A Causal Analysis of Financial Development and Economic Growth

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Abstract

In terms of cause and effect, financial development and economic growth relationship has been a major empirical issue for researchers and policy makers. This study explores the causal linkages between financial development and economic growth catering for country specificity and structural shocks pertaining to different cross sections in SAARC and ASEAN countries by calling in the bootstrapping technique proposed by Kónya (2006). We considered the panel estimation to allow for contemporaneous correlations and performed the Wald test for Granger Causality with country specific bootstrap critical values catering for structural breaks. Empirical investigation reveals the existence of both the demand and supply leading phenomena for the selected period of 1980-2019. The direction of causality is sensitive measures and proxies used for financial development.

Keywords: Financial development, Bootstrapping, Causal Analysis, SAARC, ASEAN

JEL: C58, C60

1. Introduction

ver since the groundbreaking work of Schumpeter (1932), Goldsmith (1969), McKinnon (1973) and Shaw (1973), the relationship between financial development and economic growth has been the topic of debate among the economists. Ample amount of literature has explored the relationship between financial deepening and economic growth. The rest of the literature has focused on identifying the channels of transmission from financial intermediation to growth. On balance, all studies suggest a strong positive association between financial development and economic growth. However, different channels of transmission are emphasized in literature. Goldsmith (1969) focuses on the relationship between financial development and efficiency of investment, McKinnon (1973) and Shaw (1973) argue liberalization of the financial system. Patrick (1966) raises a genuine question about the nature of financial and real sector, its dynamicity, and the real cause of growth. Patrick identifies that growth induces financial expansion in the real economy and term it as a 'demand-following' phenomenon. According to this view, the financial system acts passively in the growth process. However, in the 'supply-leading'

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phenomenon, the supply of financial services precedes its demand.

A natural question then concerns the direction of causality. Jung (1986) focuses on causality analysis and tries to resolve the basic issue of demand following and supply leading phenomena and infers that the causal direction is from financial development to economic growth, which corroborates with the findings in Khan, Ahmed & Bibi (2019), Swamy & Dharani (2018), Ono (2017), Pradhan, Arvin, Hall, & Nair (2016) and Xiao & Zhao (2012). In contrast to these findings, some researchers believe that it is two-way phenomena or at least causality runs form economic growth to financial development (see e.g., Opoku, Ibrahim & Sare, 2019 and Mhadhbi, Terzi & Bouchrika, 2019). A plethora of attempts have been made to establish a causal relationship between financial development and economic growth with no consensus among scholars.

Since the inception of the South-Asian for Regional Association Cooperation (SAARC), among others, its main objective is to accelerate economic growth, social progress, and cultural development in the region. The constituent countries of the regional association are extremely diverse in status of economic development, population, and size. India accounts for three-fourths of the population and 80% of the GDP in the region with relatively developed financial and capital markets. Thus, regional trends and statistics may be misleading in this regard. India targeted the development of its equity market by establishing the Securities and Exchange Board of India in response to the 1991 balance of payment crises. India's stock exchange ranks amongst the largest futures and contracts markets in the world due to the capital market reforms during the 1990s, which focused on improving corporate governance, A Causal Analysis of Financial Development and Economic Growth

securities disclosure, and pricing systems, and making listing requirements stringent.

Pakistan and Sri Lanka both started their capital market reforms in the early 1990s with the lifting of restrictions on purchases of shares of listed firms by foreigners and nonresidents. During the last decade, Pakistan initiated the automation of the stock exchange trading system and efforts are made to stimulate the development of the corporate bond market by enhancing the government securities market. Financial sector reforms helped Pakistan in developing a resilient banking system. The paradigm shifts from state-owned to private banks, allowing Pakistan to improve asset quality, profitability, and capitalization. However, the government retains its major presence in the nonbank financial sector through insurance assets, mutual funds, and saving schemes. The early 1990s reforms in Sri Lanka include interest rate deregulation, strengthening prudential requirements, and building the supervisory capacity of the Central Bank of Sri Lanka. Instead of privatization, efforts are made to reform underperforming state-owned banks by focusing on operational restructuring. While, at earlier stages of reforms, developed state-owned banks were privatized, the government has taken steps to reverse the trend by establishing new state-owned banks during the last decade. Nepal has a large and diverse financial sector with incomplete financial sector reforms. The financial sector is facing an inconducive legal framework and institutional setup in Nepal and thus requires reforms. Since 2000, the importance of state-owned banks has declined due to the inclusion of numerous new institutions to Nepal's financial sector. However, concerns are raised about the stringency of licensing requirements and supervision. On the other

hand, the central bank has employed a series of measures to strengthen supervision.

During the 1990s, the bank-dominated financial sector in the SAARC region displayed broad similarities. State-owned banks were constrained by direct lending to inefficient state-owned enterprises and by controlling interest rates. The financial sector was constrained in its ability to intermediate to support growth due to losses in state-owned banks and high reserve requirements for banks. However, over the last three decades, these countries have experienced a wave of financial liberalization with an expectation that no government control on interest rate and financial regulations enhances financial development and, in turn, expected to promote economic growth (McKinnon, 1973 and Shaw, 1973). The aim of this study is therefore to empirically investigate the direction of causality between financial development and economic growth for SAARC countries and contrast the results with a panel of relatively advanced countries of the ASEAN region. The Panel Granger Causality testing procedure proposed by Kónya (2006) is conducted for SAARC and ASEAN countries over the period 1980-2017. The SAARC sample comprises Pakistan, India, Sri Lanka and Nepal and the ASEAN sample includes Singapore, the Philippines, Indonesia, Thailand, and Malaysia. In terms of financial development, the SAARC countries similar however, Malaysia, are Thailand and Singapore are ahead of other selected countries in the ASEAN region. This provides us with the opportunity to test the direction of causality with countries having different levels of financial development. We considered six measures of financial development as a ratio to GDP including savings, domestic credit to the private sector, domestic credit provided by the banking sector, M2, M3 and deposit

money bank assets as a ratio to deposit money and central bank assets. The use of bootstrapping and Zellner (1962) methodology enabled us to incorporate the country specific as well as cross country features of financial markets.

2. Literature review

Credit and payment systems with relation to the banking sector is crucial in the development of financial institutions. An efficient and adaptable financial system has a major contribution to economic growth. In a market-oriented economy, the availability of a variety of financial institutions enhances growth (Patrick, 1966). As the economy grows, a more complex system of payments and exchange evolves with greater monetization of economies. Diversification and hedging of risks favor the emergence of financial intermediaries and banks. Greater diversification persuades the agents to hold a greater share of wealth in productive capital through financial institutions. Gurley and Shaw (1955) emphasize the institutionalization of saving to investment by explaining how spending units channelize these by moving from balance budget to surplus budget.

The relationship between financial development and economic growth has received much importance in the last two decades because of its real-world implications and far-reaching results. However, different transmission channels are emphasized in literature. For example, institutional guality and efficiency of financial intermediaries matters a lot in the development of the financial system and further enhance (Acemoglu, economic growth Johnson. Robinson, & Thaicharoen, 2003; Kutan, Samargandi & Sohag, 2017 and Khan, Kong, Xiang, & Zhang, 2019). Looking back

at history, scholars such as Gurley & Shaw (1955), Mickinnon (1973), and Pagano (1993) argue that savings redirected into investment foster economic growth. Factors such as banking regulation, innovation within firms, technological progress, and the capitalization of stock markets have been found to positively influence financial development (Xiao & Zhao, 2012). Additionally, government control over financial structures has been identified as a hindrance to economic growth (Sapienza, 2004).

Benhabib & Spiegel (2000) explore different channels through which financial development affects growth and the rate of investment. They suggest that investment and total factor productivity growth are positively influenced by financial development. However, different growth components are affected by different financial indicators. Accounting for rates of factor accumulation, the liquidity indicators and the ratio of financial assets to GDP both positively affect the factor productivity growth. Although, the financial assets to the GDP ratio turns out to be the robust financial indicator while controlling for country specificity. With fixed effect regression, only the ratio of banking to the total assets variable has a significant impact on the physical-capital accumulation rates.

The majority of the authors agree that there is a positive relationship between financial development and economic growth. However, the direction of causality is a major bone of contention between them. Jung (1986) focused on causality analysis and tried to resolve the basic issue of demand following and supply leading phenomena and inferred that the causal direction is from financial development to economic growth. Arestis, Demetriades & Luintel (2001), Christopoulos & Tsionas (2004), Atindéhou, Guevie, & the banking sector development and economic

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Amenounve (2005) and Xiao & Zhao (2012) support the argument that policies meant to enhance financial development led to economic growth. In contrast to these findings, some scholars believe that it is twoway phenomena or at least causality run form economic growth to financial development (Wolde-Rufael, 2009; Hassan, Sanchez & Yu, 2011 and Fowowe, 2011).

Calderón & Liu (2003) employ the Geweke decomposition test on pooled data of developing and industrial countries to examine the direction of causality between financial development and economic growth. They find both unidirectional and bidirectional relationship between the variables. Moreover, the causality, among other factors, depends on financial deepening and sample interval. Financial deepening drives economic growth through channels of capital accumulation and productivity growth.

Kar, Nazlıoğlu & Ağır (2011) assess the role of financial development in Middle East and North African (MENA) countries. By controlling the contemporary correlation among the individual countries and using the Seeming Unrelated (SUR) estimates from bootstrap procedure, they conclude that there is no clear consensus on the direction of causality between different proxies of financial development and economic growth.

Menyah, Nazlioglu & Wolde-Rufael (2014) explore the causal linkage between financial development, trade openness and economic growth for twenty-one African countries. Using different financial indicators, they develop a financial index and apply the panel bootstrap procedure to conclude that there is limited evidence in favor of finance-led growth and trade-led growth hypotheses.

Mhadhbi, Terzi & Bouchrika (2019) revisit

growth for forty developing countries. Using the panel bootstrap approach to Granger causality testing, they conclude the limited support for the supply-leading, demandfollowing and complementarity hypothesis. In twenty-five countries, they find the evidence for a causal relationship between economic growth and banking sector development.

Yang (2019) proves the positive link between financial development and economic growth in middle-income countries through channels of physical capital stock and total factor productivity. The study finds a causal relationship between equity market development and economic growth for the trapped middle-income and graduated middleincome countries. Reverse causality is found between economic growth and equity market for high income economies.

Khan, A., Ahmed, M., & Bibi, S. (2019) argue that the conflicting results regarding the nature of causal direction between financial development and economic growth arise because of (i) the choice of financial indicators, and (ii) the use of asymptotic methods in small samples. They use the maximum entropy bootstrap approach to establish a unidirectional causal relationship between credit to private sector as share of GDP and GDP per capita for Pakistan. However, a two-way causality is found while using investment spending to GDP as a proxy for financial development.

Opoku, Ibrahim & Sare, (2019) examine the causal nexus between financial development and economic growth for 47 African countries by using a frequencydomain spectral causality test. This technique allows them to investigate the causality at short-run, intermediate and long-run time periods. Robust measures of financial development that capture depth, access and efficiency of financial institutions and markets are employed for testing causality between economic growth and financial development. On balance, they find no causality between financial development and economic growth. For few selected countries, they find evidence in favor of supply-leading, demand-following and feedback hypothesis in all time domains i.e., short-run, intermediate and long-run. All in all, the study strengthens the hypothesis that financial development and economic growth evolve independently.

A plethora of studies attempt to explore the link between financial development and economic growth by choosing various proxy measures for financial development and consequently ended up with different results (Calderón & Liu, 2003; Menyah, Nazlioglu & Wolde-Rufael, 2014; Hassan, Sanchez & Yu, 2011 among others). On balance, the consensus among the researchers is that the financial development and economic growth bear a positive relationship (Valickova, Havranek, & Horvath, (2015). However, no concensus is reached regarding the direction of causality between the economic growth and financial developent. This study relies on more a +sophisticated econometric method to explore the causal nexus between the varaibles.

3. Measurement of Financial Development

One of the crucial aspects in assessing the relationship between financial development and economic growth is how to define financial development. The functions of finance, as described by Levine (1997) and others: (i) easing the exchange of goods and services, (ii) mobilizing and pooling savings from many investors, (iii) allocating savings to its most productive use, and (iv) diversifying

and reducing liquidity and intertemporal risk. In literature, several indicators have been identified for measuring financial development empirically which varies from bank base to monetary aggregate including efficiency of institutions (Sobiech (2019) and Kar, Nazlıoğlu, & Ağır (2011). This study employs six variables for financial development and the data set is used from 1980 to 2017. The data is collected from the World Development Indicator (WDI) and World Bank Global Financial Indicator.

First proxy used for financial development is a *Ratio of Gross Saving to GDP*. According to Solow (1956), there would be stable balanced growth if saving is diverted to investment. Moreover, any increase in saving will have an incremental effect on large capital formulation and a high level of output. Financial developments reap and get benefit from a higher level of saving by positive real interest rate (Ouma, Odongo & Were, 2017 and Menyah, Nazlioglu & Wolde-Rufael 2014).

The second measure of financial development is *Domestic Credit to Private Sector to GDP (DCPS)*. This proxy indicates the private participation in the promotion of economic growth via financial development. It also reflects the banking intermediation in funneling though savers to investor. This includes loans obtained for consumption purposes and investment horizons (Herwartz & Walle, 2014 and Kar, Nazlıoğlu, & Ağır 2011).

The third measure is *Domestic Credit* (*DCTP*) provided by the banking or financial sector as percentage of GDP which shows how much credit is available for the public and private sector. The proxy is used for intermediation and acts as bridge between the public and private sector (Sobiech, 2019 and Menyah, Nazlioglu & Wolde-Rufael 2014).

We used the *ratios of M2 and M3 to GDP* to capture the monetization effect of an

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economy. The ratio of M2 to GDP reflects the degree of monetization in the economy. It refers to the ability of financial markets to allocate credit and it is mainly related to liquidity or the medium of exchange. The ability of an economy to channel funds from savers to borrowers can be better reflected by M3 to GDP (Sobiech, 2019). The sixth measure used for financial development is *bank assets (ASSETS)* defined as a ratio of deposit money banks assets to deposit money plus central bank assets. This proxy is proposed by Beck, Demirgüç-Kunt & Levine (2000) to capture the cross-country shocks effects.

4. Methodology

Granger (1980, 1988) defined causality as a subjective phenomenon and tries to establish the causation between two variables say X and Y but not truly giving it a universal definition. To some extent, keeping in mind the subjectivity, one can define it as "A standard or defined procedure used to determine the impact of past values say X in determination of Y". But, when we have panel data structure, one must be careful regarding its validity and robustness because of cross country correlation and heteroscedasticity as there may be a possibility that one country's shock or policy may affect the other countries (Pesaran, 2004). Due to potential bias, one may place a question on the reliability of the standard Granger Causality procedure. Kónya (2006) devised a causality technique based on the methodology in Zellner (1962) to tackle the heterogeneity and contemporary crosscountry correlation. They hold the belief that in case of a contemporaneously correlation, SUR (Seemingly Unrelated Regression) is more efficient than classical linear regression (OLS).

Let x be a proxy measure of financial development and y is the economic growth. A bivariate Granger Causality model can be written as follows:

$$y_{it} = \alpha_{0,t} + \sum_{j=1}^{p} \beta_{1,ij} y_{it-j} + \sum_{i=1}^{p} \gamma_{1,ij} x_{t-j} + \varepsilon_{1,it}$$

$$x_{it} = \alpha_{1,t} + \sum_{i=1}^{p} \beta_{2,ij} y_{it-j} + \sum_{i=1}^{p} \gamma_{2,ij} x_{it-j} + \varepsilon_{2,it}$$
(1)

where the subscripts *i* & *t* represent country (*i*=1,2, 3,...*N*) and time (*t*=1,2,3,...*T*). The errors, $\varepsilon_{1,it} \& \varepsilon_{2,it} \sim \text{IIDN}(0, \sigma^2)$ with no cross-country correlations and $y_t \& x_t$ are stationary or integrated. For country *i*, the Granger Causality runs from x to y if not all γ_s are zero in the first equation but all β_s are zero in the second equation. Similarly, causality establishes from y to x when, all β_s are zero in the first equation but all γ_s are zero in the first equation. There is a twoway causality if neither all β_s nor all γ_s are zero, and there is no causality between the variables if all β_s and all γ_s are zero.

Kónya (2006) stresses that if there is no contemporaneous correlation in the model, OLS estimates are consistent and asymptotically efficient. However, the presence of contemporaneous correlations makes the 2N equations a SUR system.

As every country has its specific characteristics and development phase, we shall compute country specific bootstrap critical values following Kónya (2006) and Menyah, Nazlioglu & Wolde-Rufael (2014). The formal model which incorporates the contemporaneously correlation in the system, is given as follows.

$$y_{1,t} = \alpha_{1,1} + \sum_{j=1}^{p} \beta_{1,1,j} y_{1,t-j} + \sum_{j=1}^{p} \gamma_{1,1,j} x_{1,t-j} + \eta_{1,1,t}$$

$$y_{2,t} = \alpha_{1,2} + \sum_{j=1}^{p} \beta_{1,2,j} y_{2,t-j} + \sum_{j=1}^{p} \gamma_{1,2,j} x_{2,t-j} + \eta_{1,2,t}$$

$$\cdot \qquad (2)$$

$$y_{N,t} = \alpha_{1,N} + \sum_{j=1}^{p} \beta_{1,N,j} y_{N,t-j} + \sum_{j=1}^{p} \gamma_{1,Nj} x_{N,t-j} + \eta_{1,N,t}$$

and

$$\begin{aligned} x_{1,t} &= \alpha_{2,1} + \sum_{j=1}^{p} \beta_{2,1,j} y_{1,t-j} + \sum_{i=1}^{p} \gamma_{2,1,j} x_{1,t-j} + \eta_{2,1,t} \\ x_{2,t} &= \alpha_{2,2} + \sum_{j=1}^{p} \beta_{2,2,j} y_{2,t-j} + \sum_{i=1}^{p} \gamma_{2,2,j} x_{2,t-j} + \eta_{2,2,t} \\ & \ddots \\ & \ddots \\ & \ddots \\ & \ddots \\ & x_{N,t} &= \alpha_{2,N} + \sum_{i=1}^{p} \beta_{2,N,j} y_{N,t-j} + \sum_{i=1}^{p} \gamma_{2,N,j} x_{N,t-j} + \eta_{2,N,t} \end{aligned}$$

3.1. Estimation Methodology

If there is no contemporaneous correlation across countries, each equation in system (2) and (3) can be estimated by OLS and the estimates retain the properties of BLUE. On the other hand, in the presence of contemporaneous correlation across the countries, OLS estimates fail to incorporate the extra available information and hence are not efficient (Kónya, 2006). Alternatively, this study estimates the system of equations by the SUR estimator proposed by Zellner (1962).

There is no gain in using the SUR model instead of OLS if there are no contemporaneous correlations. To evaluate the null hypothesis of no contemporaneous correlations, we shall apply the Breusch and Pagan (1980) test with the following test statistic:

$$\kappa_{cd} = T \sum_{i=1}^{M} \sum_{j=i+1}^{M-1} r_{ij}^2$$

where, r_{ii}^2

is the estimated correlation coefficient between $\eta_{kit} \& \eta_{kjt} \ (i \neq j)$ from individual OLS regressions. This test statistic follows Chi-square distribution with N(N-1)/2 degrees of freedom under the null hypothesis.

We considered panel estimation to allow for contemporaneous correlation across countries and performed the Wald test for Granger Causality with country specific bootstrap critical values. The following steps will elucidate the use of bootstrapping for testing causality from x to y in (2) and from y to x in (3).

Step I: Estimate (2) under the null hypothesis of no causality and save the residuals.

$$e_{H_0,i,t} = y_{i,t} - \hat{\alpha}_{1,i} - \sum_{j=1}^p \hat{\beta}_{1,i,j} y_{i,t-j}$$

for *i=1, 2,...,N* and *t=1,2,...,T*

Step II: Resample a column of residuals from NxT matrix, $[e_{H_0,i,t}]$ randomly and denote it $e^*_{H_0,i,t}$.

Step III: Resample y by the following expression assuming x does not cause y.

$$y_{it}^* = \hat{\alpha}_{1,i} + \sum_{j=1}^p \hat{\beta}_{1,i,j} \, y_{it-j}^* + e_{H_0,i,t}^*$$

Step IV: Estimate (2) by substituting y_{it}^* for $y_{i,t}$ without imposing any parameter restrictions and perform the Wald test for each country to test the null hypothesis of no causality.

Step V: Repeat step 2-4 for s-times ('s' is the number of simulations) to generate the empirical distribution of the Wald test for computing critical values at the required level A Causal Analysis of Financial Development and Economic Growth

of significance. In this study, critical values are obtained at 1%, 5%, 10% level of significance. The critical values are obtained based on 10,000 bootstrapped samples. We applied Bai & Perron (2003) test for the identification of structural breaks in the data and critical values¹ are adjusted accordingly.

5. Results Discussion

The causal relationships between financial development and economic growth may depend on polices, institutional behavior and measurement variables (Arestis & Demetriades, 1997). This study caters for all possible structural break points while testing causality.

For SAARC countries, this study established a unidirectional causal relationship from financial development to economic growth if the DCBB/GDP or ASSETS is used as a proxy for financial development whereas the causality runs from financial development to economic growth for the rest of the proxies used for the financial development (Table 1). Similarly for ASEAN countries, causality runs from financial development to economic growth if M2/GDP or DCTP/GDP is used as a proxy and unidirectional causality is observed from economic growth to financial development if ASSETS are used as a proxy for financial development. These findings are the contribution to the existing literature and provide clarity on the direction of causality in both regions.

On balance, causality runs from financial development to economic growth for Pakistan. Our findings are in line with Qayyum & Sheikh (2005) and Munir & Sana (2019). The financial measures, DCTP/GDP, M2/ GDP, and M3/GDP are causing economic growth in Pakistan (Table 1). The financial

¹ Tables of critical values are available on request.

			SAARC			
Countries	Savings/GDP	DCBB/GDP	M3/GDP	M2/GDP	ASSETS	DCTP/GD
Pakistan	No Causality	→ 10.44 (9.12)*	← 26.28 (18.14)*	← 9.66 (8.46)*	No causality	← 8.86 (7.32)*
India	 → 7.23 (4.26)** ← 23.57 (12.14)** 	→ 8.05 (6.882)*	 → 10.32 (8.72)* ← 8.44 (7.32)* 	← 8.2341 (7.88)*	→ 12.12 (8.87)*	← 18.93 (15.532)*
Sri Lanka	No Causality	No Causality	No Causality	No Causality	No Causality	No Causality
Nepal	No Causality	→ 4.556 (3.8231)***	No Causality	No Causality	No Causality	 → 12.32 (9.54)* ← 34.56 (10.)*
	•	•	ASEAN			
Indonesia	No Causality	No Causality	→ 8.00 (7.54)*	No Causality	No Causality	← 8.48 (8.32)*
Malaysia	No Causality	No Causality	← 12.17 (6.90)*	← 18.48 (12.82)*	→ 3.48 (3.16)***	← 8.72 (7.22)*
Singapore	No Causality	No Causality	← 12.48 (8.44)*	← 14.72 (9.12)*	→ 10.34 (6.98)*	← 15.48 (12.25)*
Philippines	NO Causality	No Causality	No Causality	No Causality	→ 5.46 (4.63)**	NO Causality
Thailand	→ 4.55	No Causality	NO Causality	← 13.37	→ 4.46	← 7.48

Table 1. Granger Causality Test

Values reported in the table are Wald-statistics with critical values in parenthesis. *, ** & *** imply significance at 10%, 5% & 1% respectively. (?, ? & ? ?) arrows imply that the causality runs from Economic Growth to Financial Development, from Financial Development to Economic Growth and bidirectional, respectively.

sector of Pakistan has experienced different phases of development since 1970. It has undergone from complete nationalization and government regulation to the most liberalized deregulation of the banking sector following the world trends (Stolbov, 2013). By the late 1990s, public sector institutions dominated the banking sector, accounting for 92% of total assets formation, with the private banking sector being virtually non-existent.

(3.10)**

This dominance led to financial repression stemming from banking regulation and direct monetary control over the banking system.

(3.17)***

(12.96)***

(5.66)*

The financial sector reform was initiated in Pakistan in 1990-91 with the major objective of minimum regulation of the banking sector and maximum loan recovery. However, due to non-conducive growth environment in 1990s, Pakistan could not reap the benefits of reforms. In the very next decade, the

government embarked upon a serious program of macro stabilization and structural reforms. Major areas of concern were the strengthening of institutions, liberalization, banking law and domestic debt. The share of state-owned banks declined from 92% to 54%. These far-reaching financial reforms helped Pakistan to develop a more efficient, competitive, and resilient financial system. With this banking liberalization, more loans are available for the private sector yielding more economic benefits.

India is the only country where M3/GDP has bidirectional causality with economic growth which corroborates with the findings in Nell (2000). This implies that India is undergoing the usage of degree of monetization as well as high degree of sophistication of money and financial markets and economic agents are induced to economize the holdings and wealth. This suggests a simultaneous and mutually reinforcing dvnamics between these variables. The saving to GDP ratio is also showing bidirectional causality between financial development and economic growth in India. However, the rest of the proxies are indicating a unidirectional relationship. For DCBB and ASSETS, causality runs from economic growth to financial development while it's the other way round for M2/GDP and DCTP/GDP.

Surprisingly, no financial development proxy is showing a causal relationship with Sri Lankan economic growth. Our results do not corroborate with De Silva (2016) and the plausible reason could be structural breaks. This study caters for possible structural breaks in data which is the missing methodological factor in literature. Furthermore, Sri Lankan scores on financial markets, financial markets efficiency and financial development indices A Causal Analysis of Financial Development and Economic Growth

(2017) are 0.16, 0.04 & 0.28, which are in line with our findings.

Indonesia is a bank based financial system. There is total 121 banks and 47 banks are owned by foreigners having a total share 47.8% share. The results are very much sensitive to the controlling of structural breaks produced in Indonesian economy. Banking deregulations have been done in 1983. 1988 and 1991. Indonesia faced devaluation in currency due to oil price hike and global stagflation from 1974-1983. Moreover, it had faced two major crises - Asian Financial Crisis (1998-1999) and global financial crisis (2008 -2009). There has been increasing demand due to rising middle class workers. Overall, the banking sector is still developing. So, only two indicators show a causal relationship between financial development and economic growth, M3/GDP and DCTP/GDP and causality runs from economic growth to financial development.

The innovative and inclusive financial sector in Malaysia is playing a great role in its development. It has developed a full range of financial services from microfinance to special loans for farmers tied to growing seasons and financing for small and mediumscale enterprises. This is underscored by the pivotal role played by domestic credit to the private sector in fostering sustainable development. Notably, Malaysia boasts a high adoption rate of online banking, with 92 percent of its population utilizing internet banking services. Despite encountering a major setback during the Asian Financial Crisis of 1998-1999, the financial sector demonstrated resilience and adaptability. Additionally, Malaysia has embraced Islamic banking as an alternative financial system. In summary, there is a clear causal relationship

between financial development and economic growth in Malaysia.

Financial liberalization and reforms have been on Singapore government's agenda since the 1960s. After the Asian financial crises, financial liberalization is accelerated in Singapore to build a competitive and resilient financial sector. Foreign banks were encouraged along with policies to strengthen the local banks. A risk-based approach is adopted to regulation and supervision to facilitate financial development and provide protection against systematic risks. On balance, financial development in Singapore leads to economic growth.

In the Philippines, commercial banks own more than 90% of the total sector's assets. The banking sector is highly liquid and benefits from economic growth. It is evident from the results as well. The causality runs from economic growth to banking assets defined as a ratio of deposit money base assets to deposit money and central bank assets. According to data from the central bank, banks are the main source of credit to domestic economy resulting in 8.6% of GDP as the sector's value added in the first half of 2017.

Thailand commenced the Financial Sector Master Plan (FSMP) in 2004 aiming to create an efficient, transparent, and competitive financial sector. The results are also indicative of the fact that FSMP focused on a broadening access to financial services as the causality runs from financial indicators (DCTP/GDP & M2/GDP) to economic growth. On the other hand, Savings/GDP and ASSETS are caused by economic growth in Thailand.

6. Conclusion

The financial development and economic growth nexus have been a major empirical issue

for researchers and policy makers. Different techniques, models and specifications have been proposed so far to resolve the conflicting issues. This study uses a novel causality technique and caters for country specificity, individual characteristics and shocks pertaining to different cross sections to establish the causal relationship between economic development and economic growth for SAARC & ASEAN countries. The following are the highlights of the findings:

- Empirical results show that the direction of causality is sensitive to measures and proxies of financial development and country specificity. Both demand and supply leading phenomena have been observed.
- For SAARC countries, DCBB/GDPdomestic credit provided by the banking sector as percentage of GDP, is found to be unidirectional in all countries of SAARC. Causality runs from economic growth to financial development. However, we are unable to establish any causal relationship between DCBB/GDP and economic growth for the ASEAN region.
- While using the saving to GDP ratio as a measure of financial development, results indicate no causal relationship between financial development and economic growth except for India and Thailand. A bidirectional relationship exists in the case of India and causality runs from economic growth to financial development for Thailand.
- Financial development (M2/GDP) causes economic growth for all countries except for Sri Lanka, Nepal, Indonesia, and Thailand, where no causal relationship is established. For Pakistan, Malaysia, and Singapore financial development (M3/GDP) causes economic growth with evidence of

reverse causality for Indonesia. However, a bidirectional causality is proven for India.

- Domestic credit to private sector as a percentage of GDP yields a bidirectional relationship between financial development and economic growth for Nepal and unidirectional causality runs from financial development to economic growth for India, Pakistan, Indonesia, Malaysia, Singapore, and Thailand.
- Deposit money bank assets as percentage to deposit money and central bank assets shows a unidirectional causal relationship from economic growth to financial development for India, Malaysia, Singapore, the Philippines, and Thailand. No causality exists for other panel countries.
- On balance, domestic credit to private sector has a strong impact on growth proving the existence of supply leading phenomena for both panels.

These causal relationships are not only describing the cause and effect but also establishing a long run relationship between growth and financial development. However, causality cannot be understood without the interaction of macro and micro variables. Therefore, a detailed examination of firmlevel dynamics within the stock market and regulatory framework becomes imperative. Furthermore, the institutional framework and government priorities play a crucial role in fostering growth through financial development.

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