INSTITUTIONAL QUALITY, MACRO LIQUIDITY EXCESSIVE AND STOCK MARKET VOLATILITY: EMPIRICAL EVIDENCES FROM EMERGING MARKETS

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Presentation:

Content

- Motivation
- Literature review
- Methodology and data
- Results and discussions
- Conclusions

Motivations

- It is important to understand **stock market volatility** (Mittnik, Robinzonov, & Spindler, 2015; Sharma et al., 2014; Syriopoulos et al., 2015).
- Previous studies have focused on main determinants of stock market volatility (oil price, exchange rate, interest rate, inflation, economic cycles, market liquidity, financial liberalization) without considering the roles of **institution characteristics** and **macro excessive liquidity**
- The case of **Emerging markets**

- **This study is done as three-fold:**
  - The impact of institutional quality on stock market volatility
  - The impact of the excessive in money supply on stock market volatility
  - The associated impacts of institutions with national excessive liquidity on stock market volatility

Literature review:

- Determinants of stock market volatility:
  - Macroeconomic volatility: inflation, **money growth**, industrial production, oil price, exchange rate, interest rate, FDI..
  - Money supply => liquidity => stock market

- We argue the impacts of:
  - Institutional quality due to its impacts on **asymmetric information problem, transaction cost, risks** that plays important roles in stock markets.
  - The national excessive liquidity due to the **risk – taking activities** of overall stock markets
  - The **associations** between institutional quality and national excessive liquidity on stock market volatility

Methodology:

- This study recruits baseline model of theoretical equilibrium in money market as the functions of real interest rate, inflation, national income level, and lag of money supply.

$$M2_{it} = M2_{it-1} + Loggdppc_{it} + Inf_{it} + Interest_{it} + \varepsilon_{it} \qquad (1)$$

Then, we collect residuals and fitted values of M2 from the equation (1), and then we divide each residual for its fitted value and multiple for 100 to scale up as the percentage of money supply differs from its theoretical equilibrium, which is denoted as *Naliqvo*. Then, we calculate the standard deviation of *Naliqvo* and define dummy variable, which is the proxy for macro liquidity excessive (*Naliqex*), as following formula:

$$Naliqex = \begin{cases} 1 \; if \; Naliqvo > [mean(Naliqvo) + 1.5 * std(Naliqvo)] \\ 0 \qquad\qquad if \; otherwise \end{cases} \qquad (2)$$

Methodology:

Then, following previous works in examining determinants of stock market volatility, such as Beltratti and Morana (2006), Jiang, Rapach, Strauss, Tu, and Zhou (2011), Girardin and Joyeux (2013), Mittnik et al. (2015), Chen, Jiang, Li, and Xu (2016)

$$Stockvo_{it} = Stockvo_{it-1} + Turnover_{it} + Stockcap_{it} + Gdpg_{it} + Inf_{it} + Interest_{it} + M2g_{it} + Fpi_{it} + Fxvo_{it} + Usvo_{it} + Oilvo_{it} + Naliqex_{it} + Reguqua_{it} + Naliqex_{it} * Reguqua_{it} + \nu_{it} \quad (3)$$

in which: *Stockvo* is stock price volatility in each emerging market, which is the proxy of stock market volatility; *Turnover* is the stock market turnover calculated by the ratio of trade value to market capitalization, which is the proxy of market liquidity; *Stockcap* is stock market capitalization calculated by market value of stock market to GDP, which is the proxy of stock market size; *Gdpg* is the real GDP growth rate, which is the proxy of real economic growth; *Inf* and *Interest* are same as in equation (1); *M2g* is the growth rate of M2, which is the proxy of money growth rate; *Fpi* is the ratio of foreign portfolio investment net inflow to GDP, which is the proxy of portfolio investment flow; *Fxvo* is the volatility of percentage changes in nominal exchange rate, which is the proxy of the risk in foreign exchange market; *Usvo* is price volatility in US stock market, which is the proxy for the effects of US stock market to emerging markets; *Oilvo* is the volatility in the changes of WTI oil price, which is the proxy for the changes in commodity market; *Reguqua* is the percentage changes in Regulatory quality indicator, which is the proxy for changes in institutional quality; the interaction term between *Naliqex* and *Reguqua* is used to identify the associations between institutional quality and excessive in macro liquidity on stock market volatility; and ν is the residual term.

Methodology: Table 1. Definitions and sources of data

Variable	Definitions	Sources
Stockvo	The annual price volatility of market index (%)	GFDD
Turnover	Stock market turnover ratio (%) (trade value to market cap)	GFDD
Stockcap	The ratio of stock market capitalization to GDP (%)	GFDD
Gdpg	The real GDP growth rate (%)	WDI
Loggdppc	Logarithm of real GDP per capita	Calculation from WDI
Inf	The inflation rate (%) (GDP deflator)	WDI
Interest	The deposit interest rate (%)	IFS
M2	The ratio of M2 to GDP (%)	WDI
M2g	The annual growth rate of M2 (%)	WDI
Fdi	The ratio of net portfolio investment inflows to GDP (%)	Calculation from WDI
Fxvo	The volatility of exchange rate (%): the standard deviation of monthly changes of nominal exchange rate	Calculation from data of OANDA
Usvo	The annual volatility of US stock market (%)	GFDD
Oilvo	The annual volatility of oil price (%): the standard deviation of daily changes of WTI oil price * square of trading days in a year	Calculation from WTI oil price
Naliqvo	The ratio of the difference between real ratio of M2 to GDP with its theoretical equilibrium to its theoretical equilibrium	Detail calculations are presented in table 3 and 4
Naliqex	The dummy variable: it receives 0 if Naliqvo is less than (its theoretical equilibrium + 1.5*its standard deviation), it receives 1 if otherwise	
Rulelaw	Percentage change in Rule of law indicator (%)	Calculation from WGI
Regugua	Percentage change in Regulatory quality indicator (%)	Calculation from

Data:

- We collect data of 32 emerging countries in the period from 2002 to 2013: Argentina, Brazil, Bulgaria, Chile, China (mainland), Colombia, Czech Republic, Egypt Arab Rep., Estonia, Greece, Hungary, India, Indonesia, Korea Rep., Latvia, Lithuania, Malaysia, Mexico, Morocco, Nigeria, Oman, Pakistan, Peru, Philippines, Poland, Romania, Russian Federation, Slovenia, South Africa, Thailand, Turkey, and Vietnam.

- Unbalanced panel data

Data:

Table 2.Data description

Variable	Obs	Mean	Std. Dev	Min	Max
Stockvo	379	22.7950	8.7997	7.5961	67.9755
Turnover	350	52.5407	63.3916	1.1484	494.2694
Stockcap	350	45.6677	39.9544	0.4086	253.9193
Gdpg	383	4.3658	4.2264	-17.9550	33.7358
Loggdppc	383	8.4199	0.9908	6.3438	10.0985
Inf	383	6.7349	7.9935	-25.1281	103.8228
Interest	374	5.9131	5.3595	0.1283	50.4917
M2	384	65.0117	34.7182	17.7322	194.5213
m2g	384	14.1430	11.0509	-14.9337	103.1194
Fpi	372	0.3736	1.1861	-9.7321	8.0644
Fxvo	384	0.8622	0.6334	0.0000	6.0523
USvo	384	19.6928	7.9604	10.4451	39.5910
Oilvo	384	36.1909	12.0342	18.2329	62.9608
Reguqua	384	0.2994	0.6522	-1.3228	1.5364
Rulelaw	384	0.0471	0.6689	-1.5229	1.3668

Source: author's calculation.

Results and discussions:

Table 6. National excessive liquidity and stock volatility

Dep Var: Stockvo	Effects of control variables (1)		Effect of macro liquidity excessive (2)	
	Coef	P-value	Coef	P-value
Stockvo(-1)	0.2239***	0.0020	0.2257***	0.0040
Turnover	0.0621***	0.0010	0.0553***	0.0000
Stockcap	-0.0399***	0.0000	-0.0253**	0.0370
Gdpg	-0.8626***	0.0010	-0.6151***	0.0000
Inf	0.1109***	0.0010	0.1816***	0.0010
Interest	-0.5457**	0.0230	-0.4401***	0.0070
M2g	0.4340***	0.0010	0.3540***	0.0010
Fpi	3.5974***	0.0060	2.5907***	0.0010
Fxvo	7.7614***	0.0000	4.5769***	0.0010
Usvo	0.2511**	0.0230	0.3462***	0.0000
Oilvo	0.0898*	0.0920	0.0976*	0.0750
Naliqex			**-6.9621*** **	**0.0000**
No of IVs		24		26
No of Country		32		32
Obs		268		269
AR(2) test (P-value)		0.244		0.114
Hansen test (P-value)		0.881		0.714

Note: *,**,*** denote significant levels at 10%, 5%, 1%, respectively.
Source: author's calculation.

Results and discussions:

Table 7. Regulatory quality, national excessive liquidity and stock market volatility

Dep Var: Stockvo	Effects of Regulatory quality (3)		Effect of association between regulatory quality and macro liquidity excessive (4)	
	Coef	P-value	Coef	P-value
Stockvo(-1)	0.1381*	0.0640	0.0851	0.1630
Turnover	0.0500***	0.0000	0.0547***	0.0000
Stockcap	-0.0132	0.4480	-0.0373**	0.0250
Gdpg	-1.0837***	0.0000	-1.0752***	0.0000
Inf	0.3137***	0.0000	0.1763**	0.0270
Interest	-0.4481*	0.0780	-0.8164***	0.0020
M2g	0.5075***	0.0000	0.5355***	0.0000
Fpi	2.2199***	0.0030	3.4142***	0.0020
Fxvo	6.1953***	0.0100	11.2846***	0.0000
Usvo	0.4611***	0.0000	0.3953***	0.0000
Oilvo	0.0334	0.4800	0.0803	0.2960
Naliqex	**-8.1031*** **	**0.0010**	**-8.0741*** **	**0.0030**
Reguqua	**-2.0831***	**0.0810**	**-4.2446** **	**0.0110**
Reguqua*Naliqex			**-7.4005** **	**0.0260**
No of IVs		27		26
No of Country		32		32
Obs		268		268
AR(2) test (P-value)		0.157		0.745
Hansen test (P-value)		0.827		0.936

Note: *,**,*** denote significant levels at 10%, 5%, 1%, respectively.
Source: author's calculation.

Results and discussions:

Table 8. Rule of law, national excessive liquidity and stock market volatility

Dep Var: Stockvo	Effects of Rule of law (5)		Effect of association between rule of law and macro liquidity excessive (6)	
	Coef	P-value	Coef	P-value
Stockvo(-1)	0.2260**	0.0140	0.2383**	0.0280
Turnover	0.0574***	0.0000	0.0358***	0.0010
Stockcap	-0.0272*	0.0730	-0.0216	0.1600
Gdpg	-0.8732***	0.0000	-0.8625***	0.0030
Inf	0.1742***	0.0030	0.1397*	0.0550
Interest	-0.6815***	0.0020	-0.6595***	0.0020
M2g	0.5172***	0.0000	0.5338***	0.0010
Fpi	2.4790***	0.0010	2.6123***	0.0010
Fxvo	5.8308***	0.0030	5.0510**	0.0280
Usvo	0.3253***	0.0000	0.3102***	0.0010
Oilvo	0.0964*	0.0760	0.1269*	0.0610
Naliqex	**-8.8544*** **	**0.0000**	**-7.8250*** **	**0.0010**
Rulelaw	**-2.2633****	**0.0270**	**-1.4410***	**0.0720**
Rulelaw*Naliqex			**-5.0029***	**0.0980**
No of IVs		27		28
No of Country		32		32
Obs		269		268
AR(2) test (P-value)		0.154		0.198
Hansen test (P-value)		0.707		0.680

Note: *, **, *** denote significant levels at 10%, 5%, 1%, respectively.

Source: author's calculation.

Conclusions:

- The **institution** under aspects of ***regulatory quality***, and ***rule of law*** have significant **negative effects** on stock market volatility

- The **macro excessive liquidity** under aspects of government effectiveness, regulatory quality, and rule of law have significant **negative effects** on stock market volatility

- The **associations** between **institutions** and **macro excessive liquidity** under aspects of government effectiveness, regulatory quality, and rule of law have significant **negative effects** on stock market volatility

Thank you