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'More Finance' or 'Better Finance' in Output Growth Volatility Literature: Evidence from a Global Perspective

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Abstract

This paper extends the work of Beck et al. (2006, Financial intermediary development and growth volatility: Do intermediaries dampen or magnify shocks? Journal of International Money and Finance 25, 1146-1167) by expanding the measures of finance to capture the qualitative and efficiency nature of the financial sector, rather than measuring the size of the sector. The study used a large dataset for 71 countries covering the period 1999-2011 and relied on system-GMM estimates. It was found that "more finance" (i.e quantitative measures) indicators have strong evidence of dampening effect on output growth volatility, while the "better finance" (efficiency measures) indicators have weak evidence of output growth volatility reducing influence. The exact effect of both monetary and real shocks is mixed across the different measures of financial development. The interaction between financial development indicators and the two sources of shocks indicates that the output volatility reduction arising from the shock is enhanced in the presence of "better finance or qualitative finance". This concretely reinforces the superior role of "better finance" in mobilizing, distributing and utilizing saving to mitigate against shocks within these economies. The results are robust to different checks and as a policy implication, the study advocates for reforms of the financial sector.

Keywords: Financial development, Output Growth volatility and System GMM

JEL Classification : C23, E32, F22 and O16

1. Introduction

The seminal papers of Shaw (1973) and McKinnon (1973) highlighted the importance of Financial Development (FD) in enhancing economic growth and development. Both studies set the ground upon which later studies have based their argument. To date, many studies have examined the relationship between FD and growth, with the conclusion that there is a positive relationship between these two variables[1]. The financial structure of an economy is mainly comprised of money and capital market. The commonly used indicators or proxies of the money market are Private Sector Credit, Liquidity Liabilities (M3), Credit provided by the Banking Sector. As for the capital market indicators, Stock Market Capitalization, Stock Traded Value and Stock Market Turnover

[1] See Levine et al. (1997) for a survey of theoretical literature, while Levine (2005) and Pasah (2013) provides a survey of empirical literature.

Ratio are the generally used indicators. These indicators are known as the traditional or quantitative measures of FD. Since a large literature have confirmed the positive association between FD and growth, the traditional indicators could be termed "more finance, more growth" or the quantitative measures of FD, a coinage that is attributed to Law et al. (2013) and Bettin and Zazzaro (2009).

These indicators have remained dominant as studies have solely relied on their use for both theoretical and empirical research. However, despite their prominence and accolades received over the years, these indicators can be faulted on two grounds. First, the recent global financial crisis had showcased the possibility that malfunctioning financial systems directly or indirectly waste resources discourage savings and encourage speculation. This results in decline in investment and misallocation of scarce resources (Law et al. 2013 and Law and Singh, 2014). This being the case, the essential functions of the financial system and the financial intermediary would be altered. In addition to this, some studies have found that relationship between FD and growth is nonlinear. This implies that the effect of FD on growth might vary according to the level of economic development (see Deidda and Fattouh, 2002; Rioja and Valev, 2004; Huang and Lin, 2009 among others) or level of FD itself (Cecchetti and Kharoubi, 2012). Also, nonlinearity issue arises based on the structure of the financial sector (Shen and Lee, 2006 and Ergungor, 2008).

Second, the traditional measures of FD dwell more on the size of the financial sector, with little or no emphasis on the quality and efficiency of the sector. In this line of reasoning, two alternative measures were proposed. The first relates to institutional development in the financial sector. Specifically, Arestis and Demetriades (1996), Demetriades and Andrianova (2004) and Law et al. (2013) in their papers underscored that varying connections may reflect dissimilarities in the quality of finance, which is determined by the quality of financial regulation and rule of law. The second measure dwells on the efficiency of the financial sector. To this end, the "better finance" indicators are (i) ratio of the value of banks' net interest margin to total assets and (ii) ratio of bank's overhead costs to real total assets. In addition to this, Bettin and Zazzaro (2009) built an index in the form below[2]:

$$BankInefficiency_{it} = \sum_{b=1}^{B_j} \left[\frac{operatingexpenses}{Netinterestrevenue + OtherIncome} * 100 \right]_{bt} W_{bt}$$

Where B_j is the number of banks headquartered in country i and W_{bt} is the market share of bank b in terms of total assets. These data were obtained from BankScope.

Cooray (2012) was of the view that efficiency of the financial sector is a better measure than the size of the sector. Bettin and Zazzaro (2009) and Raheem (2015) in their papers orate that this qualitative measure of FD (efficiency) would be able to capture satisfactorily the microeconomic efficiency of the financial sector, a fundamental characteristic that the quantitative measures lack. For example, the traditional indicators lack the ability to select entrepreneur and channel savings towards high profit investment ventures. Hence, this will help ameliorate the negative net present value projects by banks that are accompanied by lower cost (credit) from the banks. The relationship between efficiency of the financial sector and economic growth can be coined "better finance" or "qualitative finance". Based on the foregoing, it can be hypothesized that "better finance" or "qualitative finance" is a superior measure of the financial system, as compared to "more finance" or "quantitative finance".

Theoretical intuition has established the fact that macroeconomics shock (i.e volatility) has a

[2] Due to data availability, we refrained from the use of this index.

negative consequence on the economy. The influential paper of Ramey and Ramey (1995) confirmed the negative relationship between growth and its volatility. It could then be hypothesized that variables and policies that are growth enhancing would also have dampening effect on growth volatility. In an attempt to establish such variables, FD sprung up. On like FD-growth nexus that have large attention, the potential linkage between FD and output growth volatility is in its infancy. Not only that the literature in this line of enquiry is rather small, consensus could not be reached[3].

The motivation for this study is based on the inconclusive nature of the FD-output growth volatility linkage. Essentially, we try to proffer plausible explanation for the existence of the debate. To this end, the study hypothesizes that the measurement of the FD might be the cause for the debate. It is observed that the usual practice of previous studies is to limit the measurement(s) of FD to traditional based indicators. Since it has been established that these indicators cannot influence growth satisfactorily, as explained above, the chances of them reducing the incidence of growth volatility is highly uncertain.

Based on the foregoing, the broad objective of this present paper is to examine the existence (if any) of the dampening effect of FD on output growth volatility. The specific objective is to inquire if "better finance" indicators of FD have more volatility reducing influence as compared to "more finance" indicators. Our study improves on Beck et al. (2006) by extending the measurement of FD to account for the role of efficiency of the financial sector. As far as we know, the inclusion of the improved measures of FD (i.e. better finance) serves as the novelty of this present study in the literature.

As a prevue, we found evidence that FD generally has a dampening effect on output growth volatility. However, the reducing influence of FD is more pronounced under "better finance" indicators than "more finance" indicators. It was also found that "better finance" magnifies real shocks, while the same cannot be said of monetary shocks. This however, has shown the superiority of "better finance" over the qualitative measures of FD.

Following this introductory remark, the rest of the paper is structured as follows: second two highlights data and methodological related issues. In second three, empirical results of the baseline estimates are presented, while the concluding remarks are emphasized in section four.

2. Data and Econometrics

2.1 Data issues

The scope of this study is limited to 71 countries for the period between 1999-2011. The list of countries under investigation is presented in the appendix and the choice of the scope is due to data availability. The two sources of our dataset are World Development Indicators (WDI) databank and Beck et al. (1999, updated in 2013).

Standard deviation of real GDP per capita growth and its deviation from its Hodrick-Prescott filter trend deviation are the two measures of output growth volatility used in this study. As FD, the "more finance" indicators are private sector credit (PCRED, as a % of GDP) and credit provided by the banking sector (CRED, as a % of GDP). The "better finance" indicators are (i) ratio of the value of banks' net interest margin to total assets (INT) and (ii) ratio of bank's overhead costs to real total

[3] For instance, Easterly et al. (2000), Denizer et al. (2002), Raddatz (2006), Darrat et al. (2005) all concluded that financial development has a dampening influence on output growth volatility. However, Easterly at al. (2002) found that too much FD magnifies growth volatility. Tiryaki (2003) and Beck et al. (2006) were of the view that financial development has no robust effect on growth volatility. Kunieda, (2008); Cermeno et at. (2012) could not provide evidence of a clear cut dampening effect of FD on growth volatility. This is to say that the FD-growth volatility literature is inconclusive.

assets (OVER). In terms of shocks, terms of trade volatility measure real shocks, while inflation serves as proxy for monetary shocks.

2.2 Econometrics

This study takes a cue from the model of Beck et al. (2006) with the following specification:

$$SGDP_{i,t} = \propto + FD_{i,t} + \gamma\, SHOCK_{i,t} + \varphi FD * SHOCK_{i,t} + \rho' X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (1)$$

Where SGDP is the standard deviation of GDP per capita growth, FD serves as proxies for financial development indicators as explained earlier, SHOCK is the standard deviation of macroeconomic shocks proxied by terms of trade (TOT) and inflation (INF). X is vector of control variables hypothesized to affect growth and growth volatility. They include Investment, which is proxied by Gross Fixed Capital Formation (as a ratio of GDP); Human Capital, which is proxied by Labour Participation Rate, Trade Openness (as a ratio of GDP) and Government Consumption (as a ratio of GDP).These control variables are also common in the literature.

System GMM of Arellano and Bover (1995) and Blundell and Bond (1998) was employed. This is based on the intuition that OLS might not be able to account for endogeneity related issues such as, data measurement error, omitted variable bias, and most importantly, higher growth volatility, which might induce alteration in the structure of the financial development indicators.

3. Empirical Results

Table 1 below presents the descriptive statistics of the variables in the estimated model. It shows that all the variables have positive mean values, which indicates that all the variables have an increasing trend. There is wide dispersion in the "more finance" indicators as compared to the "better finance" indicators. The two macroeconomic shocks employed in this study have similar standard deviation. The implication of this is that the volatility of the two shocks might be similar.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Max	Min
SGDP	1.857	2.135	23.62	0.001
PCRED	58.450	51.302	319.46	1.615
CRED	56.425	50.367	319.56	1.537
INT	4.442	3.118	18.634	0.124
OVER	3.729	2.860	27.478	0.039
INF	2.254	4.796	89.034	0.002
TOT	21.853	4.117	33.242	-12.6001
LAB	67.350	9.158	86.700	41.900
TRADE	83.402	54.511	458.332	14.932
GCONS	15.033	5.585	29.788	1.325

Source: Author's computation.

The correlation matrix is presented in table 2. It is interesting to infer that "more finance" indicators have the tendency of having a dampening influence on output growth volatility, while

"better finance" has the ability to magnify such volatility. Real shocks have a dampening effect on output growth volatility, while monetary shock magnifies the output growth volatility. The existence of a high correlation between the "more finance" indicators was established. Hence, both variables serve as substitute in the model.

Table 2. Correlation Matrix

VAR	SGDP	PCRED	CRED	INT	OVER	TOT	TRADE	GCON	LAB	INF
SGDP	1	-0.013	-0.001	0.120	0.119	-0.10	0.106	-0.03	0.078	0.207
PCRED		1	0.981	-0.64	-0.54	-0.08	0.380	0.5334	0.277	-0.182
CRED			1	-0.66	-0.56	-0.09	0.396	0.528	0.309	-0.185
INT				1	0.791	-0.09	-0.19	-0.435	-0.016	0.217
OVER					1	0.002	-0.14	-0.364	0.067	0.237
TOT						1	-0.04	-0.154	-0.061	0.071
TRADE							1	0.036	0.068	-0.044
GCON								1	0.076	-0.168
LAB									1	-0.032
INF										1

Source: Author's computation.

Table 3 presents the estimated coefficients of the baseline regression. The results presentation is structured into there phases. First, there is evidence of growth volatility dampening effect of "more finance" indicators. This said effect is significant at 5 per cent level. There is weak evidence of dampening effect when "better finance" indicators are used. The second structure deals with the examining the effects of macroeconomic shocks when controlling for FD indicators. It was found that measuring FD by private sector credit tends to reduce the output growth volatility, while the reverse is the case when other measures of FD are considered. As for real external shock, "better finance" indicators have dampening influence on output growth volatility. These results are similar to Beck et al. (2006) who posits that there is weak evidence of FD reducing the effects of output growth volatility. Also, existence of dampening effect of FD on terms of trade volatility and magnifying effects on inflation volatility were established.

The last phase of our result presentation deals with the interaction between FD indicators and the sources of shocks. The exact effect of "more finance" indicators in the propagation of both monetary and terms of trade shocks is mixed. This might be due to the fact that the "more finance" indicators have contradictory effects in the propagation of both monetary and real shocks. However, there is a clear-cut evidence of the volatility reducing influence of "better finance" indicators irrespective of the type of shocks considered. Thus, qualitative measures of financial development have the ability to ameliorate the contradictory effects that exists in the propagation of the monetary and real shocks, as in the case of quantitative measures of FD.

As for robustness check, we reconstruct our dataset in 3-year non-overlapping averages for the period 1999-2011. We employed an alternative measure of volatility. Specifically, deviation from Hodrick-Prescott filter trend. The results are quite similar in terms of magnitudes, significance and signs to the one presented earlier. These results are not presented for the want of space, but can be made available upon request.

Table 3. Sys-GMM Estimates

	1	2	3	4	5	6	7	8
GDP	-1.304* (0.420)	-1.296* (0.424)	-1.078* (0.300)	-1.227* (0.335)	-0.108** (0.043)	-0.149 (0.875)	-0.195 (0.090)	-0.168 (0.229)
TRAD	0.015** (0.006)	0.016** (0.008)	0.001 (0.021)	0.043** (0.019)	-0.077 (0.302)	-0.055 (0.053)	-0.020 (0.061)	0.191 (0.119)
GCON	0.208** (0.105)	0.203** (0.102)	0.207 (0.231)	0.103 (0.291)	0.198** (0.088)	0.574 (0.244)	0.341 (0.194)	0.464** (0.117)
LAB	0.063 (0.125)	0.070 (0.124)	-0.145 (0.174)	-0.275 (0.241)	-0.348 (0.201)	-0.587 (0.903)	0.203 (0.262)	-0.022 (0.161)
INF	0.017 (0.112)	0.019 (0.122)	-0.101** (0.047)	-0.121** (0.058)	0.374 (0.232)	0.157 (0.291)	-0.166 (0.144)	-0.765** (0.387)
TOT	-0.530** (0.215)	0.620 (0.432)	0.136 (0.348)	0.109 (0.382)	-0.593** (0.229)	0.942 (0.654)	0.309 (0.221)	0.301 (0.290)
PCRED	-0.05** (0.022)				-0.057 (0.081)			
CRED		-0.045** (0.023)				-0.158 (0.391)		
INT			-0.665 (0.432)				-0.255 (0.209)	
OVERH				-0.706 (0.593)				-0.723 (0.566)
PCRED*INF					-0.047 (0.603)			
PCRED*TOT					0.178 (0.243)			
CRED*INF						0.007 (0.042)		
CRED*TOT						-0.319 (0.211)		
INT*INF							-0.266** (0.116)	
INT*TOT							-0.492** (0.243)	
OVERH*INF								-0.153 (0.745)
OVERH*TOT								-0.442* (0.163)
Hansen Test (p-value)	0.765	0.689	0.876	0.721	0.911	0.813	0.887	0.912
Arellano-Bond Test for Autocorrelation (p-value)	0.316	0.567	0.501	0.410	0.673	0.689	0.512	0.661

Source: Author's computation. Values in parenthesis are standard error, while * and ** shows the level of statistical significance at 1 and 5 per cent correspondingly.

4. Conclusion

This paper set out to extend the work of Beck et al. (2006) by expanding the measures of finance to capture the qualitative and efficiency features of the financial sector, rather than measuring the size of the sector. The study used a large dataset for 71 countries covering the period 1999-2011 and relied on the system-GMM estimator. It was found that "more finance" indicators have strong evidence of dampening effect, while the "better finance" indicators have weak evidence of output growth volatility reducing influence. The exact effect of both monetary and real shocks is mixed across the different measures of FD. The interaction between FD indicators and the two sources of shocks indicates that the output volatility reduction arising from the shock is enhanced in the presence of "better finance" or "qualitative finance". The results are robust to different checks.

The policy implication derived from this study is that policymakers should formulate policies and frameworks directed towards improving the entire financial sector. This is based on the fact that the two categories of FD indicators are quintessential to the reduction of the effects of output growth volatility. While "more finance" has a direct approach, the "better finance" acts through the conduit of both monetary and real shocks.

The burgeoning literature of finance has argued that the excessive development of the financial sector is detrimental to the economy. As such, they argued that once the optimal level of FD is exceeded, finance tend to serve as growth drag. It would be interesting to see future studies in this direction. Also, measurement of FD should incorporate market (stock) based indicators. This is to examine if similar results will be obtained.

APPENDIX 1: List of Countries

Argentina, Algeria, Austria, Australia, Bangladesh, Belgium, Bolivia, Brazil, Cameroon, Columbia, Congo, Rep, Costa Rica, Cote D'Ivoire, Denmark, Ecuador, Egypt, El-Salvador, Finland, France, Gabon, Gambia, Germany, Ghana, Greece, Guatemala, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Jordan, Kenya, Latvia, Luxemburg, Malawi, Mali, Mexico, Morocco, Netherland, New Zealand, Niger, Norway, Pakistan, Panama, Papa New Guinea, Paraguay, Peru, Philippines, Portugal, Senegal, Sierra Leone, South Africa, South Korea, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey.

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