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TOWARD A QUALITY OF LIFE THEORY: NET DOMESTIC PRODUCT OF HAPPINESS

INTRODUCTION

Various disciplines have approached and defined Quality of Life (QOL) and its closely related topics of human well-being and happiness, differently. Quality of life is influenced by a multidimensional set of domains that constitute life. Using a standard-of-living (an indicator for the economic domain of life) as a measure of an individual's or a community's well-being undervalues the importance of many other domains of life such as relationships, health, spirituality, environment, safety, knowledge, and liberty. However, with the exception of economic domain, all others are intangible variables that resist objective measurement from most economists' point of view. In measuring a community's well-being, QOL studies use a set of indices (often selected on an ad hoc basis) to arrive at an aggregate measure of QOL. The purpose of this paper is to suggest an unbiased QOL definition, a measurement method, and examination of the link between happiness and QOL.

THE SCIENCES AND QOL

Medical researchers and practitioners have conducted the most extensive applied-human-well-being and QOL studies (Capewell, 1988; Hunt, 1988; Kind, 1988; Smith, 1988; Puma and Lawlor, 1990; Bowling, 1991). However, their focus is primarily on the health domain of QOL. For example, before conducting a treatment, physicians sometimes use a Quality-Adjusted-Life-Years (QALY)

approach to evaluate overall QOL of a patient with or without the proposed treatment.

Economics is commonly defined as the best allocation of scarce resources among competing ends. In order to provide a more comprehensive answer to the question of, "the best allocation toward what ultimate objective?" the above definition should be expanded to include the QOL concept. As an objective, the attainment of the highest possible Quality of Life has more affinity with society's well being than the attainment of highest economic efficiency. However, the incompatibility between the subjective nature of "feelings" associated with the QOL concept and the objective nature of the economics science has curtailed QOL studies in the field of economics.

In economics, improving the standard-of-living is the primary means for enhancing a society's well-being (the economic domain of QOL). The use of ordinal data (e.g., using a one-seven scale) in most human-behavior-related fields such as medicine, psychology, and social sciences in general is well accepted. However, despite recent growth in happiness and well-being studies in economics, starting with Easterlin (1974, 1995), Oswald (1977), and especially Frey and Stutzer (2001), this core topic has not yet fully captured the mainstream economists' attention. This is due to the economists' skepticism concerning the quality of self-reported-ordinal-scaled data. Most economists acknowledge the importance of the subjective domains of life, such as relationships, but leave the study of those domains mostly to other professionals.

Compared to material-wealth, maximizing relational-wealth (a term used by Diwan, 2000), or democratic-wealth (a term used by Frey and Stutzer, 2001) is theoretically more complex as it deals with intangible values. Frey and Stutzer's study of happiness and unhappiness associated with macroeconomic variables is noteworthy. However, their primary focus is limited to the economic domain of the QOL.

Psychologists' examination of human emotions, motivations, happiness, and well-being focuses on the intangible aspects of the QOL. In his recent interdisciplinary studies in overlapping areas between economics and psychology, Daniel Kahneman, the 2002 Noble prizewinner in economics, and Tversky introduce the concept of "objective happiness" for measuring utility and happiness (Kahneman and Tversky, 2000). On the importance of happiness, they state:

Clearly, a life that is meaningful, satisfying and cheerful should rank higher on the scale of well-being than a life that is equally meaningful and satisfying, but sad or tense. Objective happiness is only one constituent of the quality of human life, but it is a significant one ...... The concept of objective happiness is not intended to stand on its own, and is proposed only as a necessary element of a theory of human well-being. A comprehensive account of well-being inevitably brings in philosophical considerations (Ryff and Singer, 1998) and a moral conception of "the good life" (Brock, 1993; Nussbaum and Sen, 1993), which are not easily reduced to experienced utility. (p. 684)

DEFINING QOL AND RELATING TO HAPPINESS

In studying QOL, every discipline has a natural bias to overemphasize the importance of its own area. However, an individual's QOL is influenced by all life events within all domains of life (e.g., economics, health, spirituality, liberty, social relationships) without any predetermined bias toward a particular discipline. Therefore, in assessing a community's QOL, only a multidimensional approach is applicable.

A comprehensive definition of QOL is a prerequisite for its study and measurement. This study suggests the following definition for the QOL concept. This proposed definition is a synthesis of many existing and relevant (to this study) definitions of QOL. It is unbiased toward any specific philosophy of life, religion, or "morality" and seems to capture the main aspects of the QOL concept. From cannibalism to capitalism, the following proposed definition is equally applicable. Since a community is a collection of many individuals with often similar interests, a community's measure of QOL is the sum of its members' QOL.

The Quality of Life should be defined as the product of the interaction between an individual's personality and the continuous episodes of life events. The life events occur within a multidimensional set of domains, namely, liberty, knowledge, economics, health, safety, social relationships, spirituality, environment, and recreation.

The relationship between happiness and QOL is unique. Despite their diversity, all indices that attempt to measure various domains of QOL share one common denominator of "happiness," the ultimate goal in life for the majority of individuals. Improving QOL is just "a means" and not "an end" in itself. The ultimate goal of improving QOL is to maintain and enhance the scope, depth and intensity of

human well-being or "happiness." This suggests that any compre-
hensive evaluation of QOL must rely on measuring the intangible
variable of "feelings" that is embedded in happiness.

In other words, QOL determines human well-being and ultimately
happiness. Therefore, any objective approach toward measuring
QOL must eventually address its ultimate goal or the subjective
concept of happiness. In her interpretation of Ayn Rand's explana-
tion of happiness, Smith (2000) prefers the implied active term of
"human flourishing" to that of passive term of "happiness." Never-
theless, both "human flourishing" and "happiness" are subjective
terms.

An individual's feelings are byproducts of that individual's at-
tempts toward maximizing the positive experiences of his or her
QOL. Human feelings are reactionary emotions that are evoked
during every life-event encounter. While we pursue our internal in-
stinct to satisfy our needs and move toward self-actualization, we face
a never-ending series of external life events. In dealing with these life
events, there are three primary processes at work, before, during and
after that event:

1. An assessment of our personal resources, capabilities, competency,
    and our accumulated previous experiences, especially as they are
    compared to others.
2. An expectation for the most likely outcome (before and during the
    event), and eventual realization of the outcome (after the event).
3. An expectation for the pleasure or pain associated with that event
    (before and during the event), and the resulting actual experienced
    pleasure or pain from that event (after the event). According to
    Bentham's Utilitarianism, avoiding pain and promoting pleasure
    is the most basic human tendency and a natural social rule.

As we live, the interaction among the above three processes
evokes the feelings of hope, fear, stress, relief, apathy, anger, confi-
dence, jealousy, spirituality and personal peace, accomplishment,
success, failure, content, belonging, compassion, security, physical
and mental comfort, pride, self-worth, and love. Among these feel-
ings, those that produce pleasure (positive feelings) lead to happiness
and vice versa.

In explaining the objective happiness concept, Kahneman and
Tversky point out:

Moment-utility is the building block of the broader construct of experienced utility. It is also the building block for a construct of objective happiness, ... objective happiness is to be derived from a distribution of moment-utility that characterizes an individual, a group, or a setting. Like total utility, objective happiness is a moment-based concept, which is operationalized exclusively by measures of the affective state of individuals at particular moments in time. (p. 681)

As a catalyst, command-over-resources fosters a higher degree of personal freedom in dealing with various life events. When the liberty domain of QOL is energized, the expanded freedom of choice enables us to select alternatives that better maximize our happiness.

Contemplation about "the meaning of life," what constitutes "a meaningful or a good life," or the eternal question of "what is happiness," requires a much broader scope of inquiry (i.e., religion, philosophy, culture, ethics, and morality) and is beyond the scope of this study. However, within a moment-based context, the moment-based happiness can be loosely defined as a net-sum of all pleasant feelings whenever the actual outcome from a positive life event matches or exceeds our expected outcome of that event (e.g., you expected to win 5–0 but won 8–0).

Similarly, in the case of negative life events, whenever the actual outcome falls short of our prior expected outcome we will not feel happy but rather "not as sad" (expected to lose 0–5 but lost 0–1). The degree of happiness is directly related to the gap between our expected and actual outcome. Consequently, unexpected events, for which the gap between expected and actual outcome is the greatest, enhance the intensity of happiness feeling (expected to lose 0–5 but won 8–0, or winning a lottery), or sadness feeling (expected to win 5–0 but lost 0–5, or unexpected death of a loved one).

Kahneman and Tversky also point out:

...Objective happiness differs from standard measures of subjective well-being, which are memory-based and require the subject to report a global evaluation of the recent past. The term 'objective' is used because the judgment of happiness is made according to objective rules. The ultimate data for the judgment are, of course, subjective experiences. (p.681)

The difference between the moment-based objective happiness and subjective well-being is similar to that of the time concept as in the momentary-passing-of-the-seconds and time as in the time-of-the-day concept (e.g., five o'clock). Memories are what we recall from our

past experiences. They are a collection of moment-based happy and sad experiences. They also include the residual feelings associated with those past events.

Our "personalities" do not form in a vacuum but they are directly and continuously influenced by our everyday life events as well as our expectation of future events. Our personalities are shaped when the external life events, our accumulated learned-experiences (resulting from our past moment-based happy or sad experiences), and our inherited genetic gifts merge together. For example, an individual who has resolved life crises through spiritual means, and felt comforted, will likely adopt and incorporate spirituality as part of his or her personality makeup. It is our personalities that primarily influence our long-term happiness and assigns subjective weights to our various QOL domains (for one individual economic domain and wealth is the most important domain in QOL and for another the spirituality domain and religion).

A moment-based happiness (a wedding) cannot independently produce enough fuel for the long-term well-being or happiness (a marriage). In his study of objective happiness, Kahneman and Tversky make the following observation:

The fundamental surprise of well-being research is the robust finding that life circumstances make only small contribution to the variance happiness–far smaller than the contribution of inherited temperament or personality (Diener 1999; Lykken and Tellegen, 1996; Myers and Diener, 1995). Although people have intense emotional reactions to major changes in the circumstances of their lives, these reactions appear to subside more or less completely, and often quite quickly (Headey and Wearing, 1992; Frederick and Loewenstein, 1999). As a consequence, cross-sectional correlations between life circumstances and subjective happiness are low. Between 1958 and 1987, for example, real income in Japan increased fivefold, but self-reported happiness did not increase at all (Easterlin, 1995). The most famous observations in this vein were made by Brickman. Coates, and Janoff-Bulman (1978), who reported that after a period of adjustment, lottery winners are not much happier than a control group and paraplegics (not much unhappier than normal people). In a now classic essay, Brickman and Campbell 1971 used the term hedonic treadmill both to describe and to interpret such observations. (p. 686)

There are two explanations for this conundrum, one in the field of psychology and the other in the field of economics. Economics principles are often universally applicable to other disciplines. Getting used to happy or sad events and our eventual adaptation to these life-event-produced feelings can be explained by the Law of Diminishing Marginal Utility (LDMU). Economists refer to

"utility" as the satisfaction or pleasure (happiness) that consumption of goods and services provide. Therefore, everything that provides satisfaction or pleasure must contain the utility-generating capability.

"Memory" is neither a good nor a service. However, its consumption (reminiscing) can produce satisfaction or happiness so it must have utility-producing capability. If the economist's LDMU is expanded to include not only goods and services, but everything that generates utility, then "memory" must also abide by this law. This implies that after a life event has produced its moment-based happiness (sadness or apathy), the consumption of the memory of that event (reminiscing) generates less and less marginal utility or happiness.

When memory is defined as the consumption of past feelings, then, like any other consumption, the memory consumption is also subject to LDMU. This implies that as soon as a life event takes place and produces a feeling of happiness or sadness (or apathy), any reminiscing about that event, as well as the happiness or sadness associated with it, also will be subject to the LDMU. Therefore, moment-based happiness, and the memory of that happiness seem to eventually be forgotten. In other words, over time, LDMU reduces the marginal utility of happiness or marginal disutility of sadness. Thus, the happiness (sadness) associated with the moment-based memory of life events will eventually dissipate. The scope, depth and intensity of the event's happiness determine the rate of its dissipation.

In pursuit of their genetic directive of survival, all living matters are motivated to nourish and protect themselves. What sets humans apart is their intelligence and self-realization. A satisfied need evokes pleasure and happiness. The employee-motivation (to satisfy need) theories in psychology-management suggest basic principles that are applicable to happiness and the QOL studies. In his pioneer work in humanistic psychology, Maslow introduced his need-hierarchy theory (Maslow, 1943). He suggests that we are motivated by "ordered" levels of needs. In summary, his hierarchal pyramid of needs includes basic needs (food, shelter, safety), social needs (affection, belonging, acceptance), and ego needs (recognition, autonomy, achievement, self-actualization). Maslow's ego needs are the highest order of needs and are very similar to Aristotle's theory

of happiness that emphasizes self-actualization and seeking happiness from within oneself rather than extracting happiness from external and often transitory elements such as wealth. Maslow suggests that as we satisfy a category of need A and move up to the next category B, the recently satisfied category A (which at one time was very important need and motivator to us) becomes unimportant and losses it ability to motivate us. Assuming that satisfying needs produce happiness (the core reason for our motivation), any short-term happiness associated with satisfying any component of category A will rapidly dissipates as we move on to the next category.

Herzberg's Two-Factory Theory classified needs into two categories of Hygiene and Motivator factors (Herzberg et al., 1959). He suggests that the motivator factors (e.g., achievement and recognition) produce job satisfaction, whereas hygiene factors (e.g., pay and job security) produce job dissatisfaction. For example, salary increase is more of a hygiene factor, meaning that the lack (reduction) of it produces dissatisfaction but the presence of it does not necessarily lead to satisfaction (happiness) and thus, it is not a motivator. Therefore any happiness associated with a pay raise will quickly subside. Some empirical evaluation studies of both Maslow and Herzbery Theories have produced inconclusive results.

Brickman and Campbell's (1971) (in Kahneman and Tversky, 2000, p. 686) use of the term ''hedonic treadmill'' explains a very similar phenomenon. As soon as the adaptation level catches up with the consumption level, the satisfaction and hence happiness dwindles and our expectations are then reset and raised to a higher level. The residual happiness effects of motivator factors are higher than the hygiene factors.

INTRODUCING NET DOMESTIC PRODUCT OF HAPPINESS (NDPH)

''Money'' as a unit of measurement and a common denominator, measures the standard-of-living (the economic domain of QOL) by valuing all market-exchanged goods and services and arriving at a single monetary value, the GDP (Gross Domestic Product). The development of the GPI (Genuine Progress Index) was an attempt to

revise GDP by adding non-market-exchanged activities and subtracting the value of negative externalities (pollution) in order to give a more realistic measure of the society's well being or its QOL. Other similar indices such as the ISH (Index of Social Health), also share the same goal as the GPI. These adjustments represent the move away from standard-of-living (economic domain of the QOL) toward a more comprehensive measure of QOL that eventually determines the level of happiness.

In evaluating a community's QOL, the majority of studies have used an ad hoc and subjective approach toward selecting a list of indices (government or survey generated) to arrive at a measure of QOL. The multidimensional nature of life, and QOL, results in a set of multidimensional variables and scales. This inherent and presently unresolved problem impedes any major progress toward a more systematic and objective method of selecting various QOL indices, and hence, toward developing an objective and scientifically reliable QOL measure. For example, in considering the safety domain of QOL, reducing the crime rate index from 100 to 50, or increasing the police force from 50 to 75 does not necessarily translate into a 50% improvement in the "feeling" of safety. Most QOL studies either report the status of each QOL domain separately based on any available (government or survey) data and leave the judgment to the readers, or add various indices together, often using an unsupported various-domain-have-equal-weight assumption, to arrive at a single index number as the QOL index (e.g., Shookner, 2000).

Identification of QOL domains, objective selection of QOL indices for those domains, and converting all domains and indices of QOL into a common measure of happiness is the only scientifically reliable approach in arriving at a single value as an index for QOL. And, until the theoretical barrier of this conversion has been overcome, QOL measurement studies remain less than scientific from most economists' point of view.

Nevertheless, among the expanding subjective well-being studies in economics, Clark and Oswald (2002) have proposed an objective method for valuing and monetizing the intangible variables. Using self-reported happiness scores, and an ordered-probit model, Clark and Oswald have monetized the happiness feelings of getting married and the sadness feeling of losing a job.

In summary, they simply compared the coefficients of two dummy variables of being-employed and being-unemployed. Then they calculated the amount of income required to bring the unemployed person to the same level of happiness as an employed person. Despite the shortcomings associated with of Clark and Oswald's ordinal data, their proposed method is promising.

This applied approach in monetizing intangibles can help decision-making in a wide range of scenarios. For instance, by comparing the monetary-equivalent value of unhappiness associated with unemployment to that of inflation, policy makers can decide on selection of the best mixture of monetary or fiscal policy in this fundamental macroeconomic policy trade-off. How can policy-makers be certain that a 5% unemployment and a 3% inflation policy combination is better (provides a higher social well being and happiness) than an alternative policy that leads to a 3% unemployment and a 5% inflation rate?

The monetization of all intangible aspects of each QOL domains yields a single net monetary measure of QOL. The term "net" refers to the difference between the positive values of QOL monetary measures generated by happiness from higher employment, higher life expectancy, better health, etc., and the negative monetary values of QOL generated by unhappiness from higher inflation, higher divorce rate, higher crime rate, higher pollution, etc. This QOL measure should be labeled the Net Domestic Product of Happiness (NDPH). That is the monetary-value difference between the proposed GDP of happiness (derived from all the positive domain indicators of the QOL) and unhappiness (generated by all the negative domain indicators of the QOL). The following three steps facilitate the calculation of the QOL measure.

The first step toward arriving at a measure of QOL is to identify the domains of QOL. The second step is to objectively develop relevant indices for each QOL. The third step is to convert the multi-dimensional variables (and their scales) into a common unit of measurement using a methodology similar to Clark and Oswald (2002). This monetization of intangible feelings of happiness and unhappiness, the common denominator among all domains, results in a single monetary value for QOL or the Net Domestic Product of Happiness.

CONCLUSION

Attaining the highest possible QOL, and its corresponding happiness, is the ultimate human objective for the majority of individuals. Within the wide spectrum of socio-economic systems, from capitalism to communism, our accumulated centuries of knowledge in arts and sciences (from medicine to economics), and our tendency toward spirituality or a materialistic life, they all target only one common goal, to enhance the Quality of Life and its resulting happiness. Thus, defining, evaluating, measuring, and enhancing QOL should become the ultimate goal of any socio-political-economic system.

Despite its importance, due to the overall objective nature of the economic science and its uneasiness to address the interdisciplinary and subjective aspects related to the quality of life, the QOL studies have not been too popular among mainstream economists. How can policy makers decide on the appropriate levels of unemployment and inflation without assessing their impact on QOL or evaluating the ultimate feelings of happiness or unhappiness associated with those policies? Is the unhappiness associated with a one percent increase in unemployment rate more than, or less than, the unhappiness associated with a one percent increase in inflation rate? Using the QOL approach, an objective and comprehensive answer to this question is a prerequisite for any optimal decision, and hence, "the allocation of resources among competing ends."

In developing a QOL theory in this paper, the QOL is defined to be comprehensive and more encompassing than the standard-of-living concept. Using psychological studies, the link between QOL and happiness was examined. It is suggested that the Net Domestic Product of Happiness (NDPH) is a better measure of QOL than the narrowly defined GDP, which only measures the standard of living. Developing a measure for NDHP requires a three-step process.

First, the QOL domains are identified. The domains include relationships, health, economics, recreation, spirituality, environment, safety, knowledge, and liberty. Second, a relevant set of indices must be developed to assess and evaluate those domains. These indices include unemployment rate, GDP, crime rate, toxic waste, infant mortality rate, and many others. Application of theories

in economics, psychology, and statistics, can facilitate the development of a set of guidelines for objective selection of appropriate indices.

In measuring our QOL, current studies "only" focus on various indices such as the unemployment rate, the inflation rate, the crime rate, the divorce rate, the toxic waste index, the GDP level, the church attendance rate, the infant mortality rate, the health status index, or the life expectancy. Since the above indices are not equally important (equally weighted) for individuals within a given community, this study suggests that the focus should not be just on the indices themselves, but rather, the focus should be on the sum of happiness and unhappiness "associated" with each and all of the above indices and their net impact on our collective QOL. Third, the most important process is the conversion of various domains into a single unit and value. Using Clark and Oswald's approach, by monetizing the happiness and unhappiness associated all domains of life, a measure of NDPH can be calculated. This will be a comprehensive measure of QOL.

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