Symmetric Effect of Financial Market Development, Government Transparency and Trade openness on Macroeconomic Stability: Cross-country evidence

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Abstract

This paper investigates the effect of financial market development, government transparency, and trade openness on macroeconomic stability by utilizing a panel data of 75 countries over the period from 2007 to 2017. Quantile Regression method is applied for estimation, the findings reveal that financial market development is favorable for the macroeconomic stability. The results also shows that government transparency and trade openness is positively and significantly associated with the macroeconomic stability. Gross Domestic Product (GDP) is utilized as control variable which is also positive and significant with macroeconomic stability. Furthermore, for robustness, the main panel is divided into three sub-panel on the basis of country risk (low-risk, moderate-risk, and high-risk) and adopted same statistic technique. The results shows that independent variables of the study have a significant and positive association with macroeconomic stability at various quantiles. However, financial market development and government transparency are important factor than trade openness. It is recommended that optimal level of policies for financial development and government transparency should be designed and formulated for economic stability in the country. It is suggested for the future research to focus on financial openness for further study on macroeconomic stability.

Keywords: Financial Market Development, Government Transparency, Trade openness, Macroeconomic Stability, Quantile Regression, Panel Data Analysis, Sub-Panel (country risk).

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1. Introduction

A sound financial system can reduce the market anomalies, reduce the cost of capital, and improve the overall economic performance (Adeoye & Isumaila, 2022; Ahmed, 2013). In a globalized economy, trading activities are important and fundamental element for economic development (Touwen, 2021). These economic activities ignite the volume of investment through economic freedom and trade openness which is essential for a sound macroeconomic environment (Ehigiamusoe et al., 2020). Macroeconomic instability is curbing and restricting to develop their economies, especially the developing economies is seriously suffering locally and regionally. The governments of these economies are trying to deal and manage the related economic factors to improve their macroeconomic stability (Weller & Zulfiqar, 2013).

Financial market development is very important factor to enhance the savings and investment which increase the overall firms' productivity (Sever, 2019). Existing evidences are available that financial market development from the financial intermediation plays important role in mobilizing and redistribution of

financial resources which contributes to the country's economic growth (Brychko et al., 2021). A developed financial system is essential for macroeconomic stability by relaxing credit constraints on firms and households (Nyalihama & Kamanzi, 2022). Trade openness is an approach where governments provide a free trade and less restrictions on trade of goods and services which is positively increase the economic growth Kaplan & Yaprakli, 2014). The macroeconomic stability indicators are very important factors for economic growth and development (Vasylieva et al., 2018). So, it is also believed that governments can stable its macroeconomic indicators by less restricted economic activities which will not only boost up the income level of individual but also productivity in a country.

Countries which have implemented sound transparency system, and easy business operating policies have achieved a better position globally. To eradicate the corruption element in a country, governments have to formulate and implement different strategic policies which will enhance the transparency. Government transparency build a confidence among investors. For example, foreign direct investment is basic need especially for the developing countries. Investors trust on government initiatives not on just announcements.

The improving transparency and accountability have a positive influence on decision making for local and foreign investors (Schmaljohann, 2013). On the other hand, Şıklar and Kocaman (2018) has suggested that macroeconomic stability is important for foreign direct investment. Hence, it is believed that through financial market development, trade openness, and government transparency, the stability in macroeconomic indicators can be achieved.

Existing literatures builds a positive link between financial development and economic growth (Eren et al., 2019; Ibrahim & Alagidede, 2018). A very few contemporary existing literatures are available that tested the direct relationship between financial market development on macroeconomic stability.

Previously, macroeconomic stability is tested with financial development of the West African Region by utilizing a panel data, this study confirms that there is a positive impact of macroeconomic stability on the financial market development. By applying cointegration analysis, VECM, and Granger Causality test, argued that to attract high volume of the foreign direct investment, the macroeconomic stability should be strengthened (Şıklar & Kocaman, 2018). However, Nyalihama and Kamanzi (2022) have argued that financial development has a positively and significantly impact on macroeconomic stability. Previously, transparency of central banks is investigated with financial stability by using a panel data of 110 countries over the period from 2000 to 2011, and found that too high transparency is not beneficial for the financial stability (Horváth & Vaško, 2016).

Williams (2014) has documented that in democratic countries, the transparency has a positive and significant impact on macroeconomic stability. The impact of trade openness is investigated by Ma et al., (2022) using quarterly Chinese data over the period from 2005 to 2020, and found that the impact of trade openness on macroeconomic volatility is differ in different situation.

Based on the above research arguments, we believed that financial market development, government transparency, and trade openness have a direct positive impact on macroeconomic stability. In prior studies, these variables are tested with different factors (Eren et al., 2019; Ibrahim & Alagidede, 2018; (Şıklar & Kocaman, 2018; Horváth & Vaško, 2016).

Similarly, Shaohua et al., (2021) have investigated these variables by considering the macroeconomic stability as independent variable. However, in this study, we have considering macroeconomic stability as dependent variable while financial market development, trade openness, government transparency as independent variable. Moreover, quantile regression will be a good contribution in existing literature on macroeconomic stability. Secondly, this panel data is further divided into three sub-panels based on country risk which is also previously overlooked, and will also provide a help for the policymakers in formulating different policies.

2. Methodology

In this research study, a panel data consisting 75 countries globally are utilized over the period from 2007 to 2017. Further, this panel data is divided into sub-panel based on country risk i.e., low-risk, medium-risk, and high-risk to investigated the effect of financial market development, government transparency, and trade openness on macroeconomic stability. Secondary data is utilized which is collected from global competitiveness index (GCI).

Macroeconomic stability is considered as dependent variable which is the third pillar of GCI, and measured with country credit rating, government debt, inflation, gross national savings, and government budget balance. Whereas financial market development is considered as independent variable which is eight pillar of GCI which is measured with legal rights, regulation of security exchanges, soundness of banks, venture capital availability, ease of access to banks, financing through local equity markets, affordability of financial services, and financial services meeting business needs. Government transparency is measured with degree of accessibility of information for business. Trade openness is measured with imports plus exports as percentage of gross domestic product. However, gross domestic product (GDP) is considered as control variable for this study. According to the linear regression, it explains that how much dependent variable changes with change in a particular variable.

However, in quantile regression, it estimates the changes in various quantile. Thus, quantile regression methodology is utilized in this study. For this short panel data, it is assumed that data is stationary at level. Quantile regression is a non-linear parametric method which is widely used by the researchers when the data is not normally distributed.

For this purpose, Jarque-Bera (JB-test) is utilized to test the normality of the data. For robustness, the main panel data is divided into three sub-panels based on country risk which is a novel contribution in existing literature on macroeconomic stability.

3. Results and Discussion

Descriptive statistics of dependent variable and independent variable are shown in Table-1 as below. The average score of macroeconomic stability (MES) of the selected countries is 4.712. Burundi is showing the instable macroeconomic situation whereas Norway has shown the strong macroeconomic stability indicators among countries of this study.

The mean value of financial market development is 4.212, and the maximum value is 6.40 and minimum value is 2.10. Gambia has the most developed financial market whereas Mauritania is the least developed country. On average, the transparency government is 4.288.

Mauritania also has weak government transparency, and Singapore is the most transparency government among countries. The average value of trade openness is

87.484. Singapore has the less restricted economic policy and easy to operate economic activities whereas Norway has the strict policy towards trade openness.

3.1 Descriptive Statistics

The descriptive statistics is also showing that Jarque-Bera Test of all variables are significant which mean that the data is not normally distributed. For further analysis, a non-parametric test is applied. Hence, quantile regression is utilized which fulfill all its assumptions.

Table 1. Summary Statistics

Variable	Mean	S.D	Min	Max	Skew:	Kurtos:	JB-test
MES	4.712	0.874	1.000	6.840	-0.397	3.677	37.454***
FMD	4.212	0.762	2.100	6.400	0.158	2.748	5.645***
TRANSP:	4.288	0.763	2.471	6.322	0.306	2.813	14.121***
TRDOPN:	87.484	60.611	20.722	437.326	2.616	11.451	3396199***
GDP	17643.96	22160.80	172.495	123514.2	1.955	7.345	1175.21***

Source: Authors

3.2. Quantile Regression Estimates

Quantile regression methodology allows to understand the relationship between variables which are outside mean value. This method is helpful to test the non-linear relationship with predicator variables. The following Table presents the results of each variable for the full sample of countries.

Table 2: Quantile Regression Estimates (Full Sample)

Variables	**QR(Median)**	**Q10**	**Q20**	**Q30**	**Q40**	**Q50**	**Q60**	**Q70**	**Q80**	**Q90**
FMD	0.089*** (0.034)	0.141*** (0.071)	0.162*** (0.049)	0.110*** (0.040)	0.073*** (0.035)	0.089*** (0.034)	0.062** (0.034)	0.024 (0.033)	-0.016 (0.039)	-0.035 (0.047)
GTranp:	0.285*** (0.050)	0.209** (0.122)	0.204*** (0.058)	0.268*** (0.048)	0.275*** (0.046)	0.285*** (0.050)	0.214*** (0.054)	0.257*** (0.049)	0.261*** (0.049)	0.342*** (0.073)
TradeOp	0.001*** (0.000)	0.002*** (0.004)	0.002*** (0.004)	0.002*** (0.003)	0.001*** (0.004)	0.001*** (0.004)	0.001*** (0.004)	0.001*** (0.004)	0.000 (0.000)	-0.001 (0.000)
GDP	9.020*** (01.400)	1.350*** (2.100)	1.130*** (1.390)	1.040*** (1.250)	9.090*** (1.280)	9.020*** (1.400)	9.940*** (1.750)	7.550*** (1.760)	7.110*** (2.140)	4.970*** (2.130)
Intercept	2.838*** (0.222)	1.770*** (0.355)	2.163*** (0.242)	2.414*** (0.2100)	2.769*** (0.213)	2.838*** (0.222)	3.422*** (0.249)	3.631*** (0.220)	4.099*** (0.229)	4.309*** (0.353)
Observ:	825									
JB-test	66.983***									
R^2	0.166									
Adj: R^2	0.162									

Source: Author's own explanation

Note: Values in parenthesis are the robust standard errors. However, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. (FMD=Financial Market Development, GTransp=Government Transparency, TradeOp=Trade Openness, GDP=Gross Domestic Product)

From the above results, it is found that according to QR(Median) all the independent variables have positive and significant impact on macroeconomic stability. According to this result, as financial market development increases in a particular country, this will bring a positive change to stable the economic indicators (beta=0.089, p-value<0.05). Government transparency is also showing positive results on dependent variable of the study. It showing that 1% increase in implementation of government transparency, will bring 28% increase in macroeconomic stability which is a big change. So, it is important factor for an economy that facing instability in the economy indicators. However, as per the results of trade openness, it is shows that trade openness is not brining a big positive change in stability but a very slight positive change on dependent variable. The co-efficient of beta of gross domestic product is showing a positive and significant change on macroeconomic stability. The full sample of panel data is consisting of 825 observations. Jarque-Bera Test is showing significant results which is showing the quantile regression is meeting basic assumption. R-squared is 16.60% which is describing that overall impact of explanatory variables on dependent variable. However, Adjusted R-squared is 16.20%.

Furthermore, the table is also reporting the results of different quantiles i.e., 10, 20, 30, 40, 50, 60, 70, 80, and 90 percent quantiles. It is found that financial market development is gradually increasing its impact on stability up to 50 percent quantile, after that its impact is insignificant. However, government transparency is resulting a good positive contribution for the soundness of macroeconomic indicators throughout the quantiles. Although, it is found that trade openness has a positive and significant impact at various quantiles but its impact on macroeconomic stability is too low (beta=0.002, p-value<0.05). It is found that trade openness is not an effective factor to influence the macroeconomic stability. Gross domestic product is also contributing better on macroeconomic stability.

3.3 Robustness Checks

For robustness checks, the full sample panel is divided into three sub-panels i.e low-risk, medium-risk, and high-risk. Based on this technique, find slightly different results based on country's risk. Same methodology is adopted to find results.

Table 3: Quantile Regression Estimates (Low-Risk)

Variables	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
FMD	0.065 (0.092)	0.121* (0.077)	0.133*** (0.077)	0.167*** (0.068)	0.180*** (0.062)	0.124*** (0.061)	0.164*** (0.061)	0.205*** (0.073)	0.152** (0.091)
GTranp:	0.344*** (0.144)	0.339*** (0.113)	0.201*** (0.106)	0.173*** (0.089)	0.103 (0.073)	0.092 (0.071)	0.069 (0.072)	0.090 (0.091)	0.114 (0.159)
TradeOp	0.001 (0.001)	0.003*** (0.001)	0.002* (0.003)	0.001 (0.001)	0.001 (0.004)	-0.001 (0.004)	-0.001 (0.004)	-0.000 (0.000)	-0.001** (0.000)
GDP	9.080*** (1.480)	9.650*** (1.220)	8.510*** (1.300)	0.000*** (1.500)	0.000*** (1.230)	0.000*** (1.160)	0.000*** (1.190)	0.000*** (2.010)	0.000*** (6.360)

Intercept	1.546*** (0.601)	1.439*** (0.510)	2.299*** (0.496)	2.564*** (0.446)	2.936*** (0.398)	3.468*** (0.405)	3.526*** (0.408)	3.493*** (0.529)	3.980*** (0.787)
Observ:	407								
JB-test	38.417***								
R^2	0.109								
Adj: R^2	0.100								

Source: Author's own explanation

Note: Values in parenthesis are the robust standard errors. However, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. (FMD=Financial Market Development, GTransp=Government Transparency, TradeOp=Trade Openness, GDP=Gross Domestic Product)

Table 4: Quantile Regression Estimates (Medium-Risk)

Variables	**Q10**	**Q20**	**Q30**	**Q40**	**Q50**	**Q60**	**Q70**	**Q80**	**Q90**
FMD	0.327***	0.236***	0.136***	0.099	0.020	-0.041	-0.089	-0.08***	-0.094
	(0.102)	(0.093)	(0.068)	(0.077)	(0.073)	(0.074)	(0.071)	(0.068)	(0.103)
GTranp:	0.215	0.151	0.153**	0.176***	0.192***	0.164***	0.222***	0.311***	0.413***
	(0.223)	(0.111)	(0.089)	(0.085)	(0.083)	(0.082)	(0.086)	(0.075)	(0.082)
TradeOp	0.013***	0.011***	0.009***	0.006***	0.006***	0.006***	0.003	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
GDP	1.860***	1.680***	1.220***	5.310	3.590	2.190	-4.220	-8.590	-1.440
	(8.090)	(6.860)	(5.440)	(5.160)	(5.200)	(5.300)	(6.210)	(6.450)	(6.070)
Intercept	-0.050	1.161**	2.116***	2.708***	3.167***	3.731***	4.241***	4.699***	4.147***
	(0.861)	(0.626)	(0.527)	(0.498)	(0.499)	(0.472)	(0.444)	(0449)	(0.750)
Observ:	198								
JB-test	6.649***								
R^2	0.100								
Adj: R^2	0.081								

Source: Author's own explanation

Note: Values in parenthesis are the robust standard errors. However, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. (FMD=Financial Market Development, GTransp=Government Transparency, TradeOp=Trade Openness, GDP=Gross Domestic Product).

Variables	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
FMD	0.479***	0.327***	0.284***	0.242***	0.172***	0.183***	0.148***	0.048	0.106
	(0.144)	(0.071)	(0.070)	(0.063)	(0.050)	(0.047)	(0.048)	(0.055)	(0.090)
GTranp:	-0.211	-0.087	0.022	0.079	0.137*	0.169***	0.126***	0.151***	-0.072
	(0.142)	(0.132)	(0.111)	(0.102)	(0.085)	(0.080)	(0.077)	(0.076)	(0.097)
TradeOp	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
GDP	1.880***	1..460***	1.260***	1.220***	1.130***	1.020***	8.840***	6.180***	9.140
	(4.350)	(2.440)	(2.210)	(2.151)	(2.110)	(2.100)	(2.340)	(2.030)	(2.000)
Intercept	2.234***	2.718**	2.752***	2.858***	3.115***	3.098***	3.652***	4.317***	5.519***
	(1.036)	(0.439)	(0.355)	(0.364)	(0.378)	(0.402)	(0.441)	(0.478)	(0.489)
Observ:	208								
JB-test	12.907***								
R^2	0.215								
Adj: R^2	0.199								

Table 5: Quantile Regression Estimates (High-Risk)

Source: Author's own explanation

Note: Values in parenthesis are the robust standard errors. However, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. (FMD=Financial Market Development, GTransp=Government Transparency, TradeOp=Trade Openness, GDP=Gross Domestic Product).

For low-risk countries, the impact of financial market development is significant and positive throughout the various quantiles which was not observed in the full sample panel. Similarly, government transparency is found positive up to 40^{th} quantile, and later on insignificant impact on macroeconomic stability which is also inconsistent with the main panel. However, the results of trade openness are consistent with the main panel. However, the results of medium-risk panel data are consistent with the full sample panel. As per the results of high-risk countries, the impact of financial market development is found positive and significant up to 70 percent quantile which is almost consistent with main panel. However, the government transparency is found inconsistent with the main panel, and also found inverse results with low-risk panel data. Interestingly, the trade openness factor is showing its silent features with on macroeconomic stability in the main global panel as well as in the sub-panels.

4. Conclusion and Policy Implications

The objective of this study is to assess the impact of financial market development, government transparency, and trade openness on macroeconomic stability. For this purpose, a panel data consisting of 75 countries of the world is utilized and quantile regression method is applied for estimates. For robustness checks, the main global panel is divided into three sub-panels based on country's risk (low-risk, medium risk, and high-risk). The results of all the independent variables have found positive and significant relationship with macroeconomic stability by using full main panel data. However, the results of sub-panels are different from the main panel except medium-risk countries. Hence, the expansion in financial markets through provision of financial services may introduced and strengthen the macroeconomic stability. Similarly, the results also indicates that government transparency is contributing to stabilize the output in medium-risk countries. However, the features of trade openness towards macroeconomic

stability are silent. Interestingly, the results of low-risk countries and high-risk countries are showing opposite results. The co-efficient of beta of financial market development has positively and significantly increasing gradually with increasing quantiles for low-risk countries and vice versa in high-risk countries. The co-efficient beta of government transparency is decreasing positively and significantly on macroeconomic stability for low-risk countries whereas for high-risk countries, this impact is started negatively and gradually improving its impact significantly and positively on macroeconomic stability. However, trade openness has shown its silent impact. Based on the results it is concluded that for medium-risk level countries, financial market development and government transparency factors are important instead of trade openness to stable macroeconomic indicators. However, from the results of low-risk and high-risk countries, it is concluded that high-risk countries must revisit their policies towards government transparency. It is recommended for the researchers to test the impact of financial openness on macroeconomic stability.

References

Adeoye, B. W., & Isumaila, O. S. (2022). Stock Market Liquidity and Economic Growth: Empirical Evidence from Nigeria. *Romanian Journal of Economics*, *54*(1 (63)), 80-94.

Ahmed, A. D. (2013). Effects of financial liberalization on financial market development and economic performance of the SSA region: An empirical assessment. *Economic Modelling*, *30*, 261-273.

Brychko, M., Bilan, Y., Lyeonov, S., & Mentel, G. (2021). Trust crisis in the financial sector and macroeconomic stability: a structural equation modelling approach. *Economic Research-Ekonomska Istraživanja*, *34*(1), 828-855.

Ehigiamusoe, K. U., Lean, H. H., & Chan, J. H. (2020). Influence of macroeconomic stability on financial development in developing economies: Evidence from West African region. *The Singapore Economic Review*, *65*(04), 837-856.

Eren, B. M., Taspinar, N., & Gokmenoglu, K. K. (2019). The impact of financial development and economic growth on renewable energy consumption: Empirical analysis of India. *Science of the Total Environment*, *663*, 189-197.

Horváth, R., & Vaško, D. (2016). Central bank transparency and financial stability. *Journal of Financial Stability*, *22*, 45-56.

Ibrahim, M., & Alagidede, P. (2018). Effect of financial development on economic growth in sub-Saharan Africa. *Journal of Policy Modeling*, *40*(6), 1104-1125.

Kaplan, F., & Yaprakli, S. (2014). The impacts of institutions, openness and macroeconomic stability on economic growth: a panel data analysis on middle income countries. *Istanbul University Econometrics and Statistics e-Journal*, (20), 104-123.

Ma, Y., Jiang, Y., & Yao, C. (2022). Trade openness, financial openness, and macroeconomic volatility. *Economic Systems*, *46*(1), 100934.

Nyalihama, C., & Kamanzi, C. (2022). Impact of financial systems development on macroeconomic stability in Rwanda.

Schmaljohann, M. (2013). *Enhancing foreign direct investment via transparency? Evaluating the effects of the EITI on FDI* (No. 538). Discussion paper series.

Sever, C. (2019). *Finance and Productivity* (Doctoral dissertation).

Shaohua, Z., Yahya, F., Pham, H., & Waqas, M. (2021). Do transparency and anti-monopoly policies matter

for financial development? Evidence from a panel ARDL-PMG approach. *Journal of Applied Economics*, *24*(1), 1-16.

Şıklar, İ., & Kocaman, M. (2018). FDI and macroeconomic stability: The Turkish case. *European Financial and Accounting Journal*, *13*(1), 19-40.

Şıklar, İ., & Kocaman, M. (2018). FDI and macroeconomic stability: The Turkish case. *European Financial and Accounting Journal*, *13*(1), 19-40.

Touwen, L. J. (2021). *Extremes in the archipelago: Trade and economic development in the outer islands of Indonesia, 1900-1942*. Brill.

Vasylieva, T. A., Lieonov, S. V., Liulov, O. V., & Kyrychenko, K. I. (2018). Macroeconomic stability and its impact on the economic growth of the country.

Weller, C. E., & Zulfiqar, G. (2013). Financial market diversity and macroeconomic stability. *Working Paperswp332, Political Economy Research Institute, University of Massachusetts at Amherst*.

Williams, A. (2014). The effect of transparency on output volatility. *Economics of Governance*, *15*(2), 101-129.