



4-2013

Assessing Happiness: How Economic Factors Measure Up

Elizabeth K. Hancock
Illinois Wesleyan University

Follow this and additional works at: https://digitalcommons.iwu.edu/econ_honproj



Part of the [Economics Commons](#)

Recommended Citation

Hancock, Elizabeth K., "Assessing Happiness: How Economic Factors Measure Up" (2013).
Honors Projects. 123.

https://digitalcommons.iwu.edu/econ_honproj/123

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Assessing Happiness: How Economic Factors Measure Up

Elizabeth K. Hancock

Illinois Wesleyan University

Abstract

This study examines the influences on subjective well-being in congruence with the emerging field of happiness economics. The field developed when economists observed that increases in per-capita income had minimal effects on the average happiness levels of a country. Applying this phenomenon to microeconomic theory challenges and expands the neoclassical premise for utility curves which neglects other influences like social comparison and non-pecuniary factors. Using multinomial logit models with data from the General Social Survey, this study evaluates the statistical significance of both economic and non-pecuniary variables on happiness. Empirical results reveal that social position, age, marital status, and one's health condition are significant determinants of happiness. These findings suggest a refined and encompassing assessment of well-being beyond simplistic neoclassical theories.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

I. Introduction

The perception of economics as a dismal science for killjoys is challenged with the development of happiness economics. Richard Easterlin, a pioneer of the economics of happiness, found that increases in per-capita income had little or no impact on average happiness, across countries. After basic needs are met, changes in aspirations, relative income, and security of gains become more important (Graham, 2008). Therefore, wealthier countries are only happier than poorer ones to a certain extent. This phenomenon has been labeled the “Easterlin Paradox”. A possible explanation for this paradox is the ability of capitalism to turn luxuries into necessities which consumers begin to take for granted. People are stuck on a consumption treadmill where they become inured to the pleasures of a higher standard of living (Economist, 2006). This trend questions how well income contributes to happiness versus other factors like health, family, employment, and one’s economic situation relative to others.

The economics of happiness refers to the study of subjective well-being compared to income, unemployment, and other economic factors. In addition, the field expands the notions of happiness and welfare past basic measures of utility while simultaneously posing serious policy questions. For example, if an economic policy is not contributing to the happiness of its constituents then is its sole purpose profit? Is there an overemphasis on the importance of income gains? Furthermore, can economic policy trust that individuals will make decisions that truly increase happiness? The development of the economics of happiness is important to address these concerns and evaluate the relationship between subjective well-being, income, and other influences on happiness.

This study assesses the relationship between happiness, socioeconomic position, and non-pecuniary factors. The project presents the microeconomic framework for utility in

comparison to a model using subjective well-being and variables aside from income and consumption. Specifically, it questions if a person's standard of living has a meaningful impact on their happiness levels given their reference group and non-pecuniary factors like gender, age, and race. It is my expectation that social position and non-pecuniary factors will have a significant effect on happiness levels that are widely unaccounted for in economic theory.

II. Theory and Literature Review

Since the project focuses on individual happiness, microeconomic theory is essential. Foremost, theories on consumer preferences and utility are helpful in the analysis. Indifference or utility curves are the basic measurement of happiness or well being in neoclassical economic theory. According to this theory, a consumer on a given indifference curve is indifferent to baskets of goods on that curve, because they create the same amount of utility or satisfaction. Further, the ability to consume baskets with larger quantities of goods causes a consumer's utility to increase. The assumption is that as consumers obtain more goods, they will have more utility or happiness. An individual maximizes utility subject to her budget by finding the tangency between the budget constraint and the utility surface (Parkin, 2009). This tangency point illustrates the highest level of utility obtainable given her income.

This microeconomic theory is insufficient because it assumes tastes are given when preferences are actually influenced by one's reference groups. Preferences are not made in a vacuum nor can one assume that an individual makes rational choices. According to Easterlin (2003), individuals make decisions in ignorance of the effects of the "hedonic treadmill", and social comparison. Further, the neoclassical model of indifference curves only accounts for income and consumption as determinants of utility.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

A major problem of neoclassical utility analysis is that preferences are assumed fixed and utility (i.e., happiness) depends on only one's fixed preference structure and budget constraint. The new literature on happiness, however, questions the simplicity of neoclassical theory to expand the evaluation of happiness with a larger set of influences than solely consumption (Easterlin, 2003). The important difference between basic measures of utility and a more thorough account of happiness is the use of subjective well-being data. Utility models estimate the future choice that a consumer will make without accounting for the effects of chance and personal differences (Clark, Frijters, Shields, 2008). Subjective well-being or a more encompassing measure of happiness gives a broader prospective on how a consumer's choices along with other variables affect well-being. The neoclassical theory examines consumer preferences from an outside point of view yet, subjective well-being allows research to gain further insights into utility and happiness. This project holds that subjective well-being and happiness measures should be the most prevalent indication of the influence of economic factors.

The opportunity cost of consuming and working is another factor neglected by the neoclassical model that should be addressed. In order to have a budget line for the model, one must be working for wages. However, time is finite and scarce; therefore, any time allocated for work is an opportunity cost for other activities (Buchanan, 2008). Opportunity costs are subjective and dependent on how much an individual values a particular option. The allocation of time between work, consumption, and leisure relates to this project because it may affect an individual's happiness. Opportunity cost will not be directly measured in this study yet, it further indicates that happiness is subjective. Hence, consumption and income cannot be the only determinants of happiness due to other subjective measures like social position.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

The focus on income and consumption in capitalism has been long contested. Sociologist Émile Durkheim held that individuals crave novelties and luxuries that will soon lose their original luster and appeal in *Suicide* (1897). The process of constantly desiring new goods and higher income correlates with the later notion of the “hedonic treadmill”. Durkheim expands his argument by asserting that the constant need for material wealth cannot “form a foundation of happiness to support one during days of trial” (Durkheim in Kivisto, 2008). A century later, economic models still limit satisfaction measures to income and consumption without creating a foundation for happiness. As a result, the neoclassical framework is too simplistic and the study of happiness economics allows the expansion and refinement of the neoclassical model. Possible refinements include accounting for non-pecuniary factors and highlighting the importance of relative income or social position.

American money is green, rectangular strips of paper which are not intrinsically valuable or useful. In other words, individuals do not have a “scale” for money because it is a medium of exchange. The feeling or satisfaction associated with consumption causes money to become valuable. Neoclassical thought misconstrues this relationship by assuming absolute levels will increase utility. When one has a larger budget, he or she consumes at a higher indifference curve. Yet, relative income may be the more appropriate determinant of happiness, not absolute income (Hsee, C. K., Yang, Y., Li, N., & Shen, L., 2009). The neoclassical model fails to acknowledge the significance of the income of one’s peers. Relative income measures and addresses the changes in life satisfaction due to the success of others and social position. Further, relative income and social position help explain the efficiencies of other theories of happiness.

Hedonic adaption is the psychological theory that one’s happiness resolves around a set point. Despite the various ups and downs of life, an individual has a basic level of happiness that

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

she will return to over time, even after major life events (Graham, 2008). In relation to well-being, Easterlin finds that monetary gains are subject to the set-point or hedonic adaptation model. Income increases have nominal effects because higher consumption abilities are read in comparison to one's reference group. For example, an engineer may earn a sizeable living but her income is only validated in comparison to her own reference group of other engineers. Therefore, any gains in income will not affect her happiness in the long term because individuals will continue to compare themselves and there will always be another income bracket to achieve. This occurrence implies hedonic adaptation because an individual will return to their set point of happiness after the income increase. This further justifies the importance of social comparison versus absolute income.

According to Graham, one's agency, or the life one is capable of leading, also influences perceived happiness. This affects the interpretation of social position because the opportunity of future gains leaves individuals continually attaining for more or better outcomes. Thus, people with less material wealth or financial opportunities report higher happiness levels than individuals in the process of obtaining more wealth (Graham, 2011). The individuals with less material wealth are not pining for more consumption goods because their focus is toward basic needs. The "hedonic treadmill" has not set in completely. Thus, one's reference group and financial opportunities contribute to their subjective well-being in the short run. Satisfaction in health, family, and employment, however, are not subject to this model because achievements in these domains contribute to lasting happiness (Easterlin, 2003). Given the research of happiness economists, absolute income is insufficient as the only determinant of happiness.

The founding principal of happiness economics is the Easterlin Paradox which asserts that increases in per-capita income have only a small effect on average happiness levels across

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

countries. After basic needs are met by individuals, his or her personal aspirations have a larger effect on happiness than income gains. The Easterlin Paradox is essential for this project, because it changes the focus from absolute income to more personal factors like rising aspirations, health, family, and employment in an industrialized country. The Easterlin Paradox is an important guiding force for my project because it acknowledges other influences on happiness aside from absolute income.

Since Easterlin uncovered his Paradox in the 1970s, he has continued his research on happiness economics. Easterlin advanced his work in happiness economics using a life domain approach. In examining domain satisfaction over the lifetime, Easterlin found, “happiness varies directly and significantly with each dimension of people’s lives” like one’s financial situation, family life, health and work (2010, Pg.169-170). Thus, the greater satisfaction in any domain led to an increase in happiness level, on average. The neoclassical model is then inefficient by neglecting the effects of health, family and employment. Family satisfaction had the highest effect on happiness when Easterlin examined it singly. Several other domains proved to be nearly as important as family, namely financial satisfaction, job satisfaction, and health satisfaction (2010). Because family exceeded one’s financial situation in affecting happiness, there is a need to reevaluate the neoclassical theory of utility and policy standards.

From the developments of happiness economics it is evident that the neoclassical model of indifference curves is insufficient for predicting happiness. Its emphasis on utility neglects the importance of social comparison among other influences. Further, it has been shown that absolute income levels do not increase happiness, on average. This study will focus on subjective well-being responses about one’s health, family, employment, and financial situation. In

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

addition, the empirical model will assess the significance of one's relative financial position to their peers in hopes of more well-rounded explanation of happiness.

III. Data

The following empirical model utilizes micro data from the General Social Survey conducted by NORC at the University of Chicago. The GSS started in 1972 and has monitored social change since that time (GSS, n.d.). The survey is funded by the Sociology Program of the National Science Foundation and is frequently used in the social sciences. Aside from core demographical information, GSS data includes information on respondents' attitudes like their perceived happiness and social position. The combination of the demographic, economic, and attitudinal information available is ideal for this study because it allows for comprehensive research of the relationship between happiness and economic factors.

As mentioned, this study uses subjective well-being as a measure for happiness. Subjective well-being measures are the most appropriate ways to determine how various factors in one's life affects his or her general happiness. Further, one's general happiness level is a reflection of past decisions and present opportunities which allows a more thorough account of one's well-being. Thus, this project will study the determinants of general happiness in regards to several factors using General Social Survey data.

In the General Social Survey, respondents are asked "Taken all together, how would you say things are these days--would you say that you are..." with answer choices "Very Happy", "Pretty Happy", and "Not Too Happy". These three responses serve as the multinomial dependent variable in the empirical model.

For the independent variables the study uses estimates for the respondent's income in addition to their gender, age, race, employment status, education level, and health condition. The last independent variable considered for the model is the respondent's perception of their family income relative to the average income of families. More specifically, the General Social Survey asks respondents, "Compared with American families in general, would you say your family income is far below average, below average, average, above average, or far above average?" Capturing the respondent's perception of their family income is essential for estimating their self-perceived social position. In sum, the GSS dataset presents the opportunity to measure happiness against economic and non-pecuniary variables.

IV. Empirical Model

In order to measure happiness level in comparison to economic and non-pecuniary explanatory variables, a multinomial logistic model is utilized. The empirical model consists of two multinomial logit equations identified as Models A and B using the best measure of social position with other explanatory variables.

The multinomial logistic regression allows the assessment of ordinal dependent variables like general happiness which categorizes happiness into three levels, "Very Happy", "Pretty Happy", and "Not Too Happy". This is the optimal method for estimating the effect of an independent variable on an individual's odds of happiness. One logistic regression represents the log odds of the two higher levels of happiness relative to the lowest level of happiness given a specific independent variable while holding all others constant. In other words, the multinomial logit measures if each independent variable significantly affects the odds of an individual being "Very Happy" relative to the "Not So Happy" group. Logistic regressions will also compare the "Pretty Happy" level of happiness to the base outcome of "Not Too Happy" in the same way.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

Model A will generate the relative log odds for the independent variables: natural log of respondent's income and a measure of relative social position.

The next step of the analysis is to determine which of the two proxies of social position should be selected to include in the final happiness multinomial logistic regression. The first option for the social position variable is constructed by comparing the respondent's earnings to predicted earnings and is labeled "Residual." The second candidate is a self perception of social position which asked the respondents how they compared financially to the average American family and is labeled "Opinion of Family Income". The approach to deciding between these two candidates of social position is placing each of the possible variables in a multinomial logistic regression. Then, the social position proxy that performs better in estimating the odds of being happy will be included in the final happiness model.

Model A estimates the odds of an individual being a particular happiness level as a function of the natural log of income and the constructed social position variable (Residual). To do this, two preliminary multinomial logit regressions measured the statistical significance of each of the variables for social position. The subjective measure is provided by the GSS survey question mentioned above concerning one's perception of their family's relative income. The second form of social position is empirically derived using an ordinary least squares (OLS) regression to create an estimated earnings function. The results from these two preliminary multinomial regressions will determine if the subjective or empirically derived measure of relative deprivation is better at estimating happiness.

Model A compares the probability of being very happy and pretty happy relative to those that are not so happy; the model uses one logistic regression estimating the two sets of log odds. Because relative deprivation is measured using the residuals from an estimated earnings function

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

it is noted as “Residual” throughout the empirical model and results section. The following equations illustrate the two functions within the logistic regression for the effect of log income and the empirically derived notion of relative social position (Residual).

Model A with Constructed Measure of Relative Social Position (Residual)

$$\ln (P(\text{Happiness}=\text{Very Happy}) / P(\text{Happiness}=\text{Not too Happy})) = b_0 + b_1(\ln \text{Income}) + b_2(\text{Residual})$$

$$\ln (P(\text{Happiness}=\text{Pretty Happy}) / P(\text{Happiness}=\text{Not too Happy})) = b_0 + b_1(\ln \text{Income}) + b_2(\text{Residual})$$

As outlined in previous literature, social comparison is a large indicator of self-perceived happiness. An estimate of one dimension of social comparison is constructed by comparing a respondent’s actual income with income that is estimated from an OLS earnings function. The main idea is that if actual earnings are less than the estimated earnings, then the individual is at a relative income disadvantage compared to peers. The OLS earnings function is then used to estimate each respondent’s earnings based on their actual characteristics, including gender, age, race, educational attainment, employment status, marital status, and self perceived health condition. These are most of the same independent variables used in the complete happiness model to be presented later in this section.

$$\begin{aligned} \ln \text{Income} = & b_0 + b_1(\text{Gender}) + b_2(\text{Age}) + b_3(\text{Race}) + b_4(\text{Employment Status}) \\ & + b_5(\text{Education Level}) + b_6(\text{Marital Status}) + b_7(\text{Health Condition}) \end{aligned}$$

Table 1 provides variable definitions.

The following steps were used to construct the empirically derived estimate for social position (Residual). First, the above OLS earnings regression is used to calculate the expected earnings of each respondent. Second, these estimated earnings are then subtracted from actual earnings as a way to measure the difference between actual income and what we would expect the income to be according to the earnings function. The residual values found by subtracting the predicted income from the respondent’s

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

actual income creates the empirically derived measure for social comparison. Third, the residual values are used in the multinomial logit Model A above as the empirically derived notion of social position (Residual).

The unstandardized residuals from the regression estimate how a respondent compares to their reference group. For example, if the regression estimates that a 35-year old female will have a log income of 10, then the residual captures how far a respondent's actual log income deviates from 10, their estimated log income. The residual values (Residual) are used in the multinomial logit happiness models as a proxy for social comparison.

Table 1: Variable and Descriptions			
Variable Name		Description	Expected Sign
Dependent:			
	LnIncome	Log income of respondent	N/A
	Happiness Level	Very Happy Pretty Happy Not too Happy (base for logit models)	N/A
Independent:			
	LnIncome	As defined, used as independent variable in logit models	+
	Residual	Empirically derived estimate for social position Actual income- Predicted income of Respondent	+
	Opinion of Family Income	1=Perceives family income as below average 0= Does not perceive family income below average	-
	Gender	1= Female 0= Male	-
	Age	Age of Respondent in years	+
	Race	1= Black 0= Not black	-
	Employment Status	1= Employed Full Time 0= Not Employed Full Time	+
	Education Level	1= Completed Junior College or Above 0= No higher education	+
	Marital Status	1= Married 0= Never married	+
	Health Condition	1= Good/Excellent Health 0= Poor Health	+

The second candidate for relative social position is now discussed in more detail. In the General Social Survey, respondents are asked of their perception of their family's income relative to the "average" American family. This survey question is the second interpretation of social comparison or relative deprivation in the empirical model. The survey question directly asks for the respondent's opinion of social position. To use this measure in an empirical model, however, it is converted into a dummy variable. If the respondent feels that their family income is "below" or "very below" average then a relatively low social condition exists. Thus, the model tests the hypothesis based on relative deprivation theory that there is lower odds of being very happy or pretty happy relative to being not too happy when the respondent perceives themselves as below average financially. The following set of equations represents the second half of Model A which assesses the statistical significance of a subjective self-perceived measure of social position.

Model A with Self Perceived Measure of Relative Social Position

$$\ln (P(\text{Happiness}=\text{Very Happy}) / P(\text{Happiness}=\text{Not too Happy})) = b_0 + b_1(\ln \text{Income}) + b_2(\text{Opinion of Family Income})$$

$$\ln (P(\text{Happiness}=\text{Pretty Happy}) / P(\text{Happiness}=\text{Not too Happy})) = b_0 + b_1(\ln \text{Income}) + b_2(\text{Opinion of Family Income})$$

The two multinomial logistical regressions in Model A uncover the better measure of relative deprivation between the empirically derived and subjective. The notion of relative deprivation is an important detail of the relationship between economic factors and happiness. Thus, finding the more effective measure improves the overall model and illustrates if social position can be successfully derived from an estimated earnings function.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

Model B is an elaboration of Model A and includes more independent variables to assess general happiness levels. The variables added to the model are demographic and personal information regarding survey respondents. Gender, age, race, level of education, employment status, marital status, and health condition are the independent variables added to the multinomial logit model. These variables are defined in Table 1 above.

Model B: Final Multinomial Logit Regression Model

$$\ln (P(\text{Happiness}=\text{Very Happy}) / P(\text{Happiness}=\text{Not too Happy})) = \\ b_0 + b_1(\ln \text{Income}) + b_2(\text{Opinion of Family Income}) + b_3(\text{Female}) \\ + b_4(\text{Age}) + b_5(\text{Black}) + b_6(\text{Employed}) + b_7(\text{HigherEd}) + b_8(\text{Married}) + b_9(\text{Healthy})$$

$$\ln (P(\text{Happiness}=\text{Pretty Happy}) / P(\text{Happiness}=\text{Not too Happy})) = \\ b_0 + b_1(\ln \text{Income}) + b_2(\text{Opinion of Family Income}) + b_3(\text{Female}) \\ + b_4(\text{Age}) + b_5(\text{Black}) + b_6(\text{Employed}) + b_7(\text{HigherEd}) + b_8(\text{Married}) + b_9(\text{Healthy})$$

Model B predicts how each independent variable influences the probability of being very or pretty happy. Further, it allows the project to assess how non-pecuniary values affect the subjective well-being of individuals. Note that Model B did not include the variable Residual because, as will be seen in the next section, the subjective variable of social position, Opinion of Family Income, was a better predictor than Residual.

V. Results

The results are presented in three subsections to account for the OLS regression and all multinomial logistic regressions utilized in the empirical model. The first subsection presents the OLS estimated earnings regression results that are used to create the proxy for social comparison (Residual) that was described above. The second subsection, presents the multinomial logistic regressions for happiness Model A and the third subsection presents the multinomial logit results

for happiness Model B. The difference between the two models allows the assessment of two forms of social comparison along with the several other possible determinants of happiness.

For both Model A and B, the coefficients are determined as a log function of the probability of being very happy or pretty happy divided by the probability of being not too happy holding all other variables constant. The coefficients are then log odds ratios but the results section will present the coefficients as relative risk ratios or simply an odds ratio by taking the antilog of the log odd coefficients. Converting the log odds ratio into standard odds ensures clarity in the empirical results. Tables in the results section use the acronym “RRR” to signify the odds of an independent variable affecting happiness levels.

An RRR value above 1 indicates a higher probability of success over the probability of failure. In reference to this model, RRR values above 1 indicate an increase in the odds of being very happy (or pretty happy) relative to being not so happy. For RRR values below 1, the odds of being very happy (or pretty happy) is smaller relative to being not so happy. In sum, an RRR value above 1 represents higher probabilities of being very or pretty happy whereas a value below 1 represents lower probability of being the two highest happiness levels.

A. Preliminary Ordinary Least Squares Regression

The analysis begins with the estimation of an earnings function that is used to compute the variable titled “Residual”. The results of the earnings regression are reported in Table A.1 in the Appendix. As mentioned, the control variables for the initial OLS regression were gender, age, race, work status, education, marital status, and health condition. These variables estimated the log income of the respondents with an adjusted R squared at .304 meaning that the independent variables accounted for 30.4% of the variation in log income. This is a high R squared value for earnings regressions that use non-aggregated individual, cross-sectional data.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

The statistical significance of the independent variables was another indication that the regression estimated respondent's income effectively. All of the coefficients were statistically significant at the 0.01 level, except for the race variable. This may have occurred due to multicollinearity with the other independent variables. Aside from the insignificance of the race variable, the regression model adequately measures the predicted income of individuals. The residual values found by subtracting the predicted income from one's actual income were used in the following multinomial logit models.

B. Model A- Multinomial Logit Regression

The initial multinomial logit regression model measured the log odds of being very happy or pretty happy with a base outcome of being "not too happy". Model A used two multinomial logistic regressions to estimate happiness as a function of log income, the residual values from the above regression, and the second variable for social comparison, one's opinion of their family income. These results are presented in Table 2 and Table 3.

The first logit analyzed 884 observations and revealed a log likelihood of -781.615. The overall logit was statistically significant at the 0.01 level as well (See Table 2). The purpose of this logistic regression is to evaluate the variable Residual or the empirically derived notion of social comparison.

The residual values from the estimated earnings function had mixed results for the logistic regression because it lost statistical significance between the two levels of happiness. A unit increase in an individual's residual income led to lower odds of being very happy relative to being not too happy. This finding was statistically significant at the 0.05 level. While the relationship is significant, its direction was unexpected. If an individual is increasingly better off

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

Table 2: Model A, Multinomial Logit for Happiness using Income and Residual			
Log Likelihood= -781.615			
Prob> Chi2= 0.000		No. of Observations: 884	
	RRR	Standard Error	P-Value > Z
Very Happy			
LnIncome	2.204	0.442	0.000***
Residual	0.575	0.138	0.021**
Constant	-	-	-
Pretty Happy			
LnIncome	1.507	0.282	0.029**
Residual	0.737	0.164	0.173
Constant	-	-	-
Not Too Happy- Base Outcome			
*Significance at the .10 Level			
**Significance at the .05 Level			
***Significance at the .01 Level			

than his or her peers, then they should have higher odds of being very happy. Higher social position should lead to higher happiness. When comparing the odds of being pretty happy to the base outcome of not too happy, the same unexpected relationship occurred. Further, the Residual was insignificant with a p-value of 0.173. Thus, this proxy for social comparison had inconclusive results in Model A. The inconsistency of the Residual variables questions the legitimacy of an empirical derived social comparison variable. Because of the poor performance of Residual, it is not in the overall happiness logit regression and instead the Family Opinion variable is included for reasons developed below.

The natural log of one's income had conclusive results across the two happiness reference points. With a p-value of 0.000, log income passed at the .01 level of statistical significance when being very happy was compared to the not too happy group. In addition, a one unit increase in one's log income led to the higher probability that she would be very happy relative to the unhappy group. This relationship was consistent when being pretty happy was compared relative to being not too happy. In this instance, the coefficient was statistically significant at the

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

0.05 level. There was a lower relative risk of being pretty happy than observed for the very happy group using the same base outcome. The consistency of log income was expected because income is an important determinant of happiness in neoclassical models.

The multinomial logistic regression results reported in Table 3 includes subjective independent variable of relative social position (Family Opinion) which is the self-reported perception of one's family's income relative to the average United States family. Again, the condition exists if a respondent perceives their family to be "below average" or "very below average". This means that the reference is a group of respondents who perceive their family income to be average or above average compared to American families in general.

It is evident from the results presented in Table 3 that the subjective measure for social comparison is statistically significant. The odds of being very happy relative to being not too happy were low when an individual perceived their family to below average financially. This finding correlates with literature citing the importance of one's social position within a reference group. In addition, the relationship was statistically significant at the 0.01 level which affirms its place in estimating happiness. The second portion of the multinomial logistic regression assessing the pretty happy level to the base outcome revealed similar results. One's opinion of their family income continued to be highly significant at the 0.01 level and the relationship between happiness and subjective social position persisted. This result is important because it affirms that self-reported social comparison (Family Opinion) is a significant factor in assessing happiness.

The second independent variable in the second logit regression in Model A was consistent with expectations. The natural log of one's income ($\ln(\text{Income})$) significantly affected the odds of

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

them being very happy or pretty happy. In addition, the odds of being very happy relative to being not too happy were high when one's income increased. This relationship was a result in the analysis of pretty happy relative not too happy. Again, income significantly affects happiness in the direction that neoclassical models would suggest.

Table 3: Model A, Multinomial Logit for Happiness using Income and Residual			
Log Likelihood= -1522.679			
Prob> Chi2= 0.000		No. of Observations: 1726	
	RRR	Standard Error	P-Value > Z
Very Happy			
LnIncome	1.23	0.098	0.007***
Family Opinion	0.196	0.039	0.000***
Pretty Happy			
LnIncome	1.147	0.081	0.054*
Family Opinion	0.409	0.070	0.000***
Not Too Happy- Base Outcome			
*Significance at the .10 Level			
**Significance at the .05 Level			
***Significance at the .01 Level			

Model A established that subjective variables measuring social comparison like the GSS survey question for one's opinion of their family income are highly statistically significant. This was further exemplified by the inconclusive results of the residuals of the estimated earnings function. This was a major finding because it establishes that using self-reported data is the best measure of social comparison. The following results for Model B will demonstrate how other variables outside of income and social position perform in estimating happiness levels.

C. Model B- Elaboration of the Multinomial Logit Regression

Model B includes only the retrospective measure of social comparison (Family Opinion) and drops the constructed variable Residual from the analysis. The following model demonstrates if the independent variables used in the estimated earnings function (gender, race, age, work status,

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

marital status, and health) significantly affect the probability of being very happy or not too happy relative to the base.

In the multinomial logit Model B there were 880 observations with a log likelihood of -731.498. The entire logit was statistically significant at the 0.01 level with a p-value of 0.000. These preliminary findings demonstrate that the model is sufficient in estimating happiness as a whole. The significance of each independent variable varied. All of the empirical results of Model B referenced in this section are organized in Table 4.

Table 4: Model B, Multinomial Logit for Happiness with All Independent Variables			
Log Likelihood= -731.498			
Prob > Chi2 =			
	RRR	Standard Error	P-Value > Z
Very Happy			
LnIncome	1.119	0.160	0.433
Family Opinion	0.233	0.073	0.000***
Female	1.241	0.362	0.460
Age	0.982	0.011	0.097*
Black	0.987	0.380	0.974
Employed FT	0.795	0.271	0.504
Higher Ed	1.602	0.490	0.124
Married	5.797	1.919	0.000***
Good Health	3.474	1.142	0.000***
Pretty Happy			
LnIncome	1.009	0.132	0.949
Family Opinion	0.419	0.117	0.002***
Female	1.000	0.274	0.997
Age	0.976	0.010	0.016**
Black	0.675	0.239	0.267
Employed FT	1.026	0.351	0.512
Higher Ed	1.209	0.351	0.512
Married	2.673	0.820	0.001***
Good Health	2.001	0.572	0.015***
Not Too Happy- Base Outcome			
*Significance at the .10 Level			
**Significance at the .05 Level			
***Significance at the .01 Level			

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

Foremost, the social comparison measure (Family Opinion) in Model B was statistically significant with an expected value for its relative risk ratio. Again, the subjective measure for social comparison asked respondents to identify if their family income was above or below the average income of an American family. To use this measure empirically it was transformed into a dummy variable. Family Opinion variable assumes the value of one when the respondent perceived their family's income to be below average. Therefore it follows that there should be a lower probability of being very happy relative to not too happy given that the family is "below average". This result was found in Model B with a statistical significance at the 0.01 level. This relationship held when comparing being pretty happy to being not too happy. Again the social comparison measure was statistically significant at the 0.01 level and the probability of being pretty happy was low, as expected. These findings are consistent with literature citing social position or relative income as a more accurate measure of happiness. The insignificant results of the income variable in Model B further support this argument.

The logged income of the respondent (LnIncome) was used to estimate the probability of being very happy or pretty happy given a one unit increase. In this model, the measure of absolute income was insignificant in estimating happiness which was unanticipated. If the natural log of the respondent's income had been statistically significant then a one unit increase should lead to higher odds of being very happy relative to the not so happy group. The RRR value of 1.119 reflects this relationship however the insignificance of the variable removes income as a determinant of happiness. The absolute income of a respondent was insignificant when estimating the relative risk of being pretty happy compared to not too happy, as well.

Like the social comparison measure (Family Opinion), the variables age, marital status, and health condition were statistically significant in estimating the relative risk of being very

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

happy or pretty happy. At the 0.10 level of significance, an increase in age led to high relative risk of being very happy. This was the expected relationship between age and happiness. This correlation held when comparing being pretty happy to not so happy at the 0.05 level of significance as well.

The independent variable for being married was statistically significant across both levels of happiness relative to being not too happy. On average, being married leads to higher happiness levels. In Model B, being married led to a much higher relative risk of being very happy (or pretty happy) relative to the not so happy group.

The same success was found in estimating health as an indicator for happiness. When an individual cited being in “good” or “excellent” health in the GSS survey, the variable for health was assigned a value of one and was zero otherwise. It is expected that being in good health should positively impact happiness. This relationship was indeed found to be statistically significant in the results of Model B with the expected sign. When an individual cited being in good health, it leads to a higher relative risk of being very happy and pretty happy relative to the not too happy group. This outcome is desirable because it demonstrates another variable that is neglected in neoclassical theory.

Unfortunately, the parameters for gender, race, work status, and education were not statistically significant in Model B. Otherwise; this multinomial logit model demonstrated that social comparison along with several non-pecuniary variables impacted one’s happiness.

VI. Discussion

As shown in the results, a subjective measure of one’s socioeconomic position is ideal in capturing the effects of social comparison. While deriving social position from an estimated

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

earnings function appeared to be a logical empirical choice, it was an unreliable measure causing unexpected results with low statistical significance. However, the success of the second measure of social comparison, Opinion of Family Income, affirmed the several literature sources citing relative income as an important determinant of happiness. In effect, microeconomic theories should be refined to account for influences of relative income in the assessment of individual utility or satisfaction. The success of the relative income or social comparison across Models A and B also supports the notion of the “hedonic treadmill”.

To recap, the “hedonic treadmill” is the view that individuals become inured by consumption goods and material wealth because of the desire for more or better items. This process affects industrialized capitalistic countries and has been noticed for decades among economic and social theorists. The “hedonic treadmill” was indirectly found in this study as well due to the strength of the subjective social comparison and inconsistency of the absolute logged income variable. Because social comparison held significance across the model and logged income was only significant in Model A, it is inferred that the absolute wealth of an individual is less important than their relative social position. The affect of increases in absolute income is negligible because of our ability to become inured by its pleasures. Thus, the inclusion of relative social position in economic theory would allow researchers to acknowledge the effect of “hedonic treadmill” in utility models. The results from this study also illustrate the importance of non-pecuniary factors like age, marital status, and health.

It was found in Model B that the marital status, age, and health of the respondent were significant in estimating the odds of being very happy or pretty happy. This is consistent with Easterlin’s work in domain satisfaction which found satisfaction within one’s marriage, finances, job, and health were important determinants of general happiness. The correlation between

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

Easterlin and this project illustrate the importance of these variables in estimating happiness along with relative income. In addition, these observations serve as indication that the study of happiness economics serves as a refinement to neoclassical theory.

VII. Conclusion

The study of happiness economics emerged when researchers like Richard Easterlin observed that absolute income was not the sole factor in estimating happiness. The importance of relative income or one's socioeconomic position is largely neglected by the simplicity of neoclassical theories of utility. This study sought to determine the other potential factors that lead to increases general happiness using multinomial logistic regressions and an estimated earnings function. Empirical results demonstrate that social position, age, marital status, and health condition are all significant factors in estimating happiness relative to a lower level of happiness. More specifically, social position was most effective when it was derived subjectively. Thus, neoclassical theories of utility could adjust to the prevailing evidence that social position and non-pecuniary factors significantly affect subjective well-being or happiness.

VIII. References

- Buchanan, James M. (2008). Opportunity cost. *The New Palgrave Dictionary of Economics Online*. Palgrave Macmillan. doi:10.1057/9780230226203.1222
- Clark, A., Frijters, P., Shields, M. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, 46(1), 95-144.
- Durkheim, É. (2008). *Suicide* [excerpt]. In P. Kivisto (Ed.), *Social Theory, Roots and Branches* (pp.57-63). New York, New York: Oxford University Press.
- Easterlin, R. (2003). Explaining happiness. *Proceedings of the National Academy of Sciences of the United States of America*, 100(19), 11176-11183.
- Easterlin, R. (2010). *Happiness, growth, and the life cycle*. New York, New York: Oxford University Press.
- The Economist. (2006). Happiness (and how to measure it). London, England: The Economist Newspaper Limited. www.economist.com/node/8450035
- Frey, B.S., Stutzer, A. (2002). *Happiness and economics: How the economy and institutions affect well-being*. Princeton, New Jersey: Princeton University Press.
- General Social Survey. 2006 Data. NORC at the University of Chicago. <http://www3.norc.org/gss+website/>
- Graham, Carol. (2011). *The pursuit of Happiness, an economy of well-being*. Washington D.C., USA: Brookings Focus.
- Graham, Carol. (2008). Happiness, economics of. *The New Palgrave Dictionary of Economics Online*. Palgrave MacMillian. doi:10.1057/9780230226203.0702
- Hsee, C. K., Yang, Y., Li, N., & Shen, L. (2009). Wealth, Warmth, and Well-Being: Whether happiness is relative or absolute depends on whether it is about money, acquisition, or consumption. *Journal of Marketing Research*, 46(3), 396-409.
- Parkin, M. (2009). Possibilities, preferences, and choices. *Economics*, 9, 208-214. Boston, Massachusetts: Pearson Education.

ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP

IX. Appendix

Table A.1: LnIncome Regression Results		
Variable	Coefficient	Sig. Value
Constant	7.865	.000***
Female	-0.351	.000***
Age	0.016	.000***
Race, Black	0.033	.648
Employed	0.914	.000***
Higher Education	0.536	.000***
Married	0.208	.000***
Health	0.242	.000***
Summary		
N	1613	
Adjusted R ²	.304	
*Significance at the .10 Level		
**Significance at the .05 Level		
***Significance at the .01 Level		