



ISSN Print: 2394-7500
 ISSN Online: 2394-5869
 Impact Factor: 5.2
 IJAR 2016; 2(2): 690-697
 www.allresearchjournal.com
 Received: 18-12-2015
 Accepted: 20-01-2016

Ichraf Ouechtati

Applied Microeconomics
 Research Laboratory
 (LARMA), Faculty of
 Economic Sciences and
 Management of Tunis,
 University of Tunis El
 Manar, Tunisia

Do institutions matter for the relationship between economic fluctuations and financial instability

Ichraf Ouechtati

Abstract

This study aims to examine the causality relationship between economic fluctuations and financial instability in an institutional environment. Utilizing the dynamic panel technique for 44 developing countries over the period 1996- 2010, we find that: 1. there is a bidirectional causality between economic fluctuations and financial instability 2. The impact of the latter is extremely high compared to that of macroeconomic volatility. Examining this relationship in an institutional environment, we conclude that institutions of developing countries are failing. Market oriented regulations reinforce the effects of volatile financial fluctuations and macroeconomic volatility. However, the positive impact of financial instability on macroeconomic volatility is reduced by greater performance in governance.

Keywords: Economic volatility, financial instability, Institutions, Dynamic Panel Model

1. Introduction

The connection between the real economy and the financial sector is a recurring issue in the literature, most often discussed from various angles. While some were interested in the relationship between financial development and economic growth (Calderon and Liu, 2003; Hurlin and Venet, 2004) ^[1, 3]. Others have focused on the interactions between the financial sphere and macroeconomic volatility (Peresetsky and Popov (2006) ^[5], Pholphirul (2008) ^[6]). And still, some authors have chosen to deepen the study of these relationships by incorporating the institutional environment (Demetriades and Law, 2006) ^[2].

An excessive macroeconomic volatility is often coupled in the developing and emerging world with a financial system's vulnerability and wide enough troubles of their financial architectures considering themselves as well as the determinants of the variables undergoing adversely an impact of macroeconomic volatility.

Institutions are a major determinant of the interactions between financial and real sectors. The endogenous institutions are involved in determining how agents act facing excessive macroeconomic volatility and therefore in understanding the financial changes and instabilities.

In brief, this paper is an empirical essay which aims to determine the institutional channels that could explain the relationship between macroeconomic volatility and financial instability in an environment characterized by a low financial development and excessive fluctuations.

The remainder of this paper is organized as follows: Section 2 exposes the model. Section 3 reports the empirical results and section 4 concludes.

2. Empirical model

To examine the possible effect that institutions can have on the relationship between macroeconomic volatility and financial instability, we estimate this dynamic panel model on a sample of 44 developing countries over the period 1996- 2010:

$$\sigma_{y_{it}} = \alpha_j + \sum_{j=1}^m \mu_j \sigma_{y_{it-j}} + \sum_{j=1}^m \beta_j \sigma_{IF_{it-j}} + \sum_{j=1}^m \lambda_j X_{it-j} + \sum_{j=1}^m \gamma_j (\sigma_{IF_{it-j}} * I_{it-j}) + \varepsilon_{it}$$

With $\sigma_{y_{it}}$ is the indicator of economic volatility in the country i at the time t , measured by the standard deviation using a five year rolling window of economic growth rate. Data is obtained from the World Bank Database (2007) and the website www.worldbank.org

σ_{IF} is the standard deviation of five observations of the domestic financial architecture indicator.

Correspondence Ichraf Ouechtati

Applied Microeconomics
 Research Laboratory
 (LARMA), Faculty of
 Economic Sciences and
 Management of Tunis,
 University of Tunis El
 Manar, Tunisia

IF are indicators of the financial architecture (FA) : is an index measuring the degree of orientation of a financial system to the stock market and it is based on three FA indices which are the relative size, activity and the efficiency of the stock market in a given country relative to its banking sector. The high values of this index indicate a greater orientation of the financial system to market. Architecture variable reflects the arithmetic average of these three variables: architecture-size, architecture-activity and architecture-efficiency.

- ✓ The size of the architecture = Market capitalization ratio / bank credit ratio = (Market capitalization / GDP) / (bank credit / GDP)
- ✓ The activity of the architecture = total value of stocks traded ratio / bank credit ratio = (total value traded / GDP) / (bank credit / GDP)
- ✓ Efficiency AF is the product of the ratio of the total value traded and overhead costs.

Financial architecture variables data is taken from World Bank database (2007) and the World Bank website and World Bank financial structure (2008).

X_{it} : is a control variable vector that incorporates the most variables used in the literature as determinants of macroeconomic fluctuations. The selected control variables are:

- OC*: Trade openness ((Exports + Imports) as % of GDP).
- SS* : the value added of the service sector (as % of GDP)
- SA*: the value added of the agricultural sector (as % of GDP)
- DL*: Liquid liabilities (M3 as % of GDP)
- DG*: Government spending,

Control variables data is taken from the World Bank Database (2007) and the website *www.worldbank.org*

$\sigma_{IFit-j} * I_{it-j}$ is a vector of interaction variables between financial instability and institutional indicators. We have eight institutional indicators. Two indicators from the database "The International Country Risk Guide" (ICRG): Legal system and property rights (sl) and regulation of credit, labor and business (rgl) and six variables from the database of Kaufman Institute: Voice and accountability (vr), Political stability and absence of violence (pv), Government

Effectiveness (eg), Regulatory quality (qr), Rule of law (rl) and Control of corruption (cc).

δ_i : a country specific effect,

ε_{it} : is an error term

m : is the appropriate number of delay.

3. Estimation results

This section discusses the various estimations of financial volatility impact and each of its components on macroeconomic volatility.

3.1. Impact of financial instability on economic fluctuations

The effect of the financial instability exposed in the first column of each table is positive and statistically significant. The insertion of the institutional interaction terms in columns (2 to 10) significantly changes that result in most cases.

In columns (2) and (3) of each table, the interaction terms (interactions of the financial instability and its components with regulation of credit, labor, and business and the legal structure and security of property rights respectively) enter positively and significantly in the model and transform the positive sign linking financial instability in macroeconomic volatility in a negative sign. In the presence of the interaction term « $\sigma_{IF} * rgl$ », the financial instability effect, for example, becomes -3.270 instead of 1.623, and the instability of the first component of 1.496 to -2.803. These two indicators form a channel which stimulates the positive relationship from financial instability to economic fluctuations.

As for the interaction terms between financial instability and institutional indicators of Kaufman database, an overall observation shows their non- significances. This finding marks the weak institutional framework in which the developing countries are integrated. We note generally that all the coefficients of the interaction terms of financial instability with institutional indicators of Kaufman database are negative, indicating that the positive impact of financial instability on economic fluctuations is alleviated by greater performance in governance.

Tableau 1: Effect of the financial architecture instability on economic fluctuations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vlx*rgl	Vlx*sl	Vlx*vr	Vlx*pv	Vlx*eg	Vlx*qr	Vlx*rl	Vlx*cc
Vol yit-1	0.937*** (0.034)	1.001*** (0.027)	1.019*** (0.040)	1.045*** (0.063)	0.967*** (0.051)	1.019*** (0.073)	0.865*** (0.064)	0.842*** (0.033)	0.838*** (0.032)
Vol Af-1	1.623*** (0.492)	- (1.023)	- (0.835)	1.095*** (0.342)	1.278*** (0.364)	0.923* (0.538)	1.628* (0.917)	0.737** (0.289)	-0.476 (0.494)
OC	0.0310*** (0.005)	0.010*** (0.003)	0.015*** (0.003)	0.033*** (0.006)	0.016*** (0.005)	0.023** (0.009)	0.024*** (0.009)	0.018*** (0.004)	0.015** (0.006)
SS	0.080*** (0.018)	- (0.003)	0.016*** (0.005)	(0.023) -0.035	- (0.030)	-0.042* (0.022)	- (0.035)	- (0.013)	0.041** (0.018)
SA	-0.002 (0.025)	- (0.012)	0.051*** (0.014)	- (0.030)	0.103*** (0.023)	0.082*** (0.044)	- (0.061)	- (0.026)	- (0.035)
DL	-0.007 (0.005)	0.006* (0.003)	0.007* (0.003)	0.008*** (0.002)	0.008*** (0.002)	0.012*** (0.003)	0.015** (0.006)	0.007** (0.002)	0.005 (0.006)
DG	0.167*** (0.028)	-0.033 (0.027)	-0.027 (0.040)	-0.058 (0.039)	-0.048 (0.046)	-0.122* (0.064)	0.199*** (0.065)	-0.053 (0.054)	0.036 (0.059)
Vlx*rgl	-----	0.605*** (0.169)	-----	-----	-----	-----	-----	-----	-----

Vlx*sl	----	----	0.558*** (0.146)	----	----	----	----	----	----
Vly*vr	----	----	----	(0.437) -0.601	----	----	----	----	----
Vly*pv	----	----	----	----	-0.383 (0.468)	----	----	----	----
Vly*eg	----	----	----	----	----	-1.275 (1.269)	----	----	----
Vly*qr	----	----	----	----	----	----	8.238*** (1.410)	----	----
Vly*rl	----	----	----	----	----	----	----	-0.369 (0.367)	----
Vly*cc	----	----	-	----	----	----	----	----	-0.723 (0.503)
Constant	-8.928*** (1.663)	0.321 (0.649)	0.285 (0.902)	0.711 (1.668)	4.586** (2.156)	2.862** (1.353)	1.467 (3.184)	3.115*** (1.184)	-1.975 (1.612)
Diagnostics									
Observations	445	290	290	315	315	315	315	315	315
Causality granger Test P Value	0.001	0.001	0.006	0.001	0.000	0.086	0.075	0.010	0.335
AR(2) test P Value	0.676	0.439	0.441	0.208	0.216	0.235	0.121	0.241	0.291
Hansen test P Value	0.435	0.586	0.487	0.200	0.324	0.165	0.553	0.205	0.516
Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$									

Tableau 2: Effect of the instability of financial architecture size on economic fluctuations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vly*sl	Vly*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol yit-1	0.968*** (0.034)	0.912*** (0.020)	0.872*** (0.035)	0.780*** (0.047)	0.744*** (0.026)	0.719*** (0.022)	0.975*** (0.121)	0.773*** (0.078)	0.832*** (0.054)
Vol size-1	1.496*** (0.216)	- 2.803*** (0.808)	- 2.462*** (0.350)	0.993*** (0.347)	0.727* (0.405)	0.863*** (0.295)	0.669 (0.635)	2.767* (1.510)	0.040 (0.762)
OC	0.031*** (0.006)	0.005** (0.002)	-0.002 (0.005)	0.019*** (0.005)	0.021*** (0.006)	0.022*** (0.004)	0.033** (0.016)	0.015 (0.011)	0.024*** (0.008)
SS	0.087*** (0.021)	-0.007 (0.005)	- 0.025*** (0.005)	0.064*** (0.025)	0.054*** (0.018)	0.084*** (0.014)	-0.0003 (0.061)	0.044 (0.037)	0.027 (0.027)
SA	0.039 (0.031)	- 0.068*** (0.020)	- 0.095*** (0.019)	-0.026 (0.016)	-0.018 (0.013)	-0.024 (0.018)	-0.081 (0.080)	0.028 (0.044)	0.002 (0.028)
DL	-0.007 (0.004)	0.011*** (0.003)	0.016*** (0.005)	-0.001 (0.004)	0.001 (0.003)	-0.002 (0.004)	0.004 (0.008)	0.007 (0.005)	0.005 (0.005)
DG	0.237*** (0.040)	0.021 (0.034)	-0.028 (0.050)	0.061 (0.044)	0.041 (0.043)	0.081** (0.040)	-0.078 (0.158)	0.067 (0.091)	0.024 (0.059)
Vly*rgl		0.446*** (0.119)							
Vly*sl			0.518*** (0.070)						
Vly*vr				-0.192 (0.489)					
Vly*pv					-0.379 (0.281)				
Vly*eg						-0.551 (0.516)			
Vly*qr							-0.171 (2.017)		
Vly*rl								1.822 (1.236)	
Vly*cc									-0.482 (1.245)
Constant	- 11.01*** (2.224)	0.272 (0.914)	2.689** (1.183)	- 5.189*** (1.759)	- 4.757*** (1.620)	- 6.604*** (1.152)	-0.536 (3.276)	-5.203* (2.722)	-3.814** (1.608)
Diagnostics									
Observations	445	290	290	315	315	315	315	315	315
Causality granger Test P Value	0.000	0.000	0.000	0.004	0.072	0.003	0.292	0.066	0.957
AR(2) test P Value	0.740	0.407	0.385	0.254	0.253	0.266	0.248	0.303	0.298
Hansen test P Value	0.413	0.612	0.473	0.475	0.398	0.433	0.153	0.154	0.520
Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$									

Tableau 3: Effect of the instability of financial architecture activity on economic fluctuations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vly*sl	Vly*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol yit-1	0.926*** (0.036)	0.999*** (0.022)	0.914*** (0.021)	0.949*** (0.103)	1.028*** (0.103)	0.883*** (0.094)	0.927*** (0.123)	0.883*** (0.053)	0.885*** (0.063)
Vol Aty-1	1.518** (0.608)	- 35.26*** (1.709)	- 8.439*** (1.041)	1.371 (2.909)	-3.564* (2.144)	- 6.556*** (1.589)	-4.778** (2.225)	- 2.964*** (0.895)	- 2.094*** (0.653)
OC	0.008** (0.003)	0.010*** (0.003)	-0.001 (0.002)	0.035*** (0.009)	0.071*** (0.013)	0.031** (0.012)	0.041*** (0.013)	0.023*** (0.006)	0.034*** (0.010)
SS	0.033*** (0.012)	0.015*** (0.004)	0.007 (0.005)	-0.004 (0.039)	-0.005 (0.045)	-0.006 (0.054)	0.003 (0.044)	-0.012 (0.021)	-0.0005 (0.025)
SA	-0.028 (0.018)	0.001 (0.009)	-0.001 (0.011)	-0.022 (0.045)	- 0.262*** (0.085)	-0.061 (0.046)	-0.069 (0.054)	-0.030 (0.021)	-0.052* (0.030)
DL	-0.0002 (0.003)	0.005 (0.004)	0.004* (0.002)	0.014*** (0.005)	0.002 (0.009)	0.023*** (0.008)	0.0151** (0.007)	0.013*** (0.004)	0.013*** (0.004)
DG	0.029 (0.032)	0.065*** (0.014)	0.016 (0.031)	-0.076 (0.069)	-0.114 (0.127)	-0.057 (0.111)	0.044 (0.107)	0.007 (0.057)	0.058 (0.062)
Vly*rgl		5.869*** (0.277)							
Vly*sl			1.739*** (0.165)						
Vly*vr				1.622 (1.960)					
Vly*pv					-0.647 (2.531)				
Vly*eg						- 14.85*** (3.383)			
Vly*qr							-5.142 (3.484)		
Vly*rl								-3.167 (2.348)	
Vly*cc									-1.032 (1.596)
Constant	-2.519** (1.127)	- 2.830*** (0.553)	-0.474 (0.803)	-1.770 (2.298)	-0.456 (3.432)	-1.057 (3.610)	-3.407 (3.155)	-1.196 (1.388)	-3.226 (1.997)
Diagnostics									
Observations	429	281	281	302	302	302	302		
Causality granger Test P Value	0.012	0.000	0.000	0.637	0.096	0.000	0.031	0.000	0.001
AR(2) test P Value	0.361	0.295	0.386	0.275	0.280	0.351	0.276	0.270	0.299
Hansen test P Value	0.300	0.442	0.370	0.260	0.361	0.345	0.324	0.504	0.461

Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Tableau 4: Effect of the instability of financial architecture efficiency on economic fluctuations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vly*sl	Vly*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol yit-1	0.908*** (0.035)	1.048*** (0.031)	1.002*** (0.057)	0.780*** (0.066)	0.837*** (0.046)	0.742*** (0.057)	0.764*** (0.056)	0.750*** (0.057)	0.878*** (0.102)
Vol Eff-1	0.487** (0.224)	-1.349** (0.600)	- 2.450*** (0.776)	0.884*** (0.256)	0.749** (0.350)	0.988*** (0.313)	0.708** (0.283)	1.199*** (0.415)	0.742* (0.440)
OC	0.010*** (0.003)	-0.001 (0.003)	-0.007 (0.004)	0.030*** (0.009)	0.013 (0.008)	0.016* (0.008)	0.013 (0.009)	0.014* (0.007)	0.025*** (0.009)
SS	0.021** (0.009)	0.012*** (0.004)	-0.008 (0.006)	0.048 (0.040)	0.036 (0.032)	0.048 (0.035)	0.047 (0.033)	0.054 (0.035)	0.019 (0.051)
SA	-0.010 (0.014)	0.030** (0.012)	-0.024 (0.031)	0.059 (0.036)	0.057 (0.036)	0.050 (0.045)	0.057 (0.039)	0.061 (0.042)	0.014 (0.055)
DL	0.003 (0.002)	0.020*** (0.006)	0.021*** (0.006)	0.006** (0.003)	0.011** (0.005)	0.009* (0.005)	0.008* (0.005)	0.009* (0.005)	0.011* (0.005)
DG	-0.007 (0.029)	-0.127** (0.058)	- 0.152*** (0.052)	-0.086* (0.052)	- 0.219*** (0.068)	-0.148** (0.065)	-0.108* (0.061)	-0.124** (0.060)	-0.082 (0.124)
Vleff*rgl		0.270*** (0.098)							

Vly*sl			0.532*** (0.131)						
Vleff*vr				-0.553 (0.517)					
Vly*pv					-0.448 (0.299)				
Vly*eg						-1.301** (0.545)			
Vly*qr							-0.558 (0.569)		
Vly*rl								-0.384 (0.611)	
Vly*cc									-1.699 (1.174)
Constant	-1.734** (0.883)	-0.243 (0.858)	2.316** (0.940)	-4.444** (2.091)	-0.962 (1.630)	-2.413 (1.769)	-2.795* (1.429)	-3.218* (1.768)	-2.350 (2.541)
Diagonistics									
Observations	434	292	292	311	311	311	311	311	311
Causality granger Test P Value	0.029	0.024	0.001	0.000	0.032	0.001	0.012	0.003	0.091
AR(2) test P Value	0.279	0.292	0.280	0.220	0.230	0.284	0.265	0.175	0.214
Hansen test P Value	0.403	0.430	0.449	0.296	0.292	0.161	0.267	0.441	0.118
Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$									

b. Impact of macroeconomic volatility on financial instability

We focus in what follows on the effect of macroeconomic volatility on financial fluctuations and the causal relationship going from the real sector to the financial sphere. The specification tests of our dynamic model which are the autocorrelation test of second order and the Hansen test of the validity of instruments reveal the rejection of the null hypothesis of the Wald test of no causality between economic fluctuations and financial instability.

According to Table 5 (effect of macroeconomic volatility on financial architectures instability) and compared to the impact of financial instability on macroeconomic volatility, the opposite effect is extremely low. Although the volatility of the financial architecture has an impact of 1.623% on economic fluctuations, it has an effect of 0.004%. The

comparison of the effects of the financial architecture components instability on macroeconomic volatility relative to the opposite impact (see tables 6, 7 and 8) confirms that finding.

The integration of the institutional interaction terms reveals that those linking institutional indicators of the database "ICRG" with macroeconomic volatility generally enter positively into the model. For one, they accentuate the positive effect of variables "instability of the financial architecture" and the third component "instability of the efficiency of the financial architecture." They reduce, on the other hand, the negative effect of instabilities of the first and second components. Thus, the impact of these two indicators "regulation of credit, labor and business" and "Legal structure and security of property rights" is ambiguous and not clear.

Tableau 5: Effect of economic fluctuations on financial architecture instability

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vlx*sl	Vlx*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol Af-1	0.892*** (0.077)	0.884*** (0.041)	1.043*** (0.029)	0.964*** (0.156)	0.805*** (0.031)	0.810*** (0.038)	0.809*** (0.035)	0.805*** (0.113)	0.794*** (0.036)
Vol yit-1	0.004 (0.005)	0.161*** (0.016)	0.059*** (0.005)	-0.013 (0.012)	0.007*** (0.002)	0.014*** (0.003)	-0.005* (0.003)	-0.028 (0.019)	-0.008* (0.004)
OC	-0.001** (0.0004)	0.003*** (0.0004)	0.004*** (0.0003)	-0.001 (0.001)	0.001*** (0.0003)	0.001*** (0.0003)	0.002*** (0.0004)	-0.0009 (0.0007)	0.002*** (0.0004)
SS	0.003*** (0.001)	0.006*** (0.001)	-9.06e-05 (0.0009)	-0.004 (0.005)	-0.001 (0.001)	0.005*** (0.001)	-0.002** (0.001)	0.002 (0.004)	-0.001 (0.001)
SA	0.003 (0.003)	0.022*** (0.002)	0.017*** (0.001)	0.004 (0.008)	0.007*** (0.001)	0.011*** (0.002)	0.007*** (0.001)	0.009 (0.007)	0.007*** (0.001)
DL	0.0008* (0.0004)	0.001** (0.0006)	0.002*** (0.0006)	-0.0001 (0.0008)	0.001*** (0.0004)	0.001*** (0.0005)	0.0006 (0.0003)	-9.52e-05 (0.0005)	0.0008 (0.0005)
DG	-0.001 (0.007)	0.007 (0.005)	-0.009** (0.004)	0.024* (0.013)	0.009*** (0.002)	0.003 (0.003)	0.009*** (0.003)	0.018** (0.007)	0.010** (0.004)
Vly*rgl	----	0.022*** (0.002)	----	----	----	----	----	----	----
Vly*sl	----	----	0.010*** (0.0009)	----	----	----	----	----	----
Vly*vr	----	----	----	-0.030 (0.033)	----	----	----	----	----

Vly*pv	----	----	----	----	-0.001 (0.003)	----	----	----	----
Vly*eg	----	----	----	----	----	-0.016 (0.011)	----	----	----
Vly*qr	----	----	----	----	----	----	-0.003 (0.004)	----	----
Vly*rl	----	----	----	----	----	----	----	-0.025 (0.021)	----
Vly*cc	----	----	----	----	----	----	----	----	-0.005 (0.007)
Constant	0.251** (0.104)	- 0.450*** (0.139)	0.197** (0.088)	0.020 (0.325)	-0.062 (0.090)	0.193 (0.144)	0.117 (0.099)	-0.343 (0.327)	0.034 (0.104)
Diagnostics									
Observations	442	287	287	312	312	312	312	312	312
Causality granger Test P Value	0.477	0.000	0.000	0.287	0.000	0.000	0.090	0.135	0.065
AR(2) test P Value	0.131	0.671	0.290	0.340	0.153	0.338	0.236	0.412	0.202
Hansen test P Value	0.177	0.280	0.565	0.441	0.524	0.744	0.560	0.416	0.451
Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$									

Tableau 6: Effect of economic fluctuations on the instability of financial architecture size

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vlx*sl	Vlx*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol size-1	0.901*** (0.035)	0.977*** (0.024)	0.833*** (0.007)	0.952*** (0.061)	0.902*** (0.048)	0.751*** (0.044)	0.781*** (0.057)	1.074*** (0.059)	0.842*** (0.030)
Vol yit-1	-0.025** (0.010)	-0.036 (0.031)	- 0.029*** (0.007)	-0.010* (0.006)	-0.026* (0.013)	- 0.023*** (0.006)	-0.018** (0.009)	-0.005 (0.011)	-0.019** (0.009)
OC	-0.0006 (0.0009)	-0.001 (0.0009)	- 0.004*** (0.0005)	-0.002** (0.0009)	- 0.004*** (0.001)	-0.0005 (0.0008)	-0.002** (0.001)	-0.001 (0.001)	- 0.001*** (0.0006)
SS	-0.001 (0.003)	0.007*** (0.002)	- 0.004*** (0.0008)	-0.008** (0.004)	-0.007 (0.004)	-0.005** (0.002)	-0.003 (0.004)	-0.002 (0.003)	-0.010** (0.004)
SA	0.003 (0.005)	0.029*** (0.004)	0.014*** (0.002)	0.032*** (0.005)	0.016*** (0.005)	0.022*** (0.004)	0.013** (0.005)	0.041*** (0.005)	0.027*** (0.003)
DL	-0.0003 (0.0006)	0.0004 (0.0008)	0.002*** (0.0006)	0.001 (0.001)	0.0007 (0.0009)	0.0005 (0.0007)	0.0002 (0.0009)	0.0009 (0.001)	-0.0003 (0.0007)
DG	0.022*** (0.007)	0.001 (0.006)	-0.001 (0.003)	0.012 (0.010)	-0.002 (0.014)	0.008 (0.006)	0.023* (0.011)	0.011 (0.012)	0.016*** (0.006)
Vly*rgl	----	9.65e-05 (0.005)	----	----	----	----	----	----	----
Vly*sl	----	----	0.001 (0.001)	----	----	----	----	----	----
Vly*vr	----	----	----	-0.020* (0.012)	----	----	----	----	----
Vly*pv	----	----	----	----	-0.016 (0.014)	----	----	----	----
Vly*eg	----	----	----	----	----	-0.010 (0.020)	----	----	----
Vly*qr	----	----	----	----	----	----	-0.017 (0.018)	----	----
Vly*rl	----	----	----	----	----	----	----	-0.013 (0.009)	----
Vly*cc	----	----	----	----	----	----	----	----	-0.012 (0.009)
Constant	-0.085 (0.269)	- 0.589*** (0.165)	0.389*** (0.104)	0.104 (0.380)	0.637** (0.275)	0.072 (0.262)	0.028 (0.331)	-0.440 (0.430)	0.298 (0.203)
Diagnostics									
Observations	441	287	287	311	311	311	311	311	311
Causality granger Test P Value	0.010	0.245	0.000	0.095	0.051	0.000	0.040	0.641	0.037
AR(2) test P Value	0.107	0.578	0.447	0.259	0.404	0.395	0.705	0.254	0.244
Hansen test P Value	0.688	0.744	0.402	0.942	0.890	0.775	0.646	0.898	0.746
Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$									

Tableau 7: Effect of economic fluctuations on the instability of financial architecture activity

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vlx*sl	Vlx*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol aty-1	0.828*** (0.013)	0.819*** (0.010)	0.813*** (0.008)	0.741*** (0.056)	0.728*** (0.046)	0.808*** (0.044)	0.817*** (0.103)	0.798*** (0.063)	0.700*** (0.028)
Vol yit-1	- 0.010*** (0.001)	-0.001 (0.020)	-0.017*** (0.004)	-0.010* (0.006)	- 0.009*** (0.003)	-0.025*** (0.002)	-0.013 (0.008)	-0.022*** (0.006)	-0.008*** (0.002)
OC	- 0.001*** (0.0002)	-0.0004 (0.0002)	- 0.0008*** (0.0001)	-0.0009* (0.0005)	-0.0005* (0.0003)	-0.001*** (0.0003)	0.0002 (0.0006)	-0.001*** (0.0005)	-0.001*** (0.0002)
SS	0.0002 (0.0006)	-0.0008* (0.0004)	- 0.0008*** (0.0003)	-0.001 (0.002)	-0.002 (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.003 (0.002)	-0.0004 (0.0004)
SA	0.002*** (0.0008)	-3.42e-05 (0.001)	0.0009 (0.001)	0.004* (0.002)	0.003*** (0.001)	0.007*** (0.0009)	0.005* (0.003)	0.01*** (0.001)	0.003*** (0.0009)
DL	0.0005** (0.0002)	0.0006*** (9.19e-05)	0.0006*** (0.0001)	0.0003 (0.0003)	0.0006** (0.0002)	0.0006*** (0.0001)	0.0004 (0.0003)	0.0009*** (0.0002)	0.0004*** (0.0001)
DG	- 0.003*** (0.001)	-0.0005 (0.0009)	0.001 (0.001)	0.0002 (0.003)	-0.0009 (0.002)	0.001 (0.001)	-0.005 (0.005)	-0.004* (0.002)	0.004*** (0.001)
Vly*rgl	----	-0.0004 (0.003)	----	----	----	----	----	----	----
Vly*sl	----	----	0.001 (0.0009)	----	----	----	----	----	----
Vly*vr	----	----	----	-0.011 (0.009)	----	----	----	----	----
Vly*pv	----	----	----	----	-0.005 (0.003)	----	----	----	----
Vly*eg	----	----	----	----	----	-0.011 (0.007)	----	----	----
Vly*qr	----	----	----	----	----	----	-0.006 (0.009)	----	----
Vly*rl	----	----	----	----	----	----	----	-0.005 (0.007)	----
Vly*cc	----	----	----	----	----	----	----	----	-0.004 (0.004)
Constant	0.106 (0.068)	0.080 (0.049)	0.086** (0.036)	0.115 (0.127)	0.136 (0.090)	0.105 (0.083)	-0.075 (0.144)	0.283* (0.146)	0.055 (0.035)
Diagnostics									
Observations	418	272	272	293	293	293	293	293	293
Causality granger Test P Value	0.000	0.924	0.000	0.087	0.001	0.000	0.111	0.000	0.001
AR(2) test P Value	0.922	0.126	0.142	0.467	0.488	0.857	0.951	0.645	0.474
Hansen test P Value	0.483	0.487	0.634	0.608	0.687	0.687	0.493	0.850	0.394

Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Tableau 8: Effect of economic fluctuations on the instability of financial architecture efficiency

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Vly*rgl	Vlx*sl	Vlx*vr	Vly*pv	Vly*eg	Vly*qr	Vly*rl	Vly*cc
Vol eff-1	0.949*** (0.007)	0.949*** (0.008)	0.948*** (0.011)	1.099*** (0.026)	1.033*** (0.012)	1.082*** (0.016)	1.107*** (0.017)	1.191*** (0.071)	1.117*** (0.022)
Vol yit-1	0.007*** (0.002)	- 0.145*** (0.018)	- 0.030*** (0.007)	-0.009 (0.007)	-0.007 (0.005)	-0.011* (0.006)	- 0.018*** (0.004)	-0.047 (0.035)	-0.024* (0.013)
OC	- 0.001*** (0.0003)	- 0.001*** (0.0004)	- 0.001*** (0.0003)	-0.001** (0.0007)	-0.0004 (0.0003)	-0.0002 (0.0005)	-0.0009 (0.0005)	- 0.002*** (0.001)	-0.0004 (0.0006)
SS	0.001 (0.001)	- 0.002*** (0.0009)	- 0.002*** (0.0008)	0.0024 (0.002)	0.004* (0.002)	0.002 (0.001)	-0.001 (0.002)	0.0006 (0.004)	0.002 (0.001)
SA	-0.001 (0.001)	- 0.006*** (0.001)	- 0.009*** (0.002)	0.005 (0.008)	0.006** (0.002)	0.0021 (0.003)	0.004 (0.003)	0.019* (0.009)	0.005* (0.003)
DL	0.001*** (0.0002)	0.003*** (0.0003)	0.002*** (0.0003)	-4.95e-05 (0.0005)	0.001*** (0.0004)	-8.18e-06 (0.0004)	-0.0003 (0.0005)	0.001* (0.0008)	-9.01e-05 (0.0004)
DG	-0.002 (0.001)	0.009*** (0.002)	0.008*** (0.002)	0.0014 (0.005)	-0.003 (0.006)	0.014** (0.005)	0.018*** (0.006)	-0.016 (0.017)	0.012* (0.006)

Vly*rgl	----	0.022*** (0.003)	----	----	----	----	----	----	----
Vly*sl	----	----	0.004*** (0.001)	----	----	----	----	----	----
Vly*vr	----	----	----	-0.022 (0.013)	----	----	----	----	----
Vly*pv	----	----	----	----	-0.008 (0.005)	----	----	----	----
Vly*eg	----	----	----	----	----	-0.009 (0.012)	----	----	----
Vly*qr	----	----	----	----	----	----	-0.0006 (0.010)	----	----
Vly*rl	----	----	----	----	----	----	----	-0.037 (0.023)	----
Vly*cc	----	----	----	----	----	----	----	----	-0.023 (0.017)
Constant	0.020 (0.111)	0.120 (0.087)	0.196* (0.104)	-0.067 (0.215)	-0.265** (0.104)	-0.294* (0.156)	-0.106 (0.168)	0.180 (0.349)	-0.319* (0.190)
Diagnostics									
Observations	428	287	287	305	305	305	305	305	305
Causality granger Test P Value	0.000	0.000	0.000	0.217	0.155	0.078	0.000	0.186	0.069
AR(2) test P Value	0.021	0.219	0.123	0.209	0.150	0.165	0.202	0.280	0.171
Hansen test P Value	0.314	0.455	0.657	0.352	0.381	0.222	0.354	0.610	0.291
Standard errors in parentheses. Statistical significance: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$									

Regarding the interaction terms between governance indicators of Kaufman database and macroeconomic volatility, we notice their non-significance, confirming therefore the previous finding of a failing institutional environment characterizing these developing countries. All coefficients of these interaction terms are negative. This indicates that a higher governance performance reduces the effect of economic volatility on financial instabilities.

4. Conclusions

We find that there is a bidirectional causality between economic volatility and financial instability. This shows that the first variable is both a stimulator and a follower of the second.

The consideration of the institutional framework in the estimation of the causal relationship between economic and financial sectors provides results suggesting, on one hand, that the non-significance of the terms of institutional interaction in most cases of estimation can be explained by the failure of institutions in developing countries. On the other hand, we found that the market-oriented regulations reinforce the volatile effects of financial structures and macroeconomic volatility. However, the positive impact of financial instability on macroeconomic volatility is reduced by greater performance in governance.

5. References

1. Calderon C, Liu L. The direction of causality between financial development and economic growth. *Journal of Development Economics*. 2003; 72:321-334.
2. Demetriades P, Law SH. Finance, Institutions and Economic Development. *International Journal of Finance and Economics*. 2006; 11:245-260.
3. Hurlin C, Venet B. Financial development and growth: a re-examination using a panel Granger causality test, *Laboratoire d'Economie d'Orléans Working*, 2004, 18.
4. Klomp J, de Haan J. Political institutions and economic volatility. *European Journal of Political Economy*. 2009; 25:311-326.

5. Peresetsky A, Popov V. Country study Russia. Paper prepared for the CEDES-IDRC project 'International Financial Architecture, Macro Volatility, and Institutions: the Developing World Experience, 2006.
6. Pholphirul P. Financial Instability, Banking Crisis, and Growth Volatility in Thailand: An Investigation of Bi-Directional Relationship. *International Journal of Business and Management*, 2008.
7. Tadesse S. Financial Architecture and Economic Performance: International Evidence. *Journal of Financial Intermediation*. 2002; 11:429-454.