Impact of Monetary Policy on Socio Economic Indicators: A Case Study of developing Asian Economies

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Abstract

A large number of researchers consider that the monetary variables like money supply and interest rate do not have any real influence on the economy. On contrary, in some countries researchers and policymakers have explored the relationships between monetary policy and socio-economic indicators like poverty, inequality, unemployment etc., and they found empirical evidence supporting a strong relationship between monetary and socio economic variables. This study investigates the relationship of monetary policy with poverty, inequality, and unemployment for ten Asian countries including Pakistan. The data for these countries are taken from WDI for period of 1986 to 2017. The sophisticated Empirical Bayesian estimation Procedure is used to explore the relationship between monetary policy and socio-economic variables. The results support the evidence of significant relationship between monetary policy and real variables in most of the selected economies. However, the direction of the relationship varies across indicators and with the countries. It is suggested that the analysis of impact of monetary policy shall be considered monetary authorities before policy conduct.

The study implies that Central banks should analyze the socio economic impact of monetary policy before conducting it.

Key words: Monetary policy, Socio-economic indicators, Money supply, Interest rate, Poverty and Inequality.

1. Introduction

Monetary policy is one of the modern era's most effective tools used as an inflation stabilizing policy with the aim to benefit the poor; but there is uncertainty about its advantage to the poor class. Many economists have argued that expansionary monetary policy mostly benefits the high income group and financiers (Acemoglu et al., 2012). On the other hand Inflation created by expansionary monetary policy negatively effects the unprivileged of economy by reducing the real value of wage (Romer & Romer, 1998). On the other hand, the interest rate increasing to a very high level in tight monetary policy that reduces the investment and overall employment. Again this results in ultimate loss and suffering of the poor (Galbirth, 1998).

In the last two decades rapid economic growth across in most of Asian economies has widened the wealth gap. Economists and policy makers have been debating for years on government's role in reducing poverty and inequality through various social safety programs, building fair tax base and squeezing corruption. Being signatory of Millennium Development Goal (MDGs) declaration, nations across the globe have commitment to reduce the inequality and poverty. The monetary policy which is usually assumed neutral to real economic variables may affect a large number of socio economic indicators including unemployment, inflation, GDP growth, poverty and inequality. However, almost all of the research on the consequences of monetary policy is limited first three indicators, ignoring the last two indicators i.e. inequality and poverty. The literature describes that Monetary policy has direct impact on inflation and another set of literature states that inflation affects poverty and inequality, this implies that monetary policy does have indirect

relationship with these two socio economic variables but overwhelming majority of researchers did not investigate this complete channel in past. Recently, some researchers have started exploring the relation between monetary policy, poverty and inequality for United States and some European countries like (Coibion et al., 2012 and Galbraith et al., 2007). These studies argue that there is strong causal linkage between monetary policy and these variables, with a strong support of empirical evidences. These linkages may have very strong implication for developing countries, as they are facing high level of poverty and income inequality. The developing countries also have to meet the hard target of Millennium Development Goals and the conduct of monetary policy might be affecting the progress toward these goals. Therefore, there is dire need on the relationship between monetary policy and these economic indicators. This study is first of its kind aimed at exploring the relation between these variables for the Asian countries including Pakistan.

It is also interesting that a large group of researchers have explored relationship between inflation and inequality such as Galli (2001) mentioned in different panel data, cross and single country studies. There is also a large group of researchers who explored relationship between monetary policy and inflation. But there is no research on the complete chain of causal channel starting from conduct of monetary policy ending at the inequality through the channel of inflation. This study will explore the complete causal channel using the data of south Asian economies and will furnish the evidences having strong implications for poverty and inequality.

So the main objective of study is to analyze the impact of monetary policy actions on income distribution, poverty and unemployment in the ten Asian countries. This research will help the Government and Monetary authorities to understand the linkage between the monetary policy actions and their impact on the poverty, inequality and unemployment, so as to facilitate the

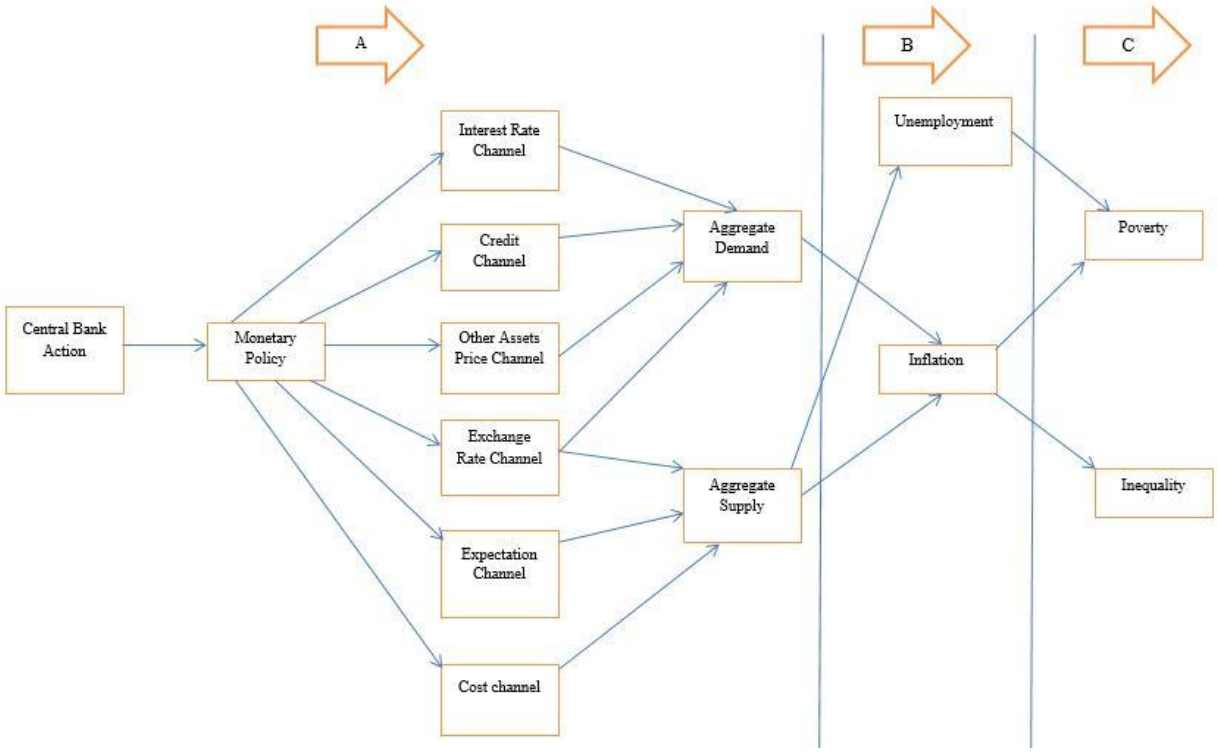
progress toward the millennium development goals. This study will also serve as reference for future studies on monetary policy and its relationship with the poverty and inequality.

Monetary transmission mechanism is a complex and interesting topic exploring linkage between monetary policy and socio-economic indicators. There are not one, but many channels through which monetary policy can affect the economy. These channels discuss the linkage between monetary policy and inflation or GDP growth. This study extends the discussion of channels to poverty, inequality and unemployment.

1.1 Monetary Transmission Channels

Many economists have discussed the number of channels of monetary transmission mechanism, through which monetary expansion or tightening can affects the real variables of the economy. The most important of these channels are interest rate channel, exchange rate channel, credit channel, other assets price channel, expectation channel, and coast channel.

Figure 1: A visual depiction of these channels.



Earlier researchers has explored either Panel A & B or Panel B & C as shown in figure.1 but no one considered or explored complete causal linkage between monetary policy and poverty or inequality. Beside Monetary Transmission Channels presented in figure 1. There are some other causal channels which are linking monetary policy with socio economic indicators. The detail of such channels is as under.

1.2 Other Causal Link between Monetary Policy, Poverty and Inequality through Transmission Mechanism Channels

Monetary policy can potentially affect income inequality, poverty and unemployment through different channels (Niggle, 1989), which are summarized as below.

1.2.1 Income Composition Channel

This channel associates monetary policy and inequality as every household has different main sources of income. Most of the households mostly depends on labor earnings, while others get greater portion of the income from business and commercial income, firm owners will get benefit

disproportionately if expansionary monetary policy shocks increase profits more than wages (since the latter also tend to be wealthier) this channel should lead to higher inequality in reaction to monetary policy shocks.

1.2.2 Financial Segmentation Channel

In financial markets if some agents regularly trade and are affected by changes in the money supply prior to other agents, then an increase in the money supply will redistribute wealth toward regular agents of the financial markets, as in Williamson (2009) and Ledoit (2011). Active Agents in financial trades have higher income as compared to occasional participants of financial trade.

1.2.3 Interest Rate Channel

Galli (2001) discussed the impact of monetary policy on income distribution through different channels both in the short run and in the long run as increase in interest rate stops the progress of economic growth with rise in unemployment rate, affecting different workers at various levels specially the low skilled workers as a result income inequality will raise in short run.

Monetary policy has an impact on income distribution in the short run through real interest rates. Both nominal interest rate and real interest rate increases with decrease in money supply growth. The increase in real interest rate will make the net borrowers worse off and the net lenders better off; as a result, income inequality expands because certainly there are more net lenders are at the top of income distribution as compared at the bottom.

1.2.4 Inflation Channel

The main function of restrictive monetary policy is to keep inflation low in the long run. Low inflation slows down the wearing a way of money purchasing power in the long-run, and this can disturb income distribution and the wellbeing of the poor in at least following ways. First, it is usually discussed that the poor are less able to protect their living standards from inflationary

shocks than the rich. The poor hold greater amount of their wealth in cash due to the presence of entry barriers in most markets for non-money financial assets, where as non-poor extremely exposing them to purchasing power erosion by inflation (Ferreira et al., 1999).Therefore, restrictive monetary policy tends to improve income distribution by slowing down the erosion of monetary financial possessions. At second, lower inflation slows down the provision of unemployment benefits and pensions since the target group of these public transfers is the poorest portion of the population this would reduce inequality. Most researches considers deteriorated purchasing power of minimum wage, high employment rate (Shawhill, 1988) while others cited increased global trade, skill biased technological change and changes in labor market institutions as the root cause of this phenomenon which have received much consideration in the literature, whereas monetary policy is hardly stated as a possible ingredient. Bulir (2001) argued that even after taking them into account, a large part of the growing gap between high and low incomes or wealth remains unexplained .Yet, economic research today is too scarce to provide a comprehensive answer.

1.3 The Effects of Monetary Policy on Socio Economic Indicators in the Short Run

Both output and inflation increase in the short run through expansionary monetary policy. These short-run effects of monetary policy can influence the welfare of the poor through three channels. First, the rise in average income in a cyclical extension directly lessens poverty. For a given distribution of income around its mean, the number of people under a fixed limit reduces with an increase in the mean. To be precise, escalation in all incomes together raises the incomes of the poor and increases some of their earnings above the poverty level. Since expansionary monetary policy increases average income in the short run, this is a powerful instrument through which monetary policy can instantly benefit the underprivileged.

Second, there may be cyclic changes in the distribution of income. The declines in unemployment and increases in real wages and labor force participation in an expansion are likely to be concentrated disproportionately among low-skilled workers. Therefore, the income distribution may contract. In this case, beyond its effect on average income there are also short-run benefits of expansionary policy to the poor. On the other hand, poor receive a larger segment of their income from transfers than do the rest of the population as transfers are less cyclic than labor income. The income distribution could expand in a boom if this effect prevails. In this case, the benefits of expansionary policy to the poor are smaller than what one would expect given the impact on mean income.

Third, the inflation created by expansionary monetary policy has distributional effects. Inflation by reducing the real value of wages and transfers can harm the underprivileged. For example, the fact that in the 1970s real welfare benefits fell may have been partially due to inflation. On the other hand, the pension income of the poor is insulated from inflation: over 90 percent of the pension income of the aged poor comes from Social Security; lastly, unanticipated inflation benefits nominal debtors at the expense of nominal creditors. Inflation can help the poor through this channel if they are net nominal debtors.

1.4 The Effects of Monetary Policy on Socio Economic Indicators in the Long Run

In the long run monetary policy can control average inflation and the variability of aggregate demand. These can affect the wellbeing of the poor by influencing long-run growth and the distribution of income. High inflation generates expectations of future macroeconomic instability and distortionary policies, upsets financial markets and creates high effective tax rates on capital. In this manner it discourages investment of all types: human capital accumulation, physical capital accumulation, research and development, foreign direct investment and technology transfer. As a

result, it can hold back growth. Because macroeconomic volatility is also expected to discourage investment, it can have similar effects. Moreover, high inflation and high variability create uncertainty about the return to productive activities and raise the possibility for activities that are privately but not socially beneficial, they may lower work effort and lead to rent seeking. This can also wear away a country's average standard of living. Macroeconomic instability and high inflation can also disturb the poor by the distribution of income around its average. Monetary policy can affect long-run income distribution by at least five channels.

First, unanticipated inflation directly affect inequality by redistributions produced through swings in it. Second, the declines in physical capital investment caused by uncertainty and financial-market disruptions raise the average return on capital and reduce wages; also extend the income distribution. Third, offsetting this, inflation may shift away the burden of taxation from labor to capital. Fourth, the uncertainty and reduced efficiency of financial markets caused by inflation and macroeconomic instability reduce not just physical capital investment, but human capital investment. This thwarts an important mechanism by which inequality can be mitigated. Lastly, inflation and macroeconomic instability not just reduce physical capital investment, but macroeconomic volatility and human capital investment may harm some sectors of the economy disproportionately. For example, they may be harmful to export-oriented industries or simple manufacturing businesses. Subject on the relative position of the workers in these industries, this can either increase or decrease inequality.

2. Literature Review

The mainstream economics considers the monetary policy as a powerful tool of managing economy without discussing its distributional consequences. The studies focusing on the distributional impacts of monetary policy are only few like Coibion et al. (2012) investigated by

using detailed household data from Consumer Expenditure survey that contractionary monetary policy actions thoroughly raises inequality in labor earnings, total income, consumption and total expenditures. De (2016) found the impact of monetary policy on food prices and poverty and found very strong correlation amongst them. Galbraith et al. (2007), studied the effects of monetary policy on earnings inequality through structure of interest rates as a measure of exogenous policy action. In developed economies Galli (2001) theoretically and empirically explored the effects of monetary policy and inflation on income inequality. He further argues that the effect of monetary policy on inequality is puzzling only a small number of empirical studies addressing this issue have given contradicting responses, to solve this puzzle he portrayed his hypothesis that monetary policy and inflation have impact on inequality via initial inflation rate. On the other hand, many authors have tried to investigate the determinants of poverty and inequality but they rarely consider the monetary policy as a determinant of inequality rather they have taken inflation as a determinant of inequality. Chu et al. (2000) used inflation among other control variables and found that average income of the bottom quintile decreases with increase in inflation. Romer and Romer (1998) in panel data study examined impact of monetary policy on both socio economic variables i:e poverty and inequality in short as well as long run and conclude that monetary policy with lower inflation rate and stabilized aggregate demand improve the situation of poor. Inequality and poverty has been largely overlooked in the literature and practice of monetary policy, but relationship between inequality and monetary policy is gaining more consideration recently. The Literature Review is divided into theoretical and empirical studies which are summarized as under.

2.1 Theoretical Literature

On the theoretical level, there are four types of debate on monetary policy and its impact on poverty and inequality which are Classical view, Keynesian view, New Keynesian view, and Monetarist view. The detail is following as:

2.1.1 Classical View

Classical Economists believes in monetary neutrality. This means that the monetary variable affects only nominal variables like wage, price level but does not affect real variables like unemployment poverty, purchasing power etc. They are of the opinion that monetary changes like a change in the units of measurements. For instance if we moved from measuring distances in feet to measure them in inches, nothing really will change only number get larger regarding real economic variables. Though the Classical do not directly discuss the effects of monetary variables on income distribution and poverty, it could be concluded that if all real variables are unaffected so will be the unemployment, poverty and inequality.

2.1.2 Keynesian View

Keynesians associates changes in quantity of money, prices is non proportional and indirect through interest rate channel. Interest rate reduces with increase in money supply that makes the capital cheaper and this also increases the investment, output and employment level of the economy. Therefore this expected to have direct effects on unemployment but Keynesians did not discuss poverty explicitly. Keynesians view assumes that monetary policy is fruitless when the economy is caught in a liquidity trap

2.1.3 New Keynesian View

New Keynesian view is best described in the form of The Phillips curve which says that there is a tradeoff between inflation and unemployment. By increase in inflation unemployment decreases, thus an expansionary monetary policy leads to reduction in unemployment and vice versa. Wage

rigidity theory by New Keynesian economists implies that monetary variables having an effect on the real variables and money is not somewhat neutral. For example sticky wages for the period of inflation reduces real wage rate of the wage earner and lowers the cost of the firms equally. Therefore fall in real wages encourage firms to demand more labor that clearly increases employment level.

2.1.4 Monetarist View

Monetarists postulate that real variables can be affected by change in money supply only in the short run. Hence money is not neutral in the short run. Monetarists equipped with the permanent income hypothesis inspect the stable link between consumption and income, criticized the simple multiplier mechanism.

2.2 Empirical Literature

On the empirical level, since the work of Kuznets (1955), many studies focused on the causes and consequences of poverty and wealth inequality.

Hume (1970) gives emphasis to the idea of an "inflation tax". He describes that when any quantity of money is bring in into a nation, it is not at first dispersed into many hands but is kept to the coffers of a few persons, who instantly seek to employ it to advantage. This situation discloses that anticipated and unanticipated changes in inf1ation and money supply have not the same effects. Fully anticipated inflation would have no real effects, but on the other hand unanticipated inflation can lead to an array of consequences from stimulating production to inducing depression.

Nordhaus (1973) moved closest to a statistical argument closely connecting inflation and wealth inequality. He also identified the same problem but his models did not take into consideration the distribution of monetary units over time, which would expose actors to the redistributive effects of money supply differently. Von (1996) and Rothbard (1994) (elaborate on Hume's theory on

disproportionate monetary distribution) claiming that changes in the money supply are disproportionately distributed throughout an economy. For them, the increase in money supply is tantamount to a tax that punishes those who see the new money last. This view of monetary redistribution is a comer stone of Austrian inflation theory. Blanchard (2003) indicated that more conventional channel for the impact of interest rate on unemployment is through capital accumulation which affects demand for labor and further demand for labor affects natural rate of unemployment. Balac (2008) by testing a model demonstrated this connection by examining monetary inflation's effect on wealth inequality. He finds that monetary inflation is not only a significant variable, but its effect on wealth inequality is more prominent at the extremities of the distribution. Crowe (2006) by using national panel data concludes that expansionary monetary policy and income inequality has a positive correlation. Correspondingly Albanesi (2007) analyzes that the cross-country correlation between inflation and income inequality created by expansionary monetary policy results from distributional conflict. In this analysis the model presents that inflation and income disparity are positively connected for the relative vulnerability to inflation of the poor. That is, the poor are to be expected to hold more cash as a portion of their entire purchases and suffer bigger loss from inflation than the rich class does.

Galbraith (1998) has underlined the importance of monetary policy's effects on economic inequality. He also suggested that for most households labor earnings are the prime source of income and these earnings may respond in a different way for high-income and low-income households to monetary policy shocks. This could happen, for example, if unemployment excessively falls upon low income clusters, as documented in Rogers (2009).

Romer and Romer (1998) make empirical efforts to analyze the effects of monetary policy on poverty and inequality. By using the U.S. time series data they analyze short-term influence of

monetary policy on poverty and inequality. They discover that the short-run and long-run re1ationships go in opposite directions. Expansionary monetary po1icy created a cyclical boom which is associated with improved conditions for the poor in the short run. Stable aggregate demand growth and low inflation are linked with improved well-being of the poor in the long run. Fowler and Wilgus (2005) also find that expansionary monetary policy improves the welfare of the poor. Easterly and Fischer (2001) analyze the link between inflation and poverty by using household data of thirty eight countries. They conclude that inflation makes the poor worse off and the poor suffer more from inflation as compared to the rich, their research findings also suggest that inflation worsens income imbalance. Bulir (2001) using the Kuznets's framework finds that lower inflation rates can improve income equality but the effects of price stabilization on income distribution are nonlinear.

Furthermore, Agénor (2004) analyzed the linkage between poverty and macroeconomic adjustment process. The author investigated effects of macroeconomics policies on wage, employment, and poverty based on cross- country data. In short, it shows that poverty is dropped by high levels of per capita income. Furthermore it is also lower by the fall of real exchange rate, great openness in industry and good health care. On the other hand, poverty is enlarged by inflation, greater income inequality, and macroeconomic instability.

For Doepke and Schneider (2006), an unforeseen increase in interest rates or decrease in inflation will benefit savers and hurt borrowers. The labor earnings at the bottom of the distribution are most affected by business cycle fluctuations as Document by (Heathcote et al., 2010). Further, the income composition channel could potentially push toward reduced rather than increased (as suggested by Austrian economists) inequality after expansionary monetary policy.

Atkinson et al. (2011) discover that top income can explain an important part of inequality by studying top income share in the long run. However the limitation of their study is that the tax data are subject to serious limitations. Cambazoglu et al. (2012) also analyzed through VAR model that changes in money shock have impact on employment and output from credit stock.

According to Brunnermeier and Sannikov (2012), asset holdings are not symmetric and hence monetary policy affects different economic agents in a different way. As a result, monetary policy redistributes wealth. This redistributive effect can ease distortions, for example debt extension problems that arise from amplification mechanisms. Growth can spur through these mitigating effects and lead to an overall higher wealth level in the economy. According to them, Conventional monetary policy can effect wealth distribution in two ways. First, by reducing banks funding costs and lowering the short term interest rate. Second, by affecting asset prices. They also come across that redistributive monetary policy has important implications across regions in a currency area. Coibion et al. (2012) studied the effects of monetary policy shocks to consumption and income inequality and found that increase inequality in labor earnings, total income, consumption and total expenditures by systematic contractionary monetary policy actions. But this study focused exclusively on the United States economy and it would be useful to see if these results can be applied to other parts of the world.

More recently Kang et al. (2013) by using provincial data for South Korea find positive correlation between the real interest rate and poverty, while real interest rates do not have significant effects on income distribution. They also find that inflation lessens poverty however inflation improves income distribution in the short-term but has no significant effects on income distribution in the long-term. Watkins (2014) paper presented some evidence that quantitative easing program of the Fed becoming helpful in increasing income and wealth inequality, although he does not analyze

the mechanism behind it. Yannick and Ekobena (2014) explored the influence of monetary policy on inequality and poverty by using household data for income and consumption of the United States and the countries of the Economic and Monetary Community of Central Africa. The resulting estimations indicate that poverty and interest rate are positively correlated in the United States, suggesting that rising interest rate increases poverty rate. Thus monetary policy destined for reducing inflation, have a positive impact on poverty reduction. Unlike in the EMCCA countries, conventional monetary policy does not affect income distribution and poverty. Monetary policy affects poverty through the quantitative easing channel.

Bulli and Guild (1995) concludes that inflation increases inequality. Blank and Blinder (1986) also used inflation as one of the explanatory variable to study its impact on poverty rate.

Many studies focus on tight monetary policy's impact on income distribution with reducing inflation but this is not necessarily true because the cost side economics has proven that in any case the monetary policy is counterproductive. In that case the analysis of relation between inflation and distribution is worthless to draw conclusion about effects of monetary policy. On the basis of these previous literatures as mentioned above, a conclusion is reached: monetary policy affects socio economic indicators like poverty and income inequality through income growth, interest rate and inflation. But this literature survey reveals different results, thus further studies are needed.

3. Methodology and Model Specification

The present study attempts to explore the impact of Monetary policy on the income distribution, unemployment, and poverty in developing Asian countries, the countries included in our analysis are Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippine, Sri Lanka, Thailand, and

Vietnam. The model employed in our study and a brief description of the variables used is given hereunder.

3.1 Model Specifications

In order to find the role of monetary policy and macroeconomic variable on the poverty, inequality, and unemployment we use the following econometrics models. The equation of models are presented below

$$\mathbf{GINI_{it}} = \boldsymbol{\theta_0} + \boldsymbol{\theta_1}\mathbf{GDPG_{it}} + \boldsymbol{\theta_2}\mathbf{BMG_{it}} + \boldsymbol{\theta_3}\mathbf{GGFCE_{it}} + \boldsymbol{\theta_4}\mathbf{UNEMP_{it}} + \boldsymbol{\theta_5}\mathbf{RINT_{it}} + \boldsymbol{\theta_6}\mathbf{PG\_1.90_{it}} + \boldsymbol{\varepsilon_{it}} \quad (1)$$

$$\mathbf{UNEMP_{it}} = \boldsymbol{\theta_0} + \boldsymbol{\theta_1}\mathbf{GDPG_{it}} + \boldsymbol{\theta_2}\mathbf{BMG_{it}} + \boldsymbol{\theta_3}\mathbf{GGFCE_{it}} + \boldsymbol{\theta_4}\mathbf{GINI_{it}} + \boldsymbol{\theta_5}\mathbf{RINT_{it}} + \boldsymbol{\theta_6}\mathbf{PG\_1.90_{it}} + \boldsymbol{\varepsilon_{it}} \quad (2)$$

$$\mathbf{PG\_1.90_{it}} = \boldsymbol{\theta_0} + \boldsymbol{\theta_1}\mathbf{GDPG_{it}} + \boldsymbol{\theta_2}\mathbf{BMG_{it}} + \boldsymbol{\theta_3}\mathbf{GGFCE_{it}} + \boldsymbol{\theta_4}\mathbf{UNEMP_{it}} + \boldsymbol{\theta_5}\mathbf{RINT_{it}} + \boldsymbol{\theta_6}\mathbf{GINI_{it}} + \boldsymbol{\varepsilon_{it}} \quad (3)$$

Where "i" is for countries and "j" is for variables. The GDPG is used for gross domestic product annual percentage growth. The BGM is an abbreviation of broad money annual percentage growth. The GGFCE is used for General government final consumption expenditure percentage of GDP while the UNEMP is used for unemployment the percentage of the total labor force which modeled by ILO. The RINT is the abbreviation for the percentage of real interest rate. The GINI is used for GINI index estimated by World Bank. The PG_1.90 is used for Poverty gap at $1.90 a day (2011 PPP) (%). The $\boldsymbol{\varepsilon_{it}}$ is error term the effect of other relevant variables which are included in the regression model. The macro variables are used as control variables which are needed to obtain unbiased estimates of the monetary variables. These control variables include the variables

involved in the causal chains linking monetary policy with socio economic variables. The control variables are taken from different previous studies mentioned as follows: (Kuznets, 1955; Barro, 2000; Bidani & Ravallion, 1997; Laabas & Liman, 2004).

3.2 Data Description

Keeping in view the objectives of our study and specific models, we took annual data of ten developing Asian economies for the period of 1986 to 2017. The data is taken from WDI 2018 online database.

3.3 Methodology

The methodology comprises two main components, the first part is based on descriptive statistics, and second part based on Empirical Bayesian estimator. In first part, we employ descriptive statistics and correlation matrices while in the second part we employ panel unit root testing for stationarity and after that used Empirical Bayesian estimator to explore the associations between monetary variables and social economic indicators poverty, inequality, and unemployment.

3.3.1 Empirical Bayesian Estimator

Empirical Bayesian estimator is an alternative to classical techniques which are commonly applied in estimations. Empirical Bayesian estimator is gaining popularity because of its advantages classical methods. The classical approach in fact overlooks the past information regarding parameters and their dispersion. However, Bayesian approach integrates the past information into the model and improves the power and flexibility of the model and delivers better outcome. Commonly the structure of economies are different from each other that is why the nature of series are also different. When we assume common structure for the economies in panel modeling, it makes model quite restrictive, and also disregards the heterogeneous behaviour amongst different countries. Many models try to capture this heterogeneity but these panel models are also having

some econometric issues. The random effects panel model commonly faced autocorrelation and heteroscedasticity issues while the fixed effect model faced loss of degree of freedom. Particularly, when time effects on predicted coefficients are also considered (Gujarati and Porter 2009). So to avoid the issues panel models and OLS regression model we used Empirical Bayesian estimator for single country analysis. Empirical Bayesian method is preferable to others for small samples because it has quite a few notable advantages and gives more accurate and efficient estimates. There are three steps of Empirical Bayesian methodology, at first estimate country wise regression which estimated through following way:

Let we have a regression model

$$Y_i = X_i\beta_i + \varepsilon_i \qquad (4)$$

Where Y is the matrix of dependent variable and X is matrix of independent variables. The "i" shows regression of ith country. The OLS

$$\hat{\beta}_i = (X_i'X_i)^{-1}X_i'Y_i \qquad (5)$$

The variance covariance matrix for estimated coefficients is:

$$COV(\hat{\beta}_i) = \hat{\omega}_i = \hat{\sigma}^2(X_i'X_i)^{-1} \qquad (6)$$

The larger value of $\hat{\omega}_i$ shows the low precision of estimates. Thus, the $(\hat{\omega}_i)^{-1}$ can be considered as precision of the estimates of the vector random variable $\hat{\beta}_i$.

Now at second stage we take precision weighted average as the measure of common structure among different countries.

$$U = (\hat{\omega}_1^{-1} + \hat{\omega}_2^{-1} + \cdots + \hat{\omega}_N^{-1})^{-1} \times [\hat{\omega}_1^{-1}\hat{\beta}_1 + \hat{\omega}_2^{-1}\hat{\beta}_2 + \cdots + \hat{\omega}_N^{-1}\hat{\beta}_N] \qquad (7)$$

U is the considered as the weighted average of $\hat{\beta}_1, \hat{\beta}_2$ …… $\hat{\beta}_N$ where these weights assigned to every estimate on the basis of precision.

Where

$$\vartheta^{-1} = \widehat{\omega}_1^{-1} + \widehat{\omega}_2^{-1} + \cdots + \widehat{\omega}_N^{-1} \qquad (8)$$

At third, the Empirical Bayesian estimate is gained as weighted average of conventional OLS estimate and prior.

$$\hat{\beta}_i^{EB} = (\widehat{\omega}_i^{-1} + \vartheta^{-1})^{-1}[\widehat{\omega}_i^{-1}\hat{\beta}_i + \vartheta^{-1}U] \qquad (9)$$

$$COV(\hat{\beta}_i^{EB}) = (\widehat{\omega}_i^{-1} + \vartheta^{-1})^{-1} \qquad (10)$$

Therefore the precision of $\hat{\beta}_i^{EB}$ estimates is measure as $(\widehat{\omega}_i^{-1} + \vartheta^{-1})^{-1}$, which is the sum of prior information and individual country's estimates precisions. According to Berger (1985), the estimates from Empirical Bayesian method are more accurate and efficient. Moreover, the standard errors are lesser as compared to those from classical methods which are helpful in obtaining more accurate results. Empirical Bayesian method has been used and recommended for panel data in several studies (see Koop, 1999; Efron & Morris, 1972; Rubin, 1981; Hsiao et al., 1999).

4 Results and Discussion

We employed empirical Bayesian model for country wise analysis and for panel data analysis. The results are given below:

4. 1 Descriptive statistics

At first the descriptive statistics has been employed on each variable for every country, which helps us to understand the nature and characteristics of the series for every country.

Table 1: Descriptive statistics of GINI Index (estimate of World Bank) for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
GINI	BGD	33	31.55	2.18	26.90	33.40
	CHN	33	38.64	5.10	29.10	46.50
	IDN	33	28.63	8.27	11.12	40.20
	IND	33	33.33	3.32	29.20	40.30
	LKA	33	37.44	3.13	32.40	41.00

	MYS	33	46.81	0.88	46.10	49.10
	PAK	33	31.41	1.37	28.70	33.30
	PHL	33	42.33	1.41	40.10	46.00
	THA	33	42.02	2.68	37.50	47.90
	VNM	33	35.88	0.91	34.80	39.30

Table 1 shows that the mean of GINI index for all countries remains approximately close but the MYS has on average highest GINI coefficient value while IDN has lowest GINI coefficient value on average, which implies that MYS more inequality. The standard deviation shows the dispersion from mean value, IDN has more standard deviation as compare to other countries. It implies that IDN has huge dispersion around the mean value. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of GINI coefficient for all countries.

Table 2: Descriptive statistics of GDPG for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
GDPG	BGD	33	5.17	1.26	2.42	7.28
	CHN	33	9.59	2.61	3.91	14.23
	IDN	33	4.99	3.57	-13.13	8.22
	IND	33	6.49	2.14	1.06	10.26
	LKA	33	5.00	2.10	-1.55	9.14
	MYS	33	5.72	3.82	-7.36	10.00
	PAK	33	4.54	1.90	1.01	7.71
	PHL	33	4.13	3.00	-7.31	7.63
	THA	33	5.15	4.19	-7.63	13.29
	VNM	33	6.43	1.57	2.79	9.54

Table 2 shows that the mean of GDPG for all countries. The CHN has on average highest GDPG while PHL has lowest GDPG on average, which implies that CHN GDP increase with high growth and PHL has low growth in GDP. The standard deviation shows the dispersion from mean value, THA has more standard deviation as compare to other countries. It implies that THA has huge

dispersion around the mean value. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of GDPG for all countries.

Table 3: Descriptive statistics of BGM for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
BMG	BGD	33	16.02	5.73	9.74	43.00
	CHN	33	20.74	8.47	8.11	46.67
	IDN	33	19.34	11.57	4.76	62.76
	IND	33	15.94	3.59	6.80	22.27
	LKA	33	17.14	7.88	4.24	49.98
	MYS	33	10.69	15.60	-43.74	71.91
	PAK	33	15.47	6.93	4.31	42.91
	PHL	33	14.67	7.97	1.69	30.24
	THA	33	11.29	6.44	3.80	26.18
	VNM	33	23.36	11.27	11.94	66.45

Table 3 shows that the mean of BMG for all countries. The CHN has on average highest BMG while MYS has lowest BMG on average, which implies that CHN BM increase with high growth and MYS has low growth in BMG. The standard deviation shows the dispersion from mean value, MYS has more standard deviation as compare to other countries. It implies that MYS has huge dispersion around the mean value. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of BMG for all countries.

Table 4: Descriptive statistics of GGFCE for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
GGFCE	BGD	33	4.91	0.51	4.03	6.00
	CHN	33	13.99	0.98	12.46	16.63
	IDN	33	8.66	1.31	5.69	12.04
	IND	33	11.18	0.66	10.01	12.46
	LKA	33	10.69	2.46	7.62	17.61
	MYS	33	12.71	1.46	9.77	16.69

	PAK	33	11.29	2.19	7.78	16.78
	PHL	33	10.27	1.33	7.61	13.28
	THA	33	13.33	2.43	9.22	17.21
	VNM	33	7.14	1.58	5.47	12.34

Table 4 shows that the mean of GGFCE for all countries. The CHN has on average highest GGFCE while BGD has lowest GGFCE on average, which implies that CHN's GGFCE increases with passage of time and BGD has low increase in GGFCE. The standard deviation shows the dispersion from mean value, KLA has more standard deviation as compare to other countries. It implies that LKA has huge dispersion around the mean value of GGFCE. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of GGFCE for all countries.

Table 5: Descriptive statistics of UNEMP for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
UNEMP	BGD	33	3.15	1.17	0.92	5.00
	CHN	33	4.02	0.93	1.80	4.89
	IDN	33	4.72	1.74	2.10	8.06
	IND	33	3.87	0.31	3.41	4.43
	LKA	33	9.25	4.16	3.88	15.90
	MYS	33	3.87	1.47	2.45	8.29
	PAK	33	4.60	2.10	0.65	8.27
	PHL	33	4.36	1.71	2.71	9.10
	THA	33	1.79	1.25	0.49	5.77
	VNM	33	2.18	0.27	1.77	2.87

Table 5 shows that the mean of UNEMP for all countries. The LKA has on average highest UNEMP while THA has lowest UNEMP on average, which implies that LKA has more unemployed labor force as compare to other countries and THA has low increase in UNEMP. The standard deviation shows the dispersion from mean value, KLA has more standard deviation as compare to other countries. It implies that LKA has huge dispersion around the mean value of

UNEMP. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of UNEMP for all countries.

Table 6: Descriptive statistics of RINT for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
RINT	BGD	33	6.44	3.96	-5.48	14.82
	CHN	33	1.76	3.41	-7.98	7.35
	IDN	33	5.91	7.30	-24.60	15.61
	IND	33	6.15	2.13	1.09	9.19
	LKA	33	2.72	3.01	-10.25	9.25
	MYS	33	3.62	3.36	-3.90	11.78
	PAK	33	1.30	3.24	-6.77	8.32
	PHL	33	5.50	3.26	-4.58	14.16
	THA	33	4.98	3.55	-0.35	13.61
	VNM	33	6.04	5.30	-6.55	12.58

Table 6 shows that the mean of RINT for all countries. The IND has on average highest RINT real interest rate while PAK has lowest RINT on average, which implies that IND impose more interest rate as compare to other countries and PAK has low increase in RINT. The standard deviation shows the dispersion from mean value, IDN has more standard deviation as compare to other countries. It implies that IDN has huge dispersion around the mean value of RINT. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of RINT for all countries.

Table 7: Descriptive statistics of PG_1.92 for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
PG_1.92	BGD	33	6.28	2.77	2.70	11.30
	CHN	33	10.82	8.21	0.30	24.40
	IDN	33	9.05	7.29	1.00	25.80
	IND	33	8.94	2.46	4.30	12.10
	LKA	33	1.05	0.68	0.10	2.60
	MYS	33	0.19	0.08	0.10	0.30

	PAK	33	6.28	6.85	0.90	20.60
	PHL	33	3.96	1.94	1.60	7.40
	THA	33	0.62	0.77	0.10	2.60
	VNM	33	7.47	4.99	0.50	16.60

Table 7 shows that the mean of PG_1.92 for all countries. The CHN has on average highest PG_1.92 while MYS has lowest PG_1.92 on average, which implies that CHN has more poverty gap at standard $1.92 per day as compare to other countries and MYS has poverty gap as compare to all other selected countries. The standard deviation shows the dispersion from mean value, CHN has more standard deviation as compare to other countries. It implies that CHN has huge dispersion around the mean value of PG_1.92. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of PG_1.92 for all countries.

Table 8: Descriptive statistics of PG_3.2 for all countries.

Variable	Country	Obs	Mean	Std.	Min	Max
PG_3.2	BGD	33	24.37	5.99	15.60	34.10
	CHN	33	24.56	15.72	2.10	47.30
	IDN	33	28.53	13.79	8.30	49.80
	IND	33	28.93	4.39	19.70	34.40
	LKA	33	7.71	3.72	1.80	13.30
	MYS	33	1.45	0.97	0.60	3.10
	PAK	33	21.93	11.28	9.50	43.80
	PHL	33	15.08	4.17	9.40	22.20
	THA	33	3.95	4.02	0.10	12.40
	VNM	33	21.77	12.11	3.00	38.00

Table 8 shows that the mean of PG_3.2 for all countries. The IND has on average highest PG_3.2 while MYS has lowest PG_3.2 on average, which implies that CHN has more poverty gap at standard $ PG_3.2 per day as compare to other countries and MYS has poverty gap as compare to all other selected countries. The standard deviation shows the dispersion from mean value, BGD

has more standard deviation as compare to other countries. It implies that BGD has huge dispersion around the mean value of PG_3.2. Max shows the maximum values and Min shows the minimum values on the basis selected sample data. The difference between Max and Min shows the range of PG_3.2 for all countries.

4.2 Correlation Matrix

We use correlation matrix to check perfect multicollinearity issues.

Table 9: Correlation Matrix for all variables.

	GINI	GDPG	BMG	GGFCE	UNEMP	INT	PG_1.90	PG_3.20
GINI	1.000							
GDPG	0.475	1.000						
BMG	-0.079	0.233	1.000					
GGFCE	0.290	0.200	-0.104	1.000				
UNEMP	0.023	0.060	0.285	-0.534	1.000			
INT	-0.123	0.067	-0.388	-0.045	-0.193	1.000		
PG_1.90	0.706	0.396	-0.165	0.689	-0.231	-0.178	1.000	
PG_3.20	0.677	0.355	-0.118	0.626	-0.072	-0.266	**0.978**	1.000

Table 9 shows the correlation between the variables. It indicates that the correlation between the variable is no much stronger expect PG_1.90 and PG_3.20 correlation which is 97.8%. This strong correlation indicates that there is perfect multicollinearity between these two variables. Thus to avoid perfect multicollinearity we drop one variable PG_3.20 from our sample. The perfect multicollinearity shows variable are same that is why we can check the effect of other variable by using one variable.

Table 10: Correlation Matrix for all variables.

	GINI	GDPG	BMG	GGFCE	UNEMP	INT	PG190
GINI	1.000						
GDPG	0.475	1.000					
BMG	-0.079	0.233	1.000				

GGFCE	0.290	0.200	-0.104	1.000			
UNEMP	0.023	0.060	0.285	-0.534	1.000		
INT	-0.123	0.067	-0.388	-0.045	-0.193	1.000	
PG190	0.706	0.396	-0.165	0.689	-0.231	-0.178	1.000

Table 10 shows the correlation between the variables. It indicates that the correlation between the variable is not much stronger that now there is no more issue of perfect multicollinearity.

4.3 Panel Unit Root Test

We used Im–Pesaran–Shin (IPS) test for testing the stationarity of all series. The results of Im–Pesaran–Shin given below in table 11:

Table 11: Im–Pesaran–Shin (IPS) Unit Root Test.

Variables	Statistics	P-Value	Statistics	P-Value
	Level stationary		First difference stationary	
LGINI	-1.441	0.075***	-----	-----
GDPG	-5.544	0.000*	-----	-----
BMG	-4.480	0.000*	-----	-----
GGFCE	-2.119	0.017**	-----	-----
UNEMP	-1.854	0.032**	-----	-----
RINT	-4.214	0.000*	-----	-----
PG_190	1.355	0.912	-8.059	0.000

*, ** and *** show significance levels 1%, 5% and 10% respectively.

Table 11 shows that all the variables are level stationary at different significance levels expect PG_1.90 which is first difference stationary.

4.4 Empirical Bayesian estimates

The empirical bayesian has been employed to trace the linkages between monetary variable broad money growth and real interest rate with inequality, poverty and unemployment. Some

macroeconomic control variables are also included in model to avoid biasness. At first we run country wise regression after that at second we run panel regression.

Table 12: Empirical Bayesian estimates for GINI Index Country-wise Analysis

Country	Variables	Const	GDPG	BMG	GGFCE	UNEMP	RINT	DPG_1.90
BGD	Coeff	3.741	0.001	0.000	-0.006	-0.001	0.000	-0.005
	t-value	-196.487*	1.759***	-0.691	-4.303*	-0.851	0.569	-2.112**
CHN	Coeff	3.759	0.001	0.000	-0.007	-0.001	0.001	-0.002
	t-value	195.047*	2.020**	-1.025	-4.516*	-0.623	0.912	-0.863
IDN	Coeff	3.761	0.001	0.000	-0.007	-0.002	0.001	-0.003
	t-value	194.387*	1.908***	-0.630	-4.473*	-1.027	2.003**	-1.047
IND	Coeff	3.764	0.001	0.000	-0.007	-0.002	0.001	-0.003
	t-value	195.021*	1.954***	-0.787	-4.656*	-1.059	1.987**	-1.218
LKA	Coeff	3.763	0.001	0.000	-0.006	-0.005	0.001	-0.003
	t-value	201.949*	1.864***	-0.716	-4.179*	-3.425*	1.046	-1.231
MYS	Coeff	3.797	0.001	0.000	-0.007	-0.001	0.001	-0.003
	t-value	231.639*	2.772**	-0.069	-4.857*	-0.609	2.355**	-1.230
PAK	Coeff	3.729	0.001	0.000	-0.006	-0.001	0.000	-0.002
	t-value	200.941*	2.231**	-0.808	-3.904*	-0.730	0.778	-1.032
PHL	Coeff	3.751	0.001	0.000	-0.005	-0.002	0.001	-0.003
	t-value	204.461*	1.059	-0.081	-3.710*	-1.252	1.882***	-1.334
THA	Coeff	3.797	0.001	0.000	-0.010	0.000	0.001	-0.004
	t-value	211.227*	2.398**	-1.089	-7.886*	-0.295	1.523	-1.544
VNM	Coeff	3.736	0.001	0.000	-0.006	-0.001	0.000	-0.003
	t-value	204.555*	1.795***	-0.776	-4.297*	-0.900	0.547	-1.482

*, ** and *** show significance levels 1%, 5% and 10% respectively.

Table 12 shows the results of empirical Bayesian estimates for GINI index for every country separately. The results indicates that the GDPG and GGFCE are significant in all country regressions. The GGFCE coefficients are having negative sign which shows that GGFCE negatively associated with GINI index. It implies that as general government final expenditure increases the inequality decreases. The real interest rate variables is significant in IDN, IND, MYS, and PHL series which means that the real interest rate has positive relation with inequality in these countries and it is insignificant in all other countries. It implies as interest rate increase the

inequality also increase. The BMG variable is insignificant in all regressions, it means BMG has no relation with inequality. The DPG_1.90 variable is only significant in BGD regression, it implies that as deep poverty increases the inequality also increases. The UNEMP variable is only significant in LKA regression. The intercept values in all regressions are also significant, it shows if all the independent variables are equal to zero then the mean value of dependent variable is intercept value. We can conclude from the estimated results that monetary variable is establishing relationship with inequality in few selected economies.

Table 12: Empirical Bayesian estimates for UNEMP Country-wise Analysis

Country	Variables	Const	GDPG	BMG	GGFCE	LGINI	RINT	dpg_190
BGD	Coeff	0.766	-0.010	0.008	0.013	1.274	0.001	-0.035
	t-value	0.414	-0.579	2.329**	0.373	2.839**	0.037	-1.298
CHN	Coeff	-2.049	-0.015	0.009	0.020	1.870	0.003	-0.051
	t-value	-1.201	-0.953	2.606*	0.625	4.497*	0.347	-1.962**
IDN	Coeff	4.228	-0.009	0.005	-0.009	0.966	-0.006	-0.037
	t-value	2.714**	-0.553	1.536	-0.280	2.586**	-0.606	-1.554
IND	Coeff	1.987	-0.009	0.009	0.006	0.872	0.005	-0.030
	t-value	1.172	-0.651	2.470**	0.195	2.170**	0.547	-1.145
LKA	Coeff	2.257	-0.013	0.008	0.008	1.043	-0.001	-0.035
	t-value	1.207	-0.792	2.241**	0.223	2.311**	-0.040	-1.294
MYS	Coeff	1.307	-0.017	0.007	0.049	1.231	-0.001	-0.035
	t-value	0.697	-1.053	2.160**	1.470	2.722**	-0.129	-1.297
PAK	Coeff	1.316	-0.011	0.008	-0.021	1.235	-0.001	-0.040
	t-value	0.703	-0.673	2.277**	-0.636	2.733**	-0.079	-1.494
PHL	Coeff	1.451	-0.013	0.009	-0.001	1.205	0.001	-0.035
	t-value	0.774	-0.801	2.441**	-0.017	2.665**	0.144	-1.299
THA	Coeff	1.201	-0.015	0.008	0.011	1.259	0.001	-0.033
	t-value	0.641	-0.916	2.282**	0.321	2.787**	0.132	-1.239
VNM	Coeff	0.620	-0.008	0.009	0.003	1.327	-0.002	-0.023
	t-value	0.342	-0.550	3.205*	0.115	3.013**	-0.198	-1.038

*, ** and *** show significance levels 1%, 5% and 10% respectively.

Table 13 shows the results of empirical Bayesian estimates for UNEMP for every country separately. The results indicates that the GDPG and GGFCE are insignificant in all country

regressions. It mean they have no role in the determination of UNEMP. The real interest rate variables is insignificant in all regression. The BMG variable is significant in all regressions, it means BMG has relation with inequality except IDN. The GINI variable is significant in all country regressions, and coefficients are having positive signs. It implies that as inequality increases the unemployment also increases. The DPG_1.90 variable is only significant in CHN regression, it implies that as deep poverty increases the UNEMP also increases. The intercept values in all regressions are insignificant except IDN. We can conclude from the estimated results that monetary variable is establishing relationship with inequality in few selected economies.

Table 13: Empirical Bayesian estimates for DPG_1.90 Country-wise Analysis

Country	Variables	Const	GDPG	BMG	GGFCE	LGINI	RINT	UNEMP
BGD	Coeff	1.067	-0.002	0.000	0.002	-0.143	-0.004	-0.005
	t-value	0.987	-1.306	0.668	0.338	-0.510	-2.142**	-0.954
CHN	Coeff	0.101	-0.002	0.000	0.002	0.072	-0.004	-0.005
	t-value	0.093	-1.312	0.720	0.308	0.256	-1.839***	-0.993
IDN	Coeff	0.223	-0.002	0.000	0.002	0.047	-0.004	-0.005
	t-value	0.204	-1.262	0.703	0.317	0.167	-1.919***	-0.957
IND	Coeff	0.254	-0.002	0.000	0.002	0.020	-0.004	-0.005
	t-value	0.234	-1.328	0.690	0.321	0.072	-1.973***	-0.945
LKA	Coeff	-0.054	-0.002	0.000	0.000	0.071	-0.004	-0.004
	t-value	-0.058	-1.299	0.857	0.042	0.297	-1.801***	-0.973
MYS	Coeff	-0.120	-0.002	0.000	0.004	0.086	-0.004	-0.006
	t-value	-0.133	-1.847***	0.956	0.969	0.368	-2.667**	-1.460
PAK	Coeff	0.285	-0.002	0.000	0.001	0.013	-0.004	-0.005
	t-value	0.260	-1.269	0.692	0.255	0.044	-1.910***	-0.992
PHL	Coeff	0.382	-0.002	0.000	0.001	-0.011	-0.004	-0.005
	t-value	0.351	-1.269	0.719	0.200	-0.039	-1.967**	-0.980
THA	Coeff	0.669	-0.002	0.000	0.001	-0.099	-0.004	-0.003
	t-value	0.618	-1.021	0.617	0.156	-0.355	-1.916***	-0.676
VNM	Coeff	0.309	-0.002	0.000	0.002	0.006	-0.004	-0.005
	t-value	0.282	-1.282	0.700	0.280	0.020	-1.960**	-0.951

*, ** and *** show significance levels 1%, 5% and 10% respectively.

Table 13 shows the results of empirical Bayesian estimates for DGP_1.90 for every country separately. The results indicates that the GGFCE, GINI, BMG, and UNEMP are insignificant in all country regressions. It mean they have no role in the determination of DGP_1.90. The real interest rate variable is insignificant in all regression. The sign of RINT coefficient in all regression is negative mean it is negatively associated with DGP_1.90. It implies that as RINT increases the deep poverty also increases. The GDPG variable only significant in case of MYS. The intercept values in all regressions are insignificant. We can conclude from the estimated results that monetary variable is establishing relationship with inequality in few selected economies.

Table 14: Empirical Bayesian estimates for GINI, UNEMP, and DPG_1.90 Panel Analysis

Model 1			Model 2			Model 3		
Variables	Coeff	t-value	Variables	Coeff	t-value	Variables	Coeff	t-value
Const	1.569	20.786*	Const	-9.821	-1.276	Const	14.340	3.119*
GDPG	0.011	2.014**	GDPG	0.097	0.870	GDPG	-0.126	-1.613
BMG	0.000	-0.377	BMG	0.006	2.416**	BMG	-0.009	-0.856
GGFCE	-0.042	-2.237**	GGFCE	0.593	1.600	GGFCE	0.337	1.165
UNEMP	0.007	0.916	LGINI	2.278	1.916***	LGINI	-4.325	-2.908*
RINT	-0.002	-1.243	RINT	0.002	0.073	RINT	-0.041	-2.250**
DPG_1.90	-0.023	-2.908*	DPG_1.90	-0.017	-0.089	UNEMP	-0.009	-0.089

*, ** and *** show significance levels 1%, 5% and 10% respectively.

In table 14 the first panel shows the results of empirical Bayesian estimates for GINI by using panel data. The results indicates that the GDPG, GGFCE, DPG_1.90, and RINT are significant in model 1 and all other variables are insignificant. The results are matching with our individual regression results. The intercept is also significant in model 1. In table 14 the second panel shows

the results of empirical Bayesian estimates for UNEMP by using panel data. The results indicates that the GDPG, GGFCE, DPG_1.90, and RINT are insignificant in model 2 and all other variables are significant. The BMG and LGINI variables are significant in model 2, which means they have positive association with UNEMP. The results are matching with our individual regression results. The intercept is also insignificant in model 2. In table 14 the third panel shows the results of empirical Bayesian estimates for DPG_1.90 by using panel data. The results indicates that the GDPG, GGFCE, BMG, and UNEMP are insignificant in model 3 and all other variables are significant. The RINT and LGINI variables are significant in model 3, which means they have negative association with DPG_1.90. The results are matching with our individual regression results. The intercept is also significant in model 3.

5 Conclusion

This study concluded that monetary policy is not neutral to socio economic variables inequality, poverty, and unemployment. The results illustrated that the monetary variables broad money growth and real interest rate are associated with inequality, poverty, and unemployment at some extant. Therefore care must be taken in conduct of monetary policy because we have to proceed for MDGs.

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