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# **Democracy and Stock Market Performance in Developing Countries**

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# **Democracy and Stock Market Performance in Developing Countries**

## **Abstract**

This paper is a natural extension of Yang (2011) where-in democracy is not positively related to stock market development. We postulate that when moment conditions of stock market performance are accounted for, democracy improves financial markets in developing countries. Channels of democracy, polity and autocracy are instrumented with legal-origins, religious-legacies, income-levels and press-freedom qualities. As a policy implication democracies have important effects on both the degree of competition for public office and the quality of public policies that favor stock market performance in developing countries.

*JEL Classification:* G10 ; G18; G28; P16; P43

*Keywords:* Financial Markets; Government Policy; Political Economy; Development

## **1. Motivation**

This paper complements Yang (2011) with four dimensions. Firstly, it introduces essential moment conditions of stock market development (legal-origins, religious-legacies, income-levels and press-freedoms) into the analysis; where-in the impact of democracy (autocracy) on financial market performance is conditional on the validity of the instruments. Secondly, it adds indicators of stock market activity, efficiency and size to the measure of depth used by Yang (2011). Thirdly, the paper introduces a measure of autocracy to assess the consistency of democracy indicators. Fourthly, for further robustness purposes the dimensions of democracy and stock market indicators are reduced with principal component analysis.

## **2. Data and Methodology**

### **2.1 Data**

Detailed description of data sources, variables, summary statistics and correlation analysis are presented in the appendices.

### **2.2 Methodology**

#### *2.2.1 Endogeneity*

While democracy might account for stock market performance, a reverse causality cannot be ruled-out especially as market-pressures do influence the quality of political systems. The potential correlation between endogenous independent variables with errors-terms in the equation of interest is taken into account by an Instrumental Variable (IV) estimation technique. Previous research has demonstrated the correlation of financial development with selected

instruments outlined in the appendices (La Porta et al., 1997; Stulz & Williamson, 2003; Beck et al., 2003; Asongu, 2011ab)

### 2.2.2 Estimation Technique

Contrary to Yang (2011) who combines the regression in differences with the regression in levels, we adopt the IV process as follows.

First-stage regression:

$$\begin{aligned} PoliticalChannel_{it} = & \gamma_0 + \gamma_1(\text{legalorigin})_{it} + \gamma_2(\text{religion})_{it} + \gamma_3(\text{incomelevel})_{it} \\ & + \gamma_4(\text{pressfreedom})_{it} + \alpha_i X_{it} + v \end{aligned} \quad (1)$$

Second-stage regression:

$$Finance_{it} = \gamma_0 + \gamma_1(Democracy)_{it} + \gamma_2(Autocracy)_{it} + \beta_i X_{it} + \mu \quad (2)$$

We adopt the following steps in the analysis:

- justify the use of a TSLS over an OLS estimation technique via the Hausman-test for endogeneity;
- show that the instruments are exogenous to the endogenous components of explaining variables (political-regime channels), conditional on other covariates (control variables);
- verify if the instruments are valid and not correlated with the error-term in the equation of interest through an Over-identifying restrictions (OIR) test.

## 3. Empirical Analysis

This section assesses the strength and the validity of the instruments. Put in plainer terms, it investigates two main issues: (1) the ability of the instruments to explain political-regimes

conditional on government-quality covariates; and (2) the capacity of political-regimes to explain stock market performance dynamics contingent on the instruments.

### 3.1 Democracy and Instruments

Table 1 below depicts the first condition for the IV procedure where-in, the instruments must be exogenous to the endogenous components of political-regime channels conditional on government-quality control variables. Findings reveal, distinguishing African countries by legal-origins, religious-dominations, income-levels and press-freedom quality helps explain cross-country differences in the quality of political regimes. Thus the instruments are strong as they enter jointly significantly at the 1% significance level.

**Table 1: Political-regime channels and instruments (First-Stage regressions)**

		Democracy		Polity		Autocracy	
	Constant	0.948 (0.456)	<b>6.374***</b> <b>(5.970)</b>	<b>21.016***</b> <b>(8.080)</b>	0.359 (0.345)	<b>-20.311***</b> <b>(-8.830)</b>	<b>6.374***</b> <b>(5.970)</b>
Legal-origins	English common-law	<b>4.193***</b> <b>(4.417)</b>	---	<b>-8.805***</b> <b>(-7.411)</b>	---	<b>13.004***</b> <b>(12.38)</b>	---
	French civil-law	---	<b>-12.597***</b> <b>(-12.37)</b>	---	<b>7.594***</b> <b>(7.641)</b>	---	<b>-12.597***</b> <b>(-12.37)</b>
Religions	Christianity	-1.062 (-0.900)	---	<b>-9.909***</b> <b>(-6.706)</b>	---	<b>9.035***</b> <b>(6.914)</b>	---
	Islam	---	<b>-8.171***</b> <b>(-7.089)</b>	---	<b>7.211***</b> <b>(6.408)</b>	---	<b>-8.171***</b> <b>(-7.089)</b>
Income Levels	Low Income	---	<b>-5.537***</b> <b>(-6.041)</b>	---	<b>6.152***</b> <b>(6.874)</b>	---	<b>-5.537***</b> <b>(-6.041)</b>
	Middle Income	-0.479 (-0.657)	---	-0.257 (-0.282)	---	-0.236 (-0.293)	---
	Lower Middle Income	<b>-2.935***</b> <b>(-2.868)</b>	---	<b>-10.057***</b> <b>(-7.848)</b>	---	<b>7.175***</b> <b>(6.332)</b>	---
	Upper Middle Income	---	<b>-5.106***</b> <b>(-3.781)</b>	---	<b>4.078***</b> <b>(3.093)</b>	---	<b>-5.106***</b> <b>(-3.781)</b>
Press Freedoms	Free	<b>4.113***</b> <b>(5.032)</b>	---	<b>5.375***</b> <b>(5.253)</b>	---	-1.193 (-1.318)	---
	Partly Free	<b>2.818***</b> <b>(3.870)</b>	---	<b>3.695***</b> <b>(4.055)</b>	---	-0.780 (-0.969)	---
	No Freedom	---	0.108 (0.131)	---	<b>-1.845**</b> <b>(-2.286)</b>	---	0.1086 (0.131)
Control Variables	Regulation Quality	<b>1.601***</b> <b>(3.721)</b>	---	<b>2.384***</b> <b>(4.425)</b>	---	<b>-0.804*</b> <b>(-1.688)</b>	---
	Voice and Accountability	---	<b>-1.914***</b> <b>(-2.867)</b>	---	<b>5.716***</b> <b>(8.767)</b>	---	<b>-1.914***</b> <b>(-2.867)</b>
	Adjusted R <sup>2</sup>	0.796	0.637	0.808	0.864	0.617	0.637
	Fisher test	<b>61.842***</b>	<b>32.957***</b>	<b>66.576***</b>	<b>116.951***</b>	<b>26.107***</b>	<b>32.957***</b>
	Observations	110	110	110	110	110	110

\*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively.

### 3.2 Financial Market and Democracy

In the second-stage regressions we first justify our choice of the IV estimation technique with the Hausman test for endogeneity. The first four models of Table 2 are estimated by OLS because their estimates are efficient and consistent; as the null hypothesis of the Hausman test is not rejected. In the stock-market turnover (index) regressions we find that the instruments are both strong and valid through the Cragg-Donald Statistics (for Weak Instrument test) and OIR test respectively. Therefore the instruments do not help democracy explain stock-market performance beyond political-regime mechanisms. Overall, we find evidence that contrary to Mulligan et al.(2004), democracies have important effects on both the degree of competition for public office and the quality of public policies that favor stock market development in developing countries.

**Table 2: Second-Stage regressions**

	Stock Market(SM) Performance								Robustness
	SM Capitalization	SM Value Traded	SM Turnover	Listed Companies	SM Index				
Constant	<b>0.312***</b> (6.594)	<b>0.294***</b> (6.103)	<b>0.045*</b> (1.825)	0.041 (1.610)	<b>0.046***</b> (3.192)	<b>0.046***</b> (3.242)	<b>0.022*</b> (1.876)	<b>0.023*</b> (1.939)	<b>-0.277*</b> (-1.655)
Democracy	<b>0.0308***</b> (4.169)	---	<b>0.013***</b> (3.547)	---	<b>0.008***</b> (3.991)	---	<b>0.012***</b> (6.722)	---	---
Polity 2(Revised)	---	<b>0.034***</b> (4.518)	---	<b>0.014***</b> (3.604)	---	<b>0.008***</b> (3.982)	---	<b>0.012***</b> (6.702)	---
Democracy Index	---	---	---	---	---	---	---	---	<b>0.580***</b> (4.722)
Autocracy	<b>-0.019**</b> (-2.333)	0.016 (1.302)	-0.003 (-0.866)	0.011 (1.638)	-0.004 (-1.352)	0.004 (0.987)	-0.002 (-0.842)	<b>0.010***</b> (2.803)	-0.001 (-0.021)
Hausman-test	4.190	4.240	2.496	2.524	<b>7.473**</b>	<b>7.552**</b>	<b>6.545**</b>	<b>6.721**</b>	<b>5.593*</b>
OIR-Sargan	---	---	---	---	<b>2.196</b>	<b>2.249</b>	<b>32.909***</b>	<b>32.93***</b>	<b>6.467</b>
P-value	---	---	---	---	<b>[0.699]</b>	<b>[0.690]</b>	<b>[0.000]</b>	<b>[0.000]</b>	<b>[0.166]</b>
Cragg-Donald	---	---	---	---	<b>21.144***</b>	<b>20.992***</b>	<b>23.167***</b>	<b>22.982***</b>	<b>20.605***</b>
Adjusted R <sup>2</sup>	0.098	0.108	0.053	0.054	0.085	0.084	0.241	0.087	0.134
Fisher Statistics	<b>15.163***</b>	<b>16.750***</b>	<b>7.846***</b>	<b>8.052***</b>	<b>11.516***</b>	<b>11.478***</b>	<b>27.529***</b>	<b>27.380***</b>	<b>15.096***</b>
Observations	259	259	245	245	158	158	163	163	154
Initial Instruments	Constant; Lower-Middle-Income; Middle-Income; English; Christians; Free Press; Partly Free Press								
Robust Instruments	Constant; Upper-Middle-Income; Low-Income; French; Islam; Not Free Press								

OIR: Overidentifying Restrictions. Cragg-Donald Weak Instrument test for First-Stage regressions. Critical values for TSLS bias relative to OLS for Cragg-Donald Statistics are 15.72 and 9.48 for 5% and 10% respectively. \*, \*\*, \*\*\*: significance levels of 10%, 5% and 1% respectively.

## **5. Conclusion**

We conclude that when moment conditions of stock market performance are accounted for, democracy improves financial markets in developing countries. Channels of democracy, polity and autocracy are instrumented with legal-origins, religious-legacies, income-levels and press-freedom qualities.



## Appendices

### Appendix 1: Summary Statistics (1990 to 2010)

		Mean	S.D	Min.	Max.	Obser.
	Stock Market Capitalization	0.354	0.521	0.008	3.382	259
Stock	Stock Market Value Traded	0.078	0.268	0.000	2.591	245
Market	Stock Market Turnover	0.095	0.119	0.000	0.704	253
Performance	Number of Listed Companies	0.067	0.085	0.002	0.712	268
	Democracy Index	3.170	4.315	-8.000	10.000	294
Democracy	Polity Index(Revised)	0.653	6.499	-10.000	10.000	294
	Autocracy Index	2.544	3.837	-8.000	10.000	294
Autocracy						
	Regulation Quality	-0.224	0.694	-2.394	0.905	168
Control	Voice and Accountability	-0.389	0.793	-1.805	1.047	168
Variables						
	English Common-Law	0.714	0.452	0.000	1.000	294
Legal	French Civil-Law	0.285	0.452	0.000	1.000	294
Origin	Christianity	0.714	0.452	0.000	1.000	294
Religion	Islam	0.285	0.452	0.000	1.000	294
	Low Income	0.285	0.452	0.000	1.000	294
Income	Middle Income	0.714	0.452	0.000	1.000	294
Levels	Lower Middle Income	0.428	0.495	0.000	1.000	294
	Upper Middle Income	0.285	0.452	0.000	1.000	294
	Press Freedom	0.345	0.476	0.000	1.000	165
Freedom of	Partial Press Freedom	0.230	0.422	0.000	1.000	165
the Press	No Press Freedom	0.424	0.495	0.000	1.000	165

S.D: Standard Deviation. Min: Minimum. Max: Maximum. Obser : Observations

## Appendix 2: Correlation Analysis

Stock Market Performance				Political-regimes			Control Vbles		Instrumental Variables											
SMC	SMVT	SMT	ListC	Demo	Poli	Auto	R.Q	V&A	Eng.	Frch.	Chris	Islam	LI	MI	LMI	UMI	Free	PFree	NFree	
1.000	0.863	0.733	0.242	0.294	0.331	-0.21	0.220	0.310	0.109	-0.10	0.123	-0.12	-0.14	0.144	-0.23	0.399	0.391	-0.12	-0.27	SMC
	1.000	0.795	0.084	0.240	0.228	-0.10	0.218	0.257	0.074	-0.07	0.065	-0.06	-0.13	0.130	-0.13	0.274	0.337	-0.13	-0.21	SMV
		1.000	0.078	0.118	0.056	0.039	0.128	0.096	-0.18	0.180	-0.24	0.242	-0.17	0.176	0.048	0.117	0.340	-0.06	-0.27	SMT
			1.000	0.442	0.405	-0.16	0.334	0.458	0.146	-0.14	0.156	-0.15	-0.30	0.308	-0.26	0.596	0.557	-0.18	-0.37	ListC
				1.000	0.805	-0.25	0.526	0.840	0.535	-0.53	0.353	-0.35	0.031	-0.03	-0.63	0.667	0.679	0.051	-0.69	Demo
					1.000	-0.77	0.429	0.836	0.496	-0.49	0.437	-0.43	0.032	-0.03	-0.68	0.718	0.667	0.060	-0.69	Poli
						1.000	-0.08	-0.39	-0.23	0.232	-0.33	0.336	-0.03	0.032	0.434	-0.44	-0.30	-0.03	0.324	Auto
							1.000	0.725	0.013	-0.01	0.066	-0.06	-0.39	0.399	-0.20	0.627	0.618	-0.02	-0.58	R.Q
								1.000	0.471	-0.47	0.397	-0.39	-0.07	0.079	-0.67	0.821	0.805	-0.00	-0.78	V&A
									1.000	-1.00	0.650	-0.65	0.400	-0.40	-0.73	0.400	0.229	0.173	-0.36	Eng.
										1.000	-0.65	0.650	-0.40	0.400	0.730	-0.40	-0.22	-0.17	0.368	Frch.
											1.000	-1.00	0.400	-0.40	-0.73	0.400	0.229	-0.37	0.100	Chris
												1.000	-4.00	0.400	0.730	-0.40	-0.22	0.377	-0.10	Islam
													1.000	-0.54	-0.40	-0.36	0.095	-0.26	0.268	LI
														1.000	0.547	0.400	0.363	-0.09	-0.26	MI
															1.000	-0.54	-0.44	0.020	0.410	LMI
																1.000	0.775	-0.11	-0.64	UMI
																	1.000	-0.39	-0.62	Free
																		1.000	-0.46	PFree
																			1.000	NFree

SMC: Stock Market Capitalization. SMVT: Stock Market Value Traded. SMT: Stock Market Turnover. ListC: Listed Companies. Demo: Democracy. Poli: Polity. Auto: Autocracy. R.Q: Regulation Quality. V&A: Voice and Accountability. Eng: English Common-Law. Frch. French Civil-Law. Chris: Christianity. LI: Low Income Countries. MI: Middle-Income-Countries. LMI: Lower-Middle-Income Countries. UMI: Upper-Middle-Income Countries. Free: Freedom of the Press. PFree: Partial Freedom of the Press. NFree: No Freedom of the Press.

### Appendix 3: Variable Definitions

Variables	Sign	Variable Definitions	Sources
Stock Market Capitalization	SMC	Stock Market Capitalization(% of GDP)	World Bank(FDSD)
Stock Market Value Traded	SMVT	Stock Market Total Value Traded(% of GDP)	World Bank(FDSD)
Stock Market Turnover	SMT	Stock Market Turnover Ratio	World Bank(FDSD)
Listed Companies	ListC	Number of Listed Companies Per(% of Population)	World Bank(FDSD)
Democracy	Demo	Institutionalized Democracy	World Bank(WDI)
Polity	Pol	Revised Combined Polity Score	World Bank(WDI)
Autocracy	Auto	Institutionalized Autocracy	World Bank(WDI)
Regulation Quality	R.Q	Regulation Quality	World Bank(WDI)
Voice and Accountability	V & A	Voice and Accountability	World Bank(WDI)
Press Freedom	Free	Freedom House Index	Freedom House

FDSD: Financial Development and Structure Database. WDI: World Bank Development Indicators.

### Appendix 4: Presentation of Countries

Instruments	Instrument Category	Countries	Num
Law	English Common-Law	Botswana, Ghana, Kenya, Mauritius, Namibia, Nigeria, South Africa, Swaziland, Zambia, Zimbabwe.	10
	French Civil-Law	Ivory Coast, Egypt, Morocco, Tunisia.	4
Religion	Christianity	Botswana, Ivory Coast, Ghana, Kenya, Mauritius, Namibia, South Africa, Swaziland, Zambia, Zimbabwe.	10
	Islam	Egypt, Morocco, Nigeria, Tunisia.	4
Income Levels	Low-Income	Ghana, Kenya, Zambia, Zimbabwe.	4
	Middle-Income	Botswana, Ivory Coast, Egypt, Mauritius, Morocco, Namibia, Nigeria, South Africa, Swaziland, Tunisia.	10
	Lower-Middle-Income	Ivory Coast, Egypt, Morocco, Nigeria, Senegal, Sudan, Swaziland, Tunisia.	8
	Upper-Middle-Income	Botswana, Mauritius, Namibia, South Africa.	4

Num: Number of cross sections(countries)

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