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Monetary Policy And Sectoral Value-Added In SAARC Countries: A Panel ARDL Analysis

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Abstract: Every country has two main demand management policies: monetary policy and fiscal policy. This study is an attempt to elucidate the relationship between monetary policy and sectoral value-added in SAARC countries over the period 1990-2020 by applying the panel ARDL technique. The findings of the study suggest that monetary policy has a positive bearing on sectoral value-added in SAARC countries. Moreover, the study has suggested that monetary policymakers must devise the policy by focusing on sectoral growth.

Keywords: Monetary Policy, Sectoral Value Added, SAARC Countries, Panel ARDL
JEL Code: E52, O47, C23

INTRODUCTION

Monetary policy is a vital and decisive factor of macroeconomic management in the open economies to get economic stability and development. To achieve sustainable output growth, it is necessary to collect accurate information for the effectiveness of the policy on the macroeconomy. It is the main issue for the policymakers in the successful implementation of any economic policy (Artas and Barroun, 1990). Monetarypolicy is a method of controlling the money supply in an economy of a nation by monetary authorities to achieve the country's economic growth (Dwived, 2005).

Since Keynes's monetary theory, changes in money supply influence economic activity through a prior effect on the market rate of interest. This theory is a 'cost of credit' theory. According to the Keynesian monetary policy, maximum emphasis is laid on the manipulability of the rate of interest. This distinguishes the Keynesian theory of monetary policy both from the 'monetarist' theory of monetary policy which emphasizes the direct money-stock effect after the quantity theory of money and from the credit theory of monetary policy, which highlights the availability of credit effect (Gupta, 2013).

In an economy, many sectors are affected by monetary policy. If monetary policy is effective and applicable, it would be beneficial for any country's development. According to monetarists, monetary policy is more effective as compared to fiscal policy for economic stabilization. It is implemented under the supervision of the central bank that controls the money supply with tools. The main tools available to the central bank are quantitative and qualitative tools for achieving specific objectives.

The objectives of monetary policy change from country to country according to their economic condition. The main objective of the monetary policy is to promote high employment, achieving steady economic growth, stable price level, stability in interest rate, promoting more stable financial markets, maintenance in the foreign rate exchange markets, reduce the unemployment and poverty, correcting the balance of payment, exchange rate stability.

The nexus between monetary policy and economic growth had been a major subject of research for a long time (Osinubi, 2006). Though many studies and literature supporting the effectiveness of the monetary policy on the macroeconomic variables. Firms in different sectors use productive factors in a different direction and buy material and investment inputs from all sectors. For empirical purposes, this paper concentrates on four broad sectors: primary, secondary, tertiary and trade. This study evaluates the impact ofmonetary policy on the sectoral value-added in the case of SAARC countries. The rest of the paper is divided into five sections. Section 2 displays the review of assorted studies. Section 3 explains the model, data and methodology.

Section 4 contains results and discussions. Section 5 concludes the paper along withpolicy implications.

REVIEW OF LITERATURE

This section displays the various studies on monetary policy and sectoral growth. Table 1 exhibits the summary of the studies.

Table 1: Studies on Monetary Policy and Sectoral Growth

Reference(s)	Time Period	Country	Technique	Impact of Monetary Policy
Summary of the studies on Monetary Policy and Primary sectors				
Saibu (2011)	1986-2008	Nigeria	ARDL	Mixed Findings
Hassan (2012)	1980-2000	Nigeria	OLS	Positive
Akbar and Jamil (2012)	1972-2010	Pakistan	GMM	Positive
Sing and Rao (2014)	1996-2013	India	VAR	Mixed Findings.
Muroyiwa et al (2014)	1970-2011	South Africa	VECM	Positive
Olarinde and Abdullahi (2014)	1978-2011	Nigeria	VECM	Negative
Lie et al. (2015)	2007-2008	China	CGE model	Negative
Hammoudeh et al. (2015)	1957-2008	United States	SVAR	Negative
Back and Miljkovie (2018)	1980-2014	Unites States	CVAR model	Positive
Summary of the study on Monetary Policy and Secondary Sectors				
Ibrahim et al. (2005)	1978-1999	Malaysia	VAR	Mixed Findings
Imoughele and Ehikioyo (2014)	1986-2010	Nigeria	OLS	Mixed Findings
Konkwo et at. (2015)	1981-2012	Nigeria	OLS	Positive
Igbinedion and Ogbeide (2016)	1980-2014	Nigeria	ECM	Negative
Kutu (2016)	1994-2012	South Africa	SVAR	Positive
Omini et al. (2017)	1970-2015	Nigeria	VECM	Positive
Onakaya et al. (2017)	2005-2015	Nigeria	VECM	Positive
Kutu et al. (2017)	1994-2013	China	ARDL	Mixed Findings
Otero (2017)	1973-1993	Latin American Countries	ARDL	Negative
Uzoma et al. (2017)	1981-2015	Nigeria	SVAR	Positive
Ezeaku et al. (2018)	1981-2014	Nigeria	ECM	Negative
Summary of the studies on Monetary Policy and Tertiary/Service Sector				
Berument et al.	1957-2003	29 countries	ARDL	Mixed Findings

(2007)				
Georgopoulas and Hejazi (2009)	1988-2001	Canada	Panel Data	Positive
Mallick (2011)	1999-2008	India	ARDL	Mixed Findings.
Olweny and Chiluwe (2012)	1996-2009	Kenya	VECM	Mixed Findings
Laokulrach (2013)	1986-2011	Thailand	Multiple Regression	Positive
Janjua (2014)	2006-2012	Pakistan	VAR	Negative
Zaman et al. (2014)	2007-2014	Pakistan	OLS	Negative
Koyama and Johnshon (2015)	1996-2011	United States (143 countries)	OLS	Negative
Hove et al. (2015)	1990-2008	South Africa	DSGE	Negative
Ekpung (2015)	1970-2006	Nigeria	OLS	Positive
Mumatzakis and Bermpei (2016)	2007-2013	US	GMM	Negative
Bach (2017)	1994-2014	Brazil	OLS	Positive
Vithessonthi. (2017)	1990-2013	Germany, Thailand and Switzerland	OLS	Negative
Summary of the studies on Monetary Policy with Quaternary Sectors and Quinary Sectors				
Yang (2017)	2003-2013	China	GMM	Positive
Mumtaz. (2017)	1969-2012	UK	SVAR	Positive.
Hanisch (2017)	1985-2014	Japan	VAR	Positive
Lawal (2018)	1985-2015	Nigeria	ARDL	Positive

After analyzing the previous studies, we may conclude that no study has explored the impact of monetary policy on sectoral value-added in the case of SAARC countries.

MODEL, DATA AND METHODOLOGY

Model Specification

Following models are suggested to investigate the impact of monetary policy on sectoral value-added:

Model 1: Monetary Policy and Primary Sector

$$AVA = \beta_0 + \beta_1 AGRL + \beta_2 EMPL + \beta_3 TRACT + \beta_4 ENERGY + \beta_5 CREDIT + \beta_6 M_2 + \mu \quad (1)$$

Model 2: Monetary Policy and Industrial Sector

$$IVA = \beta_0 + \beta_1 EMPL + \beta_2 GFCF + \beta_3 ENERGY + \beta_4 CREDIT + \beta_5 M_2 + \mu \quad (2)$$

Model 3: Monetary Policy and Service Sector

$$SVA = \beta_0 + \beta_1 EMPL + \beta_2 GFCF + \beta_3 ENERGY + \beta_4 CREDIT + \beta_5 M_2 + \mu \quad (3)$$

Model 4: Monetary Policy and Trade Sector

$$TRADE = \beta_0 + \beta_1 EMPL + \beta_2 GFCF + \beta_3 ENERGY + \beta_4 CREDIT + \beta_5 M_2 + \mu \quad (4)$$

Where:

AVA = Agriculture Value Added (% of GDP)
IVA= Industrial Value Added (% of GDP)
SVA= Services Value Added (% of GDP)

TRADE= Trade (% of GDP)
AGRL = Agriculture Land (Herten Million)
LFC= Labor Force Growth Rate (% Annual)
AGRIM = Agricultural Machinery, Tractors Per 100 Sq. Km of Arable Land
M_2 = Broad Money Supply (% of GDP)
GFCF = Growth Fixed Capital Formation (% of GDP)
ENERGY = Energy Consumption (% of GDP)
CREDIT = Credit to Private Sector (% of GDP)

DATA AND METHODOLOGY

We have used panel data for SAARC countries from 1990 to 2020. The data have assembled from World Development Indicators. We have applied the panel ARDL technique to estimate the results.

ARDL: Model Specification

The ARDL model specifications are given as:

Model 1: Monetary Policy and Primary Sector

The general form equation of model 1 is

$$\Delta(AVA)_t = \alpha + \beta_1(ARGL)_{t-1} + \beta_2(EMPL)_{t-1} + \beta_3(TRACT)_{t-1} + \beta_4(ENERGY)_{t-1} + \beta_5(CREDIT)_{t-1} + \beta_6(M_2)_{t-1} + \sum_{i=1}^{a_1}\delta_1\Delta(AVA)_{t-i} + \sum_{i=0}^{a_2}\delta_2\Delta(ARGL)_{t-i} + \sum_{i=0}^{a_3}\delta_3\Delta(EMPL)_{t-i} + \sum_{i=0}^{a_4}\delta_4\Delta(TRACT)_{t-i} + \sum_{i=0}^{a_5}\delta_5\Delta(ENERGY)_{t-i} + \sum_{i=0}^{a_6}\delta_6\Delta(CREDIT)_{t-i} + \sum_{i=0}^{a_7}\delta_7\Delta(M_2)_{t-i} + \varepsilon_t \quad \textbf{(5)}$$

Model 2: Monetary Policy and Industrial Sector

$$\Delta(IVA)_t = \alpha + \beta_1(EMPL)_{t-1} + \beta_2(GFCF)_{t-1} + \beta_3(ENERGY)_{t-1} + \beta_4(CREDIT)_{t-1} + \beta_5(M_2)_{t-1} + \sum_{i=1}^{a_1}\delta_1\Delta(IVA)_{t-i} + \sum_{i=0}^{a_2}\delta_2\Delta(EMPL)_{t-i} + \sum_{i=0}^{a_3}\delta_3\Delta(GFCF)_{t-i} + \sum_{i=0}^{a_4}\delta_4\Delta(ENERGY)_{t-i} + \sum_{i=0}^{a_5}\delta_5\Delta(CREDIT)_{t-i} + \sum_{i=0}^{a_6}\delta_6\Delta(M_2)_{t-i} + \varepsilon_t \quad \textbf{(6)}$$

Model 3: Monetary Policy and Service Sector

$$\Delta(SVA)_t = \alpha + \beta_1(EMPL)_{t-1} + \beta_2(GFCF)_{t-1} + \beta_3(ENERGY)_{t-1} + \beta_4(CREDIT)_{t-1} + \beta_5(M_2)_{t-1} + \sum_{i=1}^{a_1}\delta_1\Delta(SVA)_{t-i} + \sum_{i=0}^{a_2}\delta_2\Delta(EMPL)_{t-i} + \sum_{i=0}^{a_3}\delta_3\Delta(GFCF)_{t-i} + \sum_{i=0}^{a_4}\delta_4\Delta(ENERGY)_{t-i} + \sum_{i=0}^{a_5}\delta_5\Delta(CREDIT)_{t-i} + \sum_{i=0}^{a_6}\delta_6\Delta(M_2)_{t-i} + \varepsilon_t \quad \textbf{(7)}$$

Model 4: Monetary Policy and Trade Sector

$$\Delta(TRADE)_t = \alpha + \beta_1(EMPL)_{t-1} + \beta_2(GFCF)_{t-1} + \beta_3(ENERGY)_{t-1} + \beta_4(CREDIT)_{t-1} + \beta_5(M_2)_{t-1} + \sum_{i=1}^{a_1}\delta_1\Delta(TRADE)_{t-i} + \sum_{i=0}^{a_2}\delta_2\Delta(EMPL)_{t-i} + \sum_{i=0}^{a_3}\delta_3\Delta(GFCF)_{t-i} + \sum_{i=0}^{a_4}\delta_4\Delta(ENERGY)_{t-i} + \sum_{i=0}^{a_5}\delta_5\Delta(CREDIT)_{t-i} + \sum_{i=0}^{a_6}\delta_6\Delta(M_2)_{t-i} + \varepsilon_t \quad \textbf{(8)}$$

RESULTS AND DISCUSSIONS

Descriptive Statistics and Correlation Analysis

Table 1 shows the descriptive statistics of key variables and it is self-explanatory.

Table 1: Descriptive Statistics of Key Variables (1990-2020)

	Mean	Median	Max	Min	S.D	Skew	Kurt	J.B	Prob.
AVA	23.26	22.88	48.80	7.45	7.97	0.45	3.21	5.91	0.05
IVA	25.88	26.16	44.05	13.06	6.80	0.54	3.26	8.68	0.01
SVA	45.65	46.40	58.84	30.37	7.45	0.22	1.90	9.83	0.01
TRADE	51.18	46.16	113.60	15.67	23.50	0.83	2.91	19.19	0.00
ARL	31.66	20.73	72.10	2.62	21.61	0.15	1.52	15.96	0.00
AGRIM	89.02	116.31	163.58	0.02	63.66	0.47	1.46	22.56	0.00
LFG	4.95	0.02	825.94	-1.00	63.91	12.8	165.0	187188	0.00
GFCF	27.38	24.82	68.02	12.52	11.58	1.59	5.32	107.51	0.00
M2	50.94	48.20	109.33	20.55	16.56	0.73	3.68	17.96	0.00
CREDIT	29.78	27.84	81.16	4.11	14.49	0.76	3.71	19.44	0.00
ENERGY	354.47	365.78	687.26	104.1	140.7	0.26	2.36	4.76	0.09

Table 2 shows the correlation matrix among key variables from 1990 to 2020.

Table 2: Correlation Matrix of Key Variables (1990-2020)

	AVA	IVA	SVA	TRADE	ARL	AGRIM	LFG	GFCF	M2	CREDIT	ENERGY
AVA	1.00										
IVA	-0.50	1.00									
SVA	- 0.60	-0.32	1.00								
TRADE	-0.12	0.63	-0.25	1.00							
ARL	-0.23	-0.24	0.31	-0.78	1.00						
AGRIM	0.10	-0.46	0.26	-0.18	-0.15	1.00					
LFG	0.04	0.03	-0.12	-0.12	0.08	-0.03	1.00				
GFCF	-0.21	0.79	-0.44	0.70	-0.43	-0.49	-0.01	1.00			
M2	-0.21	0.01	0.08	0.06	0.02	0.23	-0.04	0.24	1.00		
CREDIT	-0.36	-0.05	0.31	0.02	0.09	0.30	-0.02	0.11	0.83	1.00	
ENERGY	-0.34	-0.10	0.32	-0.13	0.03	0.77	0.00	-0.27	0.45	0.46	1.00

Unit Root Analysis

Table 3 depicts the results of various panel unit root tests and find the mixed order of integration so the appropriate technique is Panel ARDL.

Long-Run Analysis

Table 4 shows the long-run results of monetary policy and sectoral value-added in SAARC countries.

Labor Force growth rate (LFG) has appeared with positive sign in the secondary sector, service sector and trade sector. Classical theorists consider that increase in labor can improve sectoral development and economic growth. The studies by Lucas, 1988; Tkachenko, 2014; Abbas, 2003; Imran et al, 2007; Mulligan and Salai- Martin, 1995 support the positive relationship between LFG and IVA. Many studies have shown the positive relationship between LFG and SVA such as Mujahid and Alam, 2014; Clark, 1941; Kasper, 1978; Ansari, 1995;Wartan, 1974; Hockman and Eschenbach, 2005; Arnold et al, 2010; Mansell, 1985; Hena et al, 2018; Ali et al,2017]. The studies by Madanizadeh and Pilvar, 2017; Thangamani, 2017; Gaddies and Pieters, 2012] have also found a positive association between LFG and trade.

Gross Fixed Capital Formation (GFCF) has a positive impact in secondary, service and trade sectors. Capital formation is considered an important factor of economic growth. The endogenous growth theory by Romer (1986), Lucas (1988), Romer (1990) reconsidered this assertion by addition other factors (human capital, infrastructure, research and development) which accelerate gross capital formation. The studies by Ugwuegbe, 2013; De Long and Summers, 2012; Canning et al, 2009; Devarajan et al, 2014; ONGO and Vukenkeng, 2014 have found the positive impact of GFCF on IVA. Substantial literature exists on the positive association between GFCF on SVA as validated by studies of Gordon and Gupta, 2003; Shan et al, 2002; Andries et al, 2003; Jalil and Ma, 2008; Khan et al, 2005; Hundie, 2016. The studies by[Yousoff and Nuh, 201; Lemzoudi, 2005; Ramzan and Kiani, 2012; Adhikary, 2015 have inferred a positive link between GFCF and trade.

Agriculture Land (ARL) refers to the share of land area that is arable under permanent crops and permanent pastures. If the ARL of a country increases, it implies that country has more land resources to increase agriculture value-added. The diffusion model suggests that agricultural land is effective for enhancing agricultural productivity. The studies by Barbier, 2014; Blin *et al*. 2000; Sing and Rao, 2014; Muroyiwa et al, 2014) have found a positive impact of agricultural land on agriculture value-added. Agriculture Machinery (AGRIM) is an agricultural capital that is used in agriculture and farming. There are many types of such equipment, from hand tools and power tools to tractors and countless kinds of farm implements. Machinery produces more food, employment and income in both rural and urban areas and it is most beneficial for the agrarian country. Several studies indicate that there is a significant increase in cropping due to the use of tractorsand irrigation intensity consequences of mechanization, for example, Madras, 1975; Singh and Singh, 1972; UPAU, 1969; NCAER, 1974. Broad Money Supply (M_2) is the core variable in which we are more interested as it shows the monetary policy. M_2 is positively associated with all sectoral value-added. An increase in M_2 lowers the interest rate which generates more investment and puts more money in the hand of the consumers, thereby motivate spending. Businesses react by ordering more raw materials and increasing production. Thus, if the money supply increases, it implies that a country has more resources for the development of all sectors. The studies by Otto et al, 2012; Dushmanitch and Darroch, 1990; Lenvine, 2012; Hassan, 2012;Apere and Karimo, 2014; Chuku, 2009have discovered the positive impact of money supply on the agriculture sector.

The studies on M2 and IVA have also found a positive link between M2 and IVA, see, for example, Otto et al, 2012; Dingela and Khobai, 2017; Chaiboonsrib and Khounkhalaxc, 2015; Ogunmuyiwa and Ekone, 2010; Ihsan and Anjum, 2013; Zapodeanu and Cociuba, 2010; Maitra, 2011; Aslam, 2016. The studies by Chaiboonsrib and Khounkhalaxc, 2015; Babatude and Chuaibu, 2011; Chude et al, 2016;Ihsan and Anjum, 2013; Aslam, 201; Maitra, 2011; Zapondeanu and Cociuba, 2010; Muhammad et al, 2009 have pointed out the positive link between M2 and SVA. Several studies analyzed the positive association between Broad Money Supply and trade see, for example, Manual and San, 2019; Ardalan and Callege, 2009; Shawa and Shen, 2013; Kiendrebeogo, 2012; Samba and Yan, 2009; Zingales and Rajan, 1998.

Table 3: Panel Unit Root Tests

Variable	Intercept				Intercept and Trend				None			Result
	LLC Test	IPS Test	ADF-Fisher Chi-Square	PP-Fisher Chi-Square	LLC Test	IPS Test	ADF-Fisher Chi-Square	PP-Fisher Chi-Square	LLC Test	ADF-Fisher Chi-Square	PP-Fisher Chi-Square	
ARL	-0.44812 (0.3270)	1.05957 (0.8553)	6.61060 (0.8822)	5.48416 (0.9398)	1.31608 (0.9059)	0.64628 (0.7410)	8.89034 (0.7123)	12.3309 (0.4195)	-3.44327 (0.0003)	21.3376 (0.0457)	29.5816 (0.0032)	**I(1)**
AVA	-1.24982 (0.1057)	0.50410 (0.6929)	9.67473 (0.6445)	8.51600 (0.7436)	2.79611 (0.9974)	1.59866 (0.9451)	4.28621 (0.9877)	17.2796 (0.1394)	-6.83392 (0.0000)	65.1038 (0.0000)	62.5214 (0.0000)	**I(1)**
CREDIT	0.20677 (0.5819)	2.28999 (0.9890)	3.13971 (0.9945)	1.94164 (0.9995)	1.63190 (0.9486)	1.56117 (0.9408)	5.45209 (0.9412)	7.24280 (0.8412)	3.33268 (0.9996)	2.57099 (0.9979)	2.40894 (0.9985)	**I(1)**
ENERGY	2.11297 (0.9827)	3.64136 (0.9999)	4.99088 (0.9583)	8.28704 (0.7623)	1.34924 (0.9114)	2.61435 (0.9955)	3.37097 (0.9923)	6.45622 (0.8914)	3.98508 (1.0000)	0.76667 (1.0000)	0.53907 (1.0000)	**I(1)**
FDI	0.45166 (0.6742)	-2.69189 (0.0036)	28.8048 (0.0042)	69.4520 (0.0000)	2.88653 (0.9981)	-1.87335 (0.0305)	22.7100 (0.0303)	68.9150 (0.0000)	-1.81592 (0.0347)	15.3118 (0.2248)	46.1882 (0.0000)	**I(0)**
GDPG	-3.65325 (0.0001)	-4.42293 (0.0000)	43.2778 (0.0000)	69.1044 (0.0000)	-3.36007 (0.0004)	-3.58287 (0.0002)	34.2742 (0.0006)	54.0487 (0.0000)	-0.35896 (0.3598)	9.79192 (0.6342)	11.8775 (0.4556)	**I(0)**
GFCF	0.80398 (0.7893)	0.97195 (0.8345)	14.5556 (0.2666)	10.6933 (0.5554)	2.36497 (0.9910)	1.38910 (0.9176)	11.0655 (0.5233)	11.2444 (0.5081)	2.27158 (0.9884)	4.43251 (0.9743)	4.55749 (0.9712)	**I(1)**
IVA	0.45721 (0.6762)	0.92138 (0.8216)	8.39326 (0.7537)	7.91932 (0.7914)	0.66556 (0.7472)	1.27561 (0.8990)	6.53831 (0.8866)	17.3524 (0.1368)	1.60825 (0.9461)	13.3759 (0.3423)	15.8801 (0.1968)	**I(1)**
LF	0.38549 (0.6501)	2.62267 (0.9956)	4.86675 (0.9623)	9.68676 (0.6434)	-3.22582 (0.0006)	1.58748 (0.0562)	21.3241 (0.0458)	7.61395 (0.8145)	2.64452 (0.9959)	0.54754 (1.0000)	0.01006 (1.0000)	**I(1)**
LFG	-0.65894 (0.2550)	-1.44043 (0.0749)	19.5071 (0.0770)	41.5192 (0.0000)	`0.75298 (0.7743)	-0.13251 (0.4473)	14.1542 (0.2910)	34.6280 (0.0005)	-1.73513 (0.0414)	20.1595 (0.0641)	36.1078 (0.0003)	**I(0)**
M_2	-1.61598 (0.0530)	0.91973 (0.8211)	11.0586 (0.5239)	7.43122 (0.8279)	1.47953 (0.9305)	1.63347 (0.9488)	6.78247 (0.8716)	5.48791 (0.9397)	2.81692 (0.9976)	0.92899 (1.0000)	0.72374 (1.0000)	**I(1)**
SSE	0.95162 (0.8294)	2.67908 (0.9963)	6.42225 (0.8943)	4.55772 (0.9711)	-0.19688 (0.4220)	0.75749 (0.7756)	9.60763 (0.6503)	7.36888 (0.8323)	4.08772 (1.0000)	5.19426 (0.9512)	4.57387 (0.9707)	**I(1)**
SVA	-1.52542 (0.0636)	-0.44006 (0.3299)	10.6828 (0.5563)	22.8417 (0.0291)	0.95717 (0.8308)	-0.08634 (0.4656)	14.4195 (0.2461)	25.7131 (0.0118)	3.14647 (0.9992)	0.90491 (1.0000)	0.45530 (1.0000)	**I(1)**
AGRIM	-0.69396 (0.2439)	-0.15288 (0.4392)	8.16766 (0.2261)	28.8448 (0.0001)	-0.20846 (0.4174)	0.63845 (0.7384)	8.40962 (0.2096)	13.0339 (0.0425)	-0.16773 (0.4334)	4.43728 (0.9742)	2.69143 (0.9974)	**I(1)**
TRADE	-0.71503 (0.2373)	0.17023 (0.5676)	0.17023 (0.7735)	6.48415 (0.8897)	2.46108 (0.9931)	2.20361 (0.9862)	3.58928 (0.9898)	0.79769 (0.9968)	-1.46228 (0.0718)	11.4846 (0.4879)	12.0764 (0.4396)	**I(1)**

Credit to the private sector refers to financial resources provided to the private sector by the financial institutions. If the facilitation of access to credit increases in a country, it means that the amount of productive investment can accelerate. The estimated parameter of credit is positive and statistically highly significant in all sectors. The studies by Binan et al, 2004; Kohansal, 2008; De Janvry and Sadoulet, 1995; Ghorbani, 2005;Zeller et al, 2001; Feder et al, 1990; Carter, 1989; Chizari and Zaree, 2000; Bashir and Mahmood, 2010; Carnejo and McBride, 2002; Anthony, 2010) have shown a positive relationship between credit and AVA. Several other studies on credit and IVA also support the same claim see, for example, Ekundayo et al, 2018; Anwar, 2015; Guidetti,1995; Josephine, 2009; Leitao, 2012; Eatzaz and Malik, 2009; Murphy et al, 2012; Onuorah, 2013. The studies by Hao and Hunter, 1997; Jalil and Ma, 2008; Caporale et al, 2009; Cheng and Degryse, 2010; Westermann, 2012; Were et al, 2012; Du, 2011; Ehikioya and Mohammed, 2013 have also found the positive association between credit and service sector. Many studies have pointed out the positive impact of credit on trade see for example Gertler and Hubbard, 1988; Gertler and Gilchrist, 1994; Cetorelli and Goldberg, 2008; Manova, 2008; Minetli and Zhu, 2010; Manova et al, 2011.

Table 4: Panel ARDL Estimates of Sectoral Valued Models

Variable	Primary Sector	Secondary Sector	Service Sector	Trade Sector
	D(AVA)	D(IVA)	D(SVA)	D(TRADE)
LFG	----	0.0099 (0.1083)	0.2207 (0.0751)	0.0303 (0.0000)
GFCF	----	1.1666 (0.0009)	0.5859 (0.0060)	0.0847 (0.1039)
ARL	0.5211 (0.0000)	----	----	----
AGRIM	0.3051 (0.0000)	----	----	----
M_2	0.0430 (0.0000)	0.0142 (0.0156)	0.1062 (0.0000)	0.2346 (0.1414)
CREDIT	0.2406 (0.0000)	0.3265 (0.0000)	0.2561 (0.0755)	2.4625 (0.0054)
ENERGY	0.0933 0.2247	0.1719 (0.0002)	0.3598 (0.0000	2.0346 (0.0074)

Energy is the power derived from the utilization of physical or chemical resources, particularly to provide heat and light or to work machines. The parameter of energy is positive. The studies conducted by Best et al, 2000; Bekhet and Azlina, 2010; Saibu, 2011; Akbar and Jamil, 2012 have shown a positive association between energy and AVA. Some empirical studies have found a positive relationship between energy and IVA see for example Hagan and Jorgensom, 1991; Pappas and Chalvatzis, 2017; Kummmel, 1982; Shiyi, 2010; Taibi et al, 2012; Qazi et al, 2012; Korsakiene, 2013; Uddin and Khoso, 2018. The studies by Schonberger et al, 2013; Wang, 2014; Jamieson, 2014; Jannuzzi, 2015; Suri et al, 2012; Mulder, 2014 have declared a positive relationship between credit and SVA. Some studies on credit and trade have found a positive link between credit and trade see, for example, Tawfik, 2019; Al Mulali and Ozturk, 2018; Jebli et al, 2019.

Error Correction Analysis

Table 5 displays the error correction coefficients along with significance. The coefficients in all models suggest that these are converging towards the equilibrium.

Table 5: Error Correction Estimates

Models	COINTEQ01 Coefficient	Prob.
AVA/ ARL, AGRIM, M_2, CREDIT, ENERGY	-0.1732	0.03
IVA/ LFG, GFCF, M_2, CREDIT, ENERGY	-0.2876	0.00
SVA/ LFG, GFCF, M_2, CREDIT, ENERGY	-0.0530	0.00
TRADE/ LFG, GFCF, M_2, CREDIT, ENERGY	-0.9982	0.01

CONCLUSIONS AND POLICY RECOMMENDATIONS

This study has investigated the impact of monetary policy on four sub-sectors which include primary secondary, services and trade sectors in SAARC countries. The analysis has been conducted for the time 1990-2020 by

applying panel ARDL. The findings of the study exhibit that monetary policy has a positive impact on sectoral growth. Based on findings, we may recommend to the monetary policymakers in SAARC countries that monetary policy has a strong impact and have vital significance for sectoral growth. They must devise their policies by disaggregating the economy into sectors.

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