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The Determinants of Demand for Money: Empirical Evidence from Some Selected Developing Countries

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ABSTRACT

This study is to estimate money demand determinants of some selected developing countries by using panel data from 1992- 2015 covering 95 countries having different income level. This study is based on three main income group countries lower, middle and upper middle income economies. Demand for money (M2), gross domestic product (GDP), inflation, rate of deposit, population and consumption are taking as variables. The stationary of variables heck through panel unit root. Variables are stationary at level and first difference. The results are estimated from panel ARDL (autoregressive distributed lag) technique. Result shows that short run exist in all these countries and their results are fluctuating from country to country. In long run, inflation, population and consumption has strong impact but economic activities (GDP) and rate of deposit varies from country to country because every country's rules and regulations are different. The objective of the study is to estimate the determinants of money demand. How people demand for money in different countries and its impact on economic activities.

1. Introduction

According to Jhingan," money demand arises to fill day to day transaction exchange and for future transaction. Businessmen and individual wantto hold money in the way of currency and liquid assets according to the need."

Classical view about money demand is that people hold money for day by day transaction. Fisher (1911) explained the QTM. According to QTM, money demand and prices are positively relative to each other but transaction volume and velocity of money remains constant. Fisher's exchange equations, MV = PT. Cambridge economists explain that prices depend on currency holding. If people hold less currency with them than money circulation will increase and as a result the prices will increase and so on. They presented equation; M = kPY

Keynes presented money demand theories in 1936. According to him, people keep money for three purposes; day to day transactions, for future unforeseen conditions (precautionary) and speculative purposes. For transaction purposes, people hold money to meet their current transaction and household keep money for medium of exchange. There is gap between income and day by day transaction so people keep cash for specific time.

Precautionary motive means people keep money with them aiming at future unexpected situations or circumstances like accidents, illness, death, war, flood and earthquakes etc. This demand for money depends on income level of people. Income and

precautionary motive are positively related to each other. For speculative purpose, people hold their assets either in the form of money or bond. There exists inverse relation between speculative money demand (Msd) and rate of interest. Md = f (i, Y)

Money demand stability plays a vital role in development of economy. Most of previous studies related to money demand work were concerned with developed countries. But in present era, most researchers search the money demand in developing countries. Instability in demand for money occurs due to interest rate, inflation and output changes in the long run.

Friedman explains the money demand in 1988. He explains that increase in the prices of stock has two impacts on holding money. The first effect is positive wealth effect and it has three factors monetary wealth rise, expected return increase on risk factor assets and financial transaction raise. The second factor is negative substitution and it shows that when stock prices increase, people will hold less money demand and prefer the equities and shares. Interest rate mostly changes due to money demand and rate of interest plays an important part in economic growth. According to debtor, a charge of borrowing is interest rate and the debtor borrows less cash when interest rate increases.

Objective of the study

The main objective of study is to determine the determinants of money demand in developing countries. The objective of study as follows:

- How money demand is determined through prices in Developing countries
- To determine the money demand through deposit interest rate
- Determine link between money demand and GDP in developing countries
- How monetary policy work in Developing countries
- How consumption affect the money demand
- Which variable is responsible to stable money demand in Developing countries

2. Literature Review

Ewing and Payne (1999) studied demand for cash in Chile by quarterly data of Chile 1980-I to 1996- II. The result showed that exchange rate had pretentious narrow and broad money. In long run, interest rate's effect on money demand was not constant.

Arlt et al. (2001) studied demand of money factors in Pakistan with yearly data from 1994 to 2000. The result revealed that demand for money had influenced the GDP (gross domestic product), nominal rate of interest and inflation.

Qayyum (2005) investigated modeling of money demand and used Pakistan's annual data from the period 1969 – 1999. The result showed that broad money (M2) had constant impact on real income, prices and rate of interest. Inflation had positive influence on broad money for long period.

Tang (2007) studied constancy of demand for money by taking quarterly data of Japan from 1960- I to 2007- II. The result revealed that due to changes in monetary policy in Japan, demand for money was unstable.

Ozturk and Acaravci (2008) studied demand for money in transition economies and used panel data of ten countries between the timeline of 1994 to 2005. The result presented that real gross domestic product (GDP) had encouraging impact on broad money (M2). Inflation and exchange rate had adverse effect on broad money.

Hye et al. (2009) investigated exchange rate, money demand and stock price relation by using annual data of Pakistan's economy from 1971 to 2006. The result revealed that stock price's statistically significant outcome on money demand and exchange rate had insignificant effect on money demand.

Hye (2009) studied financial innovation and money demand by using yearly data of Pakistan over period ranging from 1995 to 2007. The result revealed that financial innovation had positive significant impact on holding money.

Azim et al. (2010) examined demand for money in Pakistan by taking yearly time series data from 1973 to 2007 and for estimation applied autoregressive distributed lag model (ARDL). The outcome showed that exchange rate had inverse effect on holding money. Inflation and income had encouraging effect on money demand.

Dritsakis (2011) studied demand for cash in Hungry by using annual data from 1995 to 2010 and for estimation applied autoregressive distributed lag model (ARDL). The outcome showed that real income had encouraging impact and prices and rate of exchange had adversely affected money demand.

Gilal and et al. (2015) tested open economy money demand by using quarterly data from 2001- 2010 by using Johnson co integration approach. The result showed that real income was positive and significant. The coefficient of interest was positive but it against the theory because when cost of holding increased, demand for real money decreased. The study shows that positive sign of nominal effective exchange rate showed that in narrow money, people increase their money demand. The foreign disturbance affected the Pakistan economy through foreign interest and exchange rate.

Oseni and Bolaji (2016) examined fiscal policy and interest rate through ECM (error correction model) and fully modified ordinary least square by using time series data of Nigeria 1981- 2014. The study presents that fiscal deficit had positive impact on term structure of interest rate, government of Nigeria adopted fiscal and monetary policy mix to decrease the unnecessary spending, because increase in budget deficit was led to increase interest rate and discourage investment.

Farazmand et al. (2016) to estimate the determinants of money demand in Mena through generalized least square (GLS) by using time series data from 1980-2013. They used money demand, income, inflation and exchange rate as variables. The basic purpose of study was to found correct money demand that help central bank which monetary policy was helpful to stable money demand. Monetary variables had expected effect on output, interest rate and exchange rate. The analysis shows that exchange rate and inflation had negative significant impact on demand for money, income had positive effect.

3. Theoretical Frame Work

A. Fisher's approach of demand money

Irving Fisher presented QTM. According to him, prices depend on money demand while transaction volume and velocity of money is constant. Fisher's exchange equation is as; MV= PT

Left-hand equation (MV) presented the supply of money while the right hand represented the demand for money. Money market always stays in equilibrium MD= MS.

This approach explains that public holds money only for day to day purposes. According to Fisher, that doubling of supply money doubles the prices reducing worth of money to half.

B. Liquidity Preference theory:

Keynes said that, people keep money for day to day matterbut also hold money for precaution and speculative purposes. According to Keynes, people hold money or bond as their collection. This theory is called liquidity preference theory.

C. Tobin's money demand theory:

Sir James Tobin presented his modern liquidity preference or portfolio theory in 1960. According to him, people keep both cash and bond in his portfolio. This portfolio helps the people to make the most of return and diminishes danger. People have no knowledge about rate of interest so they keep both cash and bond; they get income and yield interest on bond but money did not take interest and there is no risk to hold money.

D. **Baumal's theory of money demand:**

In 1952, Baumol's presented his demand for money theory. Baumal said that holding of cash affected by rate of interest has adverse relation between interest rate and money demand. Business firm keeps cash with them for day to day transaction and face opportunity cost against such amount.

E. Friedman money demand theory:

Friedman presented "QTM…..A Restatement" in 1956. He presented factors that determine money demand. He always prefers free economy.

$$MD = f(Y_P^+, W^-, I^-, P^{e-}, P, U)$$

Permanent salary is positively linked demand for money. Percentage ratio of non-human wealth to human wealth (w), rate of interest and expected price are inversely linked to money demand. Price and utility have direct or adverse impact on demand for money.

Data and Methodology

Measurement of panel data needs serious attention for reliable and suitable results because results of panel data face several issues related to panel data estimation. In this section we have presented some measurements and estimation issues.

a. Data Description

This study is constructed on panel data of 95 countries that are considered into lower income, lower middle income and upper middle income economies. Data is collected by WDI (world development indicators)from 1992 – 2015.

b. Description of variables

In description, we have explained the endogenous and exogenous variables. Here we explain M2 (broad money), exchange rate (ER), lending amount, gross domestic product (GDP), population and inflation.

- **Demand for money:**

Broad money is used as a money demand. Money demand means holding cash. People keep money for medium of exchange, future transactions and speculative purposes. Broad money includes demand and time deposit.

- **GDP**

Gross domestic product is used to estimate the financial performance or economic growth. GDP is the market value of final goods and services that are manufactured domestically

during a year. It contains consumption, investment, government expenditure and net export.

- **Deposit rate:**

Rate of deposit is the rate that is rewarded by bank to its depositors. Bank pays deposit on saving accounts and certificates that having interest.

- **Consumption:**

The process in which consumer spends their specific income on their expenditures is called as consumption and it on income level. When income increase consumption will also increase but consumption increases at diminishing rate.

- **Inflation:**

Due to increase in prices of goods and services over the time and purchasing power of money falls. When inflation increases, people will hold more cash with them. Inflation arises due to disequilibrium between demand and supply and government imposed high tax rate.

- **Population:**

Total number of people residing in a place or country is called population. Population is positively affecting the demand for money. When population increases, people will hold additional money with them and flow of money decreases as a result.

Model specification

The model is based on GDP (gross domestic product), demand for money (M2), inflation deposit rate, population and consumption. Demand for money (M2) is explained and GDP, inflation, consumption, population and deposit interest rate are explanatory (independent) variables.

Linear Model:

$Y = f(Xi)$

Where

Y = money demand

X_i = GDP, DR, CON, INF, POP

MD = f (GDP, DR, CON, INF, POP)

Econometric Model:

$MD = \alpha + \beta_1(GDP) + \beta_2(IR) + \beta_3(ER) + \beta_4(INF) + \beta_5(POP) + \mu_t$

Where

α = Intercept

β_1 to β_5 = Co- efficient of exogenous/ independent variables

μ_t = Error term

t = time

4. Results and Discussion

Here we have explained the panel unit root results and also elaborated the autoregressive distributed lag model (ARDL) estimation.

Panel Unit root:

Panel unit root is difficult as related to time series unit root and it is the extension of augmented dickey fuller test (ADF). It is taking high powered.

The countries having income of $1,025 are lower income economies (LIC). The unit root of lesser income economies shows that some variables are stationary I(0) at level and some are I(1) at first difference.

Table 1: Lower income economies (LIC)

Panel Unit Root of LIC

	Individual Intercept				**Individual Intercept & trend**					
Variables	**LLC**	**IPS**	**ADF Fisher**	**PP-Fisher**	**LLC**	**Breitung**	**IPS**	**ADF Fisher**	**PP-Fisher**	**Result**
DR	14.2121	9.39529	2.2	1	18.2517	8.2834	10.3002	0	6.3	
	(1.0000)	(1.0000)	(1.0000)	(1.0000)	(1.0000)	(1.0000)	(1.0000)	(1.0000)	(1.0000)	
∆DR	-13.5737	-14.0017	120.222	123.661	19.8705	-3.65194	-15.1356	132.183	195.281	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	I(1)
POP	-12.5749	-10.4619	84.9628	12.6404	18.0258	-8.47631	-10.9366	86.1976	8.64463	
	(0.0000)	(0.0000)	(0.0000)	(0.0018)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.01330	I(0)
M2	4.69366	-3.06803	14.2463	31.7047	6.58674	1.96847	-2.59181	10.6269	27.2622	
	(1.0000)	(0.0011)	(0.0008)	(0.0000)	(1.0000)	(0.9755)	(0.0048)	(0.0049)	(0.0000)	
∆M2	-16.3624	-19.9083	157.509	139.492	23.2397	-7.33604	-21.2973	186.231	205.948	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(1)
GDP	-20.1264	-16.472	139.354	135.976	28.4841	-14.4212	-17.4278	154.125	149.034	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)
INF	-7.40653	-7.07729	49.2954	136.953	15.5364	-7.05444	-10.0467	76.3633	153.366	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)
CON	-5.41822	-5.83196	36.4253	34.9127	7.66315	-5.93035	-5.62876	31.7147	30.1924	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)

∆= First difference;

Consumption and inflation are stationary I(0) at level. Demand for money (M2) is stationary I (1) at first difference.

The countries having income between $1,026 and $4,035 are called LMIC. Some variables are stationary at level and some are at I (1).

Table 2: Lower middle income economies (LMIC)

Panel Unit Root of LMIC

	Individual Intercept				**Individual Intercept & trend**					
Variables	**LLC**	**IPS**	**ADF Fisher**	**PP-Fisher**	**LLC**	**Breitung**	**IPS**	**ADF Fisher**	**PP-Fisher**	**Result**
DR	-15.4597 (0.0000)	-13.8602 (0.0000)	127.506 (0.0000)	111.371 (0.0000)	-21.8797 (0.0000)	-6.78443 (0.0000)	-14.5337 (0.0000)	140.81 (0.0000)	118.862 (0.0000)	I(0)
POP	-6.04431 (0.0000)	-6.63371 (0.0000)	45.6721 (0.0000)	23.6135 (0.0000)	-8.5318 (0.0000)	-2.48127 (0.0065)	-6.52386 (0.0000)	41.4591 (0.0000)	19.0406 (0.0000)	I(0)
INF	-14.4626 (0.0000)	-13.1805 (0.0000)	121.41 (0.0000)	159.275 (0.0000)	-20.8391 (0.0000)	-4.00715 (0.0000)	-13.7199 (0.0000)	132.4 (0.0000)	190.264 (0.0000)	I(0)
M2	-0.4069 (0.342)	-5.00051 (0.0000)	29.3807 (0.0000)	34.6313 (0.0000)	-0.58821 (0.2782)	-3.99589 (0.0000)	-4.81495 (0.0000)	25.6014 (0.0000)	31.0914 (0.0000)	
∆M2	-38.2237 (0.0000)	-32.1379 (0.0000)	161.204 (0.0000)	161.148 (0.0000)	-54.0632 (0.0000)	-22.0097 (0.0000)	-34.8028 (0.0000)	263.391 (0.0000)	263.391 (0.0000)	I(1)
GDP	-8.30782 (0.0000)	-13.8275 (0.0000)	127.157 (0.0000)	177.029 (0.0000)	-11.9024 (0.0000)	0.27216 (0.6072)	-14.5828 (0.0000)	141.478 (0.0000)	224.99 (0.0000)	I(0)
CON	-13.3543 (0.0000)	-10.779 (0.0000)	91.8424 (0.0000)	82.172 (0.0000)	-18.9747 (0.0000)	-7.02905 (0.0000)	-11.1223 (0.0000)	94.1754 (0.0000)	82.3406 (0.0000)	I(0)

∆= First difference:

Table 2 reveals that inflation, rate of deposit, consumption, population and GDP are stationary at level. Demand for money is stationary at I(1) first difference.

The countries whose income lies in $4,036 and $12,475 are called upper middle income economies (UMIC).

Table 3: Upper middle income economies (UMIC)

Panel Unit Root of UMIC

	Individual Intercept				Individual Intercept & trend					
Variables	**LLC**	**IPS**	**ADF Fisher**	**PP-Fisher**	**LLC**	**Breitung**	**IPS**	**ADF Fisher**	**PP-Fisher**	**Result**
DR	-19.3267 (0.0000)	-15.155 (0.0000)	143.849 (0.0000)	176.129 (0.0000)	-27.4185 (0.0000)	-14.7139 (0.0000)	-15.9538 (0.0000)	166.337 (0.0000)	222.381 (0.0000)	I(0)
POP	-6.57767 (0.0000)	-6.86166 (0.0000)	48.2448 (0.0000)	31.8442 (0.0000)	-9.31432 (0.0000)	-5.23689 (0.0000)	-6.78202 (0.0000)	44.2903 (0.0000)	27.1365 (0.0000)	I(0)
INF	-25.2358 (0.0000)	-20.5646 (0.0000)	185.305 (0.0000)	194.029 (0.0000)	-35.7933 (0.0000)	-19.2332 (0.0000)	-22.0435 (0.0000)	244.448 (0.0000)	263.391 (0.0000)	I(0)
GDP	-18.849 (0.0000)	-16.025 (0.0000)	150.042 (0.0000)	147.597 (0.0000)	-26.8495 (0.0000)	-12.8578 (0.0000)	-17.0713 (0.0000)	177.153 (0.0000)	172.316 (0.0000)	I(0)
CON	-2.0339 (0.021)	-7.27243 (0.0000)	53.3076 (0.0000)	66.9881 (0.0000)	-2.8839 (0.002)	-2.92213 (0.0017)	-7.20383 (0.0000)	49.6961 (0.0000)	64.8841 (0.0000)	I(0)
M2	-0.84886 (0.198)	-4.5773 (0.0000)	25.7359 (0.0000)	26.9922 (0.0000)	-1.19877 (0.1153)	-4.877 (0.0000)	-4.26718 (0.0000)	21.3883 (0.0000)	22.6371 (0.0000)	
∆M2	-40.5768 (0.0000)	-34.386 (0.0000)	149.182 (0.0000)	147.498 (0.0000)	-57.3851 (0.0000)	-27.7373 (0.0000)	-37.2982 (0.0000)	263.391 (0.0000)	263.391 (0.0000)	I(1)

∆= First difference

Table 3 reveals that inflation, population, rate of deposit, GDP and consumption are stationary at I(0) (level). Money demand (M2) is stationary at I(1).

Table: 4: Developing countries (DC)

Panel Unit Root of DC

	Individual Intercept				Individual Intercept & trend					
Variables	**LLC**	**IPS**	**ADF Fisher**	**PP-Fisher**	**LLC**	**Breitung**	**IPS**	**ADF Fisher**	**PP-Fisher**	**Result**
DR	-24.3663 (0.0000)	-19.3582 (0.0000)	191.466 (0.0000)	212.034 (0.0000)	-34.4702 (0.0000)	-18.3754 (0.0000)	-20.6248 (0.0000)	256.657 (0.0000)	263.391 (0.0000)	I(0)

POP	-9.33986	-7.73127	60.3266	79.2555	-14.6315	-7.42494	-8.79933	71.0839	76.4807	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)
INF	-39.7159	-31.7363	200.566	172.983	-56.2076	-28.8517	-34.4002	263.391	263.391	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)
GDP	-25.011	-22.2512	207.832	210.211	-35.4258	-12.8958	-23.8861	263.391	263.391	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)
CON	-11.4998	-12.1493	114.722	164.522	-16.8928	-11.0408	-13.2216	134.666	216.547	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)
M2	-4.36611	-8.34062	65.1627	63.7433	-6.75845	-8.92817	-9.39914	75.6764	77.1834	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	I(0)

Δ= First difference

The table 4 reveals that overall performance of developing countries. It includes lesser income economies, lower middle income economies and upper middle income economies. The unit root result explains that all variables are stationary at level.

Short run results:

Here we have described the short run result of this study. Results are fluctuating from country to country. The error correction term (ECM) must be negative and statistically significant. The change among actual and real value is called error correction term.

Table 5: Error Correction Model regression (LIC)

Panel ARDL (1,1,1,1,1,1); Short run Results; Dependent variable M2

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.103100	0.040451	-2.548771	0.0113
D(GDPG)	0.049814	0.068075	0.731755	0.4648
D(INF)	0.016196	0.030531	0.530458	0.5961
D(DR)	-0.728090	0.645351	-1.128208	0.2600
D(POPG)	-10.17195	8.629030	-1.178805	0.2393
D(CON1)	0.097271	0.103885	0.936331	0.3498

The table 5 shows that value of ECT is -0.103100 and also significant. Gross domestic product (GDP), inflation and consumption positively affect the demand for money but deposit interest rate and population have inverse impact on money demand. The negative sign of population is according to the study of Muhammad (2011).

Table 6: Error Correction Regression Model (LMIC)

Panel ARDL (1,1,1,1,1,1) Short run Results; Dependent Variable M2

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.050961	0.022739	-2.241124	0.0254
D(GDPG)	-0.174911	0.064272	-2.721438	0.0067
D(INF)	-0.125371	0.031950	-3.923953	0.0001
D(CON1)	-0.009952	0.059464	-0.167363	0.8671
D(DR)	0.063572	0.157709	0.403098	0.6870
D(POPG)	-2.828246	10.28564	-0.274970	0.7834
C	2.775499	0.941325	2.948504	0.0033

Table 6 explains that coefficient sign of gross domestic product, inflation, consumption and population is negative but deposit rate has negative sign. Consumption negative sign shows that people hold more cash in hand for future transaction. Error correction value is adverse and statistically significant (0.00254).

Table 7: Error Correction Model Regression (UMIC)

Panel ARDL (2,1,1,1,1,1) Short run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.020839	0.009495	-2.194858	0.0285
D(M2(-1))	0.142962	0.050628	2.823769	0.0049
D(GDPG)	-0.198173	0.060392	-3.281423	0.0011
D(INF)	-0.236415	0.053061	-4.455517	0.0000
D(POPG)	-7.582895	5.218232	-1.453154	0.1466
D(CON1)	0.039758	0.068303	0.582078	0.5607
D(DR)	0.221246	0.319676	0.692095	0.4891

Table 7 shows that gross domestic product, inflation and population has negative effect while deposit rate and consumption positively affects the money demand. ECT (Error correction term) is negative (-0.020839) and significant (0.0285).

Table 8: Error Correction Model Regression (DC)

Panel ARDL (2,1,1,1,1,1) Short Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.009737	0.003775	-2.579270	0.0100
D(M2(-1))	0.105358	0.025626	4.111354	0.0000
D(GDPG)	-0.192378	0.045571	-4.221458	0.0000
D(INF)	-0.156369	0.032750	-4.774674	0.0000
D(POPG)	-9.284789	2.735149	-3.394619	0.0007

D(CON1)	0.012557	0.048696	0.257856	0.7965
D(DR)	0.036483	0.215726	0.169116	0.8657

The table 8 explains that gross domestic product (GDP), inflation and population shows negative effect on money demand while consumption and deposit rate have positive affect. ECT is negative -0.009737 and its probability are 0.0100.

Long run results:

Table 9: Long Run Result (LIC)

Panel ARDL (1,1,1,1,1,1) Long run Result; Dependent variable M2

Variable	Coefficient	Std. Error	t-Statistic	Prob
GDPG	-1.002435	0.225568	-4.444047	0.0000
INF	-0.338335	0.082643	-4.093941	0.0001
DR	-0.105891	0.114363	-0.925923	0.3551
POPG	2.282808	0.842053	2.711003	0.0071
CON1	0.238766	0.029174	8.184226	0.0000

In table 9, there occurs long run relationship among variables. The negative sign of gross domestic product (GDP) shows that 1% increase in GDP will fall demand for money in -1.002435. Naseer (2013) is supporting this study. 1 % rise in inflation will decline the demand for money -0.338335. Due to negative deposit interest rate, money demand will decline -0.105891. Faridi and Akhtar (2013) support this result. Population has positive impact on money demand and this result is supported by Faridi and Akhtar (2013). When consumption rises, demand for money also increases.

Table 10: Long Run Result (LMIC)

Panel ARDL (1,1,1,1,1,1) Long run Results; Dependent variable M2

Variable	Coefficient	Std. Error	t-Statistic	Prob
GDPG	0.535813	0.331660	1.615548	0.1067
INF	0.466601	0.097403	4.790403	0.0000
CON1	0.173118	0.114194	1.515998	0.1300
DR	-2.147486	0.285425	-7.523808	0.0000
POPG	5.536017	1.519273	3.643858	0.0003

Inflation has positive effect on money demand. 1 % rise in inflation will demand for money by 0.466601% and significant. 1% increase in gross domestic product will rise the demand for money by 0.535813% and statistically significant at 10%. Consumption and population are having positive impact on demand for money. 1% increase in deposit rate will decline demand for money -2.147486%.

Table 11: Long Run Result (UMIC)

Panel ARDL (2,1,1,1,1,1) Long run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob
GDPG	2.947970	0.490123	6.014751	0.0000
INF	-0.029651	0.007159	-4.141663	0.0000
POPG	8.248399	2.455644	3.358956	0.0008
CON1	0.721097	0.052587	13.71256	0.0000
DR	0.003057	0.013340	0.229131	0.8188

In upper middle income economies, demand for money rise due to high GDP (economic activities). 1% increase in gross domestic product will increase money demand in 2.95%. Population, consumption and deposit rate carries aggressive impact on money demand. Inflation has negative influence on money demand. 1% rise in inflation will fall demand for money by -0.029651.

Table 12: Long Run Result (DC)

Panel ARDL (2,1,1,1,1,1) Long Run Result

Variable	Coefficient	Std. Error	t-Statistic	Prob
GDPG	4.389152	0.753269	5.826807	0.0000
INF	-1.191598	0.251319	-4.741372	0.0000
POPG	19.99042	3.345068	5.976087	0.0000
CON1	0.350897	0.064564	5.434911	0.0000
DR	2.548838	0.506983	5.027468	0.0000

In developing countries, GDP is positive and significant. 1 %rise in GDP will rise 4.389152% in demand for money. 1 %rise in prices will reduction demand for money by -1.191598 %. Deposit rate, population and consumption are positive and significant. 1 % rises in consumption, rate of deposit and population will raise demand for currency in 0.350897 %, 2.548838% and 19.99042%.

The result of all income groups is almost same. Rate of deposit is positive in developing countries. The reason is that there is deficiency of monetary institutions so people keep cash in hand. There is no idea of deposit rate in Islamic countries so that deposit rate is positive. Population consumption and inflation has powerful impact on the demand for money in the long run.

5. Conclusion

This study is based on holding money (money demand) determinants in some selected developing countries. We have divided countries according to income group LIC, LMIC and UMIC. For estimation, we have taken panel data of 95 developing countries over period 1992 -2015 and applied panel ARDL. Result reveals that short run exist in all these countries and their result are fluctuating from country to country. In long run, inflation, population, and consumption has strong impact but GDP and rate of deposit varies from country to country because every country' rules and regulations are different from each other.

This research paper will help the developing countries' government for making development plans. These developing countries should take step to increase its GDP.

Financial institution plays an important role in development so developing countries should increase number of financial institutions resulting in the falling of money demand which at the end will increase the circulation of currency. Increasing population also affects the circulation of money so population should be controlled in these countries.

6. Policy Recommendation

i. In developing countries population should be controlled. Population should be controlled through education and awareness of development.

ii. Inflation is strong determinant of money demand in developing countries. Prices are not stable in developing countries due to government instability and other issues. Prices should be controlled by government and central bank. When inflation increase holding of money will increase and circulation of money will fall.

iii. Government should establish financial institution in developing countries. So holding of money will less and people deposit their amount in banks and that's why investment increases through getting loan for productive purposes.

iv. Spread awareness for development in developing countries; try to reduce the unnecessary consumption. So the cash will decrease and people will prefer to deposit their amount in bank, banks use these amounts to advancing loan, all this will increase investment and create employment opportunities.

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