Ecowrap

PM JAN BHAGIDARI AND JAN CHETNA & EVEN INTEREST RATE SIGNALLING ARE PUBLIC GOODS: BEST WORKS WITH INCENTIVISATION OR DETERRENT

There is a direct linkage between the Jan Bhagidari and Jan Chetna movement by Honourable PM and even for that matter interest rate signaling through yield curve by RBI. All are public goods in economic parlance and need incentivisation and/or deterrent to work best for the welfare of all individuals. In economic parlance, public goods are defined as non-excludable and non-rival in nature, as like law enforcement. There is plenty of literature on the use of public goods through the use of game theory supporting the contention that if agents cooperate well, all players will have the opportunity to benefit; but if they work in isolation, all are likely to suffer. Hence, all should have a common interest in any reforms that improve the system for public benefit.

Garrett Hardin's famous essay "The Tragedy of the Commons," published in Science magazine in 1968 was the earliest example of the use of public goods. The farmer who added an extra cow gained an advantage over other farmers in his village over the pasture, but it also led to an overgrazed one. **Recently, RBI Governor communicated in the policy that market players should always be competitive and not combative so as to get the best results. In the Indian markets, it is common to find debt market players behaving differently. For example, if one set of players acts pro-cyclically with the RBI monetary policy stance, the other set of players acts counter cyclically and sometimes both the players act combatively**. **This often makes it difficult for the RBI to allow the pass-through of signaling mechanism.**

In policy making by the Government there are also numerous examples of similar dilemma occurring, for examples the Government had announced that well off people could subsidy on cylinders so that the Government could save on gas subsidy bill. Even after the intense campaigning there has been less than 10% people who have voluntarily surrendered (out of almost 30 crore consumers) indicating that it is only incentivisation and deterrent that will result in agents giving up subsidy. Ideally, the agents will always have an incentive to defect under this scheme as they can get away by enjoying the benefits of subsidy.

Can we avoid such problem of defection in public goods and ensure cooperation to get the desired results? Yes it could be done either through a carefully planned system of incentvisation or a deterrent. Echoing the concept of Jan Bhagidari to public goods, we thus propose a scheme called "ADOPT-A-FAMILY". Under this scheme, which is purely voluntary, a taxpayer (probably annual income of Rs 10 lakh or more) may be incentivized to adopts a BPL family for a year with a specified amount (say Rs 5,000 per month). In this way a BPL family which is badly hit due to Covid-19 will get support of Rs 60,000 without any fiscal burden on Government. In India, there are around 70 lakh tax-payers whose gross annual income is more than Rs 10 lakh. Even if 10% enroll under this scheme, it will benefit around 7 lakh families (or 28 lakh family members). To boost the scheme, Government can ideally incentivise say Rs 50,000 tax deduction over and above 80C limits to the taxpayer and nudge agents to adopt a poor family. **Agents without an incentivisation will always have an incentive to defect and not adopt a family as they can get away without the proposed fiscal burden and hence incentivisation in use of public goods has to be a must.** The cost to Government will only be the income tax foregone of Rs 1050 crore (Rs 50,000*30% =Rs 15,000*7 lakh) but that could result in a consumption boom of Rs, 11,666 crores.

Mask wearing is a again a perfect example of a public good, as there is always a proviso that the person not wearing masks could benefit and hence both not wearing masks could be an eventuality! In this case however we need a harsh punishment and not an incentvisation for not wearing masks. **This is exactly line with the PM's vision of 'Jan Chetna'.** Clearly, adhering to Jan Bhagidhari and Jan Chetna as PM has been espousing requires an intelligent application of game theory in policy making!

APPLICATION OF GAME THEORY IN INDIAN CONTEXT

♦ RBI Governor in the recent monetary policy announcement said that, "*Financial market stability and the **orderly evolution of the yield curve are public goods** and both market participants and the RBI have a shared responsibility in this regard….Market participants, on their part, need to take a broader time perspective and display bidding behaviour that reflects a sensitivity to the signals from the RBI in the conduct of monetary policy and debt management….It is said that it takes at least two views to make a market, **but these views can be competitive without being combative**".

♦ Interestingly, there is a direct linkage between the RBI Governor's statement and the Nobel Prize in economics that was awarded to Robert Wilson and Paul Milgrom (proponents of game theory). The statement by RBI Governor that yield curve control and financial market stability are public goods is a stark reminder of the treatment of the same in game theory where defection among individuals / market players is random, often resulting in least payoffs. It is an irony that application of game theory in macroeconomics in India is minimal and thus it is always a matter of great elation whenever we can find a link!

Goods: A Taxonomy		
	Rival One person's consumptions leaves less for the others	Non-rival
Excludable No pay → no good	Private goods	Club goods
Non excludable	Common pool resources	Public goods
Source: Lectures by Sudipta Sarangi in the online course on Game theory recently organized by Ashoka University		

- In economic parlance, public goods are defined as non-excludable and non-rival in nature, as like law enforcement. There is plenty of literature on the use of public goods supporting that if agents cooperate well, all players will have the opportunity to benefit; but if they work in isolation, all are likely to suffer. Hence, all should have a common interest in reforms that will improve the system for public benefit.

- Garrett Hardin's famous essay "The Tragedy of the Commons," published in Science magazine in 1968 was the earliest example of the use of public goods. The farmer who added an extra cow gained an advantage over other farmers in his village over the pasture, but it also led to an overgrazed one.

- Against this background, it is important to understand how the breakdown of trust across agents in the use of public goods often results in minimal payoffs. Both the agents have two options between them — either cooperation or defection. Thus, we effectively have four policy options, and each of the options will have a particular benefit/payoff. Our endeavour is to find out which policy option can result in a Nash Equilibrium. A Nash equilibrium occurs when neither of the agents can increase its payoff by unilaterally changing its action. There are four options — player 1 and player 2 both cooperate, player 1 and player 2 both non-cooperate, player 1 cooperate, player 2 non cooperate and player 1 non-cooperate and player 2 cooperate.

- The payoff scenarios are hypothesised as benefits accruing to player 1 and player 2 separately when they are deciding on either of the policy options: cooperating or defecting. Specifically both cooperating cannot be a Nash equilibrium as both the players will have an incentive to defect and get a higher payoff. Since the situation is same for everyone, both the players will defect and receive a payoff of 0. This is the only Nash equilibrium for this game, but this is sub-optimal. It also seems to be the most plausible outcome of an uncoordinated behaviour. The bottom line is, however, it is an outcome that the regulator will never want.

YIELD CURVE AS A PUBLIC GOOD

- Let us now extend the analogies to Indian debt markets. Bank of Japan was perhaps the first central bank to proclaim that yield curve is a public good and it is heartening to see the RBI echoing the same.

- In the Indian markets, it is common to find debt market players behaving differently. For example, if one set of players acts pro-cyclically with the RBI monetary policy stance, the other set of players acts counter-cyclically and sometimes both the players act combatively. This often makes it difficult for the RBI to allow the pass-through of signalling mechanism. This also results in the yield structure not in sync with macro fundamentals many times in the market.

- Further, the borrowing pattern of last 10 years indicates that instead of being competitive the market participants are mostly combative in their dealings. They are acting in a way which might be even inconsistent with the RBI's signal.

Tragedy of Commons		
Player 1 ↓ Player 2 →	Cooperate	Defect
Cooperate	2, 2	-1, 3
Defect	3, -1	0, 0
Source: Sudipta Sarangi		

- An analysis of month-wise G-sec trading since Jan'14 indicates that out of 82 months only 18 times the activity (buy/sell of G-sec bonds) of one set of banks and another set of banks have been on same side of the market. In the remaining 64 times both have dealt in G-sec market in opposite direction.

- In India, the G-sec yields are also determined by statements made by regulators apart from macro-fundamentals. For example, when Dr. Viral Acharya (the then Dy. Governor of RBI) had remarked on interest rate risk on 16 Nov'17, the yields increased by 16 bps by the next month (by 18 Dec'17).

- It may be always argued for a better price discovery, there should be players on both side of the market. However, in reality what happens is that market players does not coordinate and ultimately there could be defection and thereby RBI signalling mechanism could astray as it happened recently when there was large devolvement's.

'GIVE UP' CAMPAIGN OF LPG CYLINDERS IS A CLEAR EXAMPLE OF DEFECTION

- The payoffs that we discussed earlier are also common in Government policy, say for example surrendering LPG cylinders subsidy (Give-Up). When the Government had announced that well off people could surrender cylinders so that the Government could save on gas subsidy bill, there was resistance as people thought let others give up and I will do later. Thus even after the intense campaigning there has been thus only 1 crore people have surrendered (out of almost 30 crore consumers) indicating that it is only incentivisation and deterrent that will result in agents giving up subsidy.

Activity in G-sec Trading in India			
Number of Months (Total: 82 months)		One set of Banks	
		Buy	Sell
Another set of Banks	Buy	8	38
	Sell	26	10
Source: SBI Research			

- The matrix alongside shows that agents will always have an incentive to defect as they will continue to get the subsidy. By this logic, ultimately everyone will defect to continue to enjoy getting Rs x as subsidy and this is exactly what has happened, in the absence of any incentivisation.

WE THUS PROPOSE "ADOPT A FAMILY SCHEME": IN LINE WITH PM'S JAN BHAGIDARI VISION THROUGH A PROPER INCENTIVISATION

- PM in 2019 said that the next 5-years would have to be years of 'Jan Bhagidari' (people's participation) and 'Jan Chetna' (people's awareness), and should further enhance India's position at the world stage. In this context, several ministries such as Railways have launched several innovative ideas through Jan Bhagidari.

- Echoing the concept of Jan Bhagidari to public goods, we proposed a scheme called "ADOPT-A-FAMILY". Under this scheme, which is purely voluntary, a taxpayer (probably annual income of Rs 10 lakh or more) may be incentivized to adopts a BPL family for a year with a specified amount (say Rs 5,000 per month). In this way a BPL family which is badly hit due to Covid-19 will get support of Rs 60,000 without any fiscal burden on Government. In India, there are around 70 lakh tax-payers whose gross annual income is more than Rs 10 lakh. Even if 10% enroll under this scheme, it will benefit around 7 lakh families (or 28 lakh family members). To boost the scheme, Government can ideally incentivise at least 50,000 tax deduction over and above 80C limits to the taxpayer. This can be monitored by Bank accounts enabled through Aadhaar payments.

- Under this scheme, the cost to Government is only the income tax, foregone of Rs 1050 crore (Rs 50,000*30% =Rs 15,000*7 lakh). However, if Government gives Rs 50,000 support to 7 lakh families, the fiscal cost would be Rs 3500 crore, that could result in a consumption boom of Rs, 11,666 crores.

- As like the LPG scheme, the pay off matrix shows that agents will always have an incentive to defect and not adopt a family as thy can get away without the proposed fiscal burden. By this logic, if there was no incentivisation, that we propose, none will adopt a family!

"WEAR A MASK": IN LINE WITH PM'S 'JAN CHETNA VISION

- Mask wearing is a again a perfect example of a public good, as there is always a proviso that the person not wearing masks could benefit and hence both not wearing masks could be an eventuality! In this case however we need a harsh punishment and not an incentvisation for not wearing masks. This is exactly line with the PM's vision of 'Jan Chetna'.

Payoff in the form of Subsidy Amount

Consumer 1↓ Consumer 2→	Give-up Subsidy	Do not Give-up Subsidy
Give-up Subsidy	0, 0	0, Rs x
Do not Give-up Subsidy	Rs x, 0	Rs x, Rs x

Source: SBI Research

Payoff Matrix for "Adopt-a-family" Scheme

Taxpayer 1↓ Taxpayer 2→	Adopt a family	Do not Adopt a family
Adopt a family	0,* 0*	0, Rs x
Do not Adopt a family	Rs x, 0	Rs x, Rs x

Source: SBI Research; *Non zero incentivisation through tax concessions that will increase the pay off and move agents towards adopting a poor family instead of defecting and not adopting

ADOPT-a-FAMILY: Proposed Scheme by SBI

Total number of taxpayers having gross salary of above Rs 10 lakh	70 Lakh
If 10% Enrolled the Scheme	7 Lakh
Benefits to 7 lakh Families (Say 50,000*7 lakh)	Rs 3,500 crore
Income Tax foregone (50 K deductions)	Rs 1050 crore (Rs 50K*30%*7 Lakh)

Source: SBI Research

Payoff Matrix for Face mask

Player 1↓ Player 2→	Face Mask	No Face Mask
Face Mask	4, 4	2, 5
No Face Mask	5, 2	3,3

Source: Sudipta Sarangi

Contact Details:
Dr. Soumya Kanti Ghosh
Group Chief Economic Adviser
State Bank of India, Corporate Centre
Nariman Point, Mumbai - 400021
Email: soumya.ghosh@sbi.co.in
         gcea.erd@sbi.co.in
      Phone:022-22742440
       :@kantisoumya