

## **Hello Folk: We Are Responsible for What We Will Face in 2025; Evidence from Philosophical Underpinnings of Social Capital**

GUL EJAZ and MARYUM BIBI

Social capital is a very important facet of society and has strong relevance to economic landscape of a country. There are different theories about the nature, accumulation, growth and validity of social capital as an instrument of economy. This paper explains the philosophical context of social capital and validate through a model using Berg, Dickhaut and McCabe trust game that we all transfer a set of values to our next generation, which ultimately manifest as social capital in the real world. The transferred values affects each agent's decision whether to trust other members of the society and participate in a socio-economic exchange or not. If he trusts, he reaps substantial gains from exchange, and ultimately social capital will be concreted. But if he does not, he will face a major loss and overall social capital will be dented. A distrustful ancestor will further induce agents to withdraw from the market and not to invest. This will lead a society to an overall mistrust paradigm and eventual downfall. On the other hand, the level of cooperation in the members of society increases as the good experience is transferred across generations. Economic impacts of social capital have been elucidated using Leonhard Euler function and Newton Leibniz integration processes. The ethical framework for society and role of literature in transfer of beliefs, values and culture from one generation to other has also been discussed at length. The paper is a unique study of how we all will be responsible for the kind of social capital will have in 2025.

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*Keywords:* Social, Capital, Model, Transfer, Generations, Values, Trust, Beliefs, Cooperation, Ethics, Literature

### **1. INTRODUCTION**

Why we always remember our ancestors? If we think we remember them because they left junk of wealth for us when they passed away then why we have regards for those who have left nothing back? Surely, it is not the wealth. Unintentionally we refer their talk and actions more often when confronted with a situation which was experienced by them. Kids learn from their parents. Mother is the first cradle of learning for the infant. In our personalities, we carry a reflection of how have we been brought up? Lessons learnt from the parents and ancestors are never forgotten. We normally speak of family values and traditions, which are uphold by us as a holy duty and taken as core of loyalty to our ancestors. These traditions and values

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are passed from one generation to other, and we never let them die down. Psychologically, an infant at the time of birth is always neutral, but then after birth values and beliefs are transferred to him, which he carries throughout his life. This set of values and beliefs has mark influence on his interaction with other people in society. He either becomes a cooperative optimist who participates in socio-economic exchanges or an unwilling pessimist who refuses socio-economic interaction. In either case he impacts the socio-economic life of society.

In this paper, we build a simple model based on transfer of beliefs and values from one generation to another. Transfer of beliefs and values from one generation to other plays a vital role in socio-economic life of nations. To analyse the possible variations in this process, we build a generation model where children absorb the prior from their parents and after experiencing the real world, they update it and transfer to their children. This transfer of priors in the form of beliefs, values and traditions affects each individual decision to trust other members of the society and participate in an exchange. If he trusts, an individual is optimist and he will reap substantial gains from exchange. But if he does not, he is pessimist and will face a major loss. As a result, a pessimistic prior will persuade agents to withdraw from the market and not to invest. It will result into socio-economic decline of society. It was shown in the paper that a small optimistic change can have lasting effects on the behaviour of society. In the same context, it has been described that there is a link between parents and children beliefs and values. It was concluded that economic growth trend generally confirms to behaviour curve of society. A thorough elucidation of ethical framework for a society with strong social capital has been given in the paper. It was also corroborated that culture plays a big role in transfer ring of beliefs across the generations based on comparison of two novels; "The Kidnapping" and "Sparly Ba Zaroor Razee". The two novels differ in optimism and trust placed in others. Results of the paper suggest that if we define social capital as the set of beliefs and values that increases cooperation, social capital can indeed enhance socio-economic well-being of the nation.

## 2. LITERATURE REVIEW

Traditionally, economic growth depends on three types of capitals; natural capital, physical capital, and human capital. However, it has been noted by Coleman that these three types of capitals overlook the way in which the economic agents interact and participate in economic activities to generate growth and development. This process of interaction and participation by economic agents is called social capital which is hitherto a missing linkage [Coleman (1988)]. Krugman has investigated that countries with similar stocks of natural, physical, and human capital have achieved different levels of economic performance due social capital [Krugman (1994)]. Rice has explained that there are many examples from the history where quantity and quality of social capital has made the difference. The high growth rates of the East Asian miracle economies were due to enabling policies and environment, characterised by institutional measures and organisational strategies that enhanced efficiency and cooperation between government and industry [Rice (1997)]. Putnam has argued that more voluntary associations among people in northern Italy explain the region's economic success relative to southern Italy, where such associations are less frequent [Putnam (1993)].

Francois has explained that concept of social capital has gained wide acceptance in social sciences and most recently, in economics [Francois (2002)]. Wool has investigated the relationship between economic growth and social capital and concluded that social capital acts as catalyst to economic growth [Wool (1998)]. Scully has explored linkage between social capital and institutions' design and performance and inferred that social capital improves the performance of institution and organisations manifold [Scully (1988)]. Akerlof has found that crime rate reduces with increase in social capital [Akerlof (1976)]. Philip has elucidated that social capital promotes innovation which in turn promotes economic development [Philip (1997)].

Social capital shapes economic and the political environment of a country. This is because we define social capital as a set of beliefs and values transferred from one generation to other that facilitate cooperation among the members of a community. Putnam in his works construed that social capital can be the result of historical experiences transferred from generation to another [Putnam (1993)]. Taking lead from Putnam theory, Tabellini builds a very interesting model of cultural transmission of values of cooperation. He argues that parents optimally choose what values to pass onto their children, but in doing so they evaluate their children's welfare with their own values [Tabellini (2007)]. Cipriani has investigated that in Tabellini's model there is a linkage between norms and behaviour. If more people cooperate, the cooperation increases and this expands the scope of cooperation. An expansion in the scope of cooperation makes it easier for the parents to transfer good values to their children [Cipriani (2007)]. Bisin, Alberto, and Verdier have narrated that when individuals are allowed to choose their institutions through political voting, the behaviour is always dependent on the values and beliefs of the voters: voters with positive attributes will choose positive leaders fostering cooperation and performance; voters with negative attributes will opt for negative leaders [Bisin, Alberto, and Verdier (2001)].

Williamson has investigated in his works that economic literature on the role of institutions is especially relevant in the context of social capital. The focus on institutions in institutional economics literature has regenerated interest in social linkages which provide strength to these institutions [Williamson (2000)]. Tabellini has very clearly indicated that in the political science, sociological, and anthropological literature social capital generally refers to the set of norms, networks, and organisations through which people gain access to power and resources, and through which decision-making and policy formulation occur [Tabellini (2005)]. Later, economists focused their research efforts on the contribution of social capital to economic growth. North has extensively investigated that at the microeconomic level social capital improves interaction and participation of economic actors and the functioning of markets [North (1990)]. Similarly, Glaeser has explored that at the macroeconomic level social capital has strong linkage to institutions, legal frameworks, and the government's role in production affecting overall macroeconomic performance [Glaeser (2002)].

Researchers like Sobel views social capital as a set of associations between people [Sobel (2002)]. In the same context Guiso has empirically inferred that social capital consists of social networks of social interactions and associated norms that have an effect

on the social efficiency of the community and these have important economic consequences [Guiso (2004)]. According to Goldin, the main feature of social capital is that it enables harmonisation and cooperation of the different actors for the mutual benefits and overall welfare of society [Goldin (2001)]. This concept has matured over the years and has attained a considerable level of quantification. According to Glaeser the measurement of social capital is fairly straight forward to count social and communal associations, their membership, and the frequency of meeting [Glaeser (2000)]. However, Alesina has brought out another angle to the measurement of social capital by theorising that if social associations are only considered as social capital, then there has to be agreement on what constitutes desirable outcomes from these social associations. In practice there may be involvement of value judgment and consensus building on the nature of desirable outcomes [Alesina (2002)].

A broader concept of social capital was enunciated by Fukuyama, who defined social capital as mixture of two elements; social structure to interact and actions of actors within the structure [Fukuyama (2000)]. This conjuncture broadened the concept of social capital. Many researchers around the globe started work on social capital as a platform for interaction between social agents and the behaviour among other entities such as firms. According to Eldgridge this wide concept of social capital covered a wide range of human behaviours; positive as well as negative received as priors [Eldgridge (1995)]. This sparked another dimension of the social capital and raised many related questions. Gambetta is explicit about this by explaining that depending on the behaviour of agents, social capital may be valuable or may be useless or even harmful for others. This view of social capital arrests norms governing interpersonal behaviour [Gambetta (1988)].

Another view of social capital by Fisman emphasises political environment that enables norms to develop and shapes social structure, as the most important ingredient of social capital [Fisman (2001)]. Similarly, Klitgaard explicitly elucidated that social capital includes institutional relationships and structures, such as government, the political environment, the rule of law, the court system, and civil and political liberties [Klitgaard 1995)]. Olson has argued that institutions have a significant effect on the degree of economic development of the nations. According to him political environment and institutions have greater role in the rise and decline of nations [Olson (1982)]. According to Guiso, there is empirical evidence that social capital can have an impact on development outcomes growth, equity, and poverty alleviation. Associations and institutions provide an informal framework to organise information sharing, coordination of activities, and collective decision making [Guiso (2006)].

Sapienza has elucidated that social interactions reduce negative behaviour by creating repeated interaction among agents, which enhances trust and cooperation [Sapienza (2007)]. Berg has brought that there are two perceptions of trust; the recessive and progressive, both depending on the values, beliefs and culture transferred from one generation to another. This basis for trust has been the subject of game theory [Berg (1995)]. La Porta has concluded that a cohesive social and communal association creates trust and utility of the group is maximised by the process of interaction between agents [La Porta (1997)]. Ruben has very explicitly elucidated that trust has linkage with the

values, beliefs and traditions transferred from one generation to other. If the positive values are transferred, agents will trust each other and society will prosper. If negative values are transferred, agents will mistrust each other and will withdraw from exchange which will deteriorate the society [Ruben (2007)]. Narayan has investigated that social capital based on trust paradigm has very strong influence on per capita income and standard of life of households [Narayan (1999)].

Recently researchers have worked on social capital as set of beliefs, values and ethics transferred from one generation to other. According to Bisin social cooperation and interaction by agents depends on the cultural trait of the agents. If they are culturally groomed by parenthood, they will cooperate and integrate, if not they will resist and differentiate [Bisin (2004)]. Dohmen has investigated that good and bad, trust and mistrust, optimism and pessimism are not instantaneous, rather, these are acquired from the priors [Dohmen (2007)]. Gul has indicated that good social conduct, values and beliefs acquired as priors have greater influence on the utility maximisation of agents and society as a whole [Gul (2013)]. Eric has very fantastically explained the essence of social capital as set of values, beliefs and culture acquired from the priors a phorising that where we stand today depends upon where our grandparents sat yesterday [Eric (2007)].

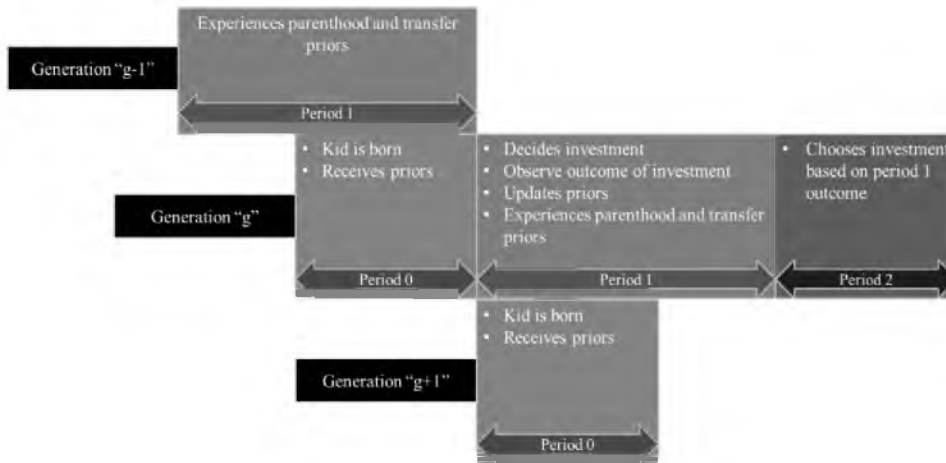
It needs to be pointed out that the existence per se of a group does not imply social capital. Like Jarga culture in the tribal areas of Pakistan does not mean social capital. It is the mechanism underlying the group's ability to enforce positive norms that constitutes the social capital in that setting.

### 3. CONCEPTUAL STRUCTURE

Psychologically, there is a difference between parents and children in the way they weigh future and current benefits. This is because parents want to save their children from costly mistakes. However, to protect children from costly mistakes, parents naturally transmit them excessively conservative priors from social point of view. Moreover, value of children learning through experiences not fully plugged in by the parents in the priors they transfer to children. Therefore, if the net benefits of social interaction and cooperation are not sufficiently high, a society starting with conservative priors will be trapped in mistrust paradigm. Starting from this situation, a positive shock to prevailing behaviour can permanently shift the equilibrium to a cooperative and optimist one even when the shock is temporary.

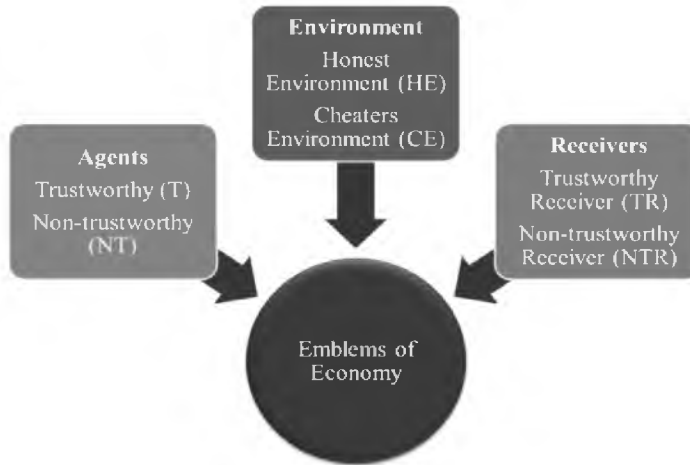
To see the effects of beliefs, values and culture, we build a generation model of prior transfer from one generation to other. Each agent 'i' lives for three periods each spanning over 25 to 30 years and starts as a child in period zero and acquires its prior from the parents. In period 1, each child become an adult, decides whether to invest an amount 'a' in an exchange that has the characteristics of the Berg, Dickhaut, and McCabe trust game. After investing, each agent updates his prior and transfers it to his children. In the period 2, the agent, now mature, has another chance to play a trust game based on experience in the last period. At the end of this period each agent dies. This process is diagrammatically explained in Figure 1.

**Fig. 1. Diagrammatic Layout of the Generational Model**



The economy has two types of agents, trustworthy (T) and non-trustworthy (NT). The proportion of the two types in society is uncertain. In one environment (the honest environment, HE) the trustworthy type are more while in the other environment (the non-honest or cheaters environment, CE) the cheaters are in a bulk. As in a standard trust game, each agent receives an amount 'a' and he can choose whether to invest it or not. When he invests it, the sum becomes 'ka',  $k \gg 1$ , but the amount returned to the investor is determined by the receiver who can send back whatever he wants. Therefore, as per the trust game, we assume that there are two types of receivers: a trustworthy receiver (TR), who sends back 'Ra',  $k \geq R \gg 1$  and a non-trustworthy receiver (NTR), who sends back 'La',  $0 \leq L \ll 1$  (where R and L represent return and loss respectively). Alternatively, the investor can keep his amount and avoid the risk of being cheated. If he does not invest at the end of the period he is left with 'a'. The ingredients of economy for the proposed model are shown in Figure 2.

**Fig. 2. Emblems of Economy**



By investing an agent gets more information which helps him in his subsequent decision and he can transmit the same to his children. This is called updating of prior. It was assumed that if an agent does not invest, he will not learn although people do learn from the experience of others. However, learning from others' experience is generally weaker and particularly so when people lack trust. So, it is not irrational to assume that non-trusting agents find it hard to learn from the outside milieu. Based on the emblems of economy, different combinations of prior probability distribution were worked out as shown in Table 1. It was assumed that an individual who invests will perfectly learn whether the fraction of trustworthy people in the population is  $S_1$  or  $S_2$ .

Table 1  
*Combination of Probability Distribution of Priors*

Environment	Probabilities	Share of Trustworthy Individual (T)	Share of Non-trustworthy Individual (NT)
Honest Environment, HE	P	$S_1$	$1-S_1$
Cheaters Environment, CE	$1-P$	$S_2$	$1-S_2$

If an agent has not invested in period 1, he will not invest in the period 2 as no new information is accrued from the experience of period 1. Thus, the only stimulating case is the one where an agent has invested in the period 1. Since investing allows the investors to learn from experience, the expected return in the period 2 will only depend on 'R', 'L' and the true share of trustworthy individuals. Let  $X = S_1R + (1 - S_1)L$  represents the expected return if receiver is from 'HE' and  $Y = S_2R + (1 - S_2)L$  represents the expected return if receiver is from 'CE'. We assume that  $X > 1$  and  $Y < 1$ , so that the expected return is positive if the receiver is from 'HE' and negative if he is from 'CE'.

Here the important fact is that an agent who lives in 'HE' in period 1 will always invest in period 2 since he obtains  $X > a$ . But if he finds out that he lives in 'CE' he will never invest in period 2, since  $a > Y$ .

Moreover, an agent expects to observe ' $S_1$ ' with probability 'P' and ' $S_2$ ' with probability of  $(1-P)$ . Hence, at beginning of period 1 the expected period 2 return will be  $PXa + (1 - P)a$ . Consequently, the agent perceives payoff ( $O_1$ ) for period 1 which is given by Equation (1).

$$O_1 = P[S_1R + (1 - S_1)L]a + (1 - P)[S_2R + (1 - S_2)L]a$$

$$O_1 = PXa + (1 - P)Ya \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

Thus, the net expected payoff ( $O_T$ ) over the two periods will be given as Equation (2).

$$O_T = (P, R, L, S_1, S_2) = PXa + (1 - P)Ya + PXa + (1 - P)a - 2a$$

$$O_T = (P, R, L, S_1, S_2) = 2PXa + (1 - P)[Y + 1]a - 2a \quad \dots \quad \dots \quad \dots \quad (2)$$

In Equation (2) ' $2a$ ' is the lifetime value of his asset if an agent does not invest in either period. Clearly, in the first period an agent will invest if and only if  $O_T \geq 0$ . However, the decision to participate in socio-economic exchange depends on acquired prior which an

agent received in period zero. Therefore, it is prudent to keep a threshold 'm' such that it is optimal to invest if and only if the received prior is above this threshold.

#### 4. TRANSFER OF VALUES FROM PARENTS TO CHILDREN

After mathematical model of investment behaviour of agents based on the set of values they received in period zero, the optimum prior that parents want to inculcate in their children was as curtailed. This optimum obviously depends upon the parents' perception of what they think is best for the children. But the problem is that parents do not weigh future and current benefits exactly the same way as children do. This is because parents bother excessively more about the cost of their children's mistakes and they suffer more if their children get into trouble when they are still alive. To simplify the issue it was assumed that parents care about their children's utility in period 1. But when parents assess the value of investment in period 1, children will use their own experience of period 1 to decide what to do in period 2.

Let 'Q' denote the belief based on acquired priors that share of honest in the population is  $S_1$ . The net expected utility 'O<sub>p</sub>' of the child in period 1 from investing 'a', as perceived by his parent is given by Equation (3).

$$\begin{aligned} O_p &= (Q, R, L, S_1, S_2) = PXa + (1 - P)a - 2a \\ O_p &= (Q, R, L, S_1, S_2) = a[PX + (1 - P)Y - 1] \quad \dots \quad \dots \quad \dots \quad (3) \end{aligned}$$

The parent will be indifferent between the child investing 'a' and not investing if his prior is such that  $O_p(Q, R, L, S_1, S_2) = 0$ . Therefore, the threshold for indifference of parents is as given in Equation (4).

$$m_p = (1 - Y)/(X - Y) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (4)$$

For meaningful results, it must be that threshold set by parents higher than the normal threshold 'm' i.e.  $m_p > m$ . The parent will then choose what prior to transmit to their children and their teaching strategy will then be as under.

$$P \geq m_p \text{ if } Q > m_p$$

$$P < m \text{ if } Q < m_p$$

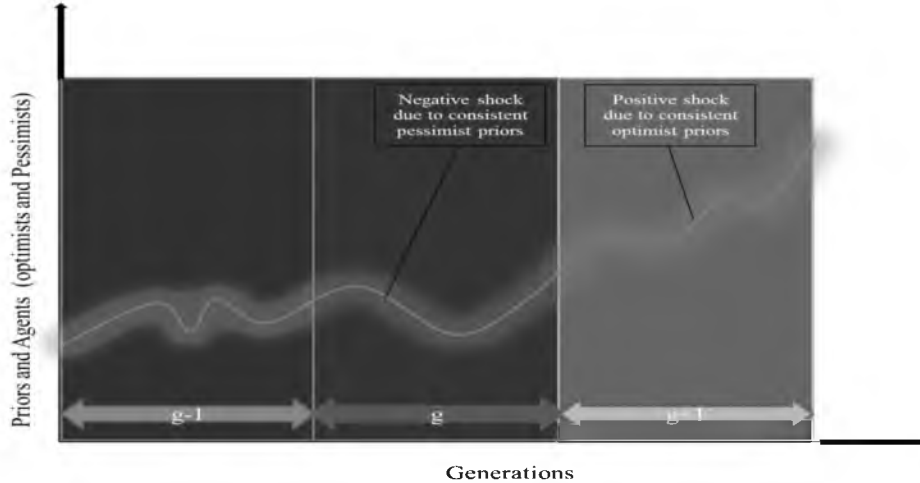
If parents have a sufficiently optimistic prior ( $Q \geq m_p$ ) they will transmit optimistic prior to their children. As a result, children will invest and if the population is an honest one will continue to transmit their optimistic priors to next generation and so on. If parents have a sufficiently pessimistic prior (that is  $Q \leq m$ ), they will transmit pessimistic prior to children, who will choose not to invest. Since the no-investment strategy does not allow for any learning, the same pessimistic prior will be transmitted from generation to generation unchanged. This pessimism will trap society in a no-trust-no-trade (NTNT) paradigm and will result into ultimate decline of the society. However, there can be positive shock to the behaviour of agents at any point of time. For example, consider the extreme case where the share of trustworthy people is 1 in 'HE' and 0 in the 'CE', that is  $S_1 = 1, S_2 = 0$ . In this case the thresholds will be as under.

$$m_p = (1 - L)/(R - L) > m = (1 - L)/2R - (1 + L)$$



If prior is such that it exceeds  $m_p = (1-L)/(R-L)$  which will be the case if  $R > 2 - L$ , then there will be positive shock and agents will invest and trust from then on. If on the contrary, the prior is below the threshold, there will be negative shock and no one would invest and will continue to do so. The graph between generations and priors is shown in Figure 3. The behaviour curve in the graph keeps on receiving positive and negative shocks across the generations.

**Fig. 3. Positive and Negative Shocks to Behaviour Curve Across the Generations**



If prior is below  $m_p$ , parents will not invest and may transmit an even more pessimist prior to their children who will not trade themselves and will transmit mistrust to the subsequent generation and so on. Marginal changes in the return to investment or to the share of trustworthy individuals will have no impact on individual decisions. Suppose, if  $R=1.3$ ,  $L=0.2$  then  $m = 0.53 < m_p = 0.73$  and thus with a pessimist conservative prior parents will not trade and will induce a no-trade prior in their kids. A small increase in  $R$  will cause no positive shock. A positive shock caused by major increase in  $R$  will change the course of transfer of beliefs and values to next generation and the economy will get free from NTNT trap. The information so acquired will be transferred to next generation which will be gifted with an optimist prior and the positive trend will continue. If the prior received by the informed generation and transferred to the subsequent one is sufficiently optimistic, agents will continue to invest.

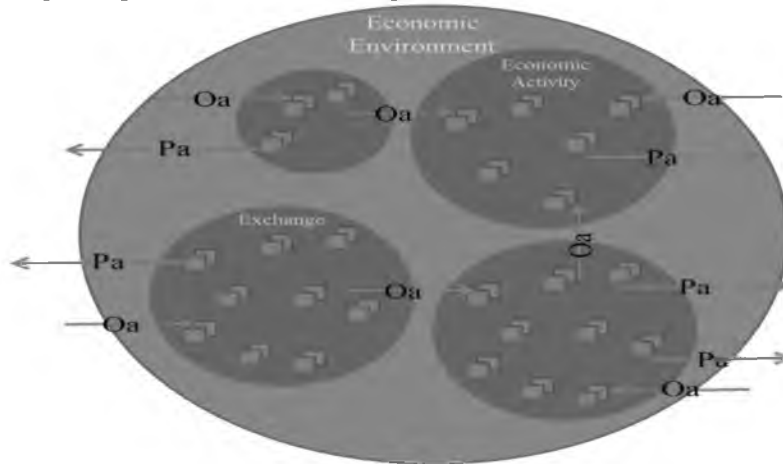
## 5. ECONOMIC AMBIENCE

The values, beliefs and culture that are shifted by priors from one generation to another have significant effect on the socio-economic landscape of the nation. It is by this updating and transfer of set of values and beliefs by our priors to us that we participate in different activities of society including economic activities. If the priors are optimists and they shift set of values and beliefs that make the next generation majority optimists, the people will participate in exchange, but if the priors are pessimists then the values they will transfer will make the next generation as majority pessimists and consequently most of the people will withdraw from exchange thereby declining the economic activities.

In an economic environment, economic activities take place in which the economic agents exchange with one another through social interactions and participation. The more is the exchange between economic agents, the more the economic activity. The overall results of economic activities depends whether the agents participating in the activity are optimists (positive) or pessimists (negative). If the optimists are more, the economic activities will boost as more and more agents will join the activities on the other hand if pessimists are more the economic activities will decline as more and more agents will leave the environment. Therefore, an economic environment shaped up by optimists will have greater economic growth while the growth will decline in case of environment shaped up by pessimist agents.

Figure 4 explains the phenomenon very clearly. An economic environment is shown in blue colour in which different economic activities are taking place as shown in maroon colour. In these activities agents participate and interact to exchange making this whole environment as a social capital. There are two kinds of agents; the optimist agents 'O<sub>a</sub>' are shown in green colour while the pessimist agents 'P<sub>a</sub>' are shown in red colour. It is clearly shown that optimists join the environment while pessimists leave and withdraw from exchange.

**Fig. 4. Optimist and Pessimist Agents in an Economic Environment**



Considering the preceding discussion let the economic growth be represented by 'G' and economic activity by 'A', then using the Leonhard Euler function economic growth index (G) can be represented as a function of economic activities (A) as under.

$$G = f(A) \text{ where } A > 0 \text{ if } O_a > P_a \text{ and } A \leq 0 \text{ if } P_a > O_a$$

Now, economic activities depend on economic exchanges 'E<sub>x</sub>' by agents. Therefore economic activity (A) is a function of economic exchange (E<sub>x</sub>),

$$A = f(E_x) \text{ where } E_x > 0 \text{ if } O_a > P_a \text{ and } E_x \leq 0 \text{ if } P_a > O_a$$

This implies

$$G = f(A) = f(E_x)$$

Now, economic exchanges are due to participation and interaction of optimist agents 'O<sub>a</sub>' and pessimist agents 'P<sub>a</sub>' in these exchanges. Therefore,

$$E_x = f(O_a) \text{ where } O_a > 0 \text{ and } E_x = f(P_a) \text{ where } P_a \leq 0$$

This implies that economic growth index is a function of participation by optimists and pessimists in economic exchanges as shown in equation (5).

$$G = f(A) = f(E_x) = f(O_a - P_a) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (5)$$

Consider that hypothetically a generation 'g' has 100 individuals with 75 people as optimists (O<sub>a</sub>) and 25 people as pessimists (P<sub>a</sub>). Then the numerical value of economic growth index of this generation at any time "t" can be calculated by using Newton-Leibniz integration process as under.

$$G = f(O_a - P_a)$$

Let O<sub>a</sub> = x and P<sub>a</sub> = y, then

$$G = \int_0^{75} x dx - \int_0^{25} y dy$$

$$G = \text{Limit } 0 \text{ to } 75 \left[ \frac{x^2}{2} + C \right] - \text{Limit } 0 \text{ to } 25 \left[ \frac{y^2}{2} + C \right]$$

Inserting the limits, we get

$$G = \left[ \frac{(75)^2 - 0}{2} + C \right] - \left[ \frac{(25)^2 - 0}{2} + C \right]$$

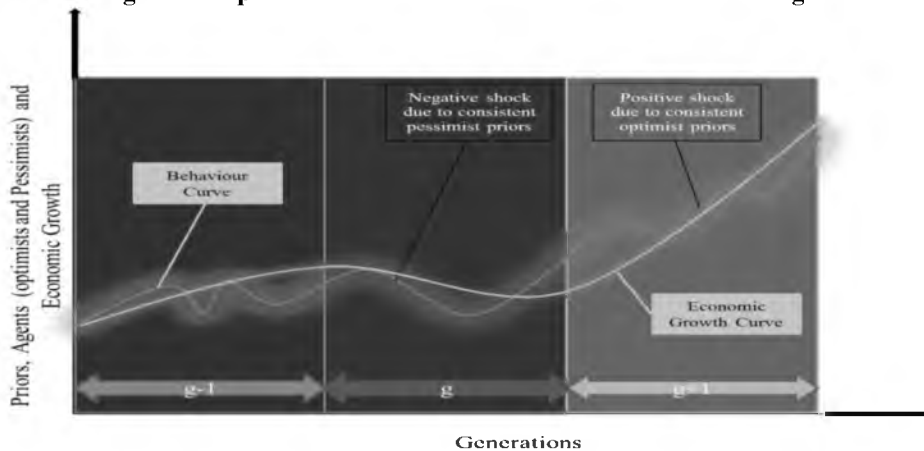
$$G = \left[ \frac{5625}{2} + C \right] - \left[ \frac{625}{2} + C \right]$$

$$G = [2812.5 - 312.5 + C - C]$$

Economic Growth Index, G = 2500

So, this generation has an economic growth index value of 2500 at time "t". Similar values can be found for other segments of time and finally a curve can be super imposed on the generation behaviour curve as shown in Figure 5. It can be seen that economic growth curve across the generations generally comply with the behaviour curve of agents across the same generations.

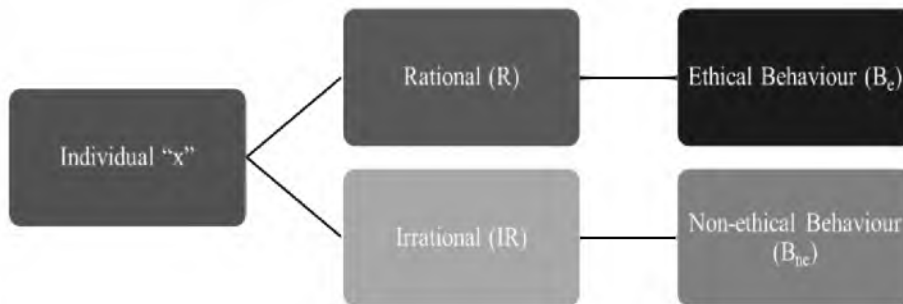
**Fig. 5. Compliance of Economic Growth and Behaviour of Agents**



## 6. ETHICAL SILHOUETTE

In a society having majority of negative and pessimist agents, people are self-interested maximising their utilities, and hence the decisions by agents lack ethical considerations as the consequences faced by others, as a result of the choice made by the agents, are generally not considered. In such a society the agents are motivated only by self-interest and are not motivated by ethical considerations, such as altruism, sympathy, fairness or moral and religious values. This is vice versa in case of society having majority of positive and optimist agents. Philosophically, in social setting members of society while choosing a desirable alternative may resort to variety of behaviours, from pure ethical to pure non-ethical depending on the kind of prior they acquired. Let us consider that from economics point of view behaviour of agents can be grouped into two types; ethical behaviour ( $B_e$ ) and non-ethical behaviour ( $B_{ne}$ ). ' $B_e$ ' is choosing a choice with full ethical considerations and have regards for the rights, social and ethical obligations. ' $B_{ne}$ ' is a total self-interested framework in which agents are only interested in maximising their utilities without any consideration for social and ethical obligations. Furthermore, human behaviour can either be rational (R) or irrational (IR). In a society based on optimism, rationality (R) is not restricted to maximise personal advantage, rather, it is considered as the foundation of societal values as when the agents are rationale they are ethical by default. This means that if an agent is rational (R) he will be ethical ( $B_e$ ) and if he is irrational (IR) he will be non-ethical ( $B_{ne}$ ) as shown in Figure 6.

**Fig. 6. Rationality and Behavioural Trends in a Social Setting**



Let us now explain Gul's conception of ethics based on the transfer of beliefs, values and tradition. For a little while we ignore this self-interest and concentrate on rationality (R) and irrationality (IR). What is this rationality in realm? We take refuge in the game theory to answer this question. Suppose there is a commodity 'k' and two agents 'x' and 'y' that are in need of commodity 'k' (there is always scarcity of resources versus needs). Suppose commodity 'k' belongs to agent 'x'. Now, 'x' has two choices; if he has acquired a positive and optimist prior he will rationalise commodity 'k' in a way to use commodity 'k' as per his need while taking care of the needs of agent 'y', in this case agent 'x' will be rational (R). On the other hand, if agent 'x' has acquired a negative and pessimist prior he may use whole of commodity 'k' disregarding needs of agent 'y', in that case agent 'x' will be irrational (IR). If agent 'x' is rational (R) then he may give part of commodity 'k' to individual 'y' in that case his behaviour will be ethical ( $B_e$ ) as

agent 'x' is self plus social interested. Ethical behaviour of part of 'y' will be to remain contented with the share he receives from 'x' and not to indulge in lawless activities. Generally, 'B<sub>e</sub>' is the most likely behaviour in a society with strong social capital based on acquisition of positive and optimist prior. If agent 'x' uses whole of the commodity 'k' to fulfil his needs and does not share it with 'y', then behaviour of individual 'x' will be unethical 'B<sub>ne</sub>' as in this case agent 'x' is only self-interested. 'B<sub>ne</sub>' is the most likely behaviour for society with weak social capital based on acquisition of negative or pessimist prior.

A look on the Gul's conception of ethics gives an impression as if the utility aspect is ignored in the framework, but it is not the case. For example when agent 'x' is 'B<sub>e</sub>' then he is interested in his own as well as society's utility maximisation. If agent 'x' is 'B<sub>ne</sub>' then he is irrational and total self-interested in maximising his own utility disregarding the needs of society. This kind of behaviour, though possible from economics point of view, but highly undesirable from ethical point view as it leads to decline of society. Thus, we conclude that to have strong social capital it is required that majority of the agents should be 'R' and 'B<sub>e</sub>'. This is shown in Figure 7.

**Fig. 7. Ethical Framework for a Society to have Strong Social Capital**



Now let us define the economic advantage of proposed ethical framework of society. This is pretty straight forward. We say that if individual is IR he gets a value of zero and if he is R he gets value greater than zero up to and including 1. Mathematically, the range of R can be given as  $1 \leq R \leq 0$ . By same analogy, the range of 'B' can be defined as  $1 \leq B \leq 0$ , where B = 0 means that individual is unethical (B<sub>ne</sub>) and 'B' other than 0 means that individual is ethical (B<sub>e</sub>) of varying degree depending on the value.

Clearly the existing social welfare equation requires amendment to include the ethical considerations. A simple welfare function 'S' for agent 'x' can be written as shown in equation (6).

$$S = R. B. U^x \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (6)$$

Where

- 'S' denotes social welfare function.
- 'R' denotes rationality of individual 'x' where  $1 \leq R \leq 0$ .
- 'B' denotes that behaviour of individual 'x'.
- 'U<sup>x</sup>' denotes utility of individual 'x'.

For the complete society with 'n' agents we can take the sum of 'S' for all agents. This is shown in (7).

$$\sum_{x=1}^n S = \sum_{x=1}^n R.B.U^x \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (7)$$

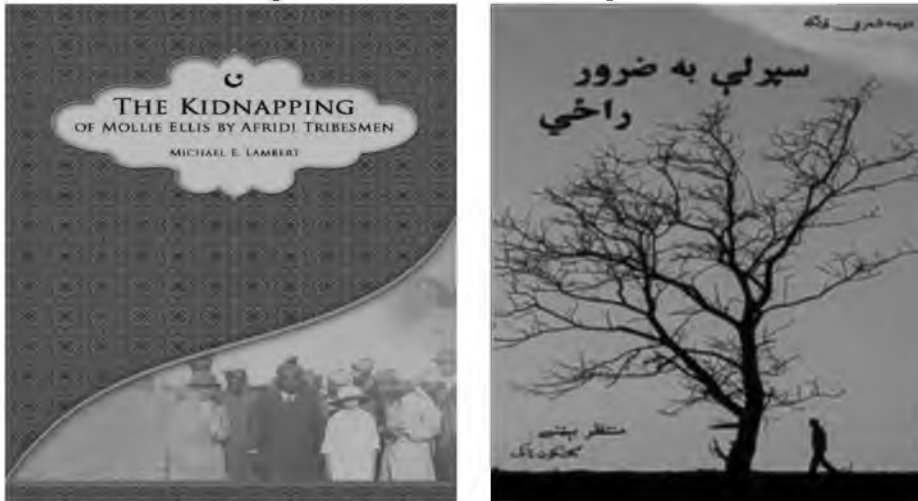
This is a simple but very useful equation to gauge how agents in a society are ethical while they are self plus social interested and desires to achieve maximum utility for self and society. Equation (7) thus, gives a wholesome ethical profile of the society.

## 7. LITERATURE AND SOCIAL CAPITAL

Culture plays significant role in development and persistence of social capital. Since, we cannot observe the beliefs of populations four or five hundred years ago we cannot document status of social capital directly. Instead, we study it from the material contained in the poems and novels of different cultures across the generations. Culture is the vehicle through which values, beliefs and traditions are transmitted over centuries and this is adequately reflected in literature of those times.

The obvious example is the Tribal Areas and urban Khyber Pakhtunkhwa (KPK) of Pakistan. There is a great difference in the stock of social capital between these two parts and also in the beliefs and norms that the populations in the two areas entail. For this purpose we take the two most important novels: “The Kidnapping” by Michael E. Lambert and “Sparly Ba Zaroor Raze” by Muntazir Betany as shown in Figure 8.

**Fig. 8. Selected Novels for Comparison**



In the “The Kidnapping”, the author has explained that a tribesman Ajab Khan Afridi abducted Miss Mollie Ellis in 1923 and took her to far flung tribal area for ransom and release of his co-gangsters. The current law and order situation can be explained in relation to this old incident. Lack of trust in people and the state, poverty and lawlessness all lead to pessimism that springs everywhere from the story. The Ajab Khan’s attitude towards other people is the same attitude that indicates a culture of mistrust towards the society, perceived as unjustified, and the reliance on the closed and narrow isolated venture for personal gains rather than society at large.

Of completely different nature are the attitudes and values conveyed in “Sparly Ba Zaroor Raze” which means “spring will definitely come”. This novel describes the story of young couple Spogmay and Fawad who live in Sardaryab, a small village near Peshawar. They fight against a cruel, powerful and dreadful feudal lord, Suhrab, who forcefully prevents the young couple from getting married because he is interested in Spogmay. While the difference in power between the couple and Suhrab is massive, Fawad and Spogmay have the confidence of fighting Suhrab and, at the end, prevail through social campaign and common voice. The novel is marked by a strong sense of optimism; optimism about the future and optimism to help others in the difficult times.

While both novels focus on the opposing themes, in “The Kidnapping” the hero used personalised venture for achieving personal gains, mistrusting the society. In “Sparly Ba Zaroor Raze”, the couple had a trust on society to fight against the oppressor. The view they transmit is completely different. “The Kidnapping” transfers a prior of lawlessness and mistrust instilling a negative sense in the readers while “Sparly Ba Zaroor Raze” radiates a message of hope and trust based on societal power, generating a positive sense in the readers.

Similarly, poetry and other forms of literature play very important role in transmitting the beliefs, values and culture across the generations. The poetry of great eastern poet Allama Muhammad Iqbal has always been inspiring the youth and has since been transmitting positivity and optimism across the generations.

## **8. PHILOSOPHICAL OUTCOMES**

From our model and underlying theory, following interesting glaring philosophical strands can be deduced.

- Social capital is not mere the number of social organisations, its participants and frequency of its meetings. In essence, it is the set of values, beliefs and ethics that is transferred across generations which either acts as binding force or repulsive force amongst the agents of socio-economic organisations.
- Transfer of positivity and optimism to next generation will create a social structure based on trust and optimism where agents willingly participate and cooperate. This has been the case in most of the developed countries of the world. Transfer of negativity and pessimism to next generation will create an environment of mistrust and pessimism where agents will decline to participate and cooperate in a socio-economic exchange. This has been the case in most of the underdeveloped and deprived countries of the world.
- Trust breeds trust and mistrust breeds mistrust. Trust generates positive participation in economic exchange resulting into economic growth. Mistrust leads to withdrawal from the exchange and not to invest resulting into economic decline.
- Generations face both positive and negative shocks of behaviour based on their experience and effort to update their priors. It is not true to say that we suffer because of our ancestors as we have ample chance to update our priors and give a positive shock to behaviour curve thereby emerging as a strong and prosperous nation. If we don't do that we shall be responsible for further intensifying the current negative trend of socio-economic behaviour curve.

- The trend of economic growth across the generations generally confirms to the trend of behaviour curve across the same generational time period. Economic growth receives negative and positive shock as is received by the generational behaviour curve.
- Positive ethics help in prosperity of society. However, positive ethics are acquired from positive priors. Therefore, we must concentrate on the ethical grooming of our children.
- Literature is vehicle on which culture travels from generation to generation. Writers and poets play significant role in transfer of beliefs, values, ethics and culture across the generations. Good literature and poetry helps in shaping of positive social environment.
- Social capital has strong relevance to socio-economic life of the nations. On the globe, nations with strong and healthy social capital are prosperous more than those with weak and declining social capital.
- The children of today will be the youth of 2025. We need to groom them and transfer them positive and optimist prior after necessary pragmatic updation as we shall be responsible for the kind of social capital that we will face in 2025.

## 9. CONCLUSION

In this paper a model of social capital based on transfer of beliefs, ethics, values and culture from one generation to other was proposed. In the process it was validated that social capital is in fact a set of beliefs and values that creates willing cooperation and harmony amongst the agents of society. This characterisation makes social capital easy to measure. We proved that it is the responsibility of parents to transfer positive and optimist behaviour to their children. It has also been explained that it is our duty to update our prior and convert societal behaviour from negative to positive. The positive ethics foster cooperation and institute willing regards for social rights and obligations. The economic ambience of social capital showed that behaviour curve across the generations confirms to economic growth curve across the same generations. It has also been indicated that positive literature, poetry and novels play vital role in transfer of ethics, values, and beliefs from one generation to other. Overall paper presents unique study on philosophical underpinnings of social capital.

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