The Role of Virtue in the Economics of Happiness

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Abstract

I analyze what role the traditional American virtues of marriage, industriousness, religiosity, and community have on subjective well-being among U.S. citizens, while controlling for other important variables from the economics of happiness literature. Using data from the GSS from 1980 to 2012, I find that virtues do have a role in increasing subjective well-being, but they may be serving as a proxy for community cohesion and one's perception about their status in the community.

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I. Introduction

Happiness is an amorphous concept, subject to millennia of debate and discourse, from Plato and Aristotle to Haybron and Kahneman. As a result, many different views on happiness have emerged throughout history: Plato considered happiness the proper ordering of one's soul; Kant viewed happiness as the fulfillment of one's duty; and Bentham and Mill argued that happiness came from maximizing one's utility. The economics of happiness developed as a means to quantify happiness based on Bentham's act utilitarian view, which held that people should focus on maximizing their happiness from each individual act.

My hypothesis is that those people in the U.S. who appear to possess particular virtues instrumental in the development of the United States will have, on average, higher reported levels of happiness, ceteris paribus, because they can provide a sense of fulfillment to one's life. This project combines the research in political science on virtue and the economic research on the variables important in the economics of happiness, and apply econometric modeling to them. This paper augments the empirical specifications used in the economics of happiness literature with the measures of virtue used in political science**.**

II. Literature Review

a. Overview of the Literature

Blanchflower and Oswald (2011) provide an overview to the field and some of its key models, conclusions and implications. They begin with the General Social Survey (GSS), one of the key happiness-measuring surveys in the U.S., which asks the question, "Taken all together, how would you say things are these days: would you say you are very happy, pretty happy, or

not too happy?" The responses to this question, "very happy," "pretty happy," and "not too happy," serve as the dependent variable for many U.S.-based studies on happiness. They then discuss the need for an ordinal estimation method (ordered logit or ordered probit modeling) to analyze this question, as a cardinal estimation method is not necessarily how people think about happiness. Blanchflower and Oswald (2011) also point out, however that research (e.g. Blanchflower and Oswald 2004, Di Tella et al. 2001) has shown that there is little difference in results between cardinal and ordinal estimators, establishing a justification for an OLS regression. Their OLS regression analysis using GSS data show that happiness is U-shaped over a person's lifespan, slightly greater among men, the educated, whites, married people, and the employed, as well as those with higher income. The explanatory power of this regression, however, is limited, explaining less that 10% of the variation in happiness.

Expanding to a global scale, Blanchflower and Oswald's (2011) research finds that happiness tends to be higher in European countries, as well as nations with the following traits: low income inequality, high social capital, low unemployment and inflation, democracy, social trust, and a strong welfare state.

Blanchflower and Oswald (2011) also believe that in the coming years, as the lines between mental health and happiness become ever more blurred, the disciplines of economics and medicine will converge, as scientists become more skilled at understanding happiness from and psychological and neurological perspective, allowing economists to create more accurate utility functions and better quantify happiness and what is correlated, or even causally related, to it.

b. The Political Study of Virtue

Murray (2012) defines classic American virtues as industriousness, marriage, community, and religiosity. He bases this determination on the question of "Would any of those who shaped the American project and observed it in its first century say that it could succeed without [these institutions]?" Murray empirically finds that such virtues are statistically significantly related to happiness, and income is not. His model, however, has flaws in its construction. Murray's model is the following:

$$Happiness = \beta_0 + \beta_1 Marriage + \beta_2 Religiousity + \beta_3 Industriousness + \beta_4 Community + \beta_5 Income + \beta_6 Age + \beta_7 Interaction\ Between\ Marriage\ and\ Industriousness$$

His dependent variable, *Happiness*, is a binary variable converted from the ordinal question on happiness in the (GSS). Other research (Blanchflower and Oswald 2004) using these data have not used a binary variable. Additionally, his independent variables for virtues are flawed in their construction. His *Marriage* variable is coded for three values: unmarried; married with a pretty happy marriage; and married with very happy marriage. This wrongly combines two separate variables: marriage and happiness within marriage. His *Industriousness* variable has four values: dissatisfied with work, regardless of hours or type of work; moderately satisfied with work, regardless of hours or type of work; very satisfied female homemaker; and very satisfied paid employment. This wrongly fuses together multiple separate variables: work satisfaction, type of work, hours working, and being a homemaker (or female, for that matter). His *Religiosity* variable has three values: no religion or religious identity and little church attendance; religious who attend services several times a year; and religious who attend nearly every week. Here, religious identity and church attendance are joined together in unholy

matrimony. His final variable, *Community*, is an index based on three questions from the GSS on the helpfulness, fairness, and trustworthiness of others, each with three responses: negative (0), neutral (1), or positive (2). Adding the responses of these three questions creates an index of social trust, whose values range from 0 to 6. All three of these virtues, helpfulness, fairness, and trustworthiness, are important in the American founding (Tocqueville 1835). They are all strongly connected to each other, and they were all necessary for the American project to succeed in its early days. Murray combined these variables specifically because of the limited responses in the GSS to questions about participation in the civic life (e.g. community organizations, political parties, etc.) This index serves as a proxy for that participation, and has been used in other surveys on community involvement (e.g. the Social Capital Benchmark Survey, developed by Robert Putnam). I use this proxy in my model to directly gauge attitudes toward the community, and indirectly gauge participation in non-religious civic life.

In addition to the aforementioned issues with Murray's model, he also lacks many variables commonly used in economics of happiness research. The results of his model are detailed below. I integrate his ideas into the greater economics of happiness field and restructure his model to gain a clearer, more comprehensive picture of the role virtue has in the economics of happiness.

Table I: Murray's Model

EQUATION	VARIABLES	(1) Probit Regression	(2) Average Marginal Effects
HapBi	MurrayFamily	0.959***	0.959***
		(12.62)	(12.62)
	MurrayVocation	0.479***	0.479***
		(8.322)	(8.322)
	MurrayFaith	0.139***	0.139***
		(4.418)	(4.418)
	SocialTrust	0.0700***	0.0700***
		(4.639)	(4.639)
	income	-0.0100	-0.0100
		(-1.092)	(-1.092)
	age	0.000284	0.000284
		(0.164)	(0.164)
	MurrayMV	-0.0355	-0.0355
		(-1.430)	(-1.430)
	Constant	-4.416***	-4.416***
		(-21.26)	(-21.26)
	Observations	10,766	10,766

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robert Putnam (2000) a political scientist from Harvard, discusses the decline of virtues in the context of community. Using the DDB Needham Life Style Survey and the Roper Social and Political Trends Survey, he analyzes on civic engagement in all its forms, including religious attendance, voluntary associations, and political participation and finds that participation in these associations has a significant impact on subjective well-being. He also devises a method for adjusting categorical data that is sometimes nonspecific (e.g. religious attendance, which includes vague categories like "nearly once a week") by estimating annual frequencies (e.g. "nearly once a week" becomes 40; every week becomes "52", etc.), which I adopt for my model.

c. Measuring Happiness

Kesebir and Diener (2008) try to reconcile the philosophical notions of happiness with behavioral evidence. They quickly summarize the history of happiness definitions in philosophy, from luck, to virtue, to heaven, to pleasure, to a "warm puppy" in the modern day. Because of the multiplicity of definitions, psychology (and behavioral economics) rely on the term subjective well-being to measure happiness.

Modern psychology has also determined that some factors do cohere with subjective well-being: life satisfaction, positive disposition, and satisfaction with the components of one's status in life. Additionally, the majority of people consider themselves to be at least somewhat happy, based on survey data, contrary to the cynicism and woe seemingly abundant in this modern world (and among graduating college seniors). Some philosophers, particularly Schopenhauer and Mill, hold that happiness comes by chance, if it all, and that people quickly adapt to their new state of happiness. Psychological evidence argues otherwise, that while people do adapt to changes in their subjective well-being to make it their new status quo, they do report measurable benefits during the process of adaptation. Happiness has also demonstrated various benefits, including health, higher achievement, and sociability. This, however, does create endogeneity problems for the regression analysis of subjective well-being.

Psychological research (e.g. Lykken and Tellegen 1996) has also demonstrated several correlates to happiness: wealth, religion, friendship, and personality. With knowledge of these factors, it may be sufficient to question whether the goal of policymaking and education should be maximizing economic welfare, or focusing more on subjective well-being, particularly since measures of economic welfare are proving less viable as measures of subjective well-being.

Kahneman and Krueger (2006) discuss several means by which researchers have tried to measure happiness. The most sophisticated of these means is neurological analyses of brain

function in response to stimuli. A less sophisticated method, that can provide more responses, is survey analysis. The authors of these surveys don't make any assumptions about what happiness is, only that respondents have an internalized definition and can give a general measurement of it. While Haybron (2008) makes strong arguments against people's ability to internally define and measure their own happiness, Kahneman and Krueger (2006) argue that certain variables (e.g. health, sleep quality, smiling) are correlated with measures of well-being.

Blanchflower and Oswald (2004) also acknowledge the issues with measuring happiness, and explain that they too rely on the assumption that people can accurately measure their own happiness. They refer to Warr (1980), among others, to point out that self-reported measures of subjective well-being relate to at least four factors: circumstances, aspirations, comparisons with others, and a person's baseline happiness or dispositional outlook. They also cite other research (e.g. Konow and Earley 1999) to explain that connections exist between these subjective measurements and objective measurements, including objective factors (e.g. employment), assessment by others, brain activity, etc. While the true level of happiness remains obscured, the data allow them to develop a model for reported subjective well-being, which likely corresponds to the model for true level of happiness.

Easterlin (2004) discusses the two leading theories in the economics of happiness literature for explaining how individuals measure happiness. The first theory, from psychology, is setpoint theory. It holds that everyone has a set point of happiness based on their innate nature, which life events (marriage, promotion, etc.) only temporarily affect. In contrast, economics holds that various life events do have a significant, long-running impact on people's happiness.

Easterlin (2004) seeks to show that elements of both theories have merit, and that they are not mutually exclusive. When analyzing health, Easterlin reports that the literature shows that

lower health is correlated with lower subjective well-being, and that adaptation does not occur. Additionally, self-reported health, which should also have a perceived setpoint based on one's innate genetics, does change over time. When examining marriage, the results are more mixed: data from Germany suggest that people's well-being adapts to marriage, while data from America indicate the opposite. Income, however, does not seem to consistently increase subjective well-being, lending some credibility to setpoint theory.

Both setpoint theory and economic utility theory have some explanatory power, and both could combined under the explanation that money is a quantitatively measurable notion ingrained in people, allowing for people to adjust to it, whereas health and marriage are not. People are easily capable of comparing the state of their income with their neighbors in various ways (e.g. house, car, clothing), though this measurement may be swayed by spending conspicuously on these particularly visible goods. Even if the measurement and the results from it are inaccurate, it is the ability to make a quantitative measurement on a widely-accepted scale (dollars) that allows people to estimate a long-run impact of income on their own happiness.

Much of the data for studies on subjective well-being come from surveys. In administering these surveys, however, there is an inherent risk of selection bias: that those surveyed are not fully representative of the population at-large. While it is possible to implement a survey to demographically represent a population (e.g. setting quotas for certain types of people to make the survey's demographics proportionally equal to the U.S. Census), those not included in the survey may have inherent beliefs and responses unique to them, thereby throwing off the analysis. Using the University of Michigan's Survey of Consumers, which records the attempted number of telephone contacts for each respondent, Heffetz and Rabin (2013) run multiple probit regressions to understand the differences in reported subjective well-being based

on number of calls, while controlling for age, race, gender, and income. They find that women who are harder to reach are significantly more likely to report low subjective well-being, whereas the opposite appears to be true for men. Additionally, elderly who are harder to reach are less likely to report high subjective well-being. These results suggest that future surveys which may not attempt to recontact specific potential respondents may be overstating female subjective well-being. It is also possible, however, that their unhappiness stems from being called so many times, rather than other factors.

d. The Empirical Study of Virtue

Religious service attendance tends to have a positive relationship with subjective well-being, owing to the sense of community and security that it provides. What Cohen-Zada and Sander (2011) discuss is the impact of an increase in the opportunity cost of religious attendance. They posit that the repeal of "blue laws," laws that prohibit businesses from operating on Sundays, represent an increase in the opportunity cost of religions attendance, which would lead some people to reduce their religious attendance. They construct a model where church attendance is the dependent variable, and whether or not a state has repealed blue laws is the independent variable, alongside individual controls, state-level controls, state fixed effects, and time fixed effects. Using data from the GSS, their results suggest a statistically significant negative relationship between blue laws being repealed and church attendance.

They then turn to the impact that this repeal has on subjective well-being. A logit analysis demonstrates that a repeal of these blue laws actually has a negative effect on subjective well-being at the 10% level, and nearly at the 5% level. When the sample is split by gender, it is statistically significant for females at the 5% level, but not at all for males. Further separating the sample to those working on Sundays and those with teenage children demonstrated similar

effects. These results do offer a possible explanation to the declining levels of subjective well-being among women over time, particularly relative to men, as Stevenson and Wolfers (2009) discuss.

Religious observance takes many forms, and Campante and Yanigizawa-Drott (2013) analyze the impact of Ramadan observance on subjective well-being among Muslims. Ramadan is one of the most significant months of the Islamic calendar, when the prophet Muhammad received his first revelations of the Islamic faith. In observance of Ramadan, Muslims fast from food, drink, smoking, and sexual activity, from sunrise to sunset. This ritual is one of the Five Pillars of the Muslim faith. Intuitively, the effect of Ramadan fasting on subjective well-being is hard to determine, as the loss of productivity during the month may outweigh the feelings of happiness coming from the fasting and observance. Using data from the World Values Survey, the authors find that Ramadan observance has a significantly positive effect on subjective well-being, stronger for women than for men, further showing the disparate impact of religion on each gender's subjective well-being, as Cohen-Zada and Sander (2011) also report. Despite the data showing that observance of Ramadan leads to a short-term economic decline, the authors hypothesize that the community effects and shift away from the material aspects of life are enough to outweigh the impact of this decline on subjective well-being. The authors conclude by asking why Muslims wouldn't fast longer, given the impact on subjective well-being. This, however, misses the forest for the trees: it is not the act of fasting itself that provides higher well-being; rather, it is the communal nature and the embodiment in tradition that gives fasting during Ramadan its impact on subjective well-being.

Deaton and Stone (2013) discuss is whether or not religion has a positive effect on well-being. Their data (again, from Gallup) conforms with much of the literature on an individual

level, which holds that religiosity does have a positive effect on well-being, but this is not the case when aggregated to the state or country level. Their work ultimately reveals that aggregation removes the effect of major factors in evaluating well-being. It also raises a larger question of whether it is possible, or effective, to measure happiness beyond the level of the individual.

Friendship, too, has the potential to affect subjective well-being. Helliwell and Huang (2013) analyze Canadian survey data to determine the status of that relationship in the 21st century. Many modern relationships are born and cultivated online, through Facebook, Twitter, and other social networks. Using the 2011 Happiness Monitor Survey, Helliwell and Huang seek to analyze the relationship between subjective well-being and social network size, while controlling for age, income, gender, education, and other factors. Their results find that larger real-life social networks significantly increase subjective well-being, whereas larger online social networks have either no significant effect, or a slightly negative effect, on subjective well-being. Data from the European Social Survey replicates these results. Their data also suggests that marriage and friendships have similar effects on subjective well-being, regardless of the differences in the respective institutions (marriage is a civil and religious institution, whereas friendship is not). Overall, these data suggest that virtual interaction cannot replace personal interaction in subjective well-being, much to my detriment.

e. Other Variables in the Economics of Happiness Literature

Income is among the most significant variables in understanding subjective well-being. Traditional models of utility would suggest that higher income leads to higher subjective well-being. As the following articles show, however, this is not necessarily the case.

Oswald (1997) seeks to understand the relationship of happiness to economic performance. He reports Easterlin's (1974) initial contribution to the economics of happiness, wherein Easterlin (1974) performed a trend analysis between national income and self-reported subjective well-being in the U.S. in the 1940s and 1950s, finding no relation, and that subjective well-being hasn't changed over time. This was the beginning of the "Easterlin Paradox," that increasing income did not increase subjective well-being. Easterlin (1974), however, ignored the downward trend in people reporting that they were "not very happy" over that time by focusing solely on the people reporting "very happy." More recent work by Blanchflower et al (1993) show that there has been a slight growth in subjective well-being over time, and that men are becoming slightly happier than women.

Data about self-reported subjective well-being in Europe provide similar results to the U.S. Great Britain also has data on distress levels of its subjects from surveys. Regression analysis of those data show that while income has no statistically significant impact on subjective well-being, being unemployed does, and additional data suggest that the loss of income is not the most worrying effect of unemployment. Rather, the shame of losing one's job and the stigma attached to unemployment are its most worrying factors. Additional factors in the literature known to be significant are marriage, education, being white, being self-employed, being retired, and being a homemaker.

Oswald (1997) also uses data from Great Britain to analyze extreme unhappiness through analyzing suicide rates, as survey data do not ask about extreme unhappiness. The data suggest that suicide rates are unaffected by social class, but that unemployment is a significant factor in suicide rates.

Deaton and Stone (2013) discuss a puzzle in the economics of happiness, as well as providing some background on the development of the field. Research in the economics of happiness has developed, to some extent, as economists have grown more concerned about the issues with measuring GDP and using that as a measure of well-being. One of the puzzles of measurement in this field is understanding whether relative income affects happiness. Prior literature suggest that individual income positively affects subjective well-being, but local income has a negative effect, suggesting that subjective well-being depends on relative income, rather than absolute income. Deaton and Stone offer two ways of measuring subjective well-being: an evaluative measure, asking people to rate their life on a zero to ten scale, and a hedonic measure, asking whether the respondent experienced a "lot of happiness yesterday" (592). Their regression, using data from Gallup, however, finds no evidence to support the relative income hypothesis when using the evaluative measure. Their regression with the hedonic measure, however, more supported followed the relative income hypothesis at the individual level, but regressions aggregated to the state or county level with the hedonic measure indicate that relative income is insignificant

Another chief puzzle in the economics of happiness is the aforementioned Easterlin paradox: that increased income does not increase subjective well-being. Clark, Frijters, and Shields (2008) outline two leading theories that explain this paradox: that people measure income on a relative level, comparing with others, and that people adapt to higher levels of income, such that the effect of income on subjective well-being decreases with time. Their analysis of the literature suggests that the relative income model holds more explanatory power, and that it needs to be considered as an element within a utility function. Kenny (1999) finds a

similar conclusion in analyzing the causal relationship between economic growth and happiness, and finds that the causality goes both ways.

Correlation, of course, does not entail causation. Pischke (2011), however, seeks to demonstrate a causal relation between income and subjective well-being. Using a sample from the GSS of men aged 20 to 64, he uses a 2SLS ordered probit regression on subjective well-being and uses the log of income as the key independent variable, while controlling for marital status, education, industry, occupation, and job satisfaction. His instruments are the industry dummy variables, and his data suggest a statistically significant causal relationship between logged income and subjective well-being, though the standard errors are large and some industries (e.g. religious services) serve as outliers in the analysis, and those in that industry, despite having low wages, tend to report high subjective well-being.

While income is an important variable in the literature, there are certainly other variables which cannot be ignored.

Sexual activity is another difficult variable to measure, as people may not always answer honestly in their answers, whether for shame, bravado, or other factors. While the interviews of the GSS are confidential and face-to-face, that does not entirely eliminate the possibility of measurement error. Blanchflower and Oswald decide to take these data at face value.

Blanchflower and Oswald (2004) develop a model where a numerical rating of subjective well-being is the dependent variable, and sexual activity, income, demographic data, and time period are the independent variables, using GSS data from 1988-2000. The dependent variable question is again phrased, “Taken all together, how would you say things are these days - would you say you are very happy, pretty happy, or not too happy?” They examine sexual activity by

examining the frequency of sexual encounters in a given month, the quantity of partners, and the gender of those partners. Their initial OLS regression suggests that having sex weekly or more frequently, on average, increases subjective well-being, ceteris paribus. An ordered logit analysis confirm their results. The ordered logit model also displays a positive relationship between education, full employment, monogamy, marriage, and family income to subjective well-being, as well as a negative relationship between being black, being male, being unemployed, and being divorced with subjective well-being. When including paying for sex and cheating as independent variables, the data show that there exist negative associations between these variables and subjective well-being. They also found that sexual orientation has no statistically significant impact on subjective well-being, but that the positive effects of sexual activity may be stronger among highly-educated people. This model, however, lacks the ability to control for fixed-effects among persons and for the endogeneity of sexual activity and happiness. Additionally, it is possible that changes in sexual morals in the previous decades could result in changes in reporting. It is for these reasons that this paper excludes sexual frequency from its model.

Di Tella, MacCollouch, and Oswald (2001) analyze the relationship of unemployment and inflation with happiness and life satisfaction. Using the Euro-Barometer Survey Series from 1975 to 1991 and the GSS from 1972 to 1994, the authors seek to understand whether or not inflation and unemployment are related to reported subjective well-being. Along with inflation and unemployment, country fixed-effects and time fixed-effects serve as controlling variables.

They employ a two-step methodology to examine this relationship on a nation-by-nation basis, rather than on a person-by-person basis. First, they use an OLS regression for each person in each nation in each year, and then compute the mean residual life satisfaction for each nation to create the dependent variable for the second-state regression. This new dependent variable is

regressed against three-year moving averages of inflation and unemployment. The moving averages serve to smooth out possible noise in the sample. In addition to OLS regressions, they used ordered probit models to confirm their conclusions.

Their results confirm that, when controlling for time and countries, inflation and unemployment are negatively correlated with life satisfaction in Europe. Additionally, unemployment has a larger impact on reported life satisfaction than inflation. An additional regression with a lagged life satisfaction variable demonstrates the same results, as well as some autoregression with the lagged variable, though it only has a coefficient of .3. They obtain similar results using U.S. data, showing that both inflation and unemployment are negatively related with subjective well-being, and that unemployment has a larger impact.

Economic freedom may also have a component in subjective well-being. Gropper, Lawson, and Thorne (2011) analyze whether nations with higher levels of economic freedom have higher levels of subjective well-being. Using the World Values Survey and the World Database of Happiness as measures for subjective well-being, and using the Economic Freedom of the World Index – measuring personal choice, competitiveness of markets, and property rights on a one to ten scale – the report suggests that higher levels of economic freedom across nations have a significantly positive effect on subjective well-being, controlling for GDP. More economically free nations also tend to be more stable and secure, which may also contribute to subjective well-being.

Habitat can also be a significant factor of happiness. Cattaneo et al. (2009) examine a study in Mexico to improve housing conditions to determine the effect of improved housing on subjective well-being. This program focuses specifically on floor quality, replacing dirt floors with cement floors, using another city not involved in this program as a control. Regressing life

satisfaction on a program binary variable while controlling for age, demographics, health, and social programs shows at 12% increase in life satisfaction, on average, for those within the home improvement program. It is unclear, however, what kind of impact such a (relatively) drastic improvement in housing in the U.S. would have, since its standard of living is higher than Mexico's standard.

Stevenson and Wolfers (2009) analyze a particularly unique element of happiness: the distinction between male and female subjective well-being, and why they have diverged over time. In the 1970s, subjective well-being data demonstrated that women reported higher subjective well-being than men, and it would be natural to think that an expansion of women's access to positions in society would further that difference. The data, however, indicate the opposite (e.g. Blanchflower and Oswald 2004). While some research argues that women are now working a "second shift" as a result of expanded opportunity to enter the workforce, data from the GSS do not prove this hypothesis. Another possible explanation is that the expansion of sexual access has resulted in more divorces and single parents, which disproportionately affect women. The data from the GSS does not support this hypothesis either. One possible explanation is that with expanded rights and opportunities, women are now comparing their life outcomes to men rather than other women, and they are finding themselves lacking in the comparison. Another possible explanation is that of decreased social cohesion and community strength. As Cohen-Zada and Sander (2011) point out, the effect of a repeal of blue laws on subjective well-being has a stronger effect on women than on men. Whatever the explanation, it remains clear that women's subjective well-being has decreased over time.

Over time, the distribution of subjective well-being has changed. Stevenson and Wolfers (2008) examine the trends in subjective well-being, and what factors may affect changes across

groups. Using the GSS, their research finds that the overall inequality in subjective well-being has decreased over time, particularly inequality in subjective well-being across different levels of education, though the averages outcomes remain different. This research helps to show that subjective well-being within groups is converging, but it does not explain what drives that convergence in the differences in subjective well-being between groups.

III. Method

My model uses the General Social Survey (GSS). The GSS is a household-level survey facilitated by the National Opinion Research Center at the University of Chicago, and is designed to take the pulse of the nation. This survey has run generally every other year since 1972, giving me up to 40 years of data. Each survey has about 2,000 respondents, giving me up to 57,000 responses to analyze. These data are pooled cross-sections. Unfortunately, however, not all questions in the GSS are asked of all respondents, resulting in fewer observations across all of my variables.

I use the following model to analyze the role of virtue in happiness:

$$\begin{aligned} Happiness = {} & \beta_0 Constant + \beta_1 Married + \beta_2 ChurchAttendance + \beta_3 NoReligion \\ & + \beta_4 ReligiousIntensity + \beta_5 SocialTrustIndex + \beta_6 Unemployed \\ & + \beta_7 JobSatiscation + \beta_8 Age + \beta_9 Age^2 + \beta_{10} Gender + \beta_{11} RelativeIncome \\ & + \beta_{12} Year + \beta_{13} HSDiploma + \beta_{14} CollegeDiploma + \beta_{15} Race + \beta_{16} Health \\ & + \beta_{17} Children \end{aligned}$$

I use an ordered probit regression for this model, as *Happiness* is an ordinal variable, and not a cardinal one. I will also, for the purposes of comparison, use a probit model, where both

"not happy" and "somewhat happy" are combined. The descriptions of the variables, as well as their descriptive statistics, are below.

Table II: Variable Descriptions

Variable	**Description**
Happy	Ranking of happiness, where 1 is "not very happy," 2 is "pretty happy," and 3 is "very happy"
HapBI	Binary happiness ranking, where 0 is "not very happy" or "pretty happy," and 1 is "very happy"
Married	Binary variable for marriage
Attend	Number of religious services attended in a year
NoReligion	Binary variable for professing no religion
Religen	Ranking of religious intensity, where 0 is "no religion," 1 is "not very strong," 2 is "somewhat strong," and 3 is "very strong"
Social Trust	Index of social trust from 1 to 6
Unemp	Binary variable for unemployment
Satjob	Job satisfaction ranking, where 1 is "very dissatisfied," 2 is "a little dissatisfied," 3 is "moderately satisfied," and 4 is "very satisfied"
Age	Age, in years
Female	Binary variable for female
RelIncome	Relative Household Income in quartiles
Year	Year of GSS
HSDip	Binary for having some post-secondary education
CDip	Binary for having some post-Bachelor's education
White	Binary variable for whiteness
Health	Discrete variable for health status, where 1 is "poor," 2 is "fair," 3 is "good," and 4 is "excellent"
Childs	Number of Children

Table III: Descriptive Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Happy	52,321	2.191	0.636	1	3
HapBi	52,321	0.316	0.465	0	1
married	57,041	0.539	0.498	0	1
noreligion	56,828	0.108	0.310	0	1
Attend	56,512	21.85	23.05	0	60
Riten	52,101	1.751	1.086	0	3
unemp	57,047	0.0328	0.178	0	1
Jobsat	41,277	3.295	0.810	1	4
SocialTrust	21,381	3.585	1.538	1	6
year	57,061	1,992	11.72	1,972	2,012
age	56,859	45.70	17.47	18	89
age2	56,859	2,394	1,761	324	7,921
female	57,061	0.559	0.496	0	1
white	57,061	0.812	0.390	0	1
Relincome	45,617	2.376	1.086	1	4
HSDip	57,061	0.542	0.498	0	1
CDip	57,061	0.220	0.414	0	1
Health	42,426	3.004	0.848	1	4
childs	56,880	1.953	1.792	0	8

The descriptive statistics contain some interesting data: 54% of the sample are married, only 4% of the sample are unemployed, 11% of the sample identify as nonreligious, 81% of the sample identifies as while, and 56% of the sample is female. 56% of the sample have a high school diploma, and 22% of the sample have a college diploma. The average age is 46, and the distribution of the Happiness variable is the following: 12% respond “not too happy,” 56% respond “pretty happy,” and 32% respond “very happy.”

The distribution of the religious intensity variable is the following: 11% respond “no religion,” 40% respond “not very strong,” 10% respond “somewhat strong,” and 38% respond “strong.” The distribution of the job satisfaction variable is the following: 4% respond “very

dissatisfied," 10% respond "a little dissatisfied," 38% respond "moderately satisfied," and 48% respond "very satisfied." Finally, the distribution of the index of social trust is the following: 1% responded in the 1st, lowest rank; 38% responded in the second rank; 7% responded in the third rank; 28% responded in the 4th rank; 5% responded in the 5th rank; and 20% responded in the 6th and highest rank. This distribution is sensible as most respondents responded in the same way to all three of the component questions

Some of these variables were not initially in the GSS, and needed to be created. RelIncome, the measure of relative income, was created from a combination of variables, as the traditional income category variable capped out at $25,000. This made it unfeasible to control for absolute income, as 50% of the sample has an income over $25,000. There are, however, a series of questions in the GSS that ask about income that are adjusted for inflation, by adding additional income brackets every few years (e.g. the most recent version of the question had 25 brackets, capping out at $150,000). I separated each respondent's household income into quartiles for each year based on that income question, and then created a relative income variable by combining the household income quartiles for each respondent in each year, which represent the approximate quartile the household's income falls into.

IV. Results

Both an ordered probit and a binary probit provided very interesting results that confirmed, to some extent, the hypotheses I posed earlier, that virtues do have an influence on subjective well-being, as does income. The ordered probit model provides the most useful results, as detailed below.

Table IV: Ordered Probit Regression

VARIABLES	(1) Ordered Probit	(2) "Not Very Happy"	(3) "Pretty Happy"	(4) "Very Happy"
Happy				
married	0.525***	-0.113***	-0.0481***	0.161***
	(16.09)	(-15.71)	(-10.6)	(16.17)
noreligion	0.0183	-0.00388	-0.00178	0.00566
	(0.337)	(-0.34)	(-0.33)	(0.34)
Attend	0.00186**	-0.000397**	-0.000175**	0.000573**
	(2.256)	(-2.26)	(-2.23)	(2.26)
Riten	0.0493**	-0.0106**	-0.00465**	0.0152**
	(2.528)	(-2.53)	(-2.48)	(2.53)
unemp	-0.343***	0.0864***	0.00671	-0.0931***
	(-4.294)	(3.73)	(1.32)	(-5)
Jobsat	0.301***	-0.0644***	-0.0284***	0.0928***
	(16.01)	(-15.82)	(-10.4)	(16.03)
SocialTrust	0.0632***	-0.0135***	-0.00596***	0.0195***
	(6.316)	(-6.27)	(-5.8)	(6.32)
year	-0.000750	0.000161	0.0000708	-0.000232
	(-0.446)	(0.45)	(0.45)	(-0.45)
age	-0.0325***	0.00696***	0.00307***	-0.01***
	(-5.262)	(5.25)	(4.94)	(-5.27)
age2	0.000351***	-0.0000752***	-0.0000331***	0.000109***
	(5.198)	(-5.19)	(-4.88)	(5.2)
female	0.0248	-0.00531	-0.00232	0.00763
	(0.829)	(-0.83)	(-0.83)	(0.83)
white	0.138***	-0.0307***	-0.011***	0.0416***
	(4.004)	(-3.85)	(-4.61)	(4.11)
Relincome	0.0791***	-0.0169***	-0.00747***	0.0244***
	(4.841)	(-4.83)	(-4.59)	(4.85)
HSDip	0.0313	-0.00672	-0.00291	0.00964
	(0.787)	(-0.78)	(-0.8)	(0.79)
CDip	0.0442	-0.00931	-0.00444	0.0138
	(0.849)	(-0.86)	(-0.8)	(0.84)
Health	0.292***	-0.0625***	-0.0275***	0.092***
	(13.80)	(-13.69)	(-9.71)	(13.82)
childs	-0.00387	0.000829	0.000365	-0.00119
	(-0.362)	(0.36)	(0.36)	(-0.36)
Observations	6,667	6,667	6,667	6,667

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

This model has 6,656 observations, mainly because the *Health* variable isn't asked of all the same respondents as the other variables. Because this is an ordered probit model, however, we cannot interpret the coefficients from these data. We can, however, notice that, with the exception of Noreligion, female, year, educational variables, and children, they are all statistically significant. In order to examine the coefficients, we must look at the marginal effect at each outcome of *Happiness*. We know from the construction of an ordered probit that the marginal effects of "very happy" will share the same coefficients as this initial regression, and that the marginal effects "not too happy" will have the opposite coefficients, whereas "pretty happy" will be indeterminate.

The first of these marginal effects, for when *Happiness* is 1, its lowest possible value, "not very happy" is listed above. From these data, we see that having a happier marriage, attending church more frequently, expressing greater social trust, having a higher relative income, being female, being white, and having higher reported job satisfaction and health status are less likely to, on average, place you in the lowest possible outcome for *Happiness* (e.g. being female makes the respondent have a 1.2 percentage points lower likelihood to report yourself as "not very happy"). Conversely, being unemployed is 8.6 percentage points more likely to place you in the lowest possible outcome for *Happiness*. In this outcome, marriage and employment status have the largest effects (-11.3 percentage points and 8.6 percentage points, respectively). This seems to suggest that one's ability to fit in to certain societal norms (marriage and employment) are necessary to avoid considering oneself not very happy. These variables are also among the most outwardly visible variables that affect subjective well-being, suggesting that other's perceptions of one's work or family status have a greater impact in one's subjective well-being than less perceptible factors (e.g. education, job satisfaction).

The second set of marginal effects, for “pretty happy” are also reported above, in column 3. While the direction of the coefficients remains unchanged, the magnitude of each coefficient changes slightly, in all cases moving closer to zero. These results suggest that those who report themselves as “pretty happy” are very similar to those who report themselves as “not too happy,” which suggests that people subconsciously see this question as a binary: are you happy (“very happy”) or not happy (“pretty happy” or “not too happy”)?

The marginal effects for “very happy” are reported above, in column 4, and in all cases are in the opposite direction of the previous tables. The absolute value of the coefficients in this marginal effect are higher than in the other marginal effects. Once again, marriage and work status have the largest coefficients (16.1 percentage points and -9.3 percentage points respectively), though works satisfaction and health are also close in magnitude (9.28 percentage points and 9.2 percentage points, respectively). This again suggests that more outward measures of life status have a greater impact on subjective well-being. This also suggests that factors people deal with on a daily basis (e.g. health and job satisfaction) have a greater impact than those things they do not deal with daily (their race, gender, or education). While children seems to contradict this, it is likely that the positive benefits of children (love and affection) are washed out by the negative impacts (time and attention, as well as money). Additionally, this distribution of marginal effects across responses motivates analyzing a probit model where “very happy” is a success, and “not happy” or “pretty happy” are failures.

A probit model with happiness is detailed below. One notable change in significance occurs in this model compared to the ordered probit model: having a high school diploma is negatively significant.

Table V: Probit Regression

EQUATION	VARIABLES	(1) HapBi	(2) Marginal Effects
HapBi	married	0.560***	0.161***
		(13.98)	(14.55)
	noreligion	0.0224	0.00646
		(0.319)	(0.319)
	Attend	0.00187*	0.000539*
		(1.893)	(1.893)
	Riten	0.0703***	0.0203***
		(2.968)	(2.975)
	unemp	-0.256**	-0.0739**
		(-2.287)	(-2.292)
	Jobsat	0.320***	0.0923***
		(12.51)	(13.04)
	SocialTrust	0.0467***	0.0135***
		(3.882)	(3.894)
	year	0.00113	0.000326
		(0.564)	(0.565)
	age	-0.0231***	-0.00664***
		(-3.165)	(-3.170)
	age2	0.000268***	7.72e-05***
		(3.462)	(3.469)
	female	0.0287	0.00827
		(0.785)	(0.785)
	white	0.108**	0.0310**
		(2.496)	(2.497)
	Relincome	0.0628***	0.0181***
		(3.129)	(3.138)
	HSDip	-0.0985**	-0.0284**
		(-2.032)	(-2.035)
	CDip	-0.0915	-0.0264
		(-1.433)	(-1.434)
	Health	0.308***	0.0887***
		(11.74)	(12.16)
	childs	-0.00691	-0.00199
		(-0.525)	(-0.525)
	Constant	-5.240	
		(-1.315)	
	Observations	6,667	6,667

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Additionally, these coefficients cannot be interpreted as they are above. Rather, it is necessary to obtain the average marginal effect, as shown in column 2, to interpret the coefficients. They all have the same direction as the average marginal effects of the ordered probit model when the response is "very happy." We once again see marriage, employment status, job satisfaction, and health as the coefficients with the highest magnitude. As other literature demonstrates, subjective well-being is U-shaped across age, with the nadir at 43 years of age. We also see one of the education variables, *HSDip*, become statistically significant. The coefficient states that respondents with a high school diploma are 2.84 percentage points less likely to report themselves as "very happy." This may be attributable to the stress and responsibilities that education brings, as an education is often correlated with a more skills-intensive job. It also seems to reinforce the cliché that "ignorance is bliss."

For comparison purposes, I have included a linear probability regression of the happiness binary variable below. Its R^2 is .13, explaining about 13% of the variation in the happiness binary variable, and it entirely mirrors the probit regression.

Table VI: OLS Regression

VARIABLES	(1) HapBi
married	0.163***
	(14.05)
attend	0.00551**
	(2.177)
noreligion	0.0158
	(0.855)
Riten	0.0224***
	(3.302)
SocialTrust	0.0134***
	(3.705)
unemp	-0.0489**
	(-2.264)
Jobsat	0.0836***
	(14.04)
age	-0.00585***
	(-2.829)
age2	6.95e-05***
	(3.103)
female	0.00949
	(0.880)
Relincome	0.0190***
	(3.192)
year	0.000547
	(0.945)
HSDip	-0.0300**
	(-2.251)
CDip	-0.0261
	(-1.391)
white	0.0317***
	(2.714)
Health	0.0868***
	(12.54)
childs	-0.00133
	(-0.361)
Constant	-1.481
	(-1.287)
Observations	6,667
R-squared	0.130

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

For further comparison, and to ensure that the regression observations is similar to the total GSS, I have included the summary statistics from the regression below. The percentages of married people, nonreligious people, unemployed, and high-school and college-educated people is similar to the total GSS sample. The average age of the sample is slightly lower, and has slightly more females and slightly fewer whites in proportion with the GSS sample. Additionally, the observations start in 1980, rather than 1972.

Table VII: Summary Statistics from Regression Observations

	(1)	(2)
	mean	sd
VARIABLES		
HapBi	0.267	0.442
married	0.501	0.500
noreligion	0.115	0.319
Attend	19.70	22.14
Riten	1.700	1.072
unemp	0.0391	0.914
Jobsat	3.210	0.851
SocialTrust	3.398	1.468
year	1,995	9.056
age	39.55	13.76
age2	1,754	1,255
female	0.568	0.495
white	0.732	0.443
Relincome	2.339	1.063
HSDip	0.591	0.492
CDip	0.189	0.391
Health	3.035	0.784
childs	1.768	1.665
Observations	6,667	

V. Discussion and Conclusion

These data provide some striking conclusions about the role of traditional American virtues in society. It also disproved Murray's specification that finds income insignificant.

Income has a significant impact, but in relative terms, rather than absolute terms. Additionally, certain components of his variables turn out to be insignificant, as not having a religion is insignificant; rather, church attendance is significant, confirming some of Putnam's arguments about the importance of community.

Additionally, more public facts about one's life seem to have a greater impact than less public measures, particularly marriage and job status. One's status in the community is often significantly affected by these factors, which suggests that a significant missing variable in the measurement of happiness is other's perceptions of one's worth, how I believe others see me. Humans are inherently social beings, desiring to fit in, so the most direct measure of fit would indeed be how others perceive oneself, or at lease how one believes others see him. Since these variables are extraordinarily difficult to honestly acquire, status variables seem to serve as proxies for these perceptions, as a means of fitting in. If international data were available, it would be very interesting to see if similar results were found for the unique traditions of specific nations. If the results from international comparisons were indeed similar, that would suggest that particular institutions that promote virtue are less of a factor than individual perceptions of fitting in the community.

For virtues, then, it seems that the institutions that represent these virtues themselves are not what matter in subjective well-being, but the strength of community within them. Rather than promoting institutions for the sake of institutions, it appears more viable to strengthen subjective well-being by promoting institutions for the sake of community, and policymakers may consider eliminating or changing those institutions that fail to provide such a sense of community. Examples of these changes could be in the structure of the tax code, which currently promotes marriage and childrearing, or in the welfare system, which promotes similar virtues.

Virtues do have a role in the economics of happiness, alongside income, race, and other important variables. Virtues are complex, however, containing elements of both their institutions and their community. Based on these results, virtues work best as a proxy for community cohesion and, above all else, how people see themselves in relation to the community, until better data for community cohesion and how people perceive other people's perception of them become available.

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