systems and economic activity while controlling for an environment with other factors which are similar.

Similar to Beck and Levine (2002) (BL), I am able to find a relationship between the legal system within the different states and the level of economic activity. Unlike BL, I was able to find a relationship between the market-based or bank-based system that classifies the state and the level of economic development. However, under the BL method, the geographic unit is determined to be market-based or bank-based due to the level of publicly-traded securities. I use a more accurate measure in determining whether each geographical unit has a market-based system or a bank-based system by looking at levels of financing which may be more influential on new economic activity or small businesses, specifically the ratio of venture capital to small business loans. I find that the small business ratio as well as the legal system is significant in determining increases in economic activity. This implies that geopolitical units should be able to encourage economic activity by promoting legislation which encourages equity, or venture capital investments, over debt, or bank loans, infusions. The higher level of venture capital in relation to bank loans leads to higher economic development levels in terms of new businesses.

The remainder of the paper is divided as follows: Section 1 will provide a brief review of the literature; Section 2 will detail the methodology; Section 3 will describe the data used in the research; Section 4 will provide the results using the BL variables;

Section 5 will provide the results using the proposed “small business ratio” variables; and Section 6 will conclude the research.

2. Literature Review

Prior to Beck and Levine (2002), research in the area of economic development had focused on determining which system was more important to spur on economic activity: a market-based system or a bank-based system. Gerschenkron (1962) and Stulz (2002) argue in favor of the merits of a bank-based system. The bank-based system proponents argue that banks are more effective at providing staged financing to businesses (Stulz 2002), close relationships between management and the board of directors may promote detrimental activities to other shareholders without the monitoring of a bank (Allen and Gale 1999), and individuals do not have an incentive to research firms in an efficient market environment since the information will be immediately absorbed by the market, but in a bank-based system the incentive exists since banks release less information to the public (Boot et al. 1993).

Hellwig (1991) and Rajan (1992) argue in favor of a market-based system (or more precisely argue against the efficiency of a bank-based system). The market-based system proponents argue that banks reduce incentives for profitable projects by extracting large portions of profits (Rajan 1992), as well as reduce growth due to their conservative bias in lending (Weinstein and Yafeh 1998).

La Porta et al. (2000) argue that neither a market-based or bank-based system was the driving factor in economic development, but instead the important aspect is the legal system efficiency. La Porta et al. indicate that the most important factor in distinguishing geographic units' economic development is the ability of the legal system to efficiently

enforce contracts. However, much of the research in regards to the legal system argument focused on country-level judicial systems rather than within-country geographic units with separate legal systems.

BL 2002 looked at a panel of 42 countries for a period of 15 years, and found that the legal system is significant, but neither the fact that a country's system was market-based or bank-based was significant. To test whether a country was a market-based country or a bank-based country, BL 2002 looked at an aggregate measure they called Structure-Aggregate. There are two components of the Structure-Aggregate variable, Structure-Activity and Structure-Size. Structure-Activity was defined to be equal to the log of the ratio of Value Traded to Bank Credit, where Value Traded was equal to the value of stocks traded as a share of national output, and Bank Credit was equal to the banking sector claims as a share of gross domestic output. Structure-Size was defined to be equal to the log of the ratio of Market Capitalization to Bank Credit, where Market Capitalization is equal to the value of listed shares divided by gross domestic product. BL 2002 also looked at differences in market-based and bank-based systems in industries that required large levels of research and development.

3. Methodology

The overall goal of this research is to determine what type of economic system, if any, or legal system promotes economic development within individual geographic units which are part of a larger well-developed geographic unit (the US). As a measure of economic development, I look at the number of new businesses. To test for the robustness of my findings, I also look at percentage change in new businesses. As a proxy for BL

2002 research and development argument, I use the number of patents issued within the state.

The independent variables include measures similar to BL 2002's Structure-Aggregate variable, the proposed "small business ratio", and measures for the legal system. In regards to whether a state has more of a bank-based system or market-based system, I utilize a Structure Aggregate variable (ST01) which is computed similarly to BL 2002. The "market portion" of the variable is based on the state of incorporation for the individual publicly-traded businesses, while the "bank credit" portion is based on total bank assets per state. Rather than using the gross domestic product, the gross state product is utilized. The variable is calculated as such so that higher values correspond to more of a market-based system within the state, while lower or negative values correspond to more of a bank-based system. For the Hellwig (1991) and Rajan (1992) theories to be accurate, then the estimate for the Structure-Aggregate variable should be positive and significantly related to the number of new businesses. For the bank-based system proponents, the estimate for the Structure-Aggregate variable should be negative and significantly related to the number of new businesses.

In regards to whether a state has more of a "small business bank-based system" or a "small business market based system", I utilize the small business ratio (SMBUSRAT). The "small business ratio" is equal to the log of the ratio of the venture capital investments to loans to small businesses. Loans to small businesses are defined as loans fewer than one million dollars per worker and venture capital investments are defined as dollar amount of venture capital investments per worker. The expectations should be the same with the small business ratio variable as it was with the Structure-Aggregate

variable: positive and significant if market-based systems are more important or negative and significant if bank-based systems are more important.

In the United States, there is a two-layered system of laws: overriding federal laws and individual state laws. In regards to the legal system effects on economic development within the individual states there are two possible theories. First, since the federal laws affect all entities in United States similarly, regardless of state of incorporation or location, then for the La Porta et al. (2000) and BL 2002 view to hold within the United States, then the individual states' laws and judicial systems must be the primary driver in economic development. The individual states can affect business development in two ways: (1) the passage of laws and regulations which effect businesses and business owners, and (2) the "judicial atmosphere" of the state. In regards to the passage of laws and regulations, states' laws include such things as regulatory burdens, financial burdens, and contract enforcement. An index (SBSI) is used which measures individual state's laws as they relate to small businesses. SBSI consists of such items as state tax burdens (income, corporate, estate, sales, property, and unemployment tax), workers' compensation, minimum wage, health care, and other state legislation. If the La Porta et al. view holds then SBSI should be significant. Since the index is measured in a way where the higher the index score, the "worse" it is for businesses, then the estimate should be negative

The second theory regarding the effects on state legal systems on economic development is that those effects are negligible because (1) a greater burden is placed on businesses by the federal government than by the individual state governments, and (2) states are more responsive to federal signals for changing laws or "getting in line" with

the other jurisdictions. Chubb (1985) research attempts to explain the second portion of the relationship by viewing the federalist system within the U.S. in terms of a principal agent relationship. If this theory holds then the state law index variable should not be significant.

The Revised Uniform Commercial Code sets forth rules and regulations that govern such things as contract enforcement and negotiable instrument requirements, as well as other items. Revised Uniform Commercial Code Article 9 was enacted by the states during this time period, and a dummy variable is set equal to one when the particular state enacts the law (variable name “UCC”) and for every year thereafter. In regards to La Porta et al., one of the important aspects of the judicial system in relation to economic development is the ability to efficiently enforce contracts. For the La Porta et al., view to hold then the variable should be positive and significant.

In regards to the “judicial atmosphere” of the state, a dummy variable will be set equal to one in the year where a particular state is named dishonorable mention or worse by the US Chamber of Commerce survey for worst jurisdictions for trials (JUDHELL). This variable should be negative and significant for the legal-system view to hold.

A generalized method of moments regression is utilized and discussed, with panel data set models based on ordinary least squares, fixed effects, and random effects used to test the robustness of the findings.

4. Data

All data used in the research is for the time period 2001 through 2003. The data used in regards to calculating the Structure-Aggregate variable consists of publicly-traded common stock for United States’ companies and domestic FDIC-insured commercial

banks. The data for the market portion of the variable was obtained from the CRSP database, and the states of incorporation for the individual companies were obtained from the Mergent database. The data for the bank portion of the variable was obtained from the FDIC. The data used in regards to the market portion of the small business ratio was obtained from Dow Jones VentureOne, while the bank portion of the ratio was obtained from the United States Small Business Administration, Office of Advocacy, Office of Economic Research. The index used to measure the legal systems of the individual states is the Small Business Survival Index, which is developed annually by the Small Business and Entrepreneurship Council. The measure of the individual states' judicial atmosphere is obtained from the annual US Chamber of Commerce Survey.

5. Empirical Results

In the BL study, the authors found, based on their Structure-Aggregate measure, that the United States had a strong market-based system (actually the 6th strongest) with a score of 1.10. Analyzing the individual states with the Structure-Aggregate measure, I found that the average range of scores is from a high (or more market-based) of 5.22 for Delaware to a low (or more bank-based) of -2.84 for New Hampshire, with an average of all fifty states for the time period being 0.93.¹ The average scores for each state are shown in Figure 1. The small business survival index scores range from a low (or a more favorable climate for business) of 22.54 for South Dakota to a high (or a least favorable climate for business) of 57.321 for Hawaii, with an average score for all fifty states for the time period being 43.697.

The following equation was estimated for the **BL** approach:

¹ Statistics for Washington D.C. are included in the measures for Maryland.

$$\text{NEWCO}_{i,t} = B_0 + B_1 (\text{ST01})_{i,t} + B_2 (\text{SBSI})_{i,t-1} + B_3 (\text{UCC})_{i,t} + B_4 (\text{LACO})_{i,t} + B_5 (\text{JUDHELL})_{i,t} + E_{i,t} \quad (1)$$

where:

NEWCO	=	the number of new companies in state i in year t
ST01	=	the Structure Aggregate measure for state i in year t
SBSI	=	the legal index in year t -1 for state i ²
UCC	=	1 if state i has Article 9 enacted in year t
	=	0 otherwise
LACO	=	1 if state i is Louisiana ³
	=	0 otherwise
JUDHELL	=	1 if state i is named by Chamber of Commerce survey in year t
	=	0 otherwise

The results from the BL model utilizing a GMM regression approach are shown in Table 1. The variable ST01 (the structure – aggregate measure) is shown to be positive and significant (parameter estimate = 0.278274). The estimate follows the Hellwig (1991) and Rajan (1992) theory of how a market-based system promotes economic development. The variable SBSI is also found to be significant, which is in line with the La Porta view. However, the parameter estimate is positive. This unexpected outcome could be due to one or more of the twenty – two components of the index causing the effect. Future research in this area should focus on the components to determine the individual effects. The remaining variables are not found to be significant.⁴ A Breusch – Pagan test was

² A one year lag was used between the legal index and the other variables based on the assumption that the tax changes would affect business start-ups in the following year.

³ A dummy variable was used since LA law is based on the Napoleonic Code rather than English Common Law like the remaining 49 states. **BL** similarly used a dummy variable for those international legal systems based on English common law. Other research has included dummy variables for legal systems based on Muslim religious law and / or Napoleonic Code.

⁴ To look at the robustness of the model, an additional GMM model is used with the dependent variable being the percentage change in new businesses (variable name “PERNEWCO”) in state i for time period t. Using this model, none of the variables are found to statistically significant at any generally-accepted level of significance (ST01 t-value was 0.45 and SBSI t-value was 0.81).

utilized to test for heteroscedasticity. The test produced a test statistic of 3.39 (probability greater than the Chi Squared is 0.6395).⁵

BL's research also looked at whether the financial structure (market-based versus bank-based) influenced research and development intensive industries. Research conducted by Rajan and Zingales (1998) ("RZ") found that "industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more developed financial markets."⁶ RZ found that the financial market development plays an even greater role for new companies rather than existing companies which are expanding. RZ found that the industries which were more technological in nature tended to have a greater demand for external finance. BL however, find that the financial structure does not affect R&D-intensive industries. Based on the logic that more technological companies are likely to have more patents issued to them, I used, as a proxy for this portion of the research, the number of patents granted per million people in each state for the years in question as the dependent variable. The results of this GMM regression are shown in Table 2. All variables, except JUDHELL, are found to be statistically significant. ST01 is found to have a parameter estimate of 40.19513. The significance and the sign of the estimate follow the theory from the RZ research.⁷

⁵ Additional econometric techniques were used to test the findings of the GMM regression. These techniques included ordinary least squares and panel data models with fixed effects and random effects. All three techniques yielded similar results in regards to ST01, positive and significant, but SBSI loses its significance (but keeps its positive sign).

⁶ Rajan, R.G. and Zingales, L., "Financial dependence and growth" American Economic Review 88, 1998 (pages 559-586)

⁷ Additional econometric techniques were used to test the findings of the GMM regression. These techniques included ordinary least squares and panel data models with fixed effects and random effects. All three techniques yielded similar results in regards to ST01, positive and significant, and SBSI, positive and significant, but the remaining variables lose their significance.

Section 5: Results Using the “Small Business Ratio” Approach

A study by the Bureau of the Census reports that new businesses account for virtually all of the net new jobs in the economy, and according to the most recent data, small businesses account for nearly 75% of the net new jobs.⁸ These small businesses tend to obtain their financing from owners’ savings, loans from family and friends, business loans from financial institutions, or venture capital firms.⁹ These small businesses are unable, or unwilling, to obtain additional funds in the capital market. The lack of use, or expected use, of the capital market by these firms decrease the importance of the Value Traded and Market Capitalization portions of the Structure-Aggregate measure. In addition, a larger proportion of the firms in the capital market are incorporated in Delaware (as illustrated by the average ST01 measure of 5.22) due to the General Corporate Laws of Delaware. New, small businesses are more likely to incorporate in the same location as their principal place of business. Due to these issues, a more accurate means of measuring whether a state has a market-based or bank-based system as it relates to new businesses is to look at the log of the ratio of venture capital invested in the state to the amount of small business loans (loans under one million dollars) made in the state (variable name “SMBUSRAT”). Analyzing the individual states with the Small Business Ratio measure, I found that the average range of scores is from a high (or more market-based) of 0.6572 for Massachusetts to a low (or more bank-based) of -3.0661 for Arkansas, with an average of all fifty states for the time period

⁸ Acs, Z.J. and Arrington, C. “*Endogenous Growth and Entrepreneurial Activity in Cities*” Center for Economic Studies, Bureau of the Census, Working Paper #CES-WP-03-2 January 2003.

⁹ “Survey of Small Business Finances” Federal Reserve Board 1998.

being -1.1036.¹⁰ The average scores for each state are shown in Figure 2. These results show that when it relates to new businesses, the US is more of a bank-based system.

A similar model was estimated using the GMM approach, with the only difference in the models being the replacement of ST01 with SMBUSRAT. The equation estimated is:

$$\text{NEWCO}_{i,t} = B_0 + B_1 (\text{SMBUSRAT})_{i,t} + B_2 (\text{SBSI})_{i,t-1} + B_3 (\text{UCC})_{i,t} + B_4 (\text{LACO})_{i,t} + B_5 (\text{JUDHELL})_{i,t} + E_{i,t} \quad (2)$$

where:

NEWCO	=	the number of new companies in state i in year t
SMBUSRAT	=	the Small Business Ratio
SBSI	=	the legal index in year t -1 for state i
UCC	=	1 if state i has Article 9 enacted in year t
	=	0 otherwise
LACO	=	1 if state i is Louisiana
	=	0 otherwise
JUDHELL	=	1 if state i is named by Chamber of Commerce survey in year t
	=	0 otherwise

The results of the above equation are given in Table 3. As shown in Table 3, the parameter estimate for the Small Business Ratio is 0.726338 and is highly significant (t-value of 4.92). These results show that even though the US is on average a bank-based system as it relates to small businesses, states that are able to move towards a market-based system are able to enjoy greater economic development in terms of new businesses being started. In addition, the model shows that the measures of the legal system, specifically the SBSI and JUDHELL variables, are statistically insignificant. A Breusch –

¹⁰ The states of Wyoming and Alaska did not have any levels of venture capital reported, therefore had a Small Business Ratio of 0 for the calculations. Additional equations were estimated by removing Wyoming and Alaska from the sample, but the results were consistent with those reported in Table 3.

Pagan test was utilized to test for heteroscedasticity. The test produced a test statistic of 4.83 (probability greater than the Chi-Squared is 0.4367).¹¹

A model was also estimated to test the applicability of the Small Business Ratio to the RZ research regarding industries which are more research and development intense. The number of patents issued in a state per one million people was once again used as a proxy for the more R&D-intensive areas. The results of the model as estimated using a GMM approach are shown in Table 4. The results show that all of the variables were significant except JUDHELL. The Small Business Ratio had an estimate of 76.281 with a t-statistic of 5.66. Once again this provides support for the **RZ** research that R&D-intensive industries are more likely to locate in areas characterized by market-based systems rather than bank-based systems. A Breusch – Pagan test was utilized to test for heteroscedasticity. The test produced a test statistic of 2.82 (probability greater than the Chi-Squared is 0.7272).

A comparison of the Structure-Aggregate measure and the Small Business Ratio measure shows that when placed in models with the same dependent and independent variables, the Small Business Ratio measure had a t-statistic of 4.92, while the Structure-Aggregate measure had a t-statistic of 2.41. The model using the Small Business Ratio had an R-Squared of 0.1670 (Adjusted R-Squared of 0.1381), while the model which used the Structure-Aggregate variable had an R-Squared of 0.0794 (Adjusted R-Squared of 0.0474). In addition, a model was estimated using GMM with NEWCO remaining the dependent variable and the independent variables being ST01, SMBUSRAT, SBSI, UCC,

¹¹ Additional econometric techniques were used to test the findings of the GMM regression. These techniques included panel data models with fixed effects and random effects. Both techniques yield similar results in regards to SMBUSRAT, positive and significant, while the other variables remain insignificant (and keep the same sign).

LACO, and JUDHELL. The results of this regression are shown in Table 5. The results show that SMBUSRAT is much more significant (t-statistic of 4.47 compared to 1.77) than ST01 in regards to new business formations. A Breusch-Pagan test was utilized to test for heteroscedasticity. The test produced a test statistic of 6.49 (probability greater than Chi-Squared is 0.3704).

6. Summary and Conclusions

Prior research in the area of economic development that compared market-based versus bank-based versus legal systems generally looked at it from an international perspective. Research which looked at economic development from a state versus state perspective primarily focused on tax, regulatory, or economic conditions comparisons. This research attempts to answer the market-based versus bank-based system debate from the domestic perspective.

According to this research, the statistically significant determinant in economic development within the states as between a market-based system, a bank-based system, or the legal system is the rather the state has a market-based system. This is in accordance with the Hellwig (1991) and Rajan (1992) theory of how a market-based system promotes economic development. In addition, a possibly better explanatory variable than the BL Structure-Aggregate measure when it comes to new business formations is the Small Business Ratio. The Small Business Ratio takes into account financing which is more likely to be used by start-up businesses, than the Structure-Aggregate measure.

Additional research opportunities in this area are to look at different ways to measure the legal system, to determine if the state legal environment is a determining

factor in economic development. In addition, the different industry effects within the individual states could be analyzed in a way similar to the BL approach.

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Figure 1 ST01 Measure.

Figure 1 consists of the average for the ST01 measure over the period 2001 through 2003 for each of the fifty states. ST01 is equal to the aggregate of Structure Activity and Structure Size variables. The Structure Activity Variable is equal to the log of the ratio of Value Traded to Bank Credit. The Structure Size Variable is equal to the log of the ratio of Market Capitalization to Bank Credit. Larger values for ST01 indicate a more market-based system, while lower values equal a more bank-based system.

State	ST01	State	ST01	State	ST01
AL	-1.7313	LA	0.7912	OH	1.4978
AK	-1.4071	ME	0.7773	OK	0.4672
AZ	1.5929	MD	3.3772	OR	2.5005
AR	-0.1740	MA	1.9835	PA	1.7209
CA	1.6811	MI	0.9533	RI	-1.5760
CO	-0.4338	MN	2.4965	SC	0.6719
CT	1.1282	MS	-0.2927	SD	-1.2019
DE	5.2220	MO	1.8578	TN	0.9411
FL	1.7430	MT	-1.5184	TX	1.3223
GA	1.7560	NE	-0.5267	UT	0.7269
HI	0.0168	NV	2.7961	VT	0.6484
ID	1.6048	NH	-2.8418	VA	2.3524
IL	0.7014	NJ	3.2972	WA	3.7385
IN	2.3156	NM	0.0480	WV	-0.1695
IA	0.3859	NY	1.3306	WI	1.9514
KS	1.6043	NC	0.8016	WY	-0.0785
KY	-0.2264	ND	-0.0021		

Figure 2 Small Business Ratio

Figure 2 consists of the average for the SMBUSRAT measure over the period 2001 through 2003 for each of the fifty states. SMBUSRAT is equal to the log of the ratio of venture capital investments to small business loans. Larger values for SMBUSRAT indicate a more market-based system, while lower values equal a more bank-based system.

State	SMBUSRAT	State	SMBUSRAT	State	SMBUSRAT
AL	-1.5624	LA	-1.3778	OH	-1.5006
AK	0.0000	ME	-1.0867	OK	-1.9830
AZ	-0.8812	MD	-0.4003	OR	-0.7077
AR	-3.0661	MA	0.6572	PA	-0.8182
CA	0.0654	MI	-1.4803	RI	-0.7872
CO	-0.1861	MN	-0.7072	SC	-2.1377
CT	-0.2210	MS	-2.7049	SD	-0.9333
DE	-0.9175	MO	-0.9128	TN	-1.3860
FL	-1.0940	MT	-1.9949	TX	-0.5972
GA	-0.7100	NE	-2.7011	UT	-0.6467
HI	-1.0771	NV	-1.7354	VT	-0.8128
ID	-2.0143	NH	-0.2349	VA	-0.1878
IL	-0.7148	NJ	-0.2063	WA	-0.3693
IN	-1.6899	NM	-1.8103	WV	-2.6771
IA	-2.4401	NY	-0.2969	WI	-1.5799
KS	-1.5328	NC	-0.5916	WY	0.0000
KY	-1.7908	ND	-0.6419		

Table 1 Dependent Variable = NEWCO

Table 1 consists of the results of the GMM approach for the time period 2001 through 2003 used with the equation 1 model:

$$NEWCO_{i,t} = B_0 + B_1 (ST01)_{i,t} + B_2 (SBSI)_{i,t-1} + B_3 (UCC)_{i,t} + B_4 (LACO)_{i,t} + B_5 (JUDHELL)_{i,t} + E_{i,t}$$

Where NEWCO = the number of new companies in state i in year t; ST01 = the Structure Aggregate measure for state i in year t; SBSI = the legal index in year t -1 for state i; UCC = 1 if state i has Article 9 enacted in year or 0 otherwise; LACO = 1 if state i is Louisiana or 0 otherwise; and JUDHELL = 1 if state i is named by Chamber of Commerce survey in year t or 0 otherwise.

Parameter	Estimate	T-value
INTERCEPT	6.479884	10.52
ST01	0.278274	2.41**
SBSI	0.001799	3.42***
UCC	-0.57623	-0.93
LACO	-0.73297	-1.89*
JUDHELL	-0.33669	-1.19

* SIGNIFICANT AT 10% LEVEL
 ** SIGNIFICANT AT 5% LEVEL
 *** SIGNIFICANT AT 1% LEVEL

Table 2. Dependent Variable = Patents

Table 2 consists of the results of the GMM approach for the time period 2001 through 2003 used with the model:

$$\text{PATENTS}_{i,t} = B_0 + B_1 (\text{ST01})_{i,t} + B_2 (\text{SBSI})_{i,t-1} + B_3 (\text{UCC})_{i,t} + B_4 (\text{LACO})_{i,t} + B_5 (\text{JUDHELL})_{i,t} + E_{i,t}$$

Where PATENTS = the number of new patents in state i in year t; ST01 = the Structure Aggregate measure for state i in year t; SBSI = the legal index in year t -1 for state i; UCC = 1 if state i has Article 9 enacted in year or 0 otherwise; LACO = 1 if state i is Louisiana or 0 otherwise; and JUDHELL = 1 if state i is named by Chamber of Commerce survey in year t or 0 otherwise.

Parameter	Estimate	T-value
INTERCEPT	3.424656	0.06
ST01	40.19513	4.15***
SBSI	4.437663	2.62***
UCC	72.08889	2.31**
LACO	-143.399	-4.98***
JUDHELL	-36.6004	-1.23

* SIGNIFICANT AT 10% LEVEL
 ** SIGNIFICANT AT 5% LEVEL
 *** SIGNIFICANT AT 1% LEVEL

Table 3. Dependent Variable = NEWCO

Table 3 consists of the results of the GMM approach for the time period 2001 through 2003 used with the equation 2 model:

$$\text{NEWCO}_{i,t} = B_0 + B_1 (\text{SMBUSRAT})_{i,t} + B_2 (\text{SBSI})_{i,t-1} + B_3 (\text{UCC})_{i,t} + B_4 (\text{LACO})_{i,t} + B_5 (\text{JUDHELL})_{i,t} + E_{i,t}$$

Where NEWCO = the number of new companies in state i in year t; SMBUSRAT = the Small Business Ratio for state i in year t; SBSI = the legal index in year t -1 for state i; UCC = 1 if state i has Article 9 enacted in year or 0 otherwise; LACO = 1 if state i is Louisiana or 0 otherwise; and JUDHELL = 1 if state i is named by Chamber of Commerce survey in year t or 0 otherwise.

Parameter	Estimate	T-value
INTERCEPT	7.337727	10.74
SMBUSRAT	0.726338	4.92***
SBSI	0.000926	1.62
UCC	-0.35015	-0.56
LACO	-0.73916	-1.86*
JUDHELL	-0.29351	-1.01

* SIGNIFICANT AT 10% LEVEL
** SIGNIFICANT AT 5% LEVEL
*** SIGNIFICANT AT 1% LEVEL

Table 4. Dependent Variable = Patents

Table 4 consists of the results of the GMM approach for the time period 2001 through 2003 used with the model:

$$\text{PATENTS}_{i,t} = B_0 + B_1 (\text{SMBUSRAT})_{i,t} + B_2 (\text{SBSI})_{i,t-1} + B_3 (\text{UCC})_{i,t} + B_4 (\text{LACO})_{i,t} + B_5 (\text{JUDHELL})_{i,t} + E_{i,t}$$

Where PATENTS = the number of new patents issued in state i in year t; SMBUSRAT = the Small Business Ratio for state i in year t; SBSI = the legal index in year t -1 for state i; UCC = 1 if state i has Article 9 enacted in year or 0 otherwise; LACO = 1 if state i is Louisiana or 0 otherwise; and JUDHELL = 1 if state i is named by Chamber of Commerce survey in year t or 0 otherwise.

Parameter	Estimate	T-value
INTERCEPT	68.03703	1.13
SMBUSRAT	76.281	5.66***
SBSI	5.306253	3.27***
UCC	87.94431	3.56***
LACO	-136.013	-4.61***
JUDHELL	-25.4882	-1.02

* SIGNIFICANT AT 10% LEVEL
** SIGNIFICANT AT 5% LEVEL
*** SIGNIFICANT AT 1% LEVEL

Table 5. Dependent Variable = NEWCO

Table 5 consists of the results of the GMM approach for the time period 2001 through 2003 used with the model:

$$\text{NEWCO}_{i,t} = B_0 + B_1 (\text{SMBUSRAT})_{i,t} + B_2 (\text{SBSI})_{i,t-1} + B_3 (\text{UCC})_{i,t} + B_4 (\text{LACO})_{i,t} + B_5 (\text{JUDHELL})_{i,t} + B_6 (\text{ST01}) + E_{i,t}$$

Where NEWCO = the number of new companies in state i in year t; SMBUSRAT = the Small Business Ratio for State i in year t; ST01 = the Structure Aggregate measure for state i in year t; SBSI = the legal index in year t -1 for state i; UCC = 1 if state i has Article 9 enacted in year or 0 otherwise; LACO = 1 if state i is Louisiana or 0 otherwise; and JUDHELL = 1 if state i is named by Chamber of Commerce survey in year t or 0 otherwise.

Parameter	Estimate	T-value
INTERCEPT	7.291701	12.65
SMBUSRAT	0.669832	4.47***
SBSI	0.000913	1.68*
UCC	-0.55853	-0.99
LACO	-0.71993	-1.88*
JUDHELL	-0.29937	-1.05
ST01	0.200677	1.77*

* SIGNIFICANT AT 10% LEVEL
 ** SIGNIFICANT AT 5% LEVEL
 *** SIGNIFICANT AT 1% LEVEL