Evaluating the Effectiveness of Monetary Policy in Pakistan Using Alternative Monetary Aggregation

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Money

Money constitutes all those things which are at any time and place, generally current without doubt or special enquiry as a means of purchasing commodities and services and of defraying expenses.

(Alfred Marshal)

Role of Money

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- Forecasting
- Information source
- Indicator of economic activity
- Facilitate monetary policy

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The definition of money needs to determine for each economy and re-examined the economic, innovative and technological changes in economy of any country

These changes have transformed the definition and function of monetary aggregates and monetary policy tools.

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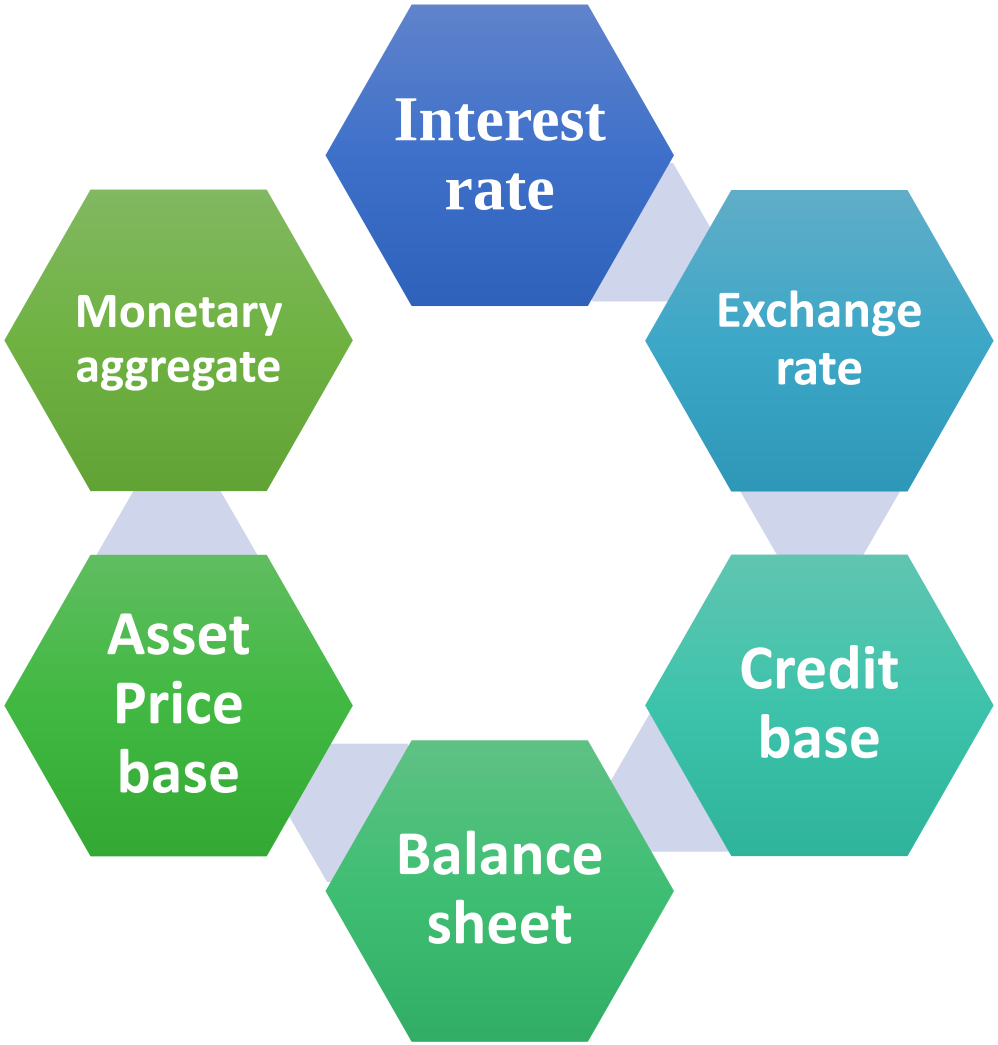
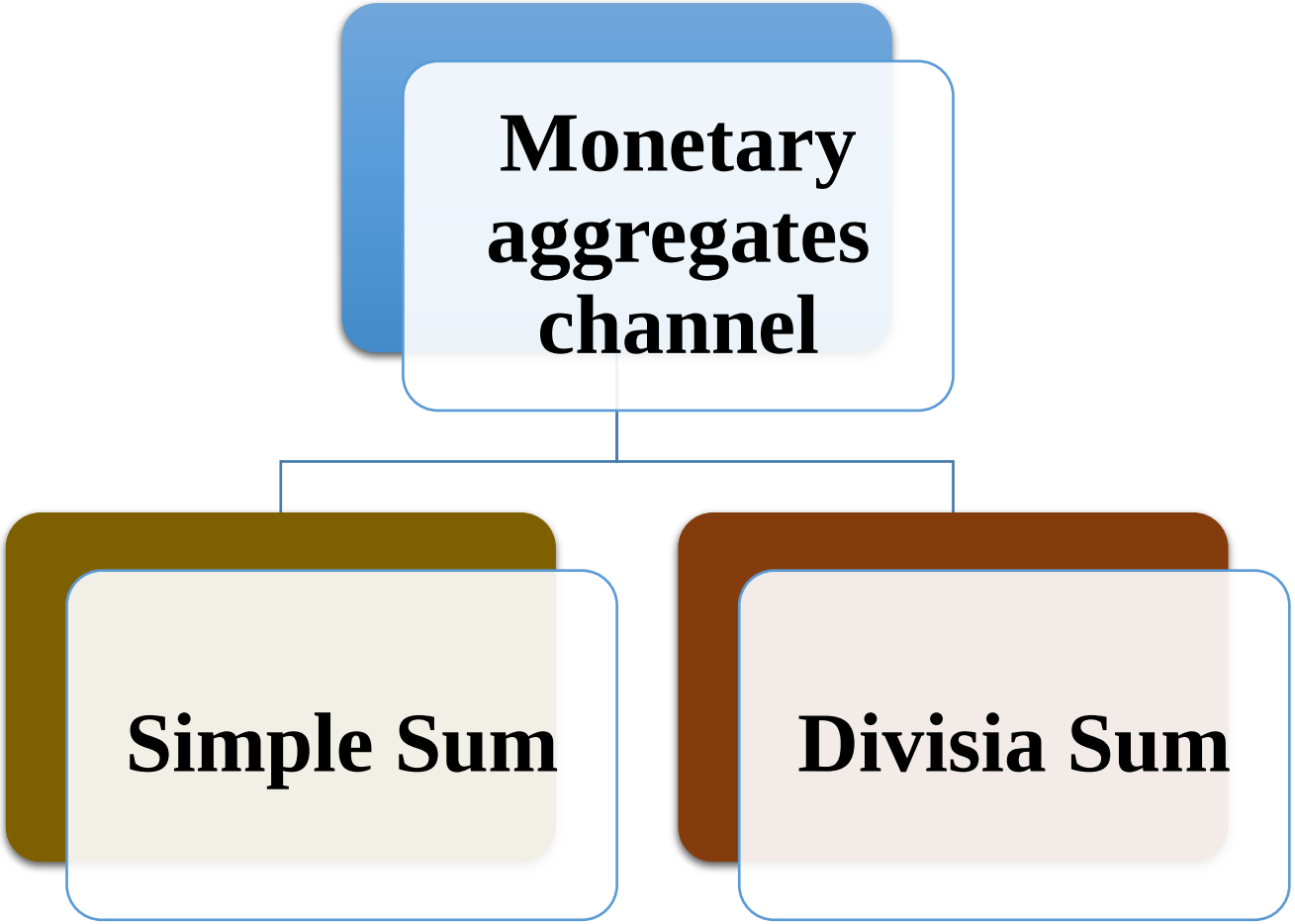
Even through the monetary intermediate channel (traditional sum) and interest rate would not be able to predict accurately the macroeconomic variables to achieve the economic goals in Pakistan. It will be the need to reform her monetary aggregates in order to achieve sustainable development goals

Monetary Transmission Mechanism Channels



Monetary Transmission Mechanism Channels



Divisia Superlative Sum

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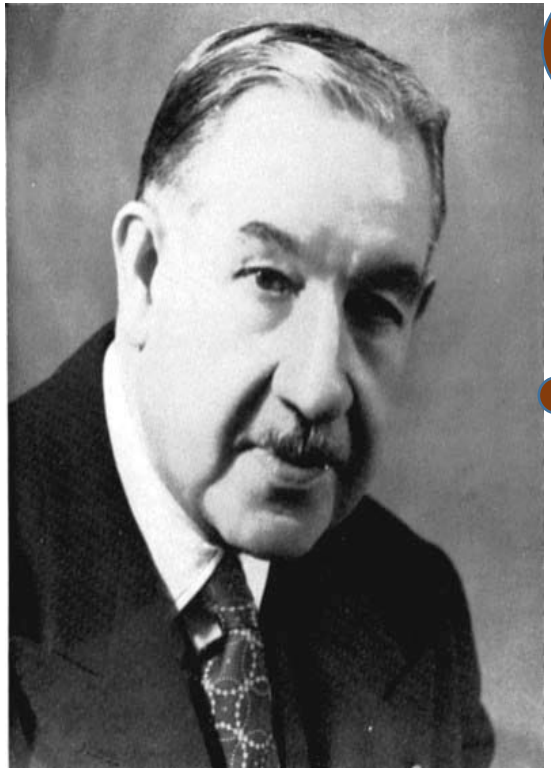

To overcome the deficiency of this method and criticism a number of method is present in the most reliable and advocated method is the Divisia Index which was presented by Francois Divisia in 1925.

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Divisia monetary aggregate have superior information content, forecasting and predictive power over simple sum. Moreover, the Divisia index allows a more accurate measurement of money in the economy on its "moneyness"

Given the debate on monetary aggregates, especially between the simple sum and Divisia index aggregates, it's a vital to construct such an index for Pakistan. The construction of Divisia index will help to evaluate the performance of alternative monetary aggregates in terms of relationship with macroeconomic variables, their controllability and information content


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MOTIVATION
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- ✓ **Over time, policy regime changes, financial innovations and changes in payment technology occur, there are advancements in economic theories and econometric tools**

- ✓ **The increased use of alternative instruments as medium of exchange has brought in significant changes in payment technology**

- ✓ **Divisia monetary Constructs embracing all the relevant monetary and financial candidates tend to provide a better measure of liquidity, especially at higher level of aggregation. Such aggregates will be highly useful in understanding the implications of liquidity movement on other economic variables. Due to all of these advantages this study will incorporate Divisia Index in Oder to solve monetary imbalances.**


OBJECTIVE

Objectives

To construct the updated Divisia index for Pakistan.

Role of Divisia Index and Simple Sum on real money demand function.

To check association between Real Money demand and financial innovation.

To recommend on the most appropriate monetary aggregates channel for State Bank of Pakistan (SBP)

Divisia Studies

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Divisia studies for developed countries

Divisia studies for emerging countries

Construction of Statistical Index

The construction of Index numbers as defined as the ratio of variables current values to it base value expressed as its percentage (Enn, 1985).

These index numbers can be categorized as

Price

Quantity

Value indices

Simple Sum

The simple sum of aggregate money supply consist a different components (such as currency, demand deposit, saving deposit and time deposit and foreign currency) into one composite sum without using weight for each component.

$$M=\Sigma m_i$$

Divisia Sum

$$w_{jt} = \frac{1}{2}(w_{jt} + w_{j,t-1})$$

j =1……n, where w is the expenditure share of asset j during the time period of t, as calculated as:

$$w_{jt} = \frac{p_{jt} \times x_{jt}}{\sum_{j=1}^{n} p_k \times x_k}$$

Where p was the nominal user cost of assets, derived in Barnett (1978) as:

$$p_{jt} = p \times \frac{R_t - r_{jt}}{1 + R_t}$$

Money Demand Function

$$\frac{M}{P} = f(GDP_t, MR_t, REX_t, FD_t)$$

Where

(GDP_t) stand real gross domestic product

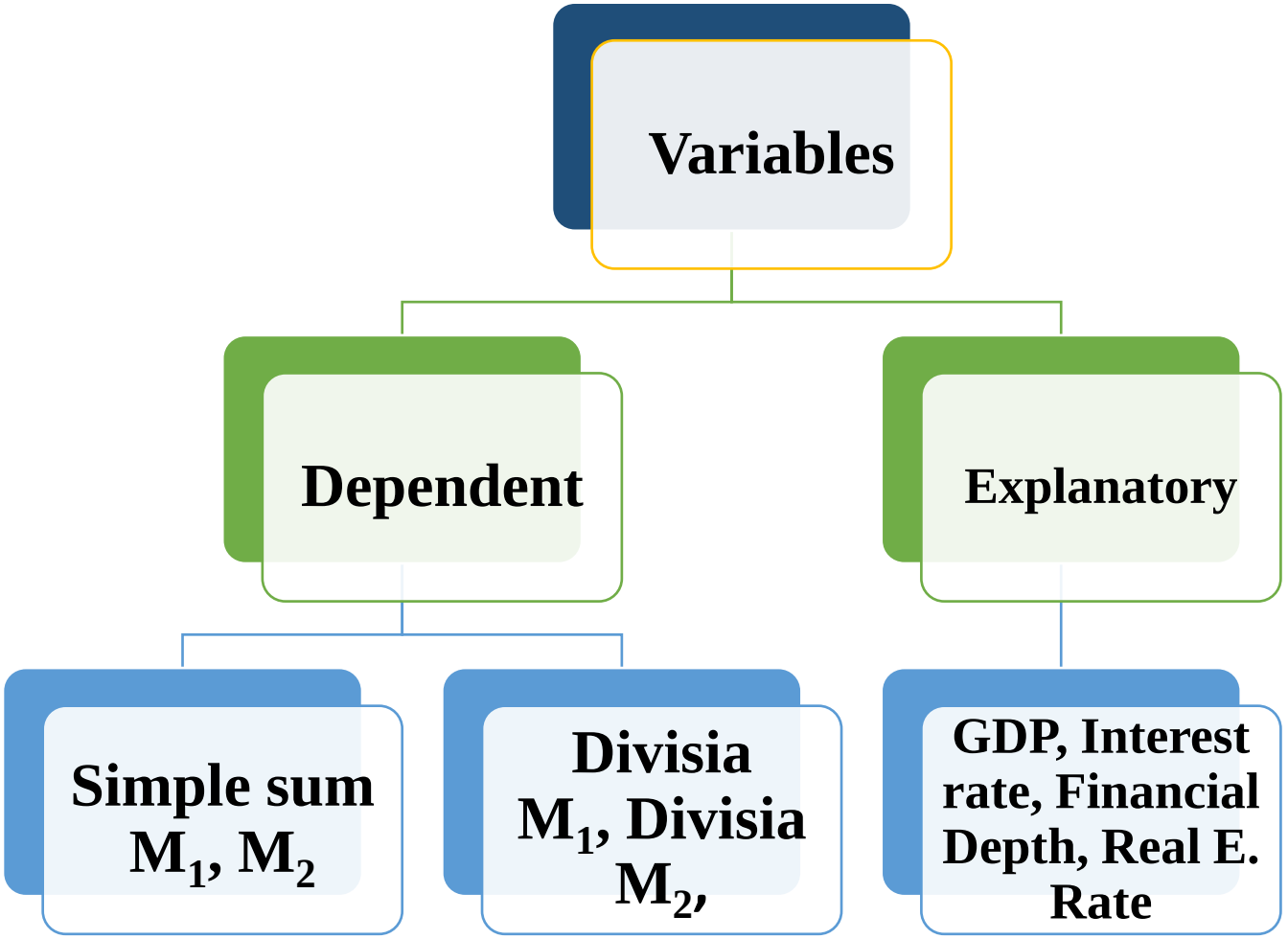
M/P_t is real money balance in shape of Divisia Index as well as Simple Sum

(MR_t) stand for money market rate for time series data

(REX_t) is real exchange

(FD_t) is called the Financial Innovation or monetisation

Choice of Variables

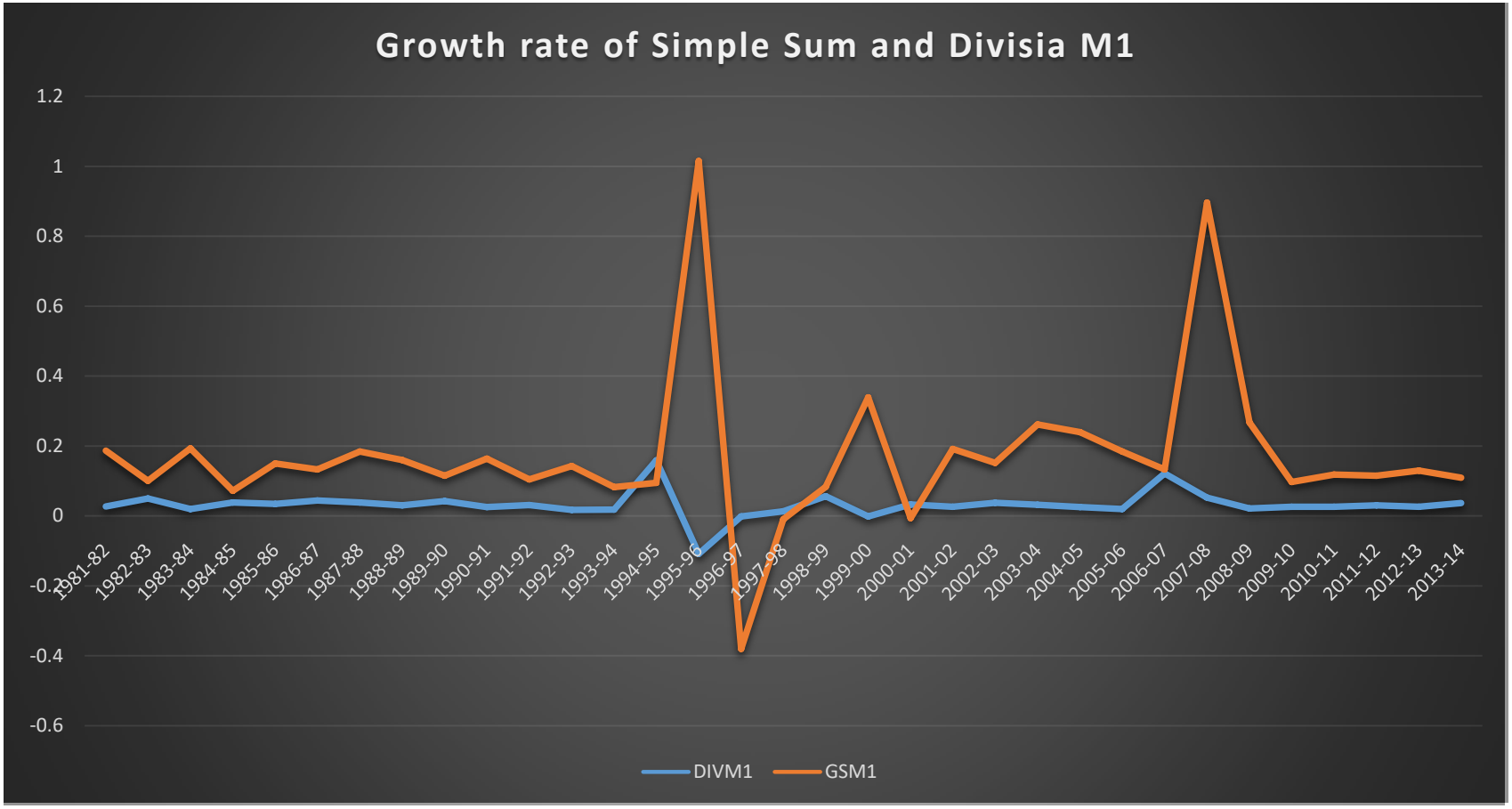


Name of variable	Description	Year	Source
$M_1$and M_2	Consists the currency plus demand deposit.	(1982- 2014)	State bank of Pakistan and (WDI) world development indicators and Federal Reserve Bank
Divisia Index	The data computing the Divisia index aggregate (DM1 and DM2). DM1 include the currency in circulation, other deposit with the SBP, current deposit, call deposit, other deposit and saving deposit of scheduled Bank. The broader Divisia monetary aggregate DM2 includes all the financial assets DM1 plus total fixed deposit of scheduled bank	(1982- 2014)	The data of own rate of return on different components of monetary assets available as a weighted average rate of return on quarterly basic from (SBP) annual report and monthly bulletin.

Name of variable	Description	Year	Source
Gross domestic product	GDP is defined as the total market value of all final goods and services produced within a given country in a given period of time usually calendar year in Pakistan.	(1982 -2014).	(WDI) ,Economic Survey of Pakistan, State Bank of Pakistan.
Interest rate	Money Market Rate	(1982 -2014).	(WDI) indicators and Federal Reserve Bank and IFS
Exchange Rate	Real Effective Exchange Rate	(1982 -2014).	The data taken from (WDI) World Development Indicators.


RESULT

Growth rate of Simple and Divisia Sum



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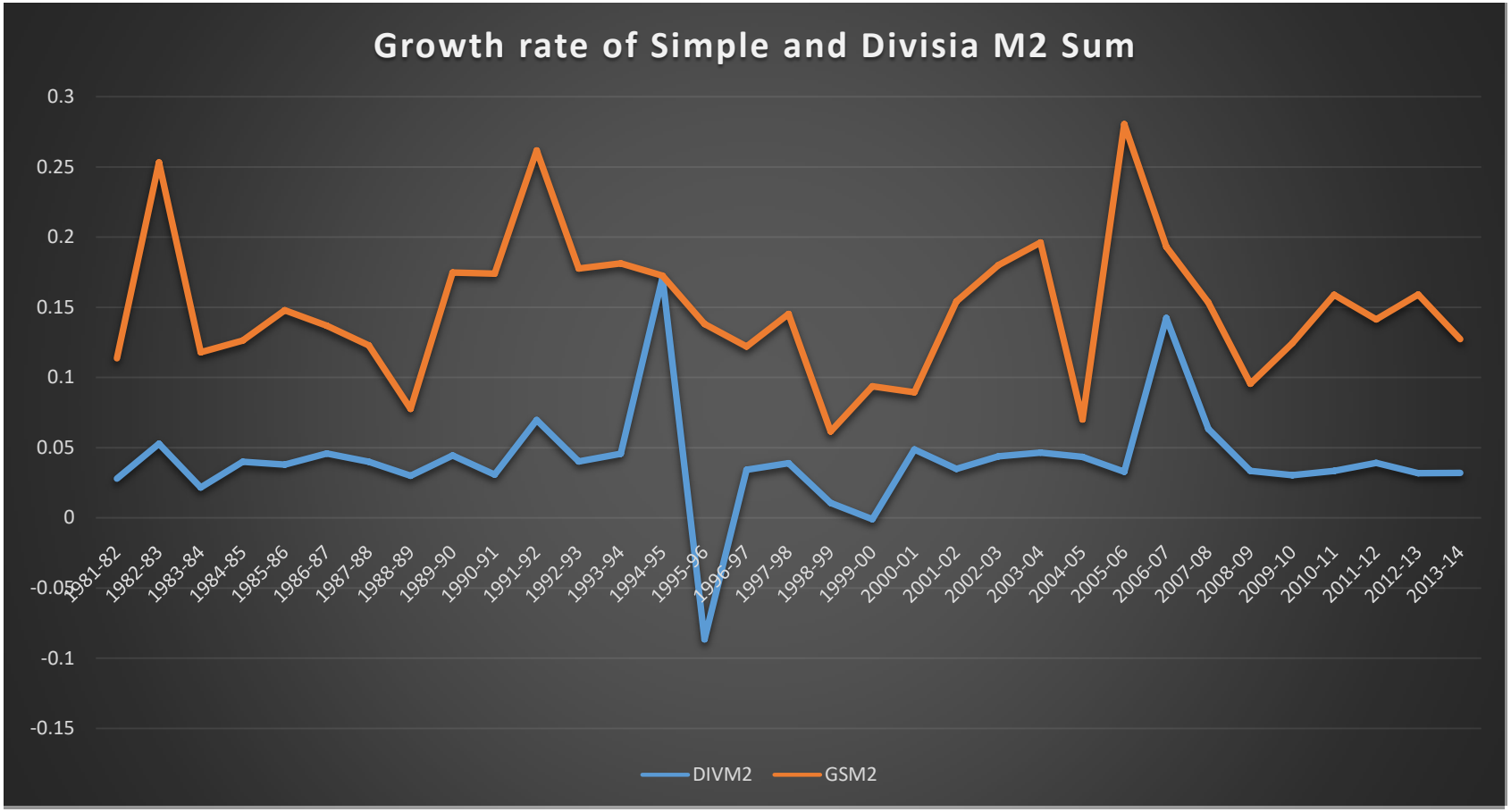
Growth rate of Simple and Divisia M2 Sum
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
1981-82
1982-83
1983-84
1984-85
1985-86
1986-87
1987-88
1988-89
1989-90
1990-91
1991-92
1992-93
1993-94
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
DIVM2
GSM2

Descriptive Statistics

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Monetary Index		Mean	Standard Deviation
M_1	GSM_1	0.237	0.176
	$DIVM_1$	0.039	0.031
M_2	GSM_2	0.149	0.039
	$DIVM_2$	0.040	0.051

Lag Length Selection Criterion

Order of Leg Length	AIC	SBC	HQ
1	24.05074	26.66631	24.88748
2	24.27444	29.17864	25.84334
3	16.90805*	24.10087*	19.20909*

Note: * shows the minimum leg selection criteria

Bound Testing

Model	Specification	Lower-Bound	Upper-Bound	F-Statistics	Decision
1	(DIVM2/CPI,FRX,MRATE,GRGDP)	2.86	4.01	6.591@	Co integration
2	(LM2/CPI,FRX,MRATE,GRGDP)	2.86	4.01	3.45@	No Co integration

Variables	Model.1		Model.2	
	Role of Divisia M2 in Money Demand		Role of Sum M2 in Money Demand	
	Coefficients	P-values	Coefficients	P-values
Intercept	-133.25 **	(0.0075)	4.30	(0.83)
D (RDIVM2 (-1))	5.64*	(0.0033)	……..	…….
D(RGSM2)	……	…….	……..	…….
(GRGDP)	8.50 **	(0.0320)	-286.41	(0.15)
(GRRFX)	137.02 **	(0.089)	62.80	(0.23)
D(GRRFX(-3))	247.03 *	(0.0052)	……..	……...
(MMRATE)	-7.17 ***	(0.002)	-8.29***	(0.00)
D(MMRATE(-2))	-7.37***	(0.00)	……..	…….
(MSDIV)	-14.33***	(0.00)	……	……
(MSSUM)	……..	……...	0.013	(0.84)
CointEq(-1)	-0.81**	(0.021)	---------	---------
R- Square	0.980	…….	0.89	……
F-Statistics	13.53	(0.001)	7.55	(0.00)

Long Run Results of Divisia Index in Money Demand Function

Variables	Coefficients	St. Error	t-Value	P-Value
GRGDP	392.12***	76.30	5.13	0.00
GRRFX	-1.58***	12.90	-0.12	0.90
MMRATE	-1.54***	0.30	-5.07	0.00
MSDIV	3.41***	0.26	13.03	0.00
C	-21.66***	3.80	-5.69	0.00

Note: *, **and *** represent the level of significance at 10 percent level of significance, 5 percent level and 1 percent level respectively. P value in parenthesis

Conclusions

- ✓ To compare the performance in case if simple Sum and Divisia Index M_1 and M_2 Monetary aggregates
- ✓ On behave of the above results indicated that Divisia performed superior, accurate and stable money demand function then simple sum counterpart
- ✓ The importance of monetary targeting is more due to knowledge of financial invention and reforms in banking sector. However, the capability of Divisia M_2 is more to maintain the association with economic and financial indicators.

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- ✓ This is alternative policy which may be adopted the (SBP). In addition the (SBP) will construct the Divisia Index data with official Simple Sum counterpart. This data provide the information about the policy maker for future prediction about the economic indicators of Pakistan economy
- ✓ Furthermore, study will be conduct to find out the predictably of inflation of Pakistan through used this type of Superlative index


THANK YOU!