Journal of Environmental Science and Economics ISSN:2832-6032
https://doi.org/10.56556/jescae.v1i1.7

RESEARCH ARTICLE

Monetary Policy Performance under Control of exchange rate and consumer price index

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Received: 02 December, 2021, Accepted: 23 January, 2022, Published: 25 January, 2022

Abstract
Central Reserve announced the Monetary Policy Rate and equally interested in the output of exchange rate and price stability. Besides having a stabilizing effect on the price level and trend of exchange rate stabilized the countries outputs. This Study adopts Generalized Method of Movements (GMM) for panel data; to examine the monetary policies stability effect due to changes in Inflation, and Exchange rate. We use monthly data for seven World important countries which covering globally; United States, United Kingdom, Switzerland, Sweden, Denmark, Japan and India for the period of 1955 to 2021. We find that monetary policy control; the price level does not affect production and exchange rate. Monetary policy is the only thing that can change the trend of exchange rate and Consumer Price Index. The actual policy was fixed exchange rate, and currency devaluations like Japan were quite successful for stability. The results indicate that the central bank can stabilize much of the macroeconomic indicators and disturbances under a monetary exchange rate and consumer price index system.

Keywords: Central Bank Policy Rate; Monetary Stability; Consumer Price Index; Exchange Rate

Introduction

This journal aims to ask whether Central Bank Policy Rate is a cause of the low real interest rate on safe assets since the onset of the Covid 19 crisis. The Central Reserve usually it's a low-interest rate when it wants to stimulate the economy. But many researchers attribute the low real interest rate to fundamental factors. Such factors lead to associate with expected lower economic growth in future. Actual rates where common causes future growth is the expectation of being low. Caused by Fed policy was the low-interest rate in the United States and worldwide. This article exploits the research area of Central Bank Policy Rate Regimes to shed light on the most critical issue. From 1965 to 2021, the central Reserve operation Central Bank Policy Rate in a variety associated with four different Central Bank Policy Rate Regimes. These different Central Bank Policy Rate Regimes display further Inflation, interest rates, and Gross domestic product outcomes. (Bindseil 2016) and (Potter 2017). This research paper has used the difference in the results to understand better how Central Bank Policy Rate affects those outcomes. Central Bank Policy Rate appears to affect the long-term real interest rate and gross domestic product during periods of Central Bank Policy Rate in Fed holds short-term high-interest rates abnormally or abnormally low. This research article exploits the idea of Central Bank Policy Rate Regimes to explain whether Central Bank Policy Rate exact-rated the real interest rate the low on safe assets; the low consumption level during the period of the range the Fed's interest rate target set at 0 to 0.25 per cent. Observers have demanded the factors. The evidence describes suggestions that policymakers should consider. Low actual interest rates were the leading cause of fed. The idea of the Central Bank Policy Rate regime was central stand rd. The maximum standard contains the gold standard and early economies since 1880 and 1940; modified the Central standard with Bretton woods and dollar-gold arrangement. Bretton woods agreement failed and replaced the paper standard was in the early 1990s. This study examines the central bank's policies that countries follow and adapt to control paper money stand rd. There were two essential indicators for the economy; GDP and Inflation (Taylor 1993).

A Review of Previous Empirical Work

Different Central Bank Policy Rate Regimes lead to different equilibrium levels of real interest rates and GDP. Money assumed the Basic theories of classical dichotomy. Real factors determine real variables. Nominal variables determined by Central fiscal Policy. Even Keynesian models with sticky prices assume and

the real effects were short-li Ed. For Central Bank Policy Rate to have persistent effects, consider extreme policies, or extend models to include more realistic features. Well studied example of extreme Central Bank Policy Rate is Inflation very high Inflation that causes firms to daily change prices and has little currency held by consumers. It reduces real interest rates and economic activity because the inflation Inter-fare with the price mechanism and equilibrium adjustments, efficiency in Market base economies. High Inflation was in the 1970s with extremely high central funds rates. The extreme policy led to high nominal and real interest rates. But policy continued because the high-volatile interest rates were disruptive to the economy. Gavin et al. (2015) applied a non-linear solution to a standard New Keynesian model to show a persistently low-interest rate can lead to output and persistently below the Model's been equilibrium steady. The equilibrium real interest rate was equal growth rare and the rate of time preference/equal; people were indifferent among current and future consumption. Factor keeps the interest rate low as the equilibrium level, then the amount the people want to borrow money will exceed the amount and people want to save. The interest rate cannot adjust, then income will fall until the number of people who wants to borrow equals the number of people who want to save (Gavin and Kydland 19 9). Central Bank Policy Rate can affect the real savings return; the low-interest-rate policy will persistently increase economic activity. Can be achieved economic activity optimal level, when the real interest rate returned to a normal level the association with the consumption growth rate plus preference the time rate. (Gavin, Keen et al. 2015) was never explicitly policy as the cause of low-interest rates. To model policy was a zero-interest rate environment, Central Bank Policy Rate models the price level is determined by central. The assumed financial policy was always to accommodate Central fiscal Policy. Assumption leads to examining interest rates wrong when they are stuck at zero and lower bonds. The central bank Policy rate was fixed and defaulted in financial policy. Models building central and financial policy of price level of theory were common (Sargent and Wallace 1981); (Nelson and Plosser 1982)' (Sims 1994); (Woodford 19 5). A recent paper developed this theory (Gavin 20 8). Research studies attempt to define why the extreme financial crisis followed interest rate zero policy. Rate preference of time was invariant over time and exogenous with Central fiscal Policy. (Bullard 2017) labor productivity growth rate was exogenous with Central bank fiscal policies. The rate preference of time was not observable; the rate preference of time rapidly fell with the financial crisis. While the labor productivity growth rates were independent of the Central bank policy rate, set of zero interest rate policy showed evidence of the high returns associated with high growth productively. Significance of irregularity after crisis period, low-interest-rate policy leads to low turnover and associate level of recession with low productivity growth (Caballero and Hammour 19 1). Real Economic activity relates to real interest rate theory influencing the consumption and saving decisions. High-interest rates produce high returns on investments and high returns on working. Opportunity building cost low capital expectations for future low-interest rates period (Williams 2017, Gavin 2018) The weight policymakers and price stability and the day-to-day implement policy since the mid-19 0s. The four important faces of Inflation and central bank policies: Great Inflation: January 1965 to October 1979, Volcker Reform: October 1979 to October 1982, Great Moderation: October 1982 to December 2008 and interest rate zero policy from December 2008 to December 2015 and central bank fund rates pegged as 0 to 0.25 per cent. After the Bretton Woods agreement, the great Inflation fails to establish the dollar to the gold standard. (Nelson 2005) was critics the people who policy making not understand the role of money, which leads to Inflation. (Gavin 2018) explain the framework of the Phillips curve was an unable and error-ridden measure of possible out. (Sargent 2002) describe the modern theory of advanced macroeconomics as ignored by the policymaker when the implemented Philips curve framework was, moderation theory reduces the inflation instability, and output fell 0.70 per cent and 0.89 per cent down during great inflation time per od. The Volcker period is 0.84 per cent, and Inflation does not go up with a low-interest rate in two time periods session. 1992 to 1994 and other was 2002 to 2 04. Fed was rapid economic growth since the 1990s, and high per capita consumption growth as Inflation is high as moderation regimes. FOMC used a risk management approach in the central bank's policy rate (Greenspan 20 4). The previous study indicates that under an exchange rate, the central banks can maintain the macro-economic situations during exchange rate no information lags and output stability. To say, under exchange rate simulate high-cost pay by the central banks in terms of instability of exchange rate and prices. Fixed exchange is the real policy, and devaluations were a proper tool from output stabilities (Edin and Vredin 1993).

Model and Data

The main objective of this study is to examine the impact of exchange rate and inflation on monetary policies. We use secondary research and data collect by World Bank, IMF and Central banks websites in term of month base. We adopt Generalized Method of Movements GMM) to examine the global impact of Monetary policies stability due to changes in Inflation, Exchange rate; panel data and endogeneity. We were able to use Central bank Policy rate, Inflation as CPI and Exchange rates of monthly base data for 7 World important countries which covering Globally; United States, United Kingdom, Switzerland, Sweden, Denmark, Japan and India for the period of 1955 to 2021. The initial

econometric models we used in our research regression are as follow:

$$M_t = \beta q_{t-s} + \tau y_{t|t-s} - \gamma \sum_{\tau=0}^{\infty} (r_{t+\tau-s|t-s} - \bar{r}) + \eta_t \quad (1)$$

Here above equation, for any variable$\varkappa$, $\varkappa$t /t -s denote the standard expectation of the $\varkappa$t provision on complete information at times. Define rt is the short and as well as the long-run mean of interest rate. While the order of aggregate depends on the current sum and estimate future deviation of real interest rate, and it's means. There is a choice and planning chances of s period, exchange rate and Inflation affect the monetary policies with s lags period.

The qt variables of real exchange rate such as defined

$$q_t = e_t + p_t^* - p_t \ , \quad (2)$$

Here, the exchange rate denoted e_t as price level P*t and domestic price level of CPI is indicate t. Monetary policy affecting the real exchange rate with an S period leg, market shares gradually adjusted relative change prices.

$$r_t - r_t^* = q_{t+1|t} - q_t \ , \quad (3)$$

Where $r* t$ for short real interest rate and qt+1/t – q t is used to estimate relative changes in the real exchange rate. Qt the sum of current and future estimate deviate of real interest rate which is directly related.

$$\sum_{\tau=0}^{\infty} (r_{t+\tau|t} - \bar{r}) = \left(\sum_{\tau=0}^{\infty} (r_{t+\tau|t}^* + q_{t+\tau+1|t} - q_{t+\tau|t} - \bar{r}) \right)$$

$$= \sum_{\tau=0}^{\infty} (r_{t+\tau|t}^* - \bar{r}) - q_t \ . \quad (4)$$

While the only cause for the total current domestic and future estimate of actual interest rates to deviate from the current total and future estimate of real interest rates are accurate exchange rates, equilibriums levels vary. We get as:

$$M_t = \beta (e_{t-s} + p_{t-s}^* - p_{t-s}) + \tau y_{t|t-s} + \eta_t \quad (5)$$

Here, q for the real exchange rate, government fiscal policy exogenous denoted variable ηt which assumed independent monetary policy. ηt is for autoregressive process

$$\eta_t = \rho_1 \eta_{t-1} + \rho_2 \eta_{t-2} + \vartheta_t \quad (6)$$

Here υt. is for exogenous specifications; its same results produced when different variable exogenous openly introduced; ηt derived.

$$p_t = a_t + (1-a)(p_t^* + \varepsilon_t) \ , \quad (7)$$

Here *a denoted* the CPI price level elasticity. Suppose, no lag in pass through imports cost to the domestic price level of goods imports. At the same time, there is the possibility to define the aggregate of supply equation as CPI of Inflation.

$$\pi_t = \pi_{t|t-k} + by_{t+z|t-k} + \left(\frac{1-a}{a} \right) q_t + \varepsilon_t \ . \quad (8)$$

Here inflation CPI describes as $\pi t = pt - p$ 1. CPI estimates Inflation future gap output as real exchange rate (t). According to equation (8), high Inflation raises the aggregate demands as high Inflation is produced when the real interest rate declines.

$$\sum_{t=0}^{\infty} \delta^t E_{t-m} \left(\frac{1}{2} (M_t)^2 + \frac{\lambda}{2} (p_t - p_t^n)^2 \right) \quad (9)$$

Here δ is denoted as a discount factor, and CPI price level determines Pn. Central banks minimize the loss function and period gave information as t-m, size of central banks indicated m information, e.g. CPI price level and financial position; we use following terms as estimation of inflation price level; nominal exchange rate and gap productivity.

$$p_t = p_t^n + (1-a)(p_t^* - p_{t|t-m}^*)$$

$$+(\eta_{t+1|t-k} - \eta_{t+1|t-m})\left(\frac{\delta a\beta(1-a)}{\delta(a\beta)^2 + \lambda(1-a)^2}\right) + (\eta_{t+s|t-k} - \eta_{t+s|t-s})\left(\frac{\delta a\beta\tau(1-a)}{(1-\tau)(\lambda(1-a)^2 + (a\beta)^2)}\right)$$

$$-\eta_{t+s|t-k}\left(\frac{\delta a\beta(\tau b + (1-\tau)(1-a))}{\lambda(1-\tau)(1-a)((1-\tau)(1-a) + ab\beta)}\right) \quad (10)$$

$$+\varepsilon_t\left(\frac{\delta(a\beta)^2(1-\tau)}{\lambda((1-a)(1-\tau) + ab\beta)(1-a)^2}\right)$$

$$e_t = p_t^n - p^*_{t|t-m} - E_{t-k}(\eta_{t+1})\left(\frac{\delta(a\beta)^2 b\tau + ab(1-a)(1-\tau)(\delta\beta + \lambda b)}{\lambda(1-a)(1-\tau)((1-a)(1-\tau) + ab\beta)}\right)$$

$$+(\eta_{t+1|t-k} - \eta_{t+1|t-s})\left(\frac{\delta a\beta}{(1-\tau)(\delta(a\beta)^2 + \lambda(1-a)^2)}\right)$$

$$+(\eta_{t+1|t-k} - \eta_{t+1|t-m})\left(\frac{\delta a\beta}{(\delta(a\beta)^2 + \lambda(1-a)^2)}\right) \quad (11)$$

$$+\varepsilon_t\left(\frac{\delta(a\beta)^2 - \lambda(1-a)a(1-\tau)}{\lambda(1-a)((1-a)(1-\tau) + ab\beta)}\right)$$

$$M_t = \frac{a\beta(p_{t-s}^* - p_{t-s|t-m-s}^*)}{(1-\tau)} + (\eta_t - \eta_{t|t-m-s})$$

$$+(\eta_{t|t-m-s} - \eta_{t|t-k-s})\left(\frac{\lambda(1-a)^2}{(\delta(a\beta)^2 + \lambda(1-a)^2)(1-\tau)}\right)$$

$$+(\eta_{t|t-s-s} - \eta_{t|t-k-s})\left(\frac{\lambda(1-a)^2\tau}{(\delta(a\beta)^2 + \lambda(1-a)^2)(1-\tau)^2}\right)$$

$$+\eta_{t|t-k-s}\left(\frac{(1-\tau)(1-a) + ab\beta\tau}{(1-\tau)((1-\tau)(1-a) + ab\beta}\right) \quad (12)$$

$$-\varepsilon_{t-s}\left(\frac{a\beta(1-\tau)}{((1-a)(1-\tau) + ab\beta)(1-\tau)}\right).$$

The stability of the monitory policy depends on the central bank's capacity. Central banks get the monetary action on the exchange rate to stabilize the price level; it depends on the value ofλ.

$$\eta_t = \mu_t - \beta(e_{t-s} + p^*_{t-s} - p_{t-s}) - \bar{\gamma} y_{t-s}. \quad (13)$$

Thus, η is determined the productivity gap, the effect on fiscal policy stabilization, and the natural exchange rate variation. η Is *to* examine everything affecting the productivity gap, systematic fiscal policy and influences from monetary policy. I studied economic indicators over the period 1955–2021. They include the effective, Inflation, the consumer price index (*CPI*) and exchange rate. The policy goals more focus on inflation activities, therefore the addition of *CPI*. Policy tools as *C.F*. *C.F*. once hit the zero lower bounds and FOMC mentioned as policies at a balance sheet which a low rate on long term assists.

Results and Discussion

Table 1. Descriptive Statistic

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
DENMARK CBPR	5.29	5.50	15.00	-0.75	3.44
INDIA CBPR	7.47	7.50	12.00	3.50	2.46
JAPAN CBPR	3.40	3.50	9.00	-0.10	3.01
SWEDEN_CBPR	5.19	5.00	40.00	-0.50	3.70
SWITZERLAND CBPR	2.29	2.00	7.00	-0.75	1.91
UK CBPR	6.33	5.91	17.00	0.10	4.14
US CBPR	4.69	4.25	22.00	0.13	3.71
DENMARK_CPI	56.53	61.33	113.35	6.99	36.79
INDIA CPI	47.62	23.95	185.43	2.31	50.83
JAPAN CPI	73.99	89.59	105.99	17.04	33.21
SWEDENCPI	57.24	58.20	114.54	7.47	37.93
SWITZERLAND CPI	66.90	69.56	101.05	22.50	28.70
UK CPI	56.07	55.46	127.02	6.29	39.11
US CPI	57.09	54.00	126.84	12.24	36.04
DENMARK DKK	6.70	6.75	11.94	4.72	1.08
INDIA INR	26.80	13.77	75.66	4.75	22.26
JAPAN JPY	206.04	143.70	362.62	76.37	107.09
SWDN SEK	6.50	6.38	10.86	3.90	1.62
SWITZERLAND CHF	2.27	1.64	4.35	0.80	1.31
UK GBP	0.55	0.57	0.92	0.36	0.14
US USD	1.00	1.00	1.00	1.00	0.00

The table above shows the descriptive statistic results of 7 world countries with the comparison of central bank policy rate; Central bank Policy Indian CBPR 7.47 on top as compared to others countries, as Japan CPI and JPY leading according to descriptive results 73.99 and 206.04 mean, which shows the effectiveness of Central bank Policy rate, Inflation and exchange.

Figure 1. Central Banks Policy Rate

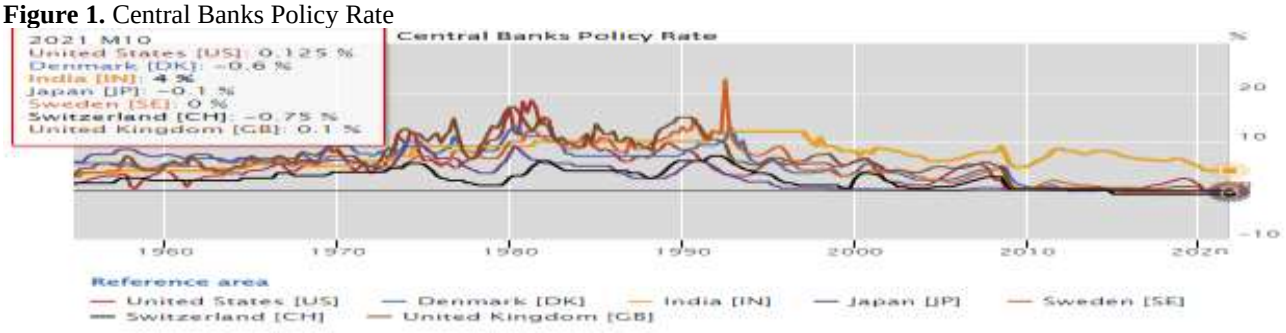

Figure 2. Inflation

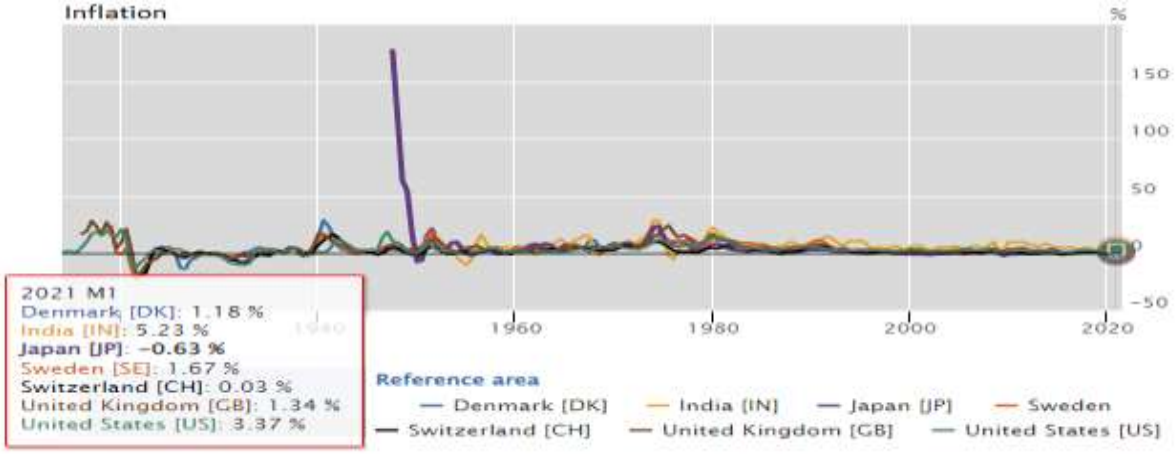

Table 2. Central bank Policy Rate and Regression

Variables	D.MARK CBPR	INDIA CBPR	JAPAN CBPR	SWEDEN CBPR	SWITZ. CBPR	U.K CBPR	U.S CBPR
INFLATION	-0.05*** -9.47	-0.21*** -9.49	-0.01*** -6.95	1.37*** 18.26	0.64*** 11.99	-0.12*** -13.91	-0.04*** -6.16
EXCHANGE RATE	1.15*** 22.31	0.58*** 11.51	0.02*** 33.74	-0.07*** -8.73	0.01** 2.26	23.18*** 22.39	7.18*** 11.57
R-squared	0.37	-2.13	0.75	-0.09	0.02	0.36	0.18
Adjusted squared	0.37	-2.14	0.75	-0.10	0.02	0.36	0.18
Sum squared re	5960.35	15233.24	1802.12	12028.86	2885.80	8771.22	3.71
J-statistic	15.96***	62.76***	12.95***	21.75***	22.63***	2.53	9056.47***
Observations	802	802	802	802	802	802	802

The table above shows the Inflation and exchange rate how can effective the Central bank policy rate and monetary stabilities of 7 regional world countries date sample period of 1955 to 2 21. The above table shows the result of all seven regional world countries. The Inflation and exchange rate are highly significant and most effective for central bank policymaking and monetary stability. Compared with other countries, Japan Central bank policy is on top, most effective and highly significant for Inflation and exchange rate -0.01*** and 0.02*** respectively. This is leading the country monetary Policy stability, Inflation and exchange rate.

Table 3. Inflation and Regression

Variables	DEMARK CPI	INDIAN C	JAPAN CP	SWEDEN CP	SW T.Z. CPI	U.K. CPI	U.S. CPI
C. Bank Pol Rate	-7.71*** -9.29	-1.47*** -11.31	-30.71*** -9.43	-3.87*** -6.60	15.25*** 10.61	-4.42*** -11.39	-4.11*** -5.69
Exchange Rat	13.96*** 19.99	2.19*** 38.81	0.76*** 12.44	12.40*** 35.13	-0.41 -0.21	159.12*** 46.32	76.38*** 14.22
R-squared	0.23	0.94	-2.43	0.56	-3.08	0.74	0.18
Adjusted squared	0.23	0.94	-2.43	0.55	-3.09	0.74	0.18
Sum squa resid	836989.1(	123143.90	3027034.00	512666.40	2692153.00	317400.10	853496.00
J-statistic	32.24***	1.77	66.79***	14.43***	56.88***	14.94***	2.10
Observations	802	802	802	802	802	802	802

The table above shows the Central bank Policy and exchange rate how can effective the Inflation of seven regional countries of world date sample period of 1955 to 2 21. The central bank policy rate has a highly significant negative impact on Inflation in 6 countries other than Swaziland's high

positively significant effect on the P.I. The exchange rate shows the only more minor impact on Switzerland inflation but negative, other countries high impact positive effective showing exchange rate to Inflation.

Table 4. Exchange Rate and Regression

Variables	DENMARK DKK	INDIAN II	JAPAN J	SWEDEN SEK	SW T.Z. CHF	U.K. GBP	U.S. US
Central Bank Pol	0.65***	0.88***	44.38***	0.44***	0.47***	0.03***	0.08***
Rate	17.09	14.19	25.57	10.58	7.26	16.66	11.23
CPI(Inflation)	0.06***	0.42***	0.87***	0.07***	0.01***	0.01***	0.01***
	28.77	59.56	16.96	31.78	10.62	45.61	33.37
R-squared	-2.49	0.94	0.58	-0.59	-0.58	0.19	0.00
Adjusted R-square	-2.49	0.94	0.58	-0.60	-0.58	0.19	0.00
Sum squared resid	3248.979	23514.83	3891684.00	3346.55	2181.57	11.81	99.50
J-statistic	38.17***	0.22	39.61***	31.64***	42.73***	41.28***	39.48***
Observations	802	802	802	802	802	802	802

The table above shows the Central bank Policy and inflation impact on the exchange rate of 7 regional world countries from 1955 to 2 21. Central bank policy rate and Inflation (CPI) show a highly significant positive effect on exchange rates of above all seven countries for 1955 to 2021. This shows the importance of variables for exchange rates.

Conclusion

This study examines the potential of the central bank's monetary policies to stabilize the output. If we optimistically observe how monetary policy can conduct, policymakers want to find which fit Model for data placement. Econometric methods extract information's as a data structure (Gavin and Kydland 19 9). This research article has described the theory, analysis results, and empirical implications of alternative Central Bank Policy. On the other way, Central Bank Policy Rate is measured with the exchange rate and Inflation. Extreme policy settings and the effect of the Inflation and exchange rate results may affect production and growth countries. During the seven years, 2007-08 financial and two years Covid 19 crisis, Result showing a low real interest rate effect on growth business trend.

I argue the possible effect of low-interest rates on real consumption and safe assets. The new policy regime and perhaps a return to the old one raises the central fund's rate target below normal to one and are closer to normal. The Real economy did not damage during slightly complex monetary policy control, higher interest rates and exchange rate devaluation the trend summers (Gavin 20 8). Using a floor system for central funds rate control by large balance sheets may raise interest rates. Monetary control is low-level safe assets consistent with growth normal consumption. I expected the primary bank policy rate affecting the Inflation and deciding how to make a new policy regime during forecasts and planning future work important safe assume long-run central objective during the extreme policy positions. The past studied evidence survey by (Williams 2014) suggested that the Central bank exchange rate policy can influence long-term real interest rates on safe assets. Sign of effect of low-interest policy rate on real economic activities. The real exchange rate had a long-lasting impact on output during the period, which shows the real policies were fixed exchange rates and currencies devaluations like Japan was quite successful for stability. Japan Monetary Policy is efficient and valuable in Inflation and exchange rate. The results indicate that the central bank can stabilize much of the macroeconomic indicators and disturbances under a monetary exchange rate or interest rate. Japan follows these terms and more effective control as compared to others.

Funding: No funding was received for conducting this study (Self-finance).

Data availability: The data sets generated and analyzed during the current study are available from the corresponding authors on reasonable request.

Declarations of Conflict of interest: All authors declare no conflict of interest.

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