AN OPERATIONAL APPROACH TO FINANCIAL STABILITY: ON THE BENEFICIAL ROLE OF REGULATORY GOVERNANCE

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Abstract

The reviews have shown that regulatory governance increases the economic growth of the country that further improves the financial stability. Weak governance promotes a weak financial sector. It is established that there are several crises took place in ancient times because of failed policy (Greco, Ishizaka, Tasiou, & Torrisi, 2019; Kuc-Czarnecka, Lo Piano, & Saltelli, 2020). The purpose of the research is to find out more about how weak governance can damage the economy of nations, and that is how it leads to financial instability. Besides, how good governance leads to economic stability can also be understood. The research problem presented in terms of the objective of the research is to find out the association between financial stability and regulatory governance for the selected nations under study. This is done by taking a sample of fifteen nations of the world. By taking selective indicators for regulatory governance and financial stability and applying the causality test, the association is checked. The results indicate a less significant association between regulatory governance and financial stability for nations under study. The results are relevant in continuously expanding global financial markets wherein emphasis is strong regulations.

Keywords: Regulatory Governance, Financial Stability, Developed Nations, Developing Nations, Returns

Authors' individual contribution: Conceptualization – T.S.S.; Methodology – T.S.S.; Formal Analysis – T.S.S.; Investigation – T.S.S.; Writing –T.S.S.; Original Draft – T.S.S. and S.S.; Writing – Review & Editing – T.S.S.; Resources – T.S.S.; Visualization – T.S.S.; Supervision –T.S.S.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

There is increased recognition of good governance as a part of good financial stability. International stands to lay more emphasis on good governance for regulators and supervisors (Das, Quintyn, & Chenard, 2004). The good regulatory governance increases the competence of the financial system which in turn improves the financial stability. Financial stability can be considered as the constancy of the market in finance that reflects economic and financial indicators like prices, the supply of money, private sector credit, the exchange rate, and interest rate. Weak regulatory governance promotes weaker financial sector which in sequence damages the functioning of the financial system. Many of the financial crises recorded in emerging market economies have confirmed that the deregulation of the financial system needs to go hand-in-hand with the development of a regulatory framework. Since the last two eras, the crisis in Asia, as well as the crisis globally, has reawakened the consciousness of financial establishments universally of the reputation of a comprehensive financial system for viable progress. It has been

proposed that global financial crises were the cause of policy failure.

The objective of the analysis is to test and give evidence in a cross-country context for the association between regulatory governance and financial stability. The stable financial system is that in which intermediaries in the system and infrastructure of the market to make funds flow easily between savers and investors which help booster growth in economic activity. This has an indirect impact on regulatory governance. The association has been tested earlier too but increasing shreds of evidence of financial failures world over and the emergence of non-banking financial institutions, financial insolvencies, presents the need for strong regulatory practices. The results of the study have many implications for policymakers.

The structure of the paper is as follows. Section 1 is Introduction, Section 2 cites the noteworthy works, Section 3 relates to research methodology, Section 4 gives details of the research data, Section 5 presents the analysis, Section 6 describes linear regression analysis, and lastly Section 7 presents conclusion.

2. LITERATURE REVIEW

2.1. Financial stability

As quoted by Das, Quintyn, and Chenard (2004) in his work, Issing (2003), Schinasi (2004), Chant, Lai, Illing, and Daniel (2003) recited that "financial stability is important for the development of relevant analytical tools as well as for the design of policy and operational frameworks (including relevant policy benchmarks)". There exists a complex interaction between the different components of the financial system which makes financial stability complex to define and measure. The complexity of definition and measurement becomes more evident with time and with more cross border interactions in the picture (Gadanecz & Jayaram, 2004).

According to Foot (2003) "financial stability is when there is monetary stability". As per a definition given by Magyar Nemzeti Bank (n.d.), "…financial stability is a state in which the financial system, i.e. the key financial markets and the financial institutional system is resistant to economic shocks and…. is fit to smoothly fulfill its basic functions: the intermediation of financial funds, management of risks and the arrangement of payments". Central Bank of Bahrain (2007) defined financial stability as "a state of affairs in which the financial services sector can channel the savings of the population and provide a nationwide payment system in a manner that is efficient secure and sustainable over time".

Various theories have been proposed stating the reasons of financial instability. Some of the common reasons identified for financial instability like weak economic policies, poor supervision, weak regulatory practices, and liberalization (Kirkpatrick, Sirageldin, & Aftab, 2001). Many researchers' world over have tried to understand financial conditions world over through various indicators of financial system vulnerabilities, many banks through their financial stability reports too focused on few key indicators, still, there is a need of composite measurement system for financial stability (Evans, Leone, Gill, Hilbers, Blaschke, Krueger, Moretti, Nagayasu, O'Brien, ten Berge, & DeLisle, 2000).

Some of the most used and comprehensive systems of measurement of financial stability include financial soundness indicators developed by the IMF (IMF, 2006). Indicators developed by Hawkins and Klau (2000), Nelson and Perli (2005), and Gray and Bebbington (2007) focusing on external vulnerability. The other commonly used indicators include: the real sector is described by GDP growth, the fiscal position of the government and inflation (IMF, 2019) for economy's financial stability, leverage and expense ratios for measuring organization's riskiness; net assets (assets minus liabilities) and net disposable income (earnings minus consumption minus debt service and principal payments) for measuring household sector's health; real exchange rates, foreign exchange reserves, the current account, capital flows and maturity/currency mismatches for accessing external conditions; monetary aggregates, real interest rates, risk measures for the banking sector, banks' capital and liquidity ratios, the quality of their loan book, standalone credit ratings and the concentration/systemic focus of their lending activities for checking financial sector's stability. There may be other composite indicators that can be used as combinations of the above-mentioned indicators (Moreira & Crespo, 2016; Greco, Ishizaka, Tasiou, & Torrisi, 2019; Kuc-Czarnecka, Lo Piano, & Saltelli, 2020) like index of financial system soundness (Das, Quintyn, & Chenard, 2004). Hence, in researches, one may use a single indicator or group of indicators to assess financial stability.

2.2. Regulatory governance

It is difficult to find a standard definition of regulatory governance as there is an apparent difference in its definition used in debates related to policies and academic discussions. Also, not all aspects of regulatory governance are taken into considerations while defining regulatory governance (Amsonova-Taddei & Turley, 2019). A definition given by Kjaer and Vetterlein (2018) fits most to the present work. They defined regulatory governance as, "governance through regulation, and we suggest perceiving regulatory governance as a 'field' as it would provide a framework capable of capturing the and interrelations between the structural aspects of governance and the micro-processes of the emergence and workings of regulation".

Levy and Spiller (1994) explained that regulation has two components: "a) a governance structure of a regulatory system and b) the regulatory incentive structure". The previous contains 'the devices that civilizations use to coerce supervisory option and to resolve struggles arising because of the constraints' while the latter encompasses the instructions applied to the controlled. Both of them are needed as they check the quality of rules and rule-making systems. Earlier Bourdieu (1984), Dingwerth and Pattberg (2009), defined three components of regulatory governance: "an object at stake around which the field constitutes itself, power relations amongst all actors relevant in a field of a specific object, and the 'rules

of the game' that emerge over time through interaction in the field".

The World Bank has proposed Worldwide Global Indicators for measuring the six aspects of governance in different nations. High-quality governance is needed for good integration of supervisory functions in the system. But preserving the integrity of supervisory function is difficult as it is vulnerable from political interferences. One of the pre-requisites of good governance is firm institutional reinforcements. Independency, accountability, transparency, and integrity are the four components identified for good regulatory governance by Das and Quintyn (2002). A similar kind of index is developed by Sundararajan, Das, and Yossifov (2003), for banking sector supervision.

2.3. Financial stability and regulatory governance

In the new environment, financial system strength depends upon their soundness of regulatory practices. Good governance is a step forward the reinforcement of credibility and morality of regulatory authorities.

Issing (2003) and Schinasi (2004) explained the significance of financial stability as an important tool for the design of policy and operational frameworks including relevant policy benchmarks. Levy and Spiller (1994) explained the design and importance of the regulation. The governance structure of a regulatory system has the devices that peoples use to compel regulatory options and to resolve conflicts that arise concerning these constraints and the regulatory incentive structure encompasses the rules applied to the regulated.

Regulatory and supervisor freedom from the government and the financial industry is vivacious for financial stability (Goodhart, 1998). Subjective indication illustrates that there is inadequate banking regulation, a loophole in supervision, government connection in the regulatory process, and connected lending have played central roles in the explanation of banking crises throughout the last few decades (Kaminsky & Reinhart, 1999). Many deficiencies in regulatory and supervisory systems arise due to the focus of systems on individual institution supervisors and failing to focus on the interconnections and links between financial firms, sectors, and markets (Brunnermeier, 2009). This indicates the lack of a macroprudential approach. The increase in flexibility in the financial system will lead to its ability to absorb shocks and spread the effects of losses due to shock while remaining viable as well. Ensuring macro-prudential policy will limit the effects of systemic risk as well as limit the effects of volatility. Barth, Nolle, Phumiwasana, and Yago (2003) talked about common practices like credit granted as directed lending which weaken regulatory governance. These are not justified under safe banking standards as there are chances that they may become non-performing. Schinasi (2004) commented that in the present economy, the role of finance is much broader including financial stability, efficient resource allocation, and the enabling of the change of systems to meet lenders and borrowers. Cheang (2009) studied approaches through which quantitative monitoring of financial stability can be done.

Further, Caprio and Klingebiel (1997), Lindgren, Baliño, Enoch, Gulde, Quintyn, and Teo (2000), and

Rochet (2008) gave evidence that most of the current disasters were motivated because of political interference. Adding to it they all have proposed that if systems ensure the independence and accountability of regulatory authorities, then financial reform can be successfully ensured. Barth et al. (2003) talked about common practices like credit granted as directed lending which weaken regulatory governance. These are not justified under safe banking standards as there are chances that they may become non-performing. Barth, Caprio, and Levine (2004; 2006) in their work have explored the impact of regulatory practices on the development, efficiency, and stability of the banking sector as well on the incidence of banking crises.

Albulescu (2010) developed an aggregate stability index comprising of 20 indicators of financial system development, vulnerability, soundness, and international economic climate. Geršl and Hermánek (2006) have also proposed an aggregate financial stability indicator in the Czech National Bank's Financial Stability Report 2006. The index is based on the values of the IMF's core financial soundness indicators. Similarly, the Central Bank of the Republic of Turkey (2006) constructed a financial strength index using six sub-indices covering asset quality, liquidity, foreign exchange risk, interest rate risk, profitability, and capital adequacy banking sector. Cardarelli, Elekdag, and Lall (2008) have constructed the financial stress index in response to the financial tsunami. The index has been prepared by an "equal-variance weighted average" of seven variables linked with stock market returns, the volatility of stock returns and foreign exchange, liquidity, sovereign debt spreads, international reserves. Van den End (2006) also came up developed a financial stability condition index for the Netherlands comprising of interest rates, effective exchange rate, real estate, and stock prices, and solvency of the financial institutions. Segoviano Basurto and Padilla (2006) developed a model for portfolio credit risk evaluation, which has explanations for linear and non-linear dependencies between the assets in banks' portfolios and their changes across the economic cycle. Kaminsky and Reinhart (1999) came up with an early warning system of crisis using zero one binary variable (either no-crisis or crisis) to signal banking crises.

Based on the above review, the hypothesis proposed is:

Hypothesis 1 (H1): There is an association between indicators of financial stability and regulatory governance.

The objective of the study is to find out the association between financial stability and regulatory governance for the nations under study.

3. RESEARCH METHODOLOGY

The study was descriptive and secondary data were used to complete. The sample included the top fifteen nations in terms of GDP; from the list of the entire nations available with the IMF i.e. total of fifteen nations (from developed and developing nations) was the sample. The study period was from the year 2007 to 2017. Secondary sources were used for collecting the data such as the websites www.world bank.org and www.IMF.org.

4. RESEARCH DATA

Table 1 presents the nations taken for the study.

Table 1. Descriptive statistics

Country	Status
Argentina	Developing
Australia	Developed
Brazil	Developing
Canada	Developed
Chile	Developed
China	Developing
France	Developed
Germany	Developed
Greece	Developed
Israel	Developed
Italy	Developed
Malaysia	Developing
Mexico	Developing
Netherlands	Developed
Nigeria	Developing

Based on the work, of Das, Quintyn, and Chenard (2004), indicators for regulatory governance used were supervisory independence and accountability (RG1), strength of external audit (RG2), and political central bank (RG3).

Indicators for financial stability used were regulatory capital to risk-weighted assets (RCRWA), bank capital to assets (BCtoA), return on assets (ROA), return on equity (ROE), and non-performing loans to total loans (NPL).

Data on these indicators were collected from the year 2007 onwards on the above-mentioned indicators for all the nations taken for the study. Or some years in between, the data on the variables was not available for the continuous duration after 2017. Hence the number of years for data observation is ten years. Linear regression was used for finding out an association between indicators of regulatory governance and financial stability for these nations.

Though alternative methods like structural equation modelling between observed and unobserved variables (Mohr & Wagner, 2013), multiple regression analysis, forming an index of variables and measuring the effects (Das, Quintyn, & Chenard, 2004), analysis of internal accountability mechanism (Kjaer & Vetterlien, 2018), Exploring the political and legal dimensions of variables, etc. can be alternative methods for exploring the topic (Grasten & Tzouvala, 2018).

5. ANALYSIS

To meet the objective of finding an association between the regulatory governance and financial stability indicators, the analysis of the data collected for the above-mentioned nations was done. The following section discusses the analysis part.

5.1. Descriptive statistics

The key characteristics of each of the data variables are presented in Table 2.

Table 2. Descriptive statistics

Indicators	N	Minimum	Maximum	Mean	Std. deviation
ROA	10	-.381605	.106170	-.13938616	.200180548
RCRWA	10	.000000	1.103804	.63386650	.488920808
ROE	10	1.045269	1.494393	1.23064091	.134173995
NPL	10	.000000	1.414973	.70490498	.518310068
RG1	10	1.770852	1.897627	1.85582949	.038622975
RG2	10	-.730000	.775974	.23581194	.559849927
RG3	10	.958086	1.166430	1.02215677	.067303418
BCtoA	10	1.868679	3.317233	2.43002623	.451412412
Valid N (listwise)	10				

5.2. Normalit

Financial data has inbuilt variations in it. It is difficult to get the residuals normally distributed. If the data becomes static, the inherent nature of the data will be lost. The Kolmogorov-Smirnov Z value was checked for the data series distribution. The results are summarized in Table 3 gave below where

some indicator series are normal in distribution (bank capital to assets, return on assets, non-performing loans to total loans, strength of external audit and political central bank) while others (regulatory capital to risk-weighted assets, return on assets and supervisory independence and accountability) are not.

Null hypothesis (H_0): Test distribution is normal.

Table 3. Testing for normal distribution

Value	Bank capital to assets	Regulatory capital to risk-weighted assets	Return on assets	Non-performing loans to total loans	Return on assets	Supervisory independence and accountability	Strength of external audit	Political Central Bank
N	10	10	10	10	10	10	10	10
Kolmogorov-Smirnov Z	1.475	2.235	.517	.614	1.532	1.707	.970	1.267
Asymp. sig. (2-tailed)	.026	.000	.952	.845	.018	.006	.304	.081

6. REGRESSION

For understanding the association between regulatory governance altogether and financial

stability indicators one by one as dependent, linear regression analysis was used.

Table 4. Regression analysis summary

Dependent variable	Independent variable	Adjusted R-square value	F-value and significance	Unstandardized coefficient Beta		Standardized coefficients		T-value and significance		Hypothesis testing
ROA	RG1, RG2, RG3	.049	1.155 at 40.1%	RG1	2.338	RG1	.451	1.299	.242	
				RG2	-.007	RG2	-.019	-.051	.961	
				RG3	1.067	RG3	.359	1.023	.346	
RCRWA	RG1, RG2, RG3	.201	1.755 at 25.5%	RG1	8.058	RG1	.637	1.999	.093	
				RG2	.098	RG2	.113	.331	.752	
				RG3	-.032	RG3	-.004	-.014	.989	
ROE	RG1, RG2, RG3	.375	2.797 at 13.1%	RG1	1.038	RG1	.299	1.061	.330	
				RG2	.007	RG2	.028	.094	.928	
				RG3	1.292	RG3	.648	2.279	.063	
NPL	RG1, RG2, RG3	.494	3.929 at 7.3%	RG1	-9.883	RG1	-.736	-2.906	.027	
				RG2	-.168	RG2	-.181	-.669	.528	
				RG3	2.445	RG3	.317	1.241	.261	
BCtoA	RG1, RG2, RG3	.255	2.026 at 21.2%	RG1	1.552	RG1	.133	.432	.681	
				RG2	-.069	RG2	-.086	-.262	.802	
				RG3	4.772	RG3	.711	2.292	.062	

Here, variables are represented as supervisory independence and accountability (RG1), strength of external audit (RG2), and political central bank (RG3), regulatory capital to risk-weighted assets (RCRWA), bank capital to assets (BCtoA), return on assets (ROA), return on equity (ROE), non-performing loans to total loans (NPL).

Here, in Table 4, RG1, RG2, RG3 are respectively supervisory independence and accountability, strength of external audit, and political central bank (indicators of regulatory governance).

Taking ROA (return on assets) as the dependent variable, the Adjusted R² value shows how much of the entire variation in the ROA, can be explained by the regulatory governance variable. In this case, a 4.9% variance is explained, which is very small and insignificant. The ANOVA Table 4 shows the F-value of 1.155 at a significance level of 40.1 percent suggesting that the regression model foretells the dependent variable suggestively well. The beta value is .451 for RG1 which shows that a 1% change in RG1 (supervisory independence and accountability) will lead to a 45.1% change in ROA. The T-value is .451 and is significant at 24.2%. The beta value is -.019 for RG2 which shows that a 1% change in RG2 (strength of external audit) will lead to a 1.9% change in ROA but in the opposite direction. The T-value is -.051 significant at 96.1%. The beta value is .359 for RG3 which means a 1% change in the RG3 (political central bank) will lead to a 35.9% change in ROA (dependent variable). The T-value is 1.023 at 34.6% which is not significant.

Taking ROE (return on equity) as the dependent variable, the Adjusted R² value shows how much of the entire variation in the ROE, can be explained by the regulatory governance variables. In this case, 37.5% variance is explained, which is very small. The ANOVA Table 4 shows the F-value of 2.797 at a significance level of 13.1 percent suggesting that the regression model foretells the dependent variable suggestively well. The beta value is .299 for RG1 which shows that a 1% change in RG1 (supervisory independence and accountability) will lead to a 29.9% change in ROE. The T-value is 1.061 and is significant at 33.0%. The beta value is .028 for RG2 which shows that a 1% change in RG2 (strength of external audit) will lead to a 2.8% change in ROE. The T-value is .094 significant at 92.8%. The beta value is .648 for RG3 which means a 1% change in the RG3 (political central bank) will lead to a 64.8% change in

ROE (dependent variable). The T-value is 2.279 at 6.3 % which is not significant.

Taking NPL as the dependent variable, the Adjusted R² value shows how much of the entire variation in the NPL (non-performing loans to total loans), can be explained by the regulatory governance variables. In this case, 49.4% variance is explained, which is quite significant. The ANOVA Table 4 shows the F-value of 3.929 at a significance level of 7.3 percent suggesting that the regression model foretells the dependent variable suggestively well. The beta value is -9.883 for RG1 which shows that a 1% change in RG1 (supervisory independence and accountability) will lead to a 988.3% change in NPL in the opposite direction. The T-value is -2.906 and is significant at 2.7%. The beta value is -.181 for RG2 which shows that a 1% change in RG2 (strength of external audit) will lead to an 18.1 % change in NPL in the opposite direction. The T-value is .09-.6694 significant at 52.8%. The beta value is .317 for RG3 which means a 1% change in the RG3 (political central bank) will lead to a 31.7% change in NPL (dependent variable). The T-value is 1.241 at 26.1 % which is not significant.

Taking BCtoA as the dependent variable, the Adjusted R² value shows how much of the entire variation in the BCtoA (bank capital to assets), can be explained by the regulatory governance variables). In this case, a 25.5% variance is explained, which is very small. The ANOVA Table 4 shows the F-value of 2.026 at a significance level of 21.2 percent suggesting that the regression model foretells the dependent variable suggestively well. The beta value is .133 for RG1 which shows that a 1% change in RG1 (supervisory independence and accountability) will lead to a 13.3% change in BCtoA. The T-value is .432 and is significant at 68.1%. The beta value is -.086 for RG2 which shows that a 1% change in RG2 (strength of external audit) will lead to an 8.6 % change in BCtoA in the opposite direction. The T-value is -.262 significant at 80.2%. The beta value is .711 for RG3 which means a 1% change in the RG3 (political central bank) will lead to a 71.1% change in BCtoA (dependent variable). The T- value is 2.292 at 6.2 % which is not significant.

7. CONCLUSION

There is an increasing focus on regulatory governance in context to the broader financial stability. The present study was done to find an

association between regulatory governance and financial stability for the selected nations of the world. These nations represented from the developed and developing countries. The time frame of the study was from 2007 to 2017. The results put forward that the association of ROA (return on assets) and NPL (non-performing loans to total loans) with all regulatory governance indicators is quite significant. Next association is good for ROE (return on equity), and least for BCtoA (bank capital to assets).

Supervisory independence and accountability and political central bank changes are much contributing to ROA (return on assets), ROE (return on equity) and NPL (non-performing loans to total loans). On the other hand, (strength of external audit) is having a reverse relationship and an insignificant association with ROA (return on assets), ROE (return on equity) and NPL (non-performing loans to total loans).

Supervisory independence and accountability changes are not much contributing to BCtoA (bank capital to assets) but political central bank changes are much contributing to BCtoA (bank capital to assets). On the other hand, (strength of external audit) is having reverse relationships and an insignificant association with BCtoA (bank capital to assets).

The results have proven that there is no complete association between financial stability and regulatory governance as against the proven theory that the quality of regulatory governance practices approved by financial system regulators and supervisors of a nation does matters for financial system soundness (Das, Quintyn, & Chenard, 2004). Strength of external audit negatively and insignificantly affects regulatory governance. But what is significant for the nations are supervisory independence and accountability and political central bank.

There is an expansion of financial markets since the last decade. The markets are more interconnected with many innovations seen. The adoption of these innovations is done to be accommodated in the financial environment. Though supervision of financial market responded to these changing conditions the financial crisis has raised a question on the regulatory and supervisory framework (Cavelaars, de Haan, Hilbers, & Stellinga, 2013).

In this context, the outcomes of the investigation undertaken in this paper are inspiring for further study. The teachings from these conclusions are upfront for policymakers i.e. importance on strengthening good regulatory governance is though important but further researches should explore this further so that the results can be generalized. One of the ways of expanding the research is by increasing the number of countries in the sample. Though recent economic advances have strengthened the unresolved role of corporate governance for financial stability and its implications for the progress of society (Lupu, 2015), in light of results it should be carefully evaluated again. Also, it should be understood that the quality of corporate governance can affect the financial stability, but when there is no governance it will lead to financial distress. In a recent work by Mohr and Wagner (2019), stability is negatively affected by poor regulation enforcement. Hence the regulatory governance is the foundation stone to reforms of the financial sector.

The exercises from these discoveries in results are clear for policymakers: accentuation on fortifying great regulatory governance will pay off as far in the context of financial system adequacy. This suggests accentuation is required on appropriate and adjusted plans for autonomy, responsibility, openness, and uprightness of regulatory agencies to improve financial governance framework. Simultaneously, enhancements in by and large governance of the public sector additionally will add to institutional reinforcing and adequacy of the financial system. The research is a work made to understand the progress in the region of issues related to regulatory issues and all the more extensively, on the subject of financial stability. The ideas created here set up for additional examination and arrangement applications.

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