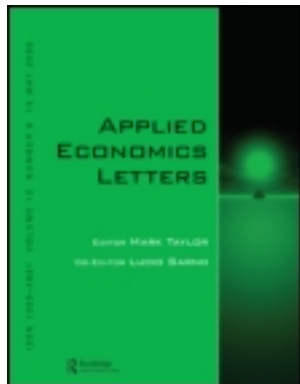


This article was downloaded by: [wenming xu]

On: 27 February 2014, At: 17:02

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Applied Economics Letters

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rael20>

### Law matters?: a Bayesian analysis of the cross-country relationship between anti-self-dealing rules and stock market outcomes

Wenming Xu<sup>a</sup>

<sup>a</sup> Law School, University of Bologna, 40126 Bologna, Italy

Published online: 07 Jan 2014.

To cite this article: Wenming Xu (2014) Law matters?: a Bayesian analysis of the cross-country relationship between anti-self-dealing rules and stock market outcomes, Applied Economics Letters, 21:5, 366-371, DOI: [10.1080/13504851.2013.861580](https://doi.org/10.1080/13504851.2013.861580)

To link to this article: <http://dx.doi.org/10.1080/13504851.2013.861580>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

---

# Law matters?: a Bayesian analysis of the cross-country relationship between anti-self-dealing rules and stock market outcomes

Wenming Xu

Law School, University of Bologna, 40126 Bologna, Italy  
E-mail: [wenming.xu2@unibo.it](mailto:wenming.xu2@unibo.it)

---

This article examines robustness of the cross-country relationship between anti-self-dealing rules and proxies for stock market development proposed by Djankov *et al.* (2008) using the weighted-average least squares estimator. The claimed relationship is not robust considering the model uncertainty problem.

**Keywords:** anti-self-dealing rules; stock market development; Bayesian analysis; weighted-average least squares estimator

**JEL Classification:** G38; K22; C11

## I. Introduction

Recent law and finance studies have been focusing on the effects of anti-self-dealing or anti-tunnelling rules on both individual firms and stock markets. Djankov *et al.* (2008), henceforth DLLS) construct a cross-sectional ‘anti-self-dealing index (ANTISDI)’ for 72 countries and claim that it positively correlates with a variety of stock market outcomes. However, their identification relies on the assumption that legal origins are valid instruments for the endogenous index, which is rejected recently.

One source of bias in such cross-sectional analyses is its failure to consider the model uncertainty problem (Leamer, 1983). To test the robustness of DLLS’s empirical results, I apply a newly developed Bayesian model averaging estimator, the weighted-average least squares (WALS) estimator (Magnus *et al.*, 2010), to a sample of 48 countries with 32 independent regressors. The ‘global sensitivity analysis’ rejects DLLS’s conclusions and suggests that their results are fragile.

## II. The Controversial Evidence

Legal protection of investors is argued to shape a number of stock market outcomes. Several empirical researches contend that better legal protection of shareholders is correlated with more external finance (La Porta *et al.*, 1997), dispersed ownership structure (La Porta *et al.*, 1998) and the stock market development (DLLS, 2008).<sup>1</sup>

Though as intriguing as the theory sounds, country-specific studies seem to reject the role that the legal institution plays in framing these outcomes. Cheffins (2001) looks into the business history of UK, and proposes that the ownership structures of listed firms had already become dispersed long before the concept of corporate governance was established. Coffee (2001) further argues that the causality is reversed in the United States, the legal developments came after the dispersed ownership arose.

Furthermore, regressions using panel data sets, which deal with country-fixed effects, provide dissenting evidence. Armour *et al.* (2009) construct a ‘shareholder

<sup>1</sup> The ‘anti-director rights index’ involved in the first two articles is re-examined by Spamann (2010), which finds significant coding errors. After these errors are corrected, the empirical relationships are no longer significant.

protection index' for 25 countries over 11 years, and show that civil law countries are converging to common law ones in shareholder protection, however, these legal changes bring no significant impacts on stock market development.

### III. Data and Empirical Strategies

To shed light on this debate, I apply the WALS estimator to a generic representation of the linear cross-country stock market development regression:

$$y = a + Xb + e = a + X_1b_1 + X_2b_2 + e \quad (1)$$

where  $y$  is a vector of the stock market outcome variables,  $X$  is a set of potential determinants of stock market development, which is comprised of two parts: the free variables<sup>2</sup>  $X_1$  and the controlling variables  $X_2$ , where the model uncertainty arises, and  $a$  is a vector of intercepts,  $e$  is the error term and  $b$ ,  $b_1$  and  $b_2$  are the coefficients.

The restricted model is set exactly to the basic specification in DLLS (2008), which includes ANTISDI, 'time to collect a bounced check', and 'GDP per capita', which comprise of the free variables  $X_1$ . Furthermore, other 29 doubtful variables identified in the literature are included and form  $X_2$ . As a result, the model space is  $2^{29}$ . Finally, the dependent variables are three proxies for stock market development employed in DLLS (2008) and they are 'Market capitalization to GDP (CMMKT)', 'Natural Logarithm of number of listed firms (LISTED)', 'IPO value to GDP (IPO)' and one overlooked variable, proxy for market liquidity 'Stock traded to GDP (TRADE)'.

The data set consists of cross-sectional observations of 48 jurisdictions, which is a sub-sample of the one used in DLLS (2008). The data are collected from published journal articles and the World Bank's World Development Index, and its sources and descriptive statistics are available from the Appendix.

### IV. Discussion

#### Estimation with only free variables

I first replicate the prior analysis of ANTISDI reported in Table 6 of DLLS (2008) with the smaller sample of 48 countries to show that the sampling problem is not a source of bias. The outputs are shown in Table 1. The specification only includes the free variables and follows the one that DLLS employ. Unsurprisingly, ANTISDI is significant in the three regressions with dependent variables CMMKT, LISTED and IPO, yet insignificant in the regression with the dependent variable TRADE, which is not included in DLLS (2008).

#### Estimation using WALS estimator

This section uses the WALS estimator to deal with the model uncertainty problem and tests the robustness of the relationship between ANTISDI and various proxies for stock market development, the results of which are shown in Table 2. To save space, only the coefficient and 't-ratio' of each regressor are reported, and a regressor is considered as robustly correlated with the dependent variable if 'the corresponding t ratio is greater than one in absolute value' (De Luca and Magnus, 2011, 531pp.). The intuition

Table 1. OLS estimation of restricted models

Dependent variables				
Independent variables	CMMKT	LISTED	IPO	TRADE
Anti-self-dealing index	74.67896* (1.9)	49.24796*** (2.89)	3.786072** (2.11)	-2.996638 (-0.12)
Time to collect on a bounced check	-22.80809** (-2.32)	-2213482 (-0.04)	0.399905 (0.72)	-29.03414*** (-2.88)
GDP per capita	35.82329*** (2.82)	17.60502*** (4.38)	2.462884*** (4.81)	38.00484*** (3.63)
Constant	20.07589 (0.29)	-65.86654 (-1.61)	-10.49623** (-2.42)	57.18273 (0.93)
R-squared	0.3904	0.4422	0.3965	0.4019
Observation	48	48	48	48

Notes: The regression estimated is as follows  $y = a + bX + e$ , where  $y$  is a vector of the four dependent variables CMMKT, LISTED, IPO and TRADE.  $X$  is a vector of the three free variables. The regression specification follows the one employed in Table 6 of Djankov et al. (2008). The t-statistics is reported in the parentheses. \*, \*\* and \*\*\* stand for 10%, 5% and 1% significance levels, respectively.

<sup>2</sup> See Leamer (1983) for discussion about the terminologies for the focus, free and doubtful variables.

Table 2. Weighted-average least squares estimation

	Panel A Dependent variable: CMMKT		Panel B Dependent variable: LISTED		Panel C Dependent variable: IPO		Panel D Dependent variable: TRADE	
	Coeff.	<i>t</i> -ratio	Coeff.	<i>t</i> -ratio	Coeff.	<i>t</i> -ratio	Coeff.	<i>t</i> -ratio
Free variables								
constant	311.2828	0.91	-142.087*	-1.73	-28.4489*	-2.29	148.0498	0.57
ANTISDI	74.47718	0.77	-7.03681	-0.29	-4.81671*	-1.29	9.192295	0.12
check	-10.0227	-0.44	0.623951	0.11	2.228639*	2.54	-21.0913*	-1.21
gdppercapita	36.5263	0.55	28.69223*	1.73	2.363407	0.97	42.25384	0.86
Doubtful variables								
itprosecution	35.18613	0.91	4.365654	0.46	0.554906	0.48	36.3191*	1.22
rantid2003dlls	-20.9551*	-1.18	6.230209*	1.42	0.640963*	1.04	-15.7543*	-1.16
onevote	14.32064	0.49	-4.66947	-0.64	-0.48024	-0.45	4.604522	0.21
catholic	-20.8929	-0.49	-14.3485*	-1.39	-2.5612*	-1.84	5.937287	0.18
protestant	-39.0954	-0.84	-9.37738	-0.85	0.628425	0.37	-7.81714	-0.23
muslim	-49.4433*	-1.17	-5.62416	-0.54	-0.10724	-0.07	-19.7302	-0.62
buddhist	-108.662*	-1.68	-21.9576*	-1.38	-1.04539	-0.4	-49.0268*	-1.02
staff	1.202156	0.78	0.470491*	1.28	0.00098	0.02	0.190168	0.17
enforcementlls	-132.704*	-1.12	23.75136	0.86	-0.79963	-0.19	-58.7022	-0.67
disclosure	44.95374	0.5	16.00541	0.72	4.45995*	1.24	50.22414	0.73
nanalysts	2.815404*	1.44	-0.79273*	-1.56	-0.01568	-0.2	1.788972*	1.21
education1960	-95.8988	-0.69	-45.7686*	-1.33	12.43677*	2.19	-136.902*	-1.28
lifee1960s	-1.2243	-0.34	1.054949*	1.19	-0.08601	-0.65	-0.19743	-0.07
britishco	-8.58917	-0.16	7.262472	0.55	-2.99965*	-1.43	19.77026	0.49
frenchco	-109.789*	-1.32	3.456285	0.18	1.830199	0.69	-57.0303	-0.91
otherfrenchcivlawco	-48.1438	-0.85	11.57991	0.87	-0.15413	-0.08	-26.5348	-0.63
otherco	27.09184	0.58	-3.98342	-0.35	-1.01814	-0.56	36.70533*	1.04
unreceptive	-25.8467	-0.48	8.565011	0.68	1.859352*	1	15.02838	0.36
latitude	-81.7626	-0.6	-24.3709	-0.74	3.076616	0.57	-45.1194	-0.45
commonlo	2.230115	0.03	-10.3316	-0.55	5.449134*	1.92	17.23049	0.29
frenchlo	37.17806	0.4	-5.21627	-0.25	1.433346	0.47	51.67045	0.75
germanlo	-17.1348	-0.28	7.033082	0.47	0.348576	0.15	28.38291	0.63
mixedlo	59.57818	0.71	1.970762	0.1	-0.51606	-0.21	52.88446	0.84
property	-0.36266	-0.24	0.193779	0.51	0.023252	0.42	-0.53057	-0.45
steps	-3.10118	-0.6	-0.25743	-0.2	0.01959	0.1	-4.67013*	-1.19
ethnolinguistic	-27.246	-0.43	1.03365	0.06	1.43597	0.64	-24.1399	-0.5
tradeopenness	0.204878	0.6	0.055699	0.67	0.011576	0.87	-0.06739	-0.27
employment	-35.5645	-0.48	1.747939	0.09	-2.95975*	-1.02	5.188666	0.09
newspaper	-5.29059	-0.23	-2.82698	-0.49	-0.27646	-0.32	11.45307	0.66

Notes: The regressions estimated are as follows:  $y = a + X_1b_1 + X_2b_2 + e$ , where  $y$  is a vector of the four dependent variables CMMKT, LISTED, IPO and TRADE,  $X_1$  is a vector of the three free variables and  $X_2$  is a vector of the 29 doubtful variables. The regressors 'itprosecution' and 'tradeopenness' are included with observations for year 1999 in regressions with dependent variables CMMKT, LISTED and TRADE, and observations for year 1996 in the one with dependent variable IPO, since the two subsets of dependent variables cover different time interval. \* stands for that the  $t$ -ratio is greater than one in absolute value.

relates to a property of the adjusted  $R^2$ , which rises if and only if the  $t$ -ratio of the additional regressor is greater than 1 in absolute value.

As is shown in Table 2, only the coefficient of ANTISDI in Panel C has a  $t$ -ratio greater than 1 in the absolute value, but the coefficient is negative. These results suggest that DLLS's conclusion could suffer from severe omitted variable bias, as Armour *et al.* (2009) using panel data to expunge the country fixed effects also find a negative correlation between their 'shareholder protection index' and IPO. The Bayesian analysis rejects the hypothesis that ANTISDI

has any robust positive correlation with the stock market outcomes.

For the doubtful variables, the general observation is that the robust subsets of regressors vary across different dependent variables. Since the law and finance theories provide limited formal guidance towards which ones should be included as control variables, the common practice that includes the same set of the controls for different proxies for the stock market development is inappropriate. The Bayesian analysis implies that though they are all named proxies for stock market development, these variables are heterogeneous.

## V. Conclusion

This article tests the empirical results of the DLLS (2008), which provides evidence that legal protection of minority shareholders from self-dealing facilitates stock market development. Taking a Bayesian perspective and considering the model uncertainty problem, I showed that these results are not robust at all. However, I do not doubt the importance of the minority shareholder protection, but further robust empirical analysis shall be carried out to test theories.

## References

- Armour, J., Deakin, S., Sarkar, P. *et al.* (2009) Shareholder protection and stock market development: an empirical test of the legal origins hypothesis, *Journal of Empirical Legal Studies*, **6**, 343–80.
- Berkowitz, D., Pistor, K. and Richard, J. (2003) Economic development, legality, and the transplant effect, *European Economic Review*, **47**, 165–95.
- Bhattacharya, U. and Daouk, H. (2002) The world price of insider trading, *The Journal of Finance*, **57**, 75–108.
- Botero, J. C., Djankov, S., La Porta, R. *et al.* (2004) The regulation of labor, *The Quarterly Journal of Economics*, **119**, 1339–82.
- Chang, J. J., Khanna, T. and Palepu, K. (2000) Analyst activity around the world, HBS Strategy Unit Working Paper No. 01-061, Harvard University, Boston, MA.
- Cheffins, B. R. (2001) Does law matter? The separation of ownership and control in the United Kingdom, *Journal of Legal Studies*, **30**, 459–84.
- Coffee, J. C. (2001) The rise of dispersed ownership: the roles of law and the state in the separation of ownership and control, *Yale Law Journal*, **111**, 1–82.
- De Luca, G. and Magnus, J. R. (2011) Bayesian model averaging and weighted average least squares: equivariance, stability, and numerical issues, *The Stata Journal*, **11**, 518–44.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F. *et al.* (2002) The regulation of entry, *The Quarterly Journal of Economics*, **117**, 1–37.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F. *et al.* (2008) The law and economics of self-dealing, *Journal of Financial Economics*, **88**, 430–65.
- Easterly, W. and Levine, R. (1997) Africa's growth tragedy: policies and ethnic divisions, *The Quarterly Journal of Economics*, **112**, 1203–50.
- Jackson, H. E. and Roe, M. J. (2009) Public and private enforcement of securities laws: resource-based evidence, *Journal of Financial Economics*, **93**, 207–38.
- Klerman, D. M., Mahoney, P. G., Spamann, H. *et al.* (2011) Legal origin or colonial history?, *Journal of Legal Analysis*, **3**, 379–409.
- La Porta, R., Lopez-De-Silanes, F. and Shleifer, A. (2006) What works in securities laws?, *The Journal of Finance*, **61**, 1–32.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. *et al.* (1997) Legal determinants of external finance, *Journal of Finance*, **52**, 1131–50.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. *et al.* (1998) Law and finance, *Journal of Political Economy*, **106**, 1113–55.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. *et al.* (1999) The quality of government, *Journal of Law, Economics, and Organization*, **15**, 222–79.
- Leamer, E. E. (1983) Let's take the con out of econometrics, *American Economic Review*, **73**, 31–43.
- Little, R. J. A. (1988) Missing-data adjustments in large surveys, *Journal of Business & Economic Statistics*, **6**, 287–96.
- Magnus, J. R., Powell, O. and Prüfer, P. (2010) A comparison of two model averaging techniques with an application to growth empirics, *Journal of Econometrics*, **154**, 139–53.
- Spamann, H. (2010) The “Antidirector Rights Index” revisited, *Review of Financial Studies*, **23**, 467–86.
- Stulz, R. M. and Williamson, R. (2003) Culture, openness, and finance, *Journal of Financial Economics*, **70**, 313–49.

### Appendix: Definitions, Data Sources and Descriptive Statistics

Number	Variable	Name	Obs	Descriptions and sources	Mean	SD
<b>Dependent variables</b>						
1	CMMKT	Market capitalization to GDP	48	Average of stock market capitalization to GDP for the period 1999 to 2003. From World Development Indicators 2011.	74.6164	68.528
2	LISTED	Ln of number of listed firms	48	Natural logarithm of the average of domestic firms listed to its population (in millions) for the period of 1999 to 2003. From World Development Indicators 2011.	23.90832	28.13407
3	IPO	IPO value to GDP	48	Average ratio of equity issued by newly listed firms (in thousands) to GDP (in millions) over the period of 1996 to 2000. From La Porta <i>et al.</i> (2006) and Djankov <i>et al.</i> (2008).	2.820875	3.037239
4	TRADE	Stock traded	48	Average of the total value of stocks traded as the percentage of its GDP over the period of 1999 to 2003. From World Development Indicators 2011.	50.81341	57.01448
<b>Independent variables (free variables)</b>						
1	ANTISDI	Anti-self-dealing index	48	Average of <i>ex ante</i> and <i>ex post</i> private control of self-dealing. From Djankov <i>et al.</i> (2008).	0.476	0.2531081
2	check	Time to collect on a bounced check	48	Logarithm of the length (in calendar days) of the judicial procedure to collect on a bounced check. From Djankov <i>et al.</i> (2008).	5.18761	0.710899
3	gdppercapita <sup>a</sup>	Log of GDP per capita	48	Logarithm of GDP per capita in 2003. From World Development Indicators 2011.	3.83306	0.6355589
<b>Independent variables (doubtful variables)</b>						
1	iprossecution1999 (1996) <sup>b</sup>	Insider trading prosecution 1999 (1996)	48	Dummy variable, equals 1 if the country files any prosecution against insider trading before 1996/1999. From Bhattacharya and Daouk (2002).	0.6458333	0.4833211
2	rantiid2003dlls	DLLS' revised anti-director index	48	Revised anti-director index for 2003. From Djankov <i>et al.</i> (2008).	(0.4166667)	(0.4982238)
3	onevote	One share equals one vote	48	Dummy variable, equals 1 if the Company Law or Commercial Code requires that ordinary shares carry one vote per share. From La Porta <i>et al.</i> (1997).	3.510417	1.132168
4	catholic	Catholic dummy	48	Dummy variable, equals 1 if the country's primary religion is Catholic. From Stulz and Williamson (2003).	0.2291667	0.4247444
5	protestant	Protestant dummy	48	Dummy variable, equals 1 if the country's primary religion is Protestant. From Stulz and Williamson (2003).	0.25	0.437595
6	muslim	Muslim dummy	48	Dummy variable, equals 1 if the country's primary religion is Muslim. From Stulz and Williamson (2003).	0.1458333	0.356674
7	buddhist	Buddhist dummy	48	Dummy variable, equals 1 if the country's primary religion is Buddhist. From Stulz and Williamson (2003).	0.0833333	0.2793102
8	staff <sup>c</sup>	Staff per million population	48	The 2005 size of the securities regulators' staff, divided by the country's population in millions. From Jackson and Roe (2009).	13.6647	15.37414
9	penforcementlls	Public enforcement index of LLS	48	Public enforcement index for year 2000. From La Porta <i>et al.</i> (2006).	0.4976167	0.224029
10	disclosure	Disclosure standards	48	Disclosure standards. From La Porta <i>et al.</i> (2006).	0.5937542	0.2373446
11	nanalysts <sup>d</sup>	Number of analysts	48	Number of analysts providing an annual earnings forecast per firm, averaged in each country for the year 1996. From Chang <i>et al.</i> (2000).	11.71938	8.874205
12	education1960	Education 1960	48	Education in 1960. From Klerman <i>et al.</i> (2011).	0.8952083	0.1696804
13	lifeee1960s	Life expectancy 1960s	48	Life expectancy in 1960s. From Klerman <i>et al.</i> (2011).	60.77083	10.56544
14	britishco	British colonial origin	48	Dummy variable, equals 1 if the country is a former British colony. From Klerman <i>et al.</i> (2011).	0.3125	0.4684174

15	frenchco	French colonial origin	48	Dummy variable, equals 1 if the country is a former French colony. From Klerman <i>et al.</i> (2011).	0.0625	0.244623
16	otherfrenchciv/lawco	Other French civil law colonial origin	48	Dummy variable, equals 1 if the country is a former colony of other French civil law country. From Klerman <i>et al.</i> (2011).	0.2916667	0.4593396
17	otherco	Other colonial origin	48	Dummy variable, equals 1 if the country is colonized by other countries. From Klerman <i>et al.</i> (2011).	0.0625	0.244623
18	unreceptive	Unreceptive transplant	48	Dummy variable, equals 1 if a transplant neither has familiarity nor transplants with significant adaptation. From Berkowitz <i>et al.</i> (2003).	0.5625	0.501328
19	latitude	Absolute latitude	48	Equals Abs (latitude of capital)/90. From La Porta <i>et al.</i> (1999).	0.3478604	0.2074438
20	commonlo	Common legal origin	48	Dummy variable, equals 1 if the country has the Common law legal origin. From Klerman <i>et al.</i> (2011).	0.2708333	0.4490929
21	frenchlo	French legal origin	48	Dummy variable, equals 1 if the country has the French legal origin. From Klerman <i>et al.</i> (2011).	0.3958333	0.494204
22	germanlo	German legal origin	48	Dummy variable, equals 1 if the country has the German legal origin. From Klerman <i>et al.</i> (2011).	0.1041667	0.3087093
23	mixedlo	Mixed legal origin	48	Dummy variable, equals 1 if the country has the mixed legal origin. From Klerman <i>et al.</i> (2011).	0.1458333	0.356674
24	property	Property right	48	Property right protection index 1997. From <a href="http://www.heritage.org">http://www.heritage.org</a> .	72.5	16.82197
25	steps	Steps to start new business	48	The number of steps to start a new business. From Djankov <i>et al.</i> (2002).	8.375	3.922792
26	ethnolinguistic	Ethnolinguistic fractionalization	48	The average value of five different indices of ethnolinguistic fractionalization. Its value ranges from 0 to 1. From Easterly and Levine (1997), and La Porta <i>et al.</i> (1999)	0.2572146	0.2567331
27	tradeopenness1999 (1996) <sup>e</sup>	Trade openness 1999 (1996)	48	Equals the total import and export of goods and services as the percentage of GDP in 1996/1999. From World Development Indicators 2011.	75.64507	60.36629
28	employment	Employment law index	48	Measures the protection of individuals by labour and employment laws. From Botero <i>et al.</i> (2004).	(72.96944)	(59.5433)
29	newspaper	Newspaper circulation	48	Logarithmic of newspapers and periodicals circulation per thousand inhabitants in 2000 (or closest available). From Djankov <i>et al.</i> (2008)	0.4544646	0.1858396

Notes: <sup>a</sup>Though 'IPO value to GDP' is averaged over the period 1996 to 2000, Djankov *et al.* (2008) still use 'Log of GDP per capita' in 2003 as controlling variable. To make the best comparable results, we follow their practice.

<sup>b</sup>Since 'IPO value to GDP' is averaged over the period of 1996 to 2000, the author constructs the dummy variable 'iprosession1996' for year 1996 separately to accommodate the different time interval covered by the dependent variable. 'iprosession1996' is used only in regressions with dependent variable 'IPO value to GDP', and its mean and variance are shown in the parentheses.

<sup>c</sup>The variables have two missing observations for the Venezuela and Zimbabwe, which are filled with the partially parametric algorithm that matches the missing value to the observed value with the closest predicted mean or linear prediction (Little, 1988).

<sup>d</sup>To maintain the largest possible sample size, we take the assumption mentioned by Chang *et al.* (2000) that if one country is not covered by Institutional Brokers' Estimate System (IBES), there is no analyst following this country.

<sup>e</sup>Since 'IPO value to GDP' is averaged over the period 1996 to 2000, the author constructs the dummy variable 'tradeopenness1996' for year 1996 separately to accommodate the different time interval covered by the dependent variable. 'tradeopenness1996' is used only in regressions with dependent variable 'IPO value to GDP', and its mean and variance are shown in the parentheses.