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Behaviour, Expectation and Monetary Policy: A Comparative Analysis to Study Economic Inequality

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It is observed that the central banks are increasingly failing to deliver the desired outcomes in inflation as well as output management. One of the major reasons behind this failure is the acceptance of unique representative estimated as well as expected inflation rates to formulate necessary policies. It is not only a failure in streamlining the monetary scenario but also a major failure to control the growing inequalities within the economy. Thus, this study wants to know the impact of monetary policy on different income groups of society with the help of behavioural economics. Here it is assumed that the individuals explain their choices with the help of socio-economic surroundings and past performance based mental schemas. More specifically, this paper wants to deduce the impact of monetary policy on different income groups of enculturated agents having asymmetric access to the formal credit market. Developing a policy to accommodate different choice-based expected inflations of the said income groups within the ambit of monetary targeting is also within the purview of this study.

The model developed within the current study assumes two groups of individuals with different productivities and corresponding different income levels. Irrespective of productivities all households intend to maximise their lifetime utility which is an increasing function of both income and consumption. However, the higher income group has easy access to the formal credit market and the lower income group is assumed to have no access to the said market. Naturally, the current concept is based upon Heterogeneous Agent New Keynesian (HANK) traditions. As the higher income group has access to the credit market consumption smoothing is easier for them as compared to the other. So, the higher actual inflation affects the richer less as compared to the poorer. As expected, inflation is based upon actual inflation, the rate of expected inflation is higher for the poorer. Also, expected inflation is more salient for the lower productivity group. Therefore, the representative realised inflation, as developed by the central bank, is less effective in implementing the monetary targets.

Let us assume that time is discrete and the individual lives for two periods, period t and period t+1. Individuals discount the future at $\beta \epsilon (0,1)$. All agents consume perfectly divisible goods. Households possess a separable utility function, which is a positive function of consumption, C_t, and a negative function of labour supply, η_t, total labour hour. Now, $T= \eta+l$, where, T represents total available time and l denotes leisure.

If household n consumes $C_t > 0$ goods and supplies $\eta_t > 0$ labour on t, then the household's utility is $[u(C_t) — g(\eta_t)]$, where the function u is twice continuously differentiable, strictly increasing, and concave, and g is convex with g(0). Households' objective is to maximise lifetime utility: $V= U_t + \beta U_{t+1}$

Where, $U_t = [u(C_t) — g(\eta_t)]$ and $U_{t+1} = [u(C_{t+1}) — g(\eta_{t+1})]$

Suppose there are two types of households, high-skilled and low-skilled. For the first type of household, $\eta_t = \eta_{ht}$, and for the low-skilled household, $\eta_t = \eta_{ut}$. The wage rate is a function of, η_t:$W_{ht} = W(\eta_{ht})$ and $W_{ut} = W(\eta_{ut})$, where $W_{ht} > W_{ut}$..

Let us assume that individual behaviour in confronting a particular choice set are endogenous and influenced by the social context, including the actions and beliefs of those around the person and culture. Here the study aims to present a theory of context-dependent choice in which a consumer's attention is drawn to salient attributes of goods. It is established that consumers attach disproportionately high weight to salient attributes and their choices are tilted toward goods with higher quality/price ratios.

The current study assumes that the consumer's choice is shaped by the most salient aspects in the choice context he faces. Here the 'rate of expected inflation' is considered as the salient feature, which plays a crucial role in the individual decision-making process. Individuals give more emphasis on the state of expected inflation while choosing their optimum consumption bundle. Let us consider two states, which can be termed as mental models: a state of high expected inflation -State A and a state of low expected inflation -State B. Individual utility depends on the salience of each of the two mental models. Let U_t be a weighted sum, $U_t = \omega(\theta)\boldsymbol{V_t^A} + [1-\omega(\theta)]\boldsymbol{V_t^B}$ Similarly, $U_{t+1} = \omega(\theta)\boldsymbol{V_{t+1}^A} + [1-\omega(\theta)]\boldsymbol{V_{t+1}^B}\theta$ is the salience of the mental model, in this case, the state of expected inflation.

V^A is the value function of the individual in state A.
V^B is the value function of the individual in state B.

The weight ω is a decreasing function of θ and takes values 0 to 1, ω ϵ (0,1). A high rate of expected inflation decreases consumers' utility.

We are also assuming that ω(θ) is different for different individuals. For high-skilled individuals, consumption smoothing is easy due to their accumulated savings, current income level and easy access to the formal credit market. Hence expected inflation is less salient for them compared to the low-skilled individuals. Then

$$\boldsymbol{\omega^h}(\theta) < \boldsymbol{\omega^u}(\theta)$$

Now,

$$V = U_t + \beta U_{t+1}$$

$V^h = U_t + \beta U_{t+1}$, value function for high-skilled labour force and $V^u = U_t + \beta U_{t+1}$, value function for low-skilled labour force. And, $\frac{\boldsymbol{dV^u}}{\boldsymbol{d\theta_t}} < \frac{\boldsymbol{dV^h}}{\boldsymbol{d\theta_t}}$, where $\frac{\boldsymbol{dV^i}}{\boldsymbol{d\theta_t}} < 0$ and i = u, h ; $\left|\frac{\boldsymbol{dV^u}}{\boldsymbol{d\theta_t}}\right| > \left|\frac{\boldsymbol{dV^h}}{\boldsymbol{d\theta_t}}\right|$.

Now, let, consumption, C_t is a function of prices of commodities (p_t), income ($W_t\eta_t$) and past savings (S_{t-1}).

Savings include certain income from the bank [$S_{0,t-1}(r)$] plus income from the bond market [$S_{b,t-1}(r)$].

Further, low-skilled households are not allowed to formal credit they do not invest in bond market as well. B_t is the amount of credit available to the high-skilled household.

For high-skilled households, budget constraints is:
$W(\eta_{ht})\eta_{ht} + S_{t-1} + B_t = P_tC_t + (1+r)B_{t-1} + S_t$

And for the low-skilled household the budget constraint is:

$W(\eta_{ut})\eta_{ut} + S_{0,t-1} = P_tC_t + S_{0,t.}$

Thus, for high-skilled households

Max $V^h = U_t + \beta U_{t+1}$

Subject to, $W(\eta_{ht})\eta_{ht} + S_{t-1} + B_t = P_tC_t + (1+r)B_{t-1} + S_t$

Where, $U_t = \boldsymbol{\omega^h}(\theta)\boldsymbol{V_t^A} + [1-\boldsymbol{\omega^h}(\theta)]\boldsymbol{V_t^B}$

$U_{t+1} = \boldsymbol{\omega^h}(\theta)\boldsymbol{V_{t+1}^A} + [1-\boldsymbol{\omega^h}(\theta)]\boldsymbol{V_{t+1}^B}$

$\boldsymbol{V_t^A} = [u(\boldsymbol{C_t^A}) — g(\eta_{ht})]$ and $\boldsymbol{V_t^B} = [\mathbf{u}(\boldsymbol{C_t^B}) — \mathbf{g}(\boldsymbol{\eta_{ht}})]$

$\boldsymbol{V_{t+1}^A} = [u(\boldsymbol{C_{t+1}^A}) — g(\eta_{ht+1})]$ and $\boldsymbol{V_{t+1}^B} = [\mathbf{u}(\boldsymbol{C_{t+1}^B}) — \mathbf{g}(\boldsymbol{\eta_{h,t+1}})]$

$\beta \epsilon (0,1)$

$\omega\epsilon (0,1)$ and $\frac{\boldsymbol{d\omega}}{\boldsymbol{d\theta}}<0$

$C_t = Ct(P_t, \theta_t, W_t.\boldsymbol{\eta_{ht}}, S_{t-1})$

$S_{t-1} = S_{0,t-1}(r) + S_{b,t-1}(r).$

For low-skilled households

Max $V^u = U_t + \beta U_{t+1}$

Subject to, $W(\eta_{ut})\eta_{ut} + S_{0,t-1}(r) = P_tC_t + S_{0,t}(r)$

Where, $U_t = \boldsymbol{\omega^u}(\theta)\boldsymbol{V_t^A} + [1-\boldsymbol{\omega^u}(\theta)]\boldsymbol{V_t^B}$

$U_{t+1} = \boldsymbol{\omega^u}(\theta)\boldsymbol{V_{t+1}^A} + [1-\boldsymbol{\omega^u}(\theta)]\boldsymbol{V_{t+1}^B}$

$\boldsymbol{V_t^A} = [u(\boldsymbol{C_t^A}) — g(\eta_{ut})]$ and $\boldsymbol{V_t^B} = [\mathbf{u}(\boldsymbol{C_t^B}) — \mathbf{g}(\boldsymbol{\eta_{ut}})]$

$\boldsymbol{V_{t+1}^A} = [u(\boldsymbol{C_{t+1}^A}) — g(\eta_{U,t+1})]$ and $\boldsymbol{V_{t+1}^B} = [\mathbf{u}(\boldsymbol{C_{t+1}^B}) — \mathbf{g}(\boldsymbol{\eta_{U,t+1}})]$

$\beta \epsilon (0,1)$

$\omega\epsilon (0,1)$ and $\frac{\boldsymbol{d\omega}}{\boldsymbol{d\theta}}<0$

$C_t = Ct(P_t, \theta_t, W_t.\boldsymbol{\eta_{ht}}, S_{t-1})$

$S_{t-1} = S_{0,t-1}(r)$

And, $\frac{dV^{u}}{d\theta_t} < \frac{dV^{h}}{d\theta_t}$

The current hypothesis and the theoretical modelling are tested over a sample of 300 households. The sample is drawn through multistage stratified random sampling without replacement for the pre and post Covid periods over the same respondents using the same questionnaire in panel form. Using econometric methods like the difference in difference estimation the present paper intends to identify the reasons for the asymmetric impact of monetary policy on different income groups. The findings validate the robustness of the current model. Finally, we observe the vital importance of including the poorer section in the formal credit market through appropriate policy measures and also the relevance of accommodating fiscal policy like income transfer in favour of the poorer for increasing the effectiveness of the monetary policy in minimising economic inequality.