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The Role of Legal Origins in Countries Affected by the 2008 Great Financial Crisis

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Abstract: This study aims to find the relationship between legal origin and the extent that a country was hit by the 2008 Great Financial Crisis. Four legal origins of 91 countries were researched and analyzed through regression analysis. This article draws the stock market figures to see how the stock market changes from 2005 to 2015 and does the regression to analyze whether it is the legal origin that affect the extent to which a country was hit by the 2008 GFC. These results indicate that the legal origin is a significant reason affecting the extent that a country was hit by the 2008 GFC and common law countries could recover faster and better than civil law countries.

1. Introduction

Recently, many studies have proved that different legal origins can cause different socioeconomic results. The appearance of the term "law and finance" is firstly proposed by La Porta, Lopez-de-Silanes, Shleifer, and Vishny [1]. LLSV also found that legal origin can affect the economy of a country since different legal origins protect the rights of creditors, shareholders and private property to various degrees. Moreover, Levine [2] [3] traced the influence of legal origin on financial development and long- term economic growth, indicating that legal origin affects economic growth through shaping the national financial system. Conversely, Stulz and Williamson [4] hold different opinions and believed that the legal tradition does not explain the current financial outcome. But they do not deny that the religious and cultural differences caused by the legal origin essentially influence the economic growth and financial development in various countries.

In 2008, the subprime mortgage crisis had a significant impact on the global economy, and most of the states had experienced substantial economic decline. The economic performance of various countries, especially the situation of the financial system, has received increasing attention in recent years.

While the current literature has explored the effects of legal origin on economic growth and the stock market, little is known about the influence of legal origin on the countries' ability to cope with the crisis. Legal origin is a fundamental reason affecting economic growth and financial markets. And, Porta, Lopez-de-Silanes and Shleifer[5] highlighted that, in terms of the degree of financial market development, the common law countries represented by the United Kingdom is higher than that of civil law countries represented by France. The instance of economic growth is that common law countries' economic growth is also higher than the civil law countries. This article will speculate whether countries with larger financial markets are more affected by the financial crisis, or countries with strong financial markets may be able to withstand these problems and recover more quickly. Unfortunately, there is relatively insufficient research focusing on the relationship between legal origin and the extent that a country was hit by the great financial crisis (GFC), especially 2008 great financial crisis. This essay aims at bridging this gap since the impact of the 2008 GFC on the global economy is long-term.

By studying the trend of the stock market and constructing a series of regression, this article aims to find out whether countries are affected by the economic crisis and the relationship between legal origin and the extent that a country was hit by the 2008 GFC. In order to discover the changes in the stock market before and after the economic crisis, the stock market to GDP was applied to 52 countries from 2005 to 2011, and the line chart is shown in the text. Moreover, a simple regression of the 2010 GDP relative to the 2007 GDP in 91 countries aims to know whether legal origins are an important reason to the extent that a country was affected by the economic crisis.

The value of this study is two-fold. First, this study attempts to fill the literature gap by focusing on the relationship between legal origin and the extent that the 2008 GFC hit a country. Second, economic crises are cyclical. Through research, we understand the difference in the influence of common law and civil law on the country's economy. This research may provide some ideas for reducing the country's impact on the economic crisis.

2. Materials and Methods

The Sample of the study consider 91 countries during the years 2003 to 2011 and required data can be obtained from the World Bank data and La Porta, Lopez-de-Silanes and Shleifer's article[5].

In order to find the relationship between legal origin and the extent that a country was hit by the 2008 GFC, we conduct several regressions. The empirical model for testing the relationship between legal origin and the extent that a country was hit by the 2008 GFC is as follows:

Model 1: $\text{GDP Growth} = \text{constant} + \beta 1 * \text{LnGDP per capital in 2007} + \beta 2 * \text{GDP2007/GDP2003} + \epsilon$

Model 2: $\text{GDP Growth} = \text{constant} + \beta 1 * \text{LnGDP per capital in 2007} + \beta 2 * \text{total reserves/GDP in 2007} + \beta 3 * \text{GDP2007/GDP2003} + \epsilon$

Model 3: $\text{GDP Growth} = \text{constant} + \beta 1 * \text{legal origin} + \beta 2 * \text{LnGDP per capital in 2007} + \beta 3 * \text{total reserves/GDP in 2007} + \beta 4 * \text{GDP2007/GDP2003} + \epsilon$

3. Findings and Analysis

3.1. Stock market development from 2005 to 2015

The stock market is an indicator of economic and financial health. It shows investors' sentiment. Therefore, the article uses stock market capitalization as a measure of financial development. Stock market development equals the total value of outstanding equity shares to GDP. This article selects data of 23 common law countries and 29 civil law countries (eleven French civil law countries) starting from 2005.

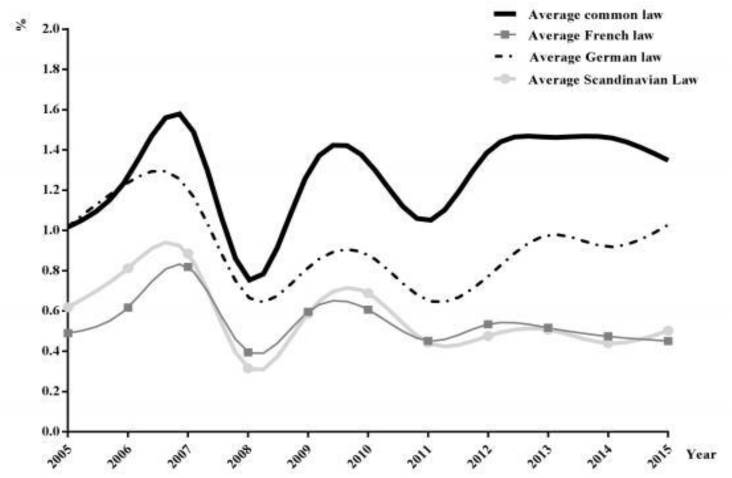

Figure 1: Stock market capitalization over GDP of four legal origins, 2005 - 2015

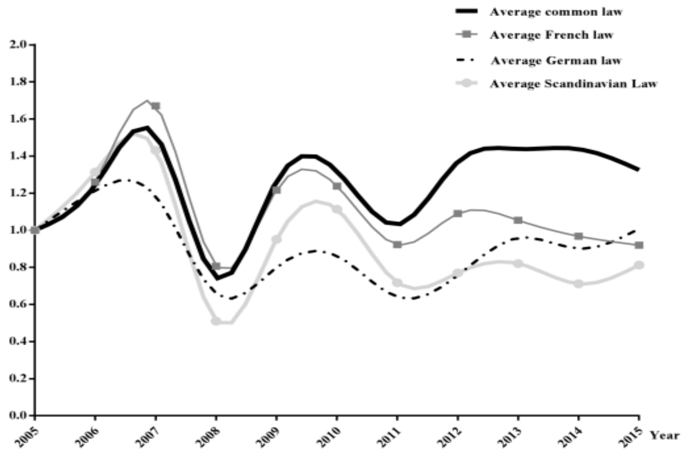

Figure 2: Stock market capitalization over GDP of four legal origins, 2005 – 2015 (Set the 2005 figures to 1)

Figure 1 shows the stock market capitalization over the GDP of common, French, German, and Scandinavian legal origin from 2005 to 2015. The picture shows a significant decline between 2007 and 2008 due to the 2008 global financial crisis and a moderate decline between 2010 and 2011 because of the sovereign debt crisis in 2011. In 2005, common law countries and German civil law countries had basically the same developed financial markets, which has the average stock market to GDP ratio of 100%. Subsequently, among four legal origins, common law country has the highest average stock market to GDP ratio, which is consistent with the view that common law countries have a more developed financial market than civil law countries by Porta, Lopez-de- Silanes and Shleifer [5]. Next, this article looks at the total value of each groups in stock markets (market capitalization) and sets them all equal to one in 2005 to see how they have changed relative to each other over time.

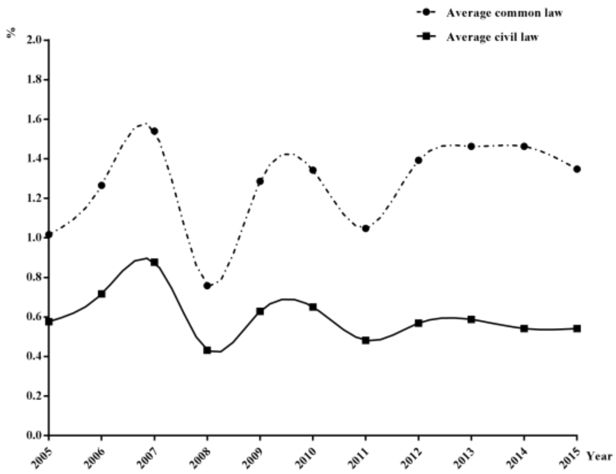

Figure 3: Stock market capitalization over GDP, 2005 – 2015

Figure 2 presents how the financial markets of four legal origin countries change from 2005 to 2015. The financial markets of French civil law developed faster than common law countries before 2008. However, a sharp decrease could be observed in 2008 of four legal origins. The common law financial market was slightly less affected than the French financial market, and the Common law countries fell by 50.74% compared to a 51.75% decrease in French civil law countries. Moreover, there was a great reversal from 2008 to 2009, and the recovery of the common law financial market after the crisis is much faster than that of French civil law countries. However, there is relatively few data could be found in German and Scandinavian countries. The curve of German and Scandinavian countries may have sample selection errors. And French, German and Scandinavian laws can all be traced back to Roman law and are part of the civil law. Therefore, in the next part, we only have civil law, including French, German, and Scandinavian legal origin, to observe market changes.

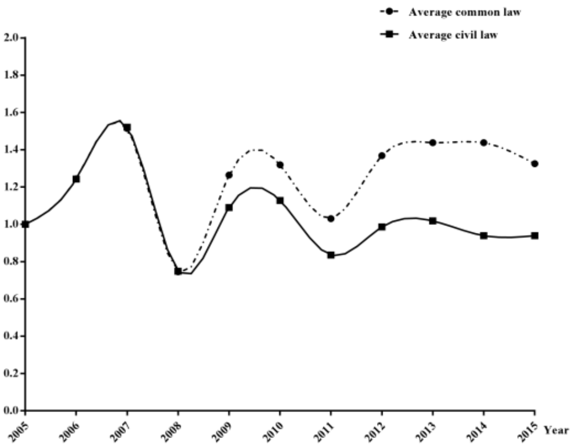

Figure 4: Stock market capitalization over GDP, 2005 – 2015 (Set the 2005 figures to 1)

Figure 3 and Figure 4 show the market capitalization over the GDP of common law and civil law countries from 2005 to 2015. The declines could also be seen in 2008 and 2011. From the period 2005 to 2008, financial markets of common law countries and civil law countries have almost the same development trend, while the difference between two legal origins appears in 2008. After the 2008 GFC, common law countries' financial markets recovered faster and developed better than civil law countries.

Next, whether the legal origin is an important factor that affects the extent to which the economies of various countries are affected by GFC will be analyzed by a series of regression.

3.2. Descriptive statistics and correlations

Table 1: Summary statistics

Variable	N	Mean	Standard Deviation	Minimum	Maximum
GDP2010/2007	91	1.09	0.09	0.90	1.30
GDP2007/2003	91	1.22	0.13	0.83	1.80
GDP2009/2007	91	1.04	0.07	0.91	1.18
GDP2011/2007	91	1.13	0.12	0.82	1.41
GDP2012/2007	91	1.18	0.15	0.76	1.54
Ln (GDP per capita in 2007)	91	9.01	2.63	5.42	22.89
Total reserves/GDP (2007)	91	0.18	0.18	0	0.92
Common Legal Origin	91	0.41	0.49	0	1
French Legal Origin	91	0.49	0.50	0	1
German Legal Origin	91	0.04	0.21	0	1
Scandinavian legal origin	91	0.04	0.21	0	1

Table 1 reports the aggregate statistics of all variables of sample countries. It can be seen from the statistics of the variables that the amount of GDP from 2009 to 2012 is increased. The average value of GDP2007/2003 is 1.22 and varied from 0.83 to 1.80. The mean of Ln (GDP per capita in 2007) amongst 91 countries is 9.01 but ranges from 5.42 to as high as 22.89. The average total reserve over GDP is 17.91 percent and ranges from almost no reserves to 92 percent reserves. Furthermore, the legal origin is a dummy variable that takes on the value one for countries with common law tradition, French civil law tradition, German law tradition, or Scandinavian legal origin, and zero otherwise.

Table 2: Correlation matrix of variables

	1	2	3	4	5	6	7	8	9	10
1.GDP2007/2003	0.457***									
2.GDP2009/2007	0.920***	0.437***								
3.GDP2011/2007	0.955***	0.449***	0.848***							
4.GDP2012/2007	0.918***	0.448***	0.802***	0.979***						
5.Ln (GDP per capita)	-0.361***	-0.135	-0.344***	-0.352***	-0.363***					
6.Total reserves/ GDP	0. 195*	0.229**	0.141	0. 180*	0.171	-0.102				
7.Common legal origin	0. 174*	-0.013	0.139	0.167	0. 188*	0.048	0. 191*			
8.French legal origin	0.018	0.151	0.066	0.018	-0.000	-0. 184*	-0.119	-0.819***		
9.German legal origin	-0.217**	-0. 194*	-0.227**	-0.210**	-0.208**	0.150	-0.075	-0. 177*	0.212**	
10.Scandinavian legal origin	-0.257**	-0.142	-0.267**	-0.243**	-0.242**	0.166	-0.105	-0. 177*	-0.212**	-0.046

Note: *, **, *** indicate significance levels of 10, 5, and 1 percent, respectively

Table 2 presents correlations among all variables. Firstly, it shows a positive relationship between GDP growth (2009/2007, 2010/2007, etc.) and total reserves, common legal origin, French legal origin, bank government ownership, ownership concentration as well as interest spread. Moreover, GDP growth is negatively correlated with GDP per capita, German legal origin, Scandinavian legal origin, debt enforcement, stock-market-to-GDP, the ratio of listed companies as well as private credit. The dependent variables (GDP2009/2007, GDP2010/2007, GDP2011/2007, and GDP2012/2007) are highly positively correlated, while the relationship between these dependent variables and GDP2007/2003 is significant. So, GDP2007/2003 can be used as one of the explanatory variables. And, as Table 2 shows, the common legal origin and French legal origin are substitutes. Therefore, only one of them needs to appear in the explanatory variables.

3.3. Relation between legal origin and the extent that a country was hit by the 2008 GFC

Before showing the results, two points should be mentioned. First, the article put together a large number of comparable regression results in one table. The second point is that because some indicators only exist in some countries, adding them to the results will shrink the sample.

The first column of Table 3 reports the results of the basic regression (Model 1). Ln (GDP per capita) is negatively related to GDP growth, and GDP2007/2003 is positively associated with GDP growth. The article also estimated the extended model, which adds the variable total reserves, which is believed to affect a country's ability to respond to crises (Arslan and Cantú, 2019). The result for Model 2 is reported in the second column of Table 3. Total reserve is positively related to GDP growth, while it is not significant. The estimated coefficient on GDP per capita and GDP2007/2003 is little changed from Model 1 and remains significant at the 1 percent level. The variable total reserves improve the interpretation of the model from 30% to 30.5%.

To study the influence of legal origin on the financial crisis, I added legal origin dummy in model 3. Results for model 3 are reported in the third column. The variables of GDP per capita, total reserves, and GDP2007/2003 have not changed much from Model 2. The coefficient on the common legal origin dummy variable is significant at the 5 percent level. Controlling for the other variables, GDP 2010/2007 of the common-law countries is, on average, 3.5 percent higher than that of civil-law countries.

Table 3: Growth results with different combinations of controls

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: GDP2010/GDP2007						
Common legal origin			0.035** (2.09)	0.036** (2.22)	0.031* (1.77)	0.031* (1.68)
Ln (GDP per capita in 2007)	-0.011*** (-3.39)	-0.010*** (-3.31)	-0.011*** (-3.50)	-0.011*** (-3.56)		-0.012*** (-3.65)
Total reserves/GDP in 2007		0.036 (0.79)	0.016 (0.36)		0.030 (0.62)	0.062 (1.27)
GDP2007/2003	0.295*** (4.62)	0.284*** (4.33)	0.291*** (4.51)	0.296*** (4.74)	0.316*** (4.64)	
Constant	0.822*** (9.45)	0.828*** (9.47)	0.813*** (9.43)	0.810*** (9.49)	0.684*** (8.26)	1. 176*** (34.87)
Observation	91	91	91	91	91	91
R-squared	0.300	0.305	0.339	0.338	0.245	0.182

Note: P-values are given in parentheses. *, **, *** Indicate significance levels of 10, 5, and 1 percent respectively.

The fourth, fifth, and sixth columns show the results of removing one variable (like GDP per capita, total reserves, GDP2007/2003) from Model 3, to see how other variables change. The fourth column shows that removing the variable total reserves has almost no effect on the model's interpretation. The estimated coefficients and significance level of the common law dummy are almost unchanged from Model 3. The fifth and sixth columns indicate that GDP per capita and GDP2007/2003 are very important. If either of them is removed, the equation's explanatory power for the dependent variable will be reduced, and the significance of the common legal origin dummy will be reduced to 10 percent level.

Table 4 reports the regression results (Model 3) that different legal origins may have an influence on GDP growth. As French legal origin is highly related to British legal origin, we only do a regression related to common legal origin. The results show that the German legal origin dummy and Scandinavian legal origin dummy are negatively related to GDP growth and not significant. Compared to civil law countries, the estimated coefficient implies that the common legal origin countries are linked with an increase of 0.035 in GDP2010/2007. Therefore, the effects on economic growth, the article only focuses on the difference between common legal origin and civil legal origin, and we believe that there are no apparent differences between the civil laws.

Table 4: Growth results with different legal origin

	(1)	(2)	(3)	(4)
Dependent variable: GDP2010/GDP2007				
				0.028 (1.60)
		-0.042 (- 1.02)		-0.035 (-0.85)
Scandinavian legal origin			-0.066 (- 1.65)	-0.057 (- 1.41)
Ln (GDP per capita in 2007)	-0.011*** (-3.50)	-0.010*** (-3. 16)	-0.010*** (-3.07)	-0.010*** (-3.08)
Total reserves/GDP in 2007	0.016 (0.36)	0.035 (0.77)	0.031 (0.69)	0.015 (0.34)
GDP2007/2003	0.291*** (4.51)	0.272*** (4.09)	0.273*** (4. 17)	0.270*** (4.09)
Constant	0.813*** (9.43)	0.841*** (9.52)	0.839*** (9.66)	0.836*** (9.54)
Observation	91	91	91	91
R-squared	0.339	0.313	0.326	0.357

Note: P-values are given in parentheses. *, **, *** Indicate significance levels of 10, 5, and 1 percent respectively.

Table 5: Legal origin and GDP from different year

	(1)	(2)	(3)	(4)
	GDP2009/ 2007	GDP2010/ 2007	GDP2011 /2007	GDP2012 /2007
Common legal origin	0.022* (1.74)	0.035** (2.09)	0.044** (2.02)	0.065** (2.31)
Ln (GDP per capita in 2007)	-0.008*** (-3.26)	-0.011*** (-3.50)	-0.014*** (-3.38)	-0.019*** (-3.57)
Total reserves/ GDP in 2007	-0.005 (-0. 13)	0.016 (0.36)	0.013 (0.22)	0.004 (0.06)
GDP2007/2003	0.214*** (4.29)	0.291*** (4.51)	0.372*** (4.41)	0.489*** (4.48)
Constant	0.838*** (12.59)	0.813*** (9.43)	0.780*** (6.93)	0.717*** (4.91)
Observation	91	91	91	91
R-squared	0.299	0.339	0.323	0.337

Note: P-values are given in parentheses. *, **, *** Indicate significance levels of 10, 5, and 1 percent respectively.

Table 5 presents the results of model 3 in different years by changing the dependent variable to see how things change. It can be seen from Table 5 that the coefficient of common legal origin is significant and increased with the increasing year's ratio ofGDP. That means common law countries grew faster than civil law countries during the recovery period after the crisis (2009-2012). So, common law countries can recover from crises faster.

4. Conclusion

The article conducted empirical research to find the relationship between legal origin and the extent that the 2008 Great Financial Crisis hit a country. A lack of research about the influence of legal origin on the financial crisis was identified in the literature review. Then this article used 91 countries' data by doing comparative analysis and regression analysis to discover whether it is the legal origin that affect the extent that a country was hit by the 2008 GFC.

This article conducts a series of regression to find the factors affecting GDP growth during the crisis and concludes that the common legal origin dummy is almost significant among all regressions in the sample of 91 countries. In general, the empirical results are consistent with previous studies' views that civil law countries have more developed financial markets than civil law countries. Moreover, the research finds that common law countries can recover faster and better from the financial crisis than civil law countries.

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