Chapter 3

Review of Related Literature

In this chapter, we will review basic welfare theories, theories of poverty and inequality, the theories behind the well-being of children and gross national happiness index (GNH).

3.1 Basic Welfare Theories

3.1.1 Arrow's Social Welfare Function

A Social Welfare Function (SWF) is a function F defined on a set of profiles (P_1,……,P_N) of strong preferences orders on X returning a relation $P= F(P_1,……,P_N)$ on X. Arrow Theorem stated that social preference can be obtained form individual preference orderings. In the voting system, firstly individual preferences ordering were obtained and form which community-wide social preferences were decided.

Individual preferences → Social choice mechanism → Social ranking

A social choice mechanism is the mechanism which sum up individual preferences into a social preference ordering. Arrow's impossibility theorem proved that there is no social welfare function which satisfies all of the following axioms.

(a) Unrestricted domain (Universality)

Let R_1,…,R_n denote the weak preference and P_1,…,P_n the asymmetric part. Without restriction, we might consider any strict preferences, where no indifference between two alternatives is allowed.

R = at least as good

P = better x P y ↔ x R y and not y R x

I = as good as x I y ↔ x R y and y R x

Given a society of N people with preferences $R_1,R_2,\ldots R_N$

$R = F(R_1,R_2,\ldots\ldots R_N)$

By universality, F is defined for any profile $P_1,P_2,\ldots\ldots P_N$

$P = F(P_1,P_2,\ldots..P_N)$

In this case, we have to assure that the strict preferences are complete in the following:

$x \neq y \rightarrow x P_i y$ or $y P_i x$ (3)

(b) Pareto Efficiency

If alternative a is ranked above b for all ordering $R_1,R_2,\ldots R_N$, then a is ranked higher than b by $F(R_1, R_2, \ldots, R_N)$

Example 1:

P_1 P_2 P_3 P_4

$$\begin{bmatrix} a & a & . & a \\ . & b & a & . \\ b & . & b & b \end{bmatrix}$$ a P b

$F(P_1, P_2, \ldots P_4)$ (4)

(c) Non-Dictatorship

Dictatorial is defined as if there is an individual i such that $F(P_1,P_2,\ldots\ldots P_N) = P_i$ if and only if P is at the top of i's ranking P_i . In the voting theory, the property of non-dictatorship stated that the results of social choice function should not be or must not be reflected by any ONE single person's preference.

$F(P_1,P_2,\ldots\ldots P_N)$

For every profile $P_1,P_2,\ldots\ldots P_N$

$F(P_1,P_2,\ldots\ldots P_N) = P_i$

Person i is the dictator.

$P_1\ P_2\ P_3\ P_4$

$$F\begin{bmatrix} a & a & c & a \\ b & b & b & b \\ c & c & a & c \end{bmatrix} = P_3$$ Person 3 is the dictator. (5)

In order to get fairness, the desires or choices of more than ONE voter must be taken an account into social welfare function.

(d) Independence of Irrelevant Alternatives (IIA)

Independence of Irrelevant Alternatives (IIA) is defined as if whenever the ranking of a Vs b is unchanged for each i = 1,…..,N when individual ranking changes from P to P' then the ranking of a Vs b is the same ordering to both F $(P_1,P_2,\ldots..P_N)$ and F $(P'_1, \ldots.P'_N)$.

Example

$$\begin{bmatrix} a & c & b \\ b & b & c \\ c & a & a \end{bmatrix}$$ Profile 1

$$\begin{bmatrix} a & b & c \\ c & c & b \\ b & a & a \end{bmatrix}$$ Profile 2

$P = F(P_1,P_2,\ldots..P_N)$

$P' = F(P'_1, \ldots.P'_N)$

b P a and b P' a , P and P' are on b Vs a. (6)

Agree on x P y ↔ x P' y

The decision on a and b does not depend on other alternatives, such as c or d.

All Arrow's Theorem showed, was that there is no ordinal approach to social choice. This means that it is impossible to make a social utility function that can transform individual ordinal ranking into social ranking. Even if preferences are stated truly such that strategic voting is excluded, there is no aggregation mechanism by an Arrowian Social Choice Function.

3.1.2 Pareto Efficiency

Pareto efficiency if whenever alternative a is ranked above b according to each P_i, then a is ranked above b according to F (P_1,P_2,…..P_N). Pareto efficiency or Pareto optimality is an important concept in the field of economic, engineering and the social sciences.

Pareto improvement is stated at the stage of when an allocation change from one to another by making at least one person better off without making any other person worse off. Strong Pareto Optimum (SPO) satisfies the stage when no further Pareto improvements can be made. The rule of Weak Pareto Optimum (WPO) is not as strict as Strong Pareto Optimum. The major concept of WPO is that only all individuals strictly prefer a new allocation, Pareto improvement is considered. So only if every person must be trade off with the new allocations, Pareto improvement is possible. In the situation where there is no allocation that every individual cannot be trade off, WPO is satisfied. So the major differences are as follow:

1. SPO satisfies the stage where there is no further Pareto optimum (in which at least one individual better off without making any other worse off).

2. WPO satisfies the stage where there is no further Pareto optimum (in which every individual must be better off).

In this case, SPO is WPO because of the assumption of Pareto optimum of SPO which is " at least one person better off". In the case of " at least one person better off" includes the event that " every person is better off" which is the assumption of WPO. Another statement of SPO is that "without making any other worse off" which alternatively include the event that " every individual must be better off". For these reasons, SPO is WPO.

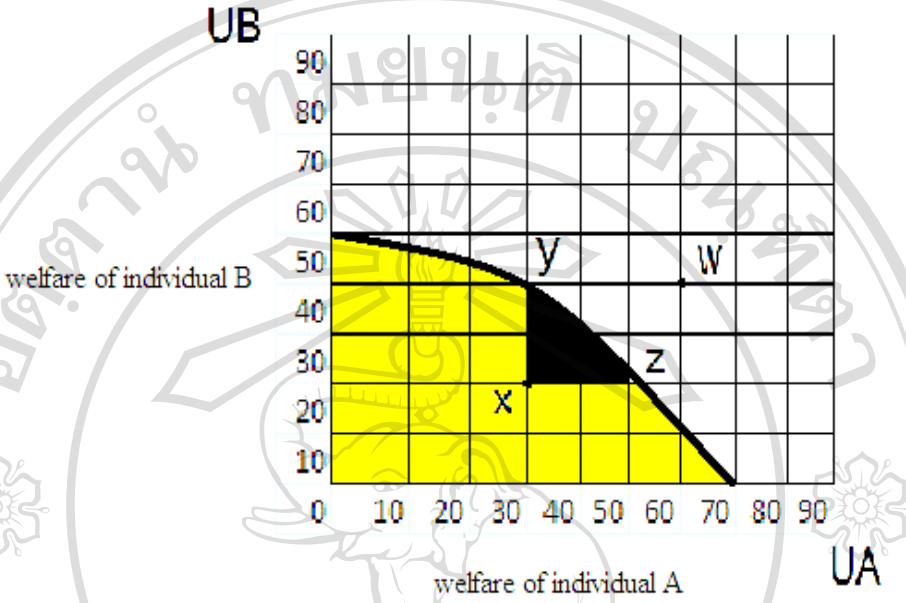
3.1.3 Pareto Frontier

Given a set of choices and a way of valuing them, the **Pareto Frontier** or **Pareto Set** is the set of choices that are Pareto efficient. A simple example is shown in Figure 3.1.

Consider, there are two people in the economy, individual A and individual B. If all goods were given to individual A, he would perceive for example 70 units of utility. Individual B would get nothing and his utility would be 0. If all of the goods were given to individual B, he may perceive 50 units of utility and individual A would still get 0 utility. The Pareto Frontier is the black curve connecting these two points. It depicts the maximum possible welfare of this pair of people.

Any point in an area between points x, y and z represents a Pareto improvement over point x. For instance point x, representing 20 units of welfare for individual B and 30 units of individual welfare for individual A, is inefficient, because some changes in the allocation of resources, technology and/or distribution of consumer goods can improve the welfare of one or both of them.

Figure 3.1 Pareto Frontier



Source : OK Economics, Retrieved from http://econc10.bu.edu/GENEC/Basics/Efficiency/pareto_frontier_lg.htm.

Point w, that is 60 units of utility for individual A and 40 units for individual B, is infeasible, since it cannot be achieved with the existing resources and technology. All the points below the Pareto Frontier are inefficient.

Starting from point x, it would be possible to double the welfare of individual B from 20 units to 40 units, without affecting the welfare of individual A, (point y) or similarly to increase the welfare of individual A without affecting the welfare of individual B (point z).

In the situation where we have individual utilities that are ordinal and not interpersonally comparable, the major differences of weak Pareto and strong Pareto principle is as follow:

The weak Pareto: P is socially preferable to Q if individual's ordinal ranking of P is higher than ranking of Q.

The strong Pareto: P is socially preferable to Q if at least one person ranks P higher than Q.

3.1.4 Nash Equilibrium

Nash equilibrium is a state which nobody can improve his allocation or pay-off by his own power. In the Nash equilibrium, a dominant strategy is defined as an action which is better independent of which the other person is doing. There is an easy numerical way to identify Nash's Equilibria on a Payoff Matrix. Consider the following two games:

Figure 3.2 Game (a) Nash Equilibrium 1

P_1/P_2	X	Y
A	(10,10)	(15,5)
B	(5,15)	(12,12)

Figure 3.3 Game (b) Nash Equilibrium 2

P_1/P_2	X	Y
A	(0,0)	(0,1)
B	(2,0)	(0,0)

In game (a), the Nash Equalibria is the point (A,X), (10,10) coded in yellow. The Nash Equilibrium is the point at which everybody moves away from the loose (worst) point and where nobody can improve by his own power. In game (a),

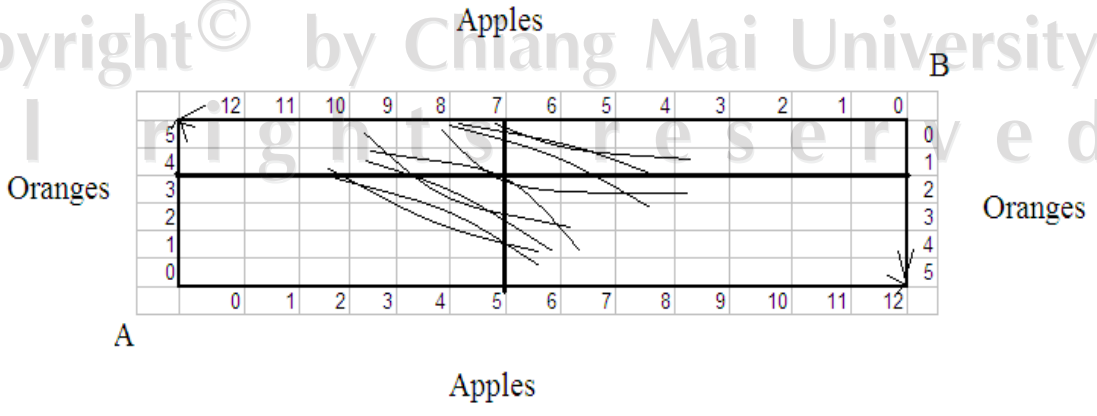
the Nash Equalibria is dominated by (B,Y), (12,12) coded in green, and in which state both players can be better off. In this case, (A,X) is Pareto sub-optimal and (B,Y) is Pareto optimal.

In game (b), there are three Nash equilibriums which are (B,X), (A,Y) and (B,Y), where nobody can improve himself by his own power. There is no Pareto dominated strategy for both Person 1 and Person 2 in this case. It means that both of them cannot be improved to better off situations through coordination.

3.1.5 Nash Bargaining Solution

The Nash Bargaining Game is a simple two-player game where bargaining interactions is considered. In the Nash Bargaining Game, some potions of goods or money are distributed to two players. If the overall demand of two players is not more than the total goods, their demands are considered. If the sum of their demands is more then the total amount, both get nothing. Nash proposed that a solution should satisfy certain axioms. They are (1) invariance to affine transformations of the utility function, (2) Pareto optimality, (3) the independence of irrelevant alternatives and (4) symmetry. See Nash Bargaining solution in the following Edgeworth Box.

Figure 3.4 Edgworth Box Showing Distribution of Two Commodities for Two Individuals



Suppose there are two individuals A and B in the pure exchange economy, there are 12 apples and 5 oranges are distributed. The initial endowment is

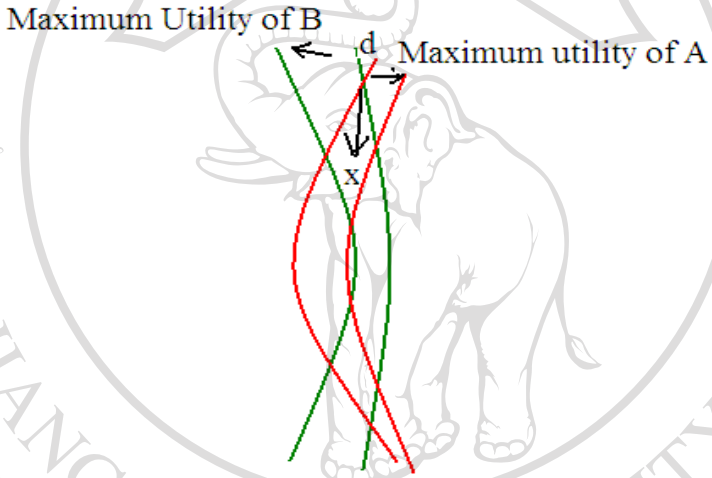
For A, 5 Apples , 3 oranges

For B, 7 Apples , 2 oranges

In the Pareto sub-optimal, more utility can get for other person.

Figure 3.5 Pareto Sub-Optimum State Vs Pareto Optimum State

(a) Pareto Sun-optimum state



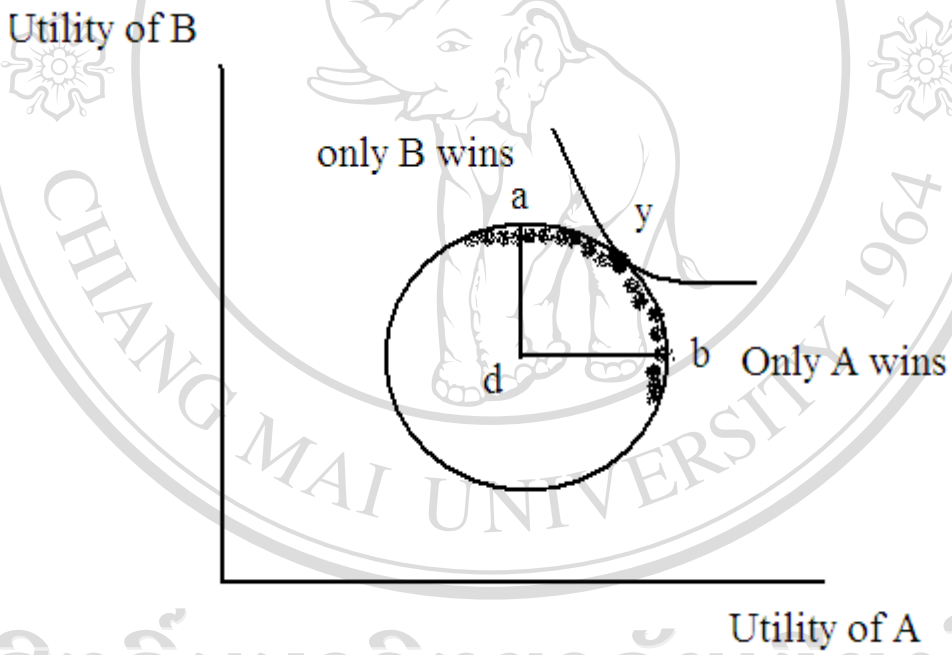
(b) Pareto Optimum state

In Figure 3.5, Pareto sub-optimum and Pareto optimum were compared. In the figure 3.5 (a), d is a thread point. x is not Pareto optimum yet and x is still at the Pareto suboptimum which can continue bargaining. In which way, utility of A and B can still be maximized. At the Pareto optimum, bargaining ends.

In figure 3.5 (b), bargaining stops because it reaches the Pareto Optimum at point Y. Bargaining is the Win-Win situations because no individual wants to loose. If bargaining fails then initial endowment d remains.

In the following figure, the shaded part is Pareto Frontier. At point a only B wins and at point b only individual B wins. y is the Pareto Optimum where both utility of A and utility of B can be maximized.

Figure 3.6 Pareto Frontier and Pareto Optimum



In the Nash Bargaining Solution, utility does not need to be interpersonally comparable, because the unique Nash Bargaining Solution Є O is found by maximizing

$N = ((U_1(x) - U_1(d))(U_2(x) - U_2(d))$

where ,

X is allocation

D is the: threat point, if bargaining fails (7)

A Nash function F (O,d), where O convex subset of IR^2, d Є IR^2 refers to a single solution of the bargaining problem, offers feasible options in O and the threat point.

$U_i(X) > U_i(d)$

It is easy to show that N is scale invariance.

Consider the new scale:

$U_1' = \alpha_1 U_1 + \beta_1$

$U_2' = \alpha_2 U_2 + \beta_2$

$(U_1(X) - U_1(d))$ (a)

$= ((\alpha_1 U_1(X) + \beta_1) - (\alpha_1 U_1(d) + \beta_1))$

$= \alpha_1 (U_1(X) - U_1(d))$

$(U_2(x) - U_2(d))$ (b)

$= ((\alpha_2 U_2(x) + \beta_2 - (\alpha_2 U_2(d) + \beta_2))$

$= \alpha_2 (U_2(x) - U_2(d))$

Then the function (x) turns out to be:

$N' = \alpha_1 \alpha_2 (U_1(X) - U_1(d) (U_2(x) - U_2(d)$

or

$N' = \alpha_1 \alpha_2 N$

Since $\alpha_1, \alpha_2 > 0$,

Maximizing N is equivalent to maximizing N'. (8)

3.1.6 Samuelson Bergson Social Welfare Function

In the situation of full interpersonal comparability, Samuelson Bergson's utility function can be stated as follows:

$$W(x) = F\left(U_1(X), U_2(X), \ldots, U_n(X) \right) \quad (9)$$

W(x) represents a real number of social utility value.

F is an increasing function that yields a real number.

U_1 is a cardinal, interpersonally comparable utility value yielded by some procedure for individual one, and

n is the total number of individuals.

But in the real world, the utility for children is difficult to measure and so cannot be compared interpersonally as a cardinal function. Consider the following standard model in the next paragraph; a bounded scale with best and worst order.

3.1.7 Standard Gamble Method

Assume that we want to measure utility based upon best and worst. We can set utility zero for the worst outcome value and 1 for the best outcome.

Consider the lottery,

$$X \sim \begin{bmatrix} Best & Worst \\ p & 1-p \end{bmatrix} = L,$$

L is equivalent to some alternative $X \sim L$

U (Best) = 1, U (Worst) = 0

By the rule of expected utility;

EU(L) = p U (Best) + (1-p) U (Worst) = p

Thus, the utility for x, U(X) = p (10)

This method requires that each person understands what a lottery is, and to have stable preferences for lotteries. Children do not understand the concept of probability and cannot find an equivalent lottery for given alternatives.

3.2 Measurement of Inequalities

3.2.1 Gini Coefficient

The Gini Coefficient (or Gini ratio) is a summary statistic of the Lorenz curve and a measure of inequality in a population. The Gini coefficient is most easily calculated from unordered size data as the 'relative mean difference', that is, the mean of the difference between every possible pair of individuals, divided by the mean size.

The Gini coefficient ranges from a minimum value of zero, when all individuals are equal, to a theoretical maximum of one in an infinite population in which every individual except one has a size of zero.

The Gini coefficient is classified into normalized and un-normalized. Un-normalized Gini is defined as small g. The formula for un-normalized Gini is as follows:

$$g(\overrightarrow{x}) = \sum_{i=1}^{n}(n+1-i)\,.\,\vec{x}\,[\,] \qquad (11)$$

A normalized Gini is formulated as follows:

$$G(\overrightarrow{x}) = 1/n\ (\ n+1-2\ .\ g(\overrightarrow{x}) / \sum \vec{x}\ ) \qquad (12)$$

Where,

i = the rank order of the individual

x = the income of the individual

n = the number of observations

$\sum \vec{x}$ = the total income

The properties of normalized and un-normalized Gini coefficients are, by Pareto improvement:

$g(\overrightarrow{x})$ is better because the greater the $g(\overrightarrow{x})$, the better it is.

G ($\overline{x}$) may be worse because the smaller the G ($\overline{x}$), the better it is.

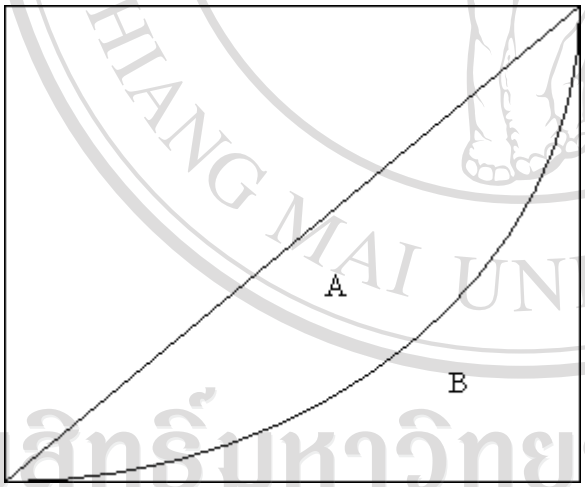
There is no problem with having an un-normalized Gini coefficient with negative income, but a normalized Gini has a problem with negative income.

(a) By Lorentz Curve (1905)

A numerical measure of inequality is the Gini coefficient. It can be derived directly from the Lorentz Curve, which is illustrated below.

In the Lorentz Curve, the 45 degree line shows the perfect distribution. The horizontal axis shows the cumulative share of people with a lower income, and the vertical axis means that cumulative share of income earned.

Figure 3.7 Lorentz Curve



Denoting the Gini coefficient by *G*, we have;

$$G = \frac{A}{A+B} \qquad (13)$$

Where area A is equal to a normalized Gini G ($\overrightarrow{x}$) and area B is equal to an un-normalized Gini g ($\overrightarrow{x}$), which must lie between 0 and 1. When there is total equality, the Lorentz curve coincides with the 45º line; area *A* then disappears and *G* = 0. With total inequality (one household having all the income, nutrition, or growth), area disappears and *G* = 1.

(b) The Principles of Lorentz Half Ordering

Lorentz half ordering satisfies three principles. If $\vec{x}$ dominates $\vec{y}$, then $\vec{y}$ can be gained from $\vec{x}$ through a sequence of Pareto-improvement, Pigou-Dalton redistribution and anonymity.

1. Pareto Improvement

$x = \vec{x} = (x_1,\ldots\ldots,x_n)$

$\vec{y} = (x_1,\ldots\ldots,x_j+\delta,\ldots\ldots x_n)$

$\Sigma \vec{y}\,[\,] \geq \Sigma \vec{x}$, $\vec{y}$ dominates $\vec{x}$. (14)

2. Anonymity

Anonymity means that any distribution should be equivalent to its permutation. If $\vec{y}$ is the permutation of $\vec{x}$ then $\vec{y}\,[\,] = \vec{x}\,[\,]$, and it follows that $\vec{y}$ dominates $\vec{x}$ and $\vec{x}$ dominates $\vec{y}$.

3. Pigou-Dalton Redistribution

The Pigou-Dalton principle demands that a regressive transfer decreases social welfare. A sequence of rank-preserving redistribution can lead to redistribution where the formally poor will not become richer than the formally rich.

$\vec{x} = \vec{x}\,[\,] = (x_1,\ldots..,x_n)$, $x_j \leq x_i$

$$x_j + \delta \leq x_i - \delta \quad (15)$$

3.2.2 Theil Index

Another widely used indicator of inequality is the generalized entropy class developed by Theil.

The Theil Mean Log Deviation Index is

$$T_0 = \frac{1}{N}\sum_{i=1}^{N}\left(\ln\frac{\overline{x}}{x_i}\right) \quad (16)$$

The Theil Entropy Index is:

$$T_1 = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{x_i}{\overline{x}}\cdot\ln\frac{x_i}{\overline{x}}\right) \quad (17)$$

Where x_i is the income of the i^{th} person, $\overline{x} = \frac{1}{N}\sum_{i=1}^{N} x_i$ is the mean income, and N is the number of people. The first term inside the sum can be considered the individual's share of aggregate income, and the second term is that person's income relative to the mean. If everyone has the same (mean) income, then the index is 0. If one person has all the income, then the index is ln N.

Both measures are zero for perfect equality. For complete inequality (one person consumes everything), T(0) goes to infinity while T(1) reaches $n\ln(n)$. The two Theil inequality measures differ in their sensitivity to inequality in different parts of the distribution. The entropy measure, E(1), is most sensitive to inequality in the top range in the distribution, while the mean log deviation measure, E(0), is most sensitive to inequality in the bottom range of the distribution.

3.3 Conceptualization and Measurement of a Child's Well-Being

3.3.1 Conceptualizing and the Philosophical Underpinnings of Well-Being

Since well-being has focused on different professions, cultures, disciplines and theoretical developments, there have been many kinds of well-being literature that have emerged in the fields of economics, medicine, psychology and sociology (Pollard and Lee, 2002; Bornstein, Davidson, Keyes, Moore, and the Centre for child wellbeing, 2003). The economic community accepted that there are additional domains of well-being, including health, education and social relationships, and this led to a recognition that material conditions do not account for the totality of well-being (Allister-McGregor, 2004a; Allister-McGregor, 2004b; Grasso, 2002; Gasper, 2004a; Gasper, 2004b). In the field of medicine, well-being has been examined in terms of the absence of disease and the level of infirmity. This group focused on illness and illness-related variables, such as physical functioning and mental health (Holmes, 2004). For instance, it was commonly found that depression is the most frequently used measure of well-being in health related well-being literature. Similarly, in the sociology and psychology literature, well-being has been mainly described in terms of life satisfaction and happiness, as well as the extent to which individual aspirations and/or expectations have been fulfilled (Holmes, 2004).

The nature of well-being is difficult to describe without first considering its philosophical concepts. It has been suggested that the meaning of well-being has two broad paradigms, namely 'hedonism' and 'eudemonism' (Ryan and Deci, 2001). Hedonism is concerned with positive feelings, such as happiness and contentment (Ryff, Singer, and Love, 2004). Hedonism is characterized by the use of terms associated with pleasure attainment and pain avoidance (Ryan and Deci, 2001;

Kahneman, Diener, and Schwarz, 1999). The subjective measurement of well-being has mainly focused on feelings such as happiness, contentment and attaining pleasure, in the context of developing a national set of child well-being indicators (Diener and Lucas, 1999). Eudemonism has been proposed as a "realization of one's true potential" rather than as the "achievement of pleasure" (Ryff, 1989). This paradigm consists of self-development, personal growth and 'purposeful engagement' (Ryff, Singer, and Love, 2004).

3.3.2 Definition and Domains of Child Well-Being

The multi-dimensionality if well-being is usually reflected in its definitions. Columbo (1986) defined well-being as a 'multi-dimensional construct incorporating psychological, physical and social dimensions' (Columbo 1986, cited in Pollard and Lee, 2002, p.63). Bornstein, Davidson, Keyes, Moore, and the Centre for child wlellbeing, (2003) suggested that 'well being is a state of successful performance throughout the life course integrating physical, cognitive and socio-emotional functions, that results in productive activities deemed significant by one's cultural community, social relationships and the ability to transcend moderate psycho-social and environmental problems'. Andrews, et al. (2002) defined well being as 'healthy and successful individual functioning (involving physiological, psychological and behavioral levels of organization), positive social relationships (with family members, peers, adult caregivers and the community) and societal provision of safety (freedom from interpersonal violence, war and crime), human and civil rights, social justice and participation in civil society' .

A number of authors have undertaken reviews of literature and have identified distinct domains for taking account of child well-being but, as exemplified

below, there has been no consistency in how this categorization has taken takes place. Carroll (2002) for example, adapted Land, Lamb, and Mustillo-Kahler, (2001a) framework, which set out a seven domain approach as follows:

1. Material well-being
2. Social relationships
3. Health
4. Safety
5. Productive activity
6. Place in community
7. Emotional and spiritual well-being

Pollard and Lee, (2002), in their systematic review of the child well-being literature, identified five distinct domains for assessing child well-being and these were:

1. Physical
2. Psychological
3. Cognitive
4. Social
5. Economic

Brown (1997) and Hauser, Brown, and Prosser (1997) also identified five domains, but these were different:

1. Health
2. Education
3. Economic security
4. Population, family and neighborhood

5. Social development and problem behavior

In the Child Trends Report (2003), it included the following:

1. Health
2. Social and emotional development
3. Education and skills
4. Demographic
5. Income, assets and work
6. Family and community

Likewise, Reidy and Winje (2002) identified six distinct domains as follows:

1. Healthy and safety
2. Social and emotional development
3. Educational achievement and cognitive attainment
4. Family environment
5. Community and school environment
6. Youth self-sufficiency

3.3.3 Subjective and Objective Well-Being

Well-being can be defined from two perspectives: objective conditions and the subjective perceptions and experiences of the individual (Ben-Arieh et al. 2001; Bornstein, Davidson, Keyes, Moore, and the Centre for child wellbeing, 2003; Diener, 1984; Bradburn, 1969; Pollard and Lee, 2002; Carroll, 2002). Objective well-being refers to the situation where the 'measurement considers the externally approved, and thereby normatively endorsed, non-feeling features of a person's life' (Gasper 2004a; Gasper 2004b, p. 13). This includes measures in which there is a consensus that they

are ‘significant components of better or worse life circumstances’ (Carroll, 2002, p. 46) such as good health, financial security and access to affordable and/or adequate housing (Carroll, 2002). Subjective well-being refers to an ‘assessment of well-being that is performed by the individual themselves’ (Strappazzon, 2001, p. 97). Subjective measures of well-being are based on an individuals’ personal values, views and assessments of their life circumstances, and include for example, happiness, feeling connected to one’s community and self-esteem (Carroll, 2002). The most common measure of subjective well-being involves asking people how satisfied or happy they are with their lives (Andrews and Robinson, 1991; Pavot and Diener, 1993). Positive and negative well-being, according to the literature, also focuses on both the positive and negative aspects of a child’s life (Acton, 1994). Therefore, to get a complete understanding of a child, it is expected that the final indicator set will comprise a balanced collection of both positive and negative measures.

3.3.4 Measuring a Child’s Well-Being

Generally child well-being has been measured through a set of child well-being indicators (Carroll, 2002: Pollard and Lee, 2002; Diener, 1984). One indicator of well-being was defined as ‘a measure of a behavior, condition or status that can be tracked over time, across people and/or geographic units’ (Child Trends, 1997, p.11). Similarly, Moore (1999) defined an indicator of well-being as ‘a measure that assesses health, cognitive and socio-emotional well-being, at a point in time and over time, and across geographic areas and population groups’ (Moore, 1999, p.6).

There have been three main approaches to developing an indicator of child well-being. They are:

(a) Data-driven

(b) Policy-driven

(c) Theory-driven

The data-driven approaches to developing an indicator set, mean that indicators are selected on the basis of the availability of data. This, in turn, means that existing data sets are exploited to best characterize the state of the subject area under investigation. In policy-driven indicator development, indicators are developed for those 'phenomena that are currently on the political agenda and for which data are requested by policy-makers' (Bauer, Davies, Pelikan, Noack, Broesskamp and Hill, 2003, p.107). Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber, (2001) suggested that it is essential that indicators are useful for policy-makers, and stressed the importance of including them in the process of developing indicators. A theory-driven approach is generally defined as one that focuses on selecting the best possible indicators from a theoretical point of view. Although indicators can be identified in this way, the availability of data often places restrictions on the outcome of this approach (Niemeijer, 2002).

The field of child well-being indicators has undergone four major shifts. These were shifts from a focus on survival to well being, from a negative to a positive focus, from well-becoming to well-being, and from traditional to new domains (Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber, 2001, p.47).

The shift from survival to well-being measurement included infant and child mortality rates, school enrolment rates and childhood immunization rates. These measures were concerned with a child's basic survival and developmental needs, and so failed to measure the well-being of children beyond survival, particularly in well-

developed countries (Aber and Jones, 1997; Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber, 2001).

As part of the negative to positive shift, a greater focus on the positive measures of a child's well-being was identified, in order to balance the negative measures of a child's well-being which had been undertaken by a number of authors (Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber, 2001; Moore, Brown, and Scarupa , 2003). It was noted that 'child well-being indicators are on the move from concentrating only on trends of dying, distress, disability and discomfort, to tackling the issue of indicators of sparkle, satisfaction and well-being' (Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber, 2001, p.40).

In the shift from well-becoming to well-being, Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber (2001) also found that many of the efforts to measure child well-being focused on the 'well-becoming' of children and included measures that were concerned solely with children as 'future adults', or as members of the next generation. While they concluded that looking to the future was a legitimate and necessary activity, they also highlighted the legitimacy of children's present well-being and the importance of taking into account the well-being experienced by children during their period of childhood itself (Ben-Arieh, Hevener-Kaufman, Bowers-Andrews, Goerge, Joo-Lee, and Aber, 2001; Qvortrup, 1997).

3.4 Theories of Poverty

3.4.1 The Capitalist Paradigm (1950s to the 1960s)

The capitalist paradigm stated that the less developed countries could promote growth when their capitalist classes had emerged largely in the primary

sector. Hunt (1989) stated that "the capitalist class plays a crucial role in capital accumulation, for its members have a higher propensity to save and invest out of their income than any other class". However, underdeveloped countries have inadequate savings in order to increase their growth. There are two ways to solve this problem. One is to save or borrow from developed countries. The second is to obtain grants for driving export-led growth, growth which can increase a country's income. The role of the state is not to intervene in the competitive market, but to intervene only when crises appear, such as the market's inability to promote individual or social welfare (Clements, 1980).

3.4.2 The Structuralist Paradigm

Strong external economic relations might have negative implications on the development process. The structuralists stated that underdeveloped countries can promote growth by identifying structural changes and economic policies (Hunt, 1989, p. 336). This theory stated that economic growth is not entirely dependent upon savings and investments, because there are some domestic constraints, such as the nature and scale of the local resource endowments and rising population size, whether or not the country can access external capital, technology and trade (Todaro and Smith, 2006, p. 114). The role of the state is to set the goals for the redistribution of income among the poor, in order to increase saving rates and maintain full employment (Clements, 1980). In this paradigm, development is seen from two perspectives, social and economical.

3.4.3 Maoist View

The principle of the Maoist view is to generate economic development, not only by improving investment in heavy industries, but also by encouraging light

industries in rural areas. This means that the welfare of the people is as important as the development of economy. Hunt implied that it is necessary for the Maoists to work for the development of "social consciousness, attitude and behavior" (Hunt, 1989, p. 236-237). Maoists consider not only the importance of increasing the rate of development of production, but also the development of productive forces.

3.4.4 Basic Needs Paradigm

The theory of the basic needs paradigm is to eliminate poverty by sustaining both the expansion of employment opportunities and the income of the poor. This theory mainly focuses on indicators of health (such as life expectancy at birth), education (such as literacy and primary school enrolment), food (such as calorie intake per head, or calorie supply as a percentage of requirements), water supply (such as the percentage of the population with access to water), and sanitation (such as the percentage of the population with access to sanitation facilities). The basis of the basic needs approach is to fulfill the poor's basic needs by raising their productivity and income. This will affect the structure of demand, which then has an impact on aggregate investment (Hunt, 1989, p. 273). The role of the state is to implement strong "political will", will which can drive the necessary changes in the country.

3.4.5 Neo-Classical Paradigm

The neo-classical paradigm considers that the operation of the free market will maximize efficiency and economic welfare (Hunt, 1989, p. 326). There are three basic approaches taken to smoothing out market transitions. These are the free market approach, the public choice theory approach, and the market friendly approach (Todaro and Smith, 2006). The free market approach considers it important to allow

markets alone to provide the best signals for investment in new activities. Public choice theory asserts strongly that the intervention of a government will slow down growth. The market-friendly approach states that the role of government is to develop physical and social infrastructures, health care facilities and educational institutions, by providing a suitable market for private enterprise. Government intervention is the major barrier to the development of economic growth. The role of government is to provide support for the operation of the free market, by setting up the infrastructure that will facilitate its performance.

3.5 Gross National Happiness Index

[3]Bhutan's former King Jigme Singye Wangchuck developed the term GNH, which is Gross National Happiness, in 1972 after opening up Bhutan's to the age of modernization. GNH identifies the quality of life in more holistic and psychological terms than Gross National Product (GDP). The King intended to build the country economy serving Bhutan's unique culture with reference to Buddhist spiritual values.

The GNH index has been designed with nine dimensions which fulfill various criteria needed for periodic national measure to happiness that is also relevant to national and district policy. The nine dimensions of GNH are as follow. It means that happiness is acquired by achieving in each of the nine dimensions.

1. Psychological well-being
2. Time use
3. Community vitality
4. Culture

[3]Origion of Gross National Happiness Index, Retrieved from: http://en.wikipedia.org/wiki/Gross_national_happiness

5. Health
6. Education
7. Environmental diversity
8. Living standard
9. Governance

Psychological wellbeing is comprised of the indicators of life enjoyment, life satisfaction and subjective wellbeing. Since psychological well-being index covered three areas of general psychological distress indicators, emotional balance indicators and spirituality indicators, general psychological distress rate, prevalence rates of both negative emotions and positive emotions, spiritual activities like mediation and prayers and consideration of karmic effects in daily life were calculated under the domain.

The domain of time use defines quality of life by analyzing the nature of time spent within a 24-hours period. Under the domain of time use, the indicators of non-work activities such as sleeping, personal care, community participation, education and learning, religious activities, social and cultural activities, sports and leisure and travel and un-paid work activities such as care of children and sick members of household, and maintenance of household are concluded.

Community validity defines the strength and weakness of relationships and interactions within communities. Community validity is measured with the indicators of family vitality, safety, reciprocity indicator, trust, social support, socialization, kinship density.

The domain of cultural diversity and resilience indicates the diversity and strength of cultural traditions which is one of the Bhutan's primary policy goals.

The indicators of dialect use, traditional sports, community festival, artisan skill, value transmission and basic precept are included under this domain.

The health status of the population, the determinants of health and the health system indicate the domain of health. Health domain is measured with the indicators of health status indicators such as self-rated health, disabilities, body mass index, number of healthy days per month, health knowledge such as the prevalence of knowledge about HIV transmission and breast feeding practices and barrier to health which defines with the indicators of walking distance to nearest health facility.

Under the domain of education, the indicators of education attainment, Dzongkha language, folk and historical literacy are included. These indicators contribute the knowledge, creativity, skills, values and civic sensibility of citizens.

The indicators of ecological degradation, ecological knowledge afforestation are measures of ecological diversity and resilience. These indicators contribute the impact of domestic supply and emend on Bhutan's ecosystems.

Living standard is measured with the indicators of income, housing, food security and hardship.

Government performance indicator, indicator of freedom and institutional trust define the domain of good government which analyze how people perceive various government functions in terms of efficacy, honesty, and quality.

GNH index was constructed with two steps, identification and aggregation. In the step of identification, applying a sufficiency cutoff to each dimension of households was included. The sufficiency cutoffs were applied by setting the value of each indicator which was sufficiency or above sufficiency zero and which was below sufficiency replacing with distances from the cut-offs. For

example, if the poverty line is 10 and the achievement is 8, the gap (depth) is (10-8)/8, or 0.25. The distances from the cutoffs were squared in order to take account of the severity of the sufficiency levels. Happiness is considered by achieving sufficiency in all 9 dimensions. The second step was to aggregate the data of the population a decomposable measure that was sensitive to the 'depth' or 'severity' of achievements. The shortfalls from gross national happiness were firstly identified and the squared distance from cutoffs are calculated. GNH is measured as follow.

GNH = 1- Average squared distance from cutoff (18)

Comparing GNH in different districts surveyed, we can see which districts have higher GNH scores. Further GNH can be compare cross time to see if GNH is decreasing or increasing after conduction further surveys. GNH can be also decomposed by dimension (or indicator), by district, by gender, by occupation, by age group in order to analyze how shortfalls in GNH vary across disaggregated levels. Decomposition of GNH across time is identified to see in which dimensions sufficiency is increasing, and also to track whether or not it is decreasing in any dimensions. Further the average severity of deprivations identifies whether the gap below the sufficiency cutoff is deepening or narrowing across time. In these ways, GNH can be used as an instrument of policy.