Frustrated Freedom: The Effects of Agency and Wealth on Wellbeing in Rural Mozambique

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Abstract

In Sen's capability view of poverty, wellbeing is threatened by both deficits of wealth and deficits of individual agency. Sen further predicts that "unfreedom," or low levels of agency will suppress the wellbeing effects of higher levels of wealth. The current paper extends Sen's view to include a condition, labeled "frustrated freedom," in which relatively higher levels of agency can heighten the poverty effects of relatively low levels of material wealth. Applying data from a large scale population study of female heads of household in rural Mozambique, the paper empirically tests Sen's view and the proposed extension. As predicted, agency is found to moderate the relationship between agency, wealth, and wellbeing, uncovering evidence of both unfreedom and frustrated freedom in the population. Further research into the complex dynamics of wellbeing and poverty are called for by the authors.

Recent research is confirming that increasing wealth is a necessary but insufficient condition for improving the wellbeing of those in poverty. We have long used GDP, household income, and absolute poverty lines to measure development, and, by extension, overall wellbeing or quality of life. Yet, recent work has also shown that wealth has a complicated relationship with wellbeing. Studies have found that "links between material resources and subjective wellbeing are weak" in developing country contexts (Müller 2009: 255; see also McGregor 2007, Gough and McGregor 2007, Camfield, Choudhury and Devine 2007; Easterlin, 2001). This is true not just for the poor. The economic and psychological literature on happiness in the developed world has also found non-linear relationships between differences in wealth and differences in personal wellbeing (see Krueger 2009, Kahneman 2011; Layard 2005; Deaton 2007).

The capabilities approach of Amartya Sen (1985, 1999, 2002) offers a theoretical explanation for these findings. The capabilities approach views the ends of development as substantive freedom—the ability of people to live the lives that they themselves value. Such human development not only depends on real opportunities, but also the ability to envision

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and pursue goals that people value (*agency*) (see Sen 2002; Alkire 2005; Clark 2005; Foster 2011). In this view, wellbeing results from the interaction between resources and agency: it is through -agency that actors are able to employ material resources to achieve the life that they desire.

For example, Sen (1999) posits an independence of the variation between income poverty and agency to explain why two otherwise similar and comparably resourced poor individuals (e.g. one from a U.S. inner city, the other from rural India) could experience dramatically different levels of wellbeing (Sen 1999). This independence is also employed to describe why a given person might report comparably low levels of wellbeing before and after a dramatic increase in their wealth (Graham 2011: 31).

To date, researchers working in the capabilities approach have identified three conditions of poverty or wellbeing that result from agency acting on wealth. First, there is the condition of substantive freedom, marked by adequate resources and agency. Second, there is absolute deprivation, characterized by a lack of basic resources, and agency. The third condition has received the most emphasis: an insufficiency of agency even in the context of adequate wealth, results in the condition of poverty Sen labels "unfreedom." Sen and others hypothesize that one of the most insidious deficits of poverty is an insufficiency of the agency to convert resources into lived differences. Substantive freedom is produced by agency effectively mobilizing resources.

This paper explores a fourth possible condition, one in which agency exceeds the potential presented by material resources. We label this condition "frustrated freedom." Based on a large random sample of female heads of household from the Zambézia province of Mozambique, we look at the relationship of agency and wellbeing as measured in the context of acute poverty. We adopt a capability approach for understanding the role of agency, calling on the work of Alkire (2008), Narayan (2005), Alsop et al. (2006), Kotan (2010), and others. We discover that increases in both wealth and agency are related to increased wellbeing only to a certain point. In the context of this study, the objective, absolute level of resources is severely limited, which tightly bounds levels of health, wealth, education, and safety. In this case, we find higher levels of agency to be associated with *decreases* in wellbeing. Subjective wellbeing improves with increasing agency up to a point, after which increases in agency are associated with a decrease in subjective wellbeing.

Resources, Wellbeing, and the Multiple Dimensions of Poverty

Conventional welfare economics holds that more wealth gives people more choice, which they will then use to pursue their preferences and utilities. While there was and still is considerable debate on what levels of absolute or relative income are considered deficient enough to be labeled poor, income has served as both the measure of poverty and the focus of development interventions. In recent years, this basic understanding has been the subject of significant critique. Sen (1999) demonstrates that differences in wealths among the poor have a limited relationship with differences in the lived conditions of poverty. Lived poverty is not merely an absence of wealth nor is its alleviation merely a question of the increase in wealth. The ability to act on what one values, or "what a person can do in line with his or

her conception of the good" (Sen 1985: 206) contributes directly and necessarily to wellbeing and freedom.

Following Sen (1999), poverty may be defined as the inability to lead the life one values. This perspective at once expands the realm of determinants of poverty out from wealth alone and, significantly, respects the aspirations and desires of "the poor". In Sen's approach, "capabilities" define the space of what is possible for individuals to do or to be. The goal of development is to increase capabilities, to ensure that people have the freedom to choose their own life path and the power to effectively pursue their goals (Sen 1993; Foster 2011). Freedom of speech, for example, requires the capabilities of literacy and technology, and the freedom of self-determination requires a whole range of capabilities that allow individuals to achieve those things and states of being that they themselves see as valuable (see Alkire 2008).

In a parallel literature, research in happiness psychology and economics has also examined the relationship between wealth and wellbeing, focusing particularly on developed country contexts. Easterlin (2001) famously observed the apparent paradox that while within countries wealthier people are on average happier than poorer ones, between countries there is little relationship between per capita income and average happiness (c.f. Stevenson and Wolfers, 2008). Numerous studies in happiness psychology and economics have demonstrated that differences in wealth have a limited and non-linear relationship with differences in individual happiness or life satisfaction. Gilbert (2006), Layard (2005), and Graham (2011) stress the importance of non-material aspects of wellbeing (stable marriage, employment, social networks, health are all associated with happiness; unhappiness is associated with divorce, unemployment, and economic instability). In a study of Latin America, Graham and Lora (1999) found that friends and family were most important to the happiness of the poor, but that work and health mattered most to the affluent.

Sen is critical of the perspective of happiness underlying utility models in traditional welfare economics (1992, 2009; see also Clark 2005). He observes that in terms of "the mental metric of utility" people tend to adapt their aspirations to the context of what is perceived as possible and realistic (see also Elster 1983). This means that a "a person's deprivation, then, may not at all show up in the metrics of pleasure, desire fulfillment, etc., even though he or she may be quite unable to be adequately nourished, decently clothed, minimally educated and so on" (Sen 1990: 45). This is to say that the reduced ("disciplined") desires of the severely deprived in terms of agency and capability is not the same as the "confident and demanding desires of the better placed" (Sen 1987: 11; see also Clark 2009, Foster 2011, Li 2007).

At the same time, Sen's rejection of the welfare utility model compels that new weight be given to life satisfaction and subjective wellbeing (see Alkire 2002). While not perfectly captured by revealed preference models (Clark 2009, Foster 2011). Happiness (if broadly conceived as subjective wellbeing) is fundamental to understanding capabilities (Graham, 2011, Chamber 1997, Nayaran and Petesch 2002). This is true not just for the developing world. Stiglitz, Sen, and Fitoussi (2010) make the case that policy in France and the

developed world should focus on increasing quality of life, understood to include broad measures of objective and subjective wellbeing.

Yet, wellbeing is a rather elusive state when it comes to measurement and for many subjective wellbeing (especially life evaluation, not just hedonic happiness) serves as a solid signal of overall quality of life. Stiglitz, Sen, and Fitoussi write that "quantitative measures of these subjective aspects hold the promise of delivering not just a good measure of quality of life per se, but also a better understanding of its determinants, reaching beyond people's income and material conditions" (2010: 18). (They go on to note that "proponents of the capability approach also emphasize that subjective states are not the only things that matter, and that expanding people's opportunities is important itself, even if this does not show up in greater subjective wellbeing" [p. 64]). In the current study we use a scale derived from the WHO Quality of Life Instrument (WHOQOL 31).

Agency, wealth, and wellbeing

The capability approach to development theory and practice emphasizes the importance of individual and collective capacity to convert objective levels of resources and opportunities into the lives people would choose for themselves. Sen (1999) understands this choosing as intrinsically motivated, stemming from agency or empowerment. For Sen, wellbeing requires an alignment of both subjective agency and objective resources. That is, substantive freedom entails choosing consistent with ones values and not simply self-interest or extrinsic reward seeking. In this light agency is a psychological state of being and not simply a measure of achieved wealth or status. Alkire (2008) shows that it is largely assumed that agency contributes directly to wellbeing, since pursuing one's own goals would, ipso facto, increase one's (subjective) wellbeing. Thus, the capability approach to development stresses the importance of freedom to choose one's life path, the exercise of agency and empowerment, in a manner than enhances overall wellbeing.

Despite its centrality, agency remains an elusive analytic construct. Composed of psychological traits such as confidence, will, intention, autonomy, and aspiration, agency is a subjective concept that interacts in complex and mutually constitutive ways with material resources, opportunity structures, and life histories. Kotan (2010: 370) defines agency as "the ability to exert power so as to influence the state of the world, do so in a purposeful way and in line with self-established objectives." Note that here (as with Sen's definition above), the importance of realized effectiveness is unclear: exerting power so as to influence the world does not mean necessarily that the world is so influenced and changed (see Bandura 1989 on efficacy).[1] Deci and Ryan (1980) distinguish two key components of agency: (1) competence and efficacy and (2) autonomy, the extent to which one perceives the right or freedom to choose. Importantly, autonomy is not synonymous with individualism (Chirkov et al. 2003). Autonomy can be a shared or collective freedom in which one internalizes the group preferences as one's own. This quality of autonomy allows for a robustness of the agency construct across cultural variations in collectivism and individualism (Alkire 2008, Chirkov et al. 2003).

Here we define agency to be subjective agency, the internal capacity and psycho-social power of individuals to make decisions. Precisely because of its complexity, it can be productive to treat agency as an analytically independent variable in modeling development interactions. Such subjective agency itself is insufficient to realize effective change: there also must be adequate resources for agency to act upon. Thus, in our model, subjective agency acts on and through available material resources (e.g. wealth).

Poverty and Unfreedom

In the emerging understanding of the relationship between agency and wealth, absolute poverty is marked by a significant deficit of both factors. Non-poverty is, in turn, described as a sufficiency of both agency and wealth. The capability approach contends that significant deficits in wellbeing are not only created by absolute poverty. In the context of increasing wealth, Sen describes an expectation that any increase in wellbeing may be limited for the poor unless their agency is comparably enhanced. This description of *unfreedom* or agency poverty has revolutionized development theory and practice over the last decades. The primary implication has been to tie the concern for enhancement of the resources available to the poor with enhancement of their agency to capitalize on such resources, their capability to achieve substantive freedom.

In a parallel literature to welfare economics and development, psychologists and economists have been studying the dynamics of wellbeing across levels of resources. In the general population, economic psychology has observed that increases in wealth have a diminishing positive impact on wellbeing. One explanation may be that changes in wealth may outpace enhancements of agency (e.g. the problem of sudden wealth faced by lottery winner). That is, persons may experience greater opportunity than they are capable of converting into their own wellbeing. For example, in studies of British civil servants (hardly a disadvantaged group), those who describe themselves as having low levels of empowerment actually report lower levels of health and wellbeing in comparison with their more empowered peers (Marmot and Wilkinson 2001). This is a condition comparable to unfreedom in that it is characterized by a deficit of agency (or empowerment) in comparison to wealth.. However it is experienced at levels of relative wellbeing that can hardly be described as poverty. Thus in both the development and happiness literature there is some evidence of the independence of changes in wealth and agency.

Sen's proposal that unfreedom is due primarily to a lack of agency may well be associated with the resigned contentment or happiness described in the psychology and economics literatures (cf. Graham 2011: 11). For the affluent, perhaps this is due to the hedonic treadmill of adapting quickly to upward mobility. But, as David Clark notes, adaptation can occur either through adjusting aspirations upward or by adjusting them downward (see also Sen 1992, Nussbaum 2000). Layard (2005), Kahneman (2011), and others argue that there is a curvilinear relationship between wealth and happiness: more wealth produces proportionate advances in happiness up to a given point. Kahneman (2011: 397) reports that above household incomes of $75,000 in high-cost areas in the U.S., there is no increase in experienced wellbeing with income increases. Kahneman and Deaton (2010) argue that

while hedonic happiness is not tightly associated with income, broader measures of life-satisfaction do have a linear relationship.

Graham has studied the paradox of "happy peasants and frustrated achievers." Her happy peasants fall into a category that Sen cautions is a misleading form of adaptation to circumstances. Graham suggests that this results from one possible adaptation to poverty: privileging hedonic happiness over life-satisfaction. Indeed, there is broad agreement that "the absence of agency severely limits wellbeing, broadly defined as the capacity to lead a fulfilling life, even if respondents who lack agency report being happy" (Graham 2011: 31).

Poverty and Frustrated Freedom

Interestingly, Graham also suggests that unhappiness may result from a kind of surfeit or excess agency: "The process of *acquiring agency* may in and of itself produce short-term unhappiness. And, if prospects of a more fulfilling life are raised but the opportunity to live that life does not materialize, one can surely imagine lasting unhappiness as a result" (47). Graham and Lora (2009) document the "paradox of unhappy growth": any sort of uncertainty is detrimental to happiness; this often results in a negative correlation between economic growth and happiness.

From this observation one might expect that an experienced excess in agency might at a point actually diminish ones sense of wellbeing, precisely because ones' agency cannot be fully realized due to the limitations of ones' wealth. Thus it is theoretically possible to describe not only conditions of absolute poverty, substantive freedom, and unfreedom, but also a fourth condition in which person's subjective agency is effectively greater than the possibilities bounded by their wealth. In the development literature though, there has been little attention to the theoretically describable fourth condition. In such a condition this resource deficit may frustrate the perceived capacity to successfully make the decision and choices that one may believe would enhance wellbeing. Given this potential relationship between agency and resources, we label the potential fourth condition "frustrated freedom."

James Ferguson (1999) provides a clear example of frustrated freedom in his study of the copper boom in Zambia and its aftermath. Ferguson shows how rapid economic growth expands the range of capabilities and expectations agency as important, internalized motivational forces; the aspirations window of ordinary Zambians opened wide and provided new points of reference for dreams of the future. After the bust, these dreams became unviable, perceived and previously achieved agency was no longer effective, leading to decreases in wellbeing based on unsatisfied aspirational capabilities.

Four conditions of wealth and agency

Figure 1, describes the four proposed conditions that might result from distinct alignments between independently varying levels of agency and resources. These conditions include the two conditions of poverty previously predicted by the capability approach: absolute poverty when levels of wealth and agency are both low; and unfreedom when wealth is relatively greater, but agency remains low. The non-poverty condition of sufficient agency and wealth is also described and here labeled "substantive freedom." Finally, the proposed condition of

poverty we label frustrated freedom is found where agency is greater and coupled with insufficient levels of wealth.

Following the emphasis in the literature of the centrality of agency to wellbeing, we expected to find a linear relationship: the more agency and or the more wealth, the greater the sense of wellbeing. For the current study this leads us to expect:

H1: higher levels of wealth will be associated with higher reported levels of wellbeing.

And

H2: higher levels of agency will be associated with higher reported levels of wellbeing.

The other condition of poverty is found where there are relatively greater, but a persistent deficit in agency, or what Sen describes as "unfreedom." This leads us for the current study to expect:

H3: the relationship between wealth and wellbeing will be moderated by the level of agency such that at higher levels of wealth, persons with relatively lower levels of agency will report lower levels of wellbeing.

Finally, we theorize that a third condition of poverty will be created by the experience persons who have persistently low levels of wealth but nevertheless subjectively assess their agency as relatively higher. We have labeled this condition frustrated freedom. This leads us to expect:

H4: the relationship between wealth and wellbeing will moderated by the level of agency such that at relatively higher levels of agency, persons with low levels of wealth will report lower levels of wellbeing.

Study design

To investigate the relationships between agency and wealth on the wellbeing of persons in poverty, we analyzed data form a large-scale population survey conducted in the Zambézia province of Mozambique. These data were collected as part of the monitoring and evaluation of a USAID funded initiative known as Strengthening Communities through Integrated Programming (SCIP). The Zambézia project, began in 2009, is called Ogumaniha (in the local Chuabo language, ogumaniha means "united/integrated for a common purpose.") The broad goal of the 5-year project is to improve health and livelihoods in Zambézia by pursuing the consolidation of an integrated, innovative, and sustainable community-based program supporting cross-sector integration of USAID's development actions in the province (Vergara, et al. 2011).

The percentage of the population living below the nationally defined poverty level in Mozambique is 54%, which translates roughly to ten million Mozambicans trying to meet their basic human needs on an income of less than one US dollar a day. The major elements contributing to the vulnerability of its people are the lack of social infrastructure, poor health and sanitation, food insecurity (low levels of food production, frequent food shortages, lack

of alternative sources of income, and poor access to markets), and spread of diseases, especially HIV/AIDS and malaria. Because many rural areas have undeveloped markets and suffer from lack of infrastructure, the population's livelihood in those areas revolves around subsistence farming and informal production and trade. It is therefore difficult to compare social, economic and human development and its impact on health in a context where there is tremendous diversity in the means of production and trade within a limited range of opportunities. Mozambique is one of the ten countries most affected by HIV in the world, with an adult prevalence recently estimated at 12% (INSIDA 2009). In addition, the epidemic varies considerably with some areas having an adult prevalence over 20% (INSIDA 2009).

Located in central Mozambique, Zambézia is a remote, underdeveloped province with rich agricultural potential but chronically vulnerable to livelihood insecurity. Health service access is extremely low. Even though the overall HIV prevalence in Zambézia is estimated to be 13% (INSIDA 2009), seropositivity among pregnant women attending antenatal services in selected urban areas ranges from 14 to 35% (MISAU, 2008). The maternal mortality rate is high, at 520 maternal deaths per 100,000 live births; infant mortality is 130 out of 1,000 live births, partly because of the remoteness of communities and lack of access to emergency care (WHO2011).

The researchers collaborated with the chief sampling statistician in Mozambique's Institute of Statistics (*Instituto Nacional de Estatística* - INE) to select two representative samples. The first sample selected 196 enumeration areas (EA) stratified by planned project intervention with probability proportional to size (PPS) in three geographically diverse districts (Alto Molocue, Morrumbala, and Namacurra) according to the most recent census. This concentrated sample allows for increased data collection yielding more precise estimates for the baseline and five-year project evaluation. A second sample of 68 EA selected with PPS from the remaining districts in Zambézia Province allows for province-wide estimates of baseline data. Using topographic maps from INE with the help of the local community leaders, survey teams divided the EA into four quadrants. Starting in her assigned quadrant, an interviewer would systematically approach the first 4 households for interview. The total sample size was calculated at 3,960 households for the desired precision by using data from previous surveys in the area to estimate design effect.

Measures

The survey instrument included information on over 500 variables in several dimensions (demographics, education, health, consumption, income, resources, housing and agency). Most questions were adapted from widely used survey tools used around the world, many previously employed in Mozambique. These include the Demographic and Health Surveys (UNICEF, 2010), and the Core Welfare Indicator Survey, (World Bank 2007; Pradhan 2007; Wold 2004). Several modules were adapted from various other tools routinely used for specific topics of interest, such as food insecurity, nutrition, HIV knowledge and stigma, agricultural production and practices. The English version of the survey tool can be found in the baseline survey report (Vergara, et al. 2011).

The section on social barriers and social participation addresses various factors that may shape wellbeing, from access to social support networks to decision making within the family and gender differences. Questions selected for this section were based on concepts from the Oxford Poverty and Human Development Initiative (OPHI, 2008), and selected from surveys used by UNICEF and others (Bhuiya, et.al, 2007; Pulerwitz,, 2008; OPHI, 2008; UNICEF, 2010) The section related to quality of life (which in this paper we call subjective wellbeing) was based on several WHO quality of life scale (WHO, 1997, 2002).

Revisions were done prior to field-testing in order to adapt the Portuguese version of the document to reflect the linguistic and social context of Mozambique. Field testing was conducted with the support of experienced staff from Vanderbilt's Latin American Public Opinion Project (LAPOP). Once the survey was deemed ready in Portuguese it was translated to the five principal local languages in Zambézia (INE, 2008): Nyanja, Elomwe, Emakhwa, Chisena, and Echuabo by faculty at the Universidade Pedagógica de Quelimane. The final translated surveys were checked for accuracy using panels of bilingual Portuguese – native local language interviewers.

Measures of Wealth—The measurement of household income is particularly problematic in high poverty areas (Ferguson, et al., 2003). In the current sample 48% report no monetary income whatsoever. Increasingly in economics and development monetary income is no longer the preferred measure. Instead, a "permanent income" (Friedman, 1957), or wealth measure based ownership of selected assets is employed. "Poverty stemming from lack of resources is associated with low income, but it is perhaps more closely related to low wealth. Low wealth individuals always have low income, but not all low income individuals have low wealth. In that sense, wealth and poverty are more closely related than income and poverty. Modern financial economics research recognizes this difference in frameworks in which individuals make consumption decisions based on wealth, where wealth includes the capitalized value of labor income, rather than just income." (Merton, 1971)

We applied a measure of permanent income developed the World Bank (Ferguson, et al., 2003). The statistical model utilized in this analysis is developed in terms of a latent variable which denotes the permanent income of household. This variable is, by definition, unobserved. What are observed are a series of asset and other indicator variables for each household. Figure 2 lists the 37 asset indicators selected for the model. We labeled this measure "*Permanent_Income*"

Measures of agency—To assess levels of agency we utilized a measure developed for the World Values Survey designed to assess individual's subjective evaluation of the competence or confidence in making decisions that could impact their life. The measure asked: Some people believe they can decide their own destiny, while others think they do not have control over their destiny. Please, to what extent do you believe you can decide your own destiny? Response options ranged on a 4 point Likert scale from "Nothing, a little, enough, or a lot? We labeled this measure "*Agency_Destiny*"

As the informants in the survey were female heads of household, we thought it relevant to also explore the gendered decision autonomy aspect of agency. To capture the gender

aspects of agency, heads of households were asked "In general, do you think you can make decisions by yourself, freely, without consulting your husband? Please, to which extent can you do this: never, sometimes, almost always or always?" We labeled this measure "*Agency_GE*"

Measure of subjective wellbeing—To assess the levels of subjective wellbeing we selected the items from the WHO quality of life scale 31 (WHO 1997, 2002). These items have been used extensively in the assessment of wellbeing in populations in conditions like those found in Zambézia. The items selected captured the general subjective wellbeing of the respondents, i.e., the extent to which one is happy and satisfied with life and state of health, given one's expectations and preferences. For example, this scale included the question" 'How would you rate your quality of life?' We label this scale "*Wellbeing*"

Covariates—To account for potential alternative sources of variation in wellbeing and wealth, and consistent with a broad view of the opportunity structures that might be associated with wellbeing, we included measures including, community participation, religiosity, and legal rights (Narayan, 2005; Nussbaum, 2000).

Analysis

Preliminary Analysis

A preliminary best-subsets regression analysis was used to study how an individual's quality of life was related to the demographic, resource and agency variables. As a starting point, we used the Bayesian Information Criterion (BIC, Schwarz, 1978) to select the best model for *Wellbeing* in terms of the main effects of all of the available variables. *Permanent_Income* and the primary agency variable (*Agency_Destiny*) were important elements of this model, and the other predictors in this model were used as controls in our study of the four hypotheses.

Models—Altogether, we use four general linear models to summarize the relevant findings. Model 1 uses only *Permanent_Income* and the *Agency_Destiny* variable as predictors, whereas in Model 2, we add the controls from the best subsets analysis,

Model 1:

$$Wellbeing = \beta_0 + \beta_1 Permanent\_Income + \sum_\ell \alpha_\ell (Agency\_Destiny)_\ell + \varepsilon$$

Model 2:

$$Wellbeing\ \beta_0 + \beta_1 Permanent\_Income + \sum_\ell \alpha_\ell (Agency\_Destiny)_\ell + \sum_k \gamma_k\ Control_k + \varepsilon.$$

Each of these models is a relatively simple analysis of covariance, where *Agency_Destiny* is the single factor and the other variables are used as covariates. For convenience, the

coefficients, $\alpha\ell$, for each level of agency-destiny, are estimated subject to the constraint that the coefficient at the highest level is set to zero ($\alpha4 \equiv 0$), so that each coefficient represents the effect (or contrast) with respect to level 4.

The second agency variable, which considers gender aspects or gender equity (*Agency_GE*), does not have significant incremental value when added to Model 2 as a main effect. Nevertheless, the interaction between the two agency variables, *Agency_Destiny* and Agency_GE, does have a very significant relationship to quality of life, and an exploratory analysis indicates that it is actually the difference between these two agency variables that has the greatest explanatory power. Model 3 summarizes this relationship and provides the best scientific model (i.e., the lowest value of BIC) that we were able to find in terms of the two agency variables, and the other available predictors,

Model 3:

$$Wellbeing = \beta_0 + \beta_1 Permanent\_Income + \sum_k \gamma_k \, Control_k + \sum_\ell \alpha_\ell [(Agency\_Destiny)_\ell - (Agency\_GE)]_\ell + \varepsilon.$$

In Model 3, the difference between the two agency variables is a single factor and the other variables are used as covariates. As a final exploratory step, we construct Model 4 by adding the only level of *Agency_Destiny* that has significant incremental value relative to Model 3.

Model 4:

$$\begin{aligned} Wellbeing = \ &\beta_0 + \beta_1 Permanent\_Income \\ &+ \sum_k \beta_k \, Control_k \\ &+ \sum_\ell \gamma_\ell [(Agency\_Destiny)_\ell - (Agency\_GE)]_\ell \\ &+ \lambda_0 [Penultimate \; Level \; of \; Agency\_Destiny] + \varepsilon. \end{aligned}$$

(In Models 3 and 4, the factor level coefficients, $\alpha\ell$, are estimated subject to the constraint that $\alpha L \equiv 0$, where L is the highest level.)

For each of the Models 1-4, we also considered an alternative form where coefficients were estimated separately within two income groups: those with and without monetary income (46% have no monetary income). In each case, the coefficient of *Permanent_Income* was significantly different across income groups, while the other coefficients were not. Thus, we applied a simple two-class form of each model where a different coefficient of *Permanent_Income* was estimated within each income group.

Results

Summary Statistics

Table 1 provides Cronbach alpha values for each of the scales, and the descriptive statistics for these scales and the basic demographic variables are in Table 2. Figures 3-5 illustrate

both the unfreedom and frustrated freedom effects in terms of each agency variable. Within each of two income groups (those with and without monetary income), Figures 3 illustrates how the average wellbeing tends to increase as *Agency_Destiny* increases to level 3 (the unfreedom effect), an then decreases at the highest agency level (4) (the frustrated freedom effect).

Figure 4 illustrates the same phenomenon by quartile of *Permanent_Income*, although for individuals at the highest wealth quartile, there is no apparent decrease in average wellbeing for individuals at the highest agency level. Figure 5 examines the effects of Figure 4 in terms of the actual distribution of wellbeing as a box plot at each agency level within wealth quartile. Here the boxes represent the subpopulation between the first and third quartiles (i.e., the middle 50% of each group) and within the lowest two wealth quartiles, there is an apparent downward shift in the wellbeing distribution at the highest agency level.

Tests of Hypotheses

Table 3 summarizes the results for Models 1-4. We now interpret these results relative to the hypotheses.

H1: Higher levels of resources will be associated with higher reported levels of wellbeing.

All models provide substantial support for the positive effect of both monetary income and permanent income. Models 2-4 also show the statistically significant association between higher wellbeing and higher levels on the other resource scales (community participation, legal rights, religiosity).

H2: Higher levels of agency will be associated with higher reported levels of wellbeing.

Models 1 and 2 test this hypothesis directly for the primary measure of agency, *Agency_Destiny*. Both models show there is a significantly higher wellbeing associated with the penultimate level of agency (level 3): wellbeing at this level is significantly greater than at any other level ($p<0.001$ in each case). Wellbeing is also significantly lower at agency levels 1 and 2, relative to agency level 4. So overall there is a significantly higher wellbeing associated with the two higher levels of agency, although the highest average wellbeing is experienced at the penultimate level of agency.

H3: The relationship between wealth and wellbeing will be moderated by the level of agency such that at higher levels of wealth, persons with relatively lower levels of agency will report lower levels of wellbeing.

Models 1 and 2 support this hypothesis and show that lower levels of Agency_Destiny (levels 2 and 3), are associated with significantly lower levels of quality of life, across monetary income groups even after correcting for the differential effects of permanent income within those groups.

H4: The relationship between wealth and wellbeing will moderated by the level of agency such that at relatively higher levels of agency, persons with low levels of wealth will report lower levels of wellbeing.

Models 1 and 2 show that there is a significantly lower level of wellbeing at the highest agency level, relative to the penultimate level, even after adjusting for the effects of wealth. Model 2 shows that this effect persists even when other control variables related to wellbeing are applied; these control variables include three other resource measures (community participation, legal rights and religiosity). This result supports H4, but we did not find that the decrease in wellbeing between agency levels 3 and 4 differed significantly across wealth levels, whether wealth is defined in terms of monetary or permanent income. Still this is consistent with H4, since all of the individuals studied here are at relatively low levels of resource wealth. Model 3 also provides support for H4. This model applies the controls of Model 2, but also corrects for the disparity between *Agency_Destiny* and *Agency_GE*. Even after these adjustments, we see a significant spike in wellbeing at the penultimate level of *Agency_Destiny* ($p<0.05$, one-sided).

Additional Exploratory Findings

Models 3 and 4 provide an exploration of the determinants of wellbeing that goes beyond a direct study of the four hypotheses. Model 3 provides the best overall paradigm for quality of life, and shows how wellbeing is strongly associated with the difference between the two agency variables (*Agency_Destiny* minus *Agency_GE*). The coefficients in Table 3 refer to the effects on wellbeing relative to the greatest positive disparity between these two levels (+3), which occurs when an individual believes she can "always" determine her own destiny, but does not believe she is ever allowed to make these decisions (*Agency_Destiny* =4, *Agency_GE*=1). The greatest positive effect on wellbeing occurs when this disparity between agency levels is at it's penultimate level: here *Agency_Destiny* is at one of its highest levels (levels 3 or 4), and *Agency_GE* is two levels below. In this case, the respondent believes she has "enough" (or a "lot" of) control over their destiny but can "never" (or "only sometimes") make decisions freely). Presumably this effect is due primarily to the fact that the primary agency level is still very high and the respondent is not as frustrated at this level as one tends to be when the disparity between the two agency variables is even greater. The greatest negative effects occur when the disparity is at 0 or 1: in each of these cases, *Agency_Destiny* is below level 4 more than 95% of the time, and it's usually below level 3, so that the fact that these groups have significantly lower average wellbeing is presumably due primarily to the substantially lower levels of *Agency_Destiny*.

Discussion

In the Mozambique data we find that subjective wellbeing is greater in association with both permanent income (wealth) and self-reported agency. However, these associations are neither linear nor additive. Often agency and wealth act in concert, but there are also frequently cases in which agency might increase and yet become thwarted when meeting up against the limitations of wealth. We sought to explore these finding by disentangling the concepts of agency and wealth. We find evidence that the relationships are indeed moderated with higher levels of wealth having diminishingly positive association with wellbeing when coupled with lower levels of agency. We describe this finding as consistent with Sen's core critique of traditional welfare economics which posits that the impact of

resources and opportunity structures on wellbeing is activated or limited by the level individual agency.

We further develop this predicted moderation by describing how agency might limit or diminish wellbeing when individuals experience the limits of available wealth. Kotan (2010) observes that when agency is effective, subjective agency has primacy; but when agency is not effectively realized, one must look toward structural conditions. A condition we label frustrated freedom. That is, wellbeing might be limited when individuals might expect that they could exert agency but are thwarted by a lack of structural power. The data we report provides evidence of this form of the moderation as well.

We chose to measure agency both generally and also to explore gender equity in decision making as might be most relevant to our sample. The Ogumaniha study focused on female heads of household. Varkey, Kureshi and Lesnick (2010) find gender empowerment to be closely associated with positive health outcomes. In our sample, the direct relationships between both these measures of agency and wellbeing are comparable, the two measures related quite complexly when we examined potential moderation effects. The difference between the two forms of agency described an apparently particularly difficult state in which a female head of household believes strongly that her decisions can affect here destiny, but finds herself denied the autonomy in her relationship to makes such decisions. This complexity may reflect some distinct underlying dynamics within the construct of agency and deserve further study. Many have noted that agency is a complex category of analysis with various components (including Sen 1993, Ibrahim and Alkire 2007, Kotan 2010). In particular, there is a distinction sometimes made between the confidence to exert agency and the power to effect real change in the world. Ibrahim and Alkire (2007: 9) observe that opportunity structures are necessary as the "preconditions for effective agency." Thus, a capability model must account for the effective freedom to choose and the structural conditions and resources outside of a single individual's control that limit the range of functionings and possibilities. As Nayaran (2005) points out, it is not just the psychological but also the human and material resources a person can call upon in achieving their goals that can lead to empowered action. In many ways, this is an iteration of the long-standing debate in the social science between agency and structure—the range of the ability to act and structural constraints on action. Relevant is Foster's (2011) definition of opportunity freedom as "the extent to which a set of options offers a decision maker real opportunities to achieve." Foster notes that economic models of choice tend to focus on outcomes, which leaves unexamined the ways in which choices are constrained and compromised by structural conditions.

The results we report here support these findings while calling attention to the important interrelation of agency and wealth in relation to wellbeing. We find that while both material resources and agency are important, their relative balance also affects wellbeing. Just as adequate material resources combined with a deficit of agency results in Sen's unfreedom, we find that high levels of agency combined with limited opportunities produce a condition of frustrated freedom.

Our findings on the not only frustrated freedom, also the complex relationships between gendered decision autonomy and additional material conditions and their impact on wellbeing call for future research on agency and its constitutive elements. While such multiple dimensions of poverty are widely recognized, the constitutive elements are often seen as additive or substitutive and what remain underexplored is the complex relationships between them. For example, changes in resource conditions and changes in levels of agency may interact to enhance or diminish persons' evaluations of their own wellbeing. In general, the relationship between enhancements in agency has been seen as complementary: increases in material conditions and resources have a positive impact on wellbeing. However, our findings here and recent research from economics and psychology raise the possibility that such a simple complementarity may not be the result. The finding of adaptation to changes in resources (particularly wealth, but also resources like health and legal rights) or the relativity of the assessment of wealth and resource adequacy raise significant doubt about how the goal of development might actually be achieved.

Our results give weight to the assertion that wellbeing is highly multidimensional, not just made up of many dimensions. That is to say, wellbeing results from the interaction of factors, especially, as we have emphasized, agency and material resources. Conventional wisdom holds that wellbeing should increase with income and wealth, a view long shared by scholars and policy makers. These results add to our understanding of the complex interplay of agency, opportunity structures (including material resources), and subjective wellbeing. They also suggest that development programs should focus on *linking* efforts to enhance agency as well as wealth.

Acknowledgments

References

Abadian S. Women's Autonomy and its impact on fertility. World Development. 1996; 24(12):1793–1809.

Alkire, S. Valuing Freedoms: Sen's Capability Approach and Poverty Reduction. Oxford University Press; New York: 2002.

Alkire S. Measuring the freedom aspects of capabilities. Mimeo. 2005

Alkire S, Foster JE. Counting and multidimensional poverty. Journal of Public Economics. 2011; 95(7-8):476–487.

Alsop, R.; Bertelsen, M.; Holland, J. Empowerment in Practice from Analysis to Implementation. Washington: World Bank; 2006.

Bandura A. Human Agency in Social Cognitive Theory. American Psychologist. 1989; 44(9):9.

Bhuiya AM, Shaila Shehrin, Masud Rana AKM, Wahed Tania, M Ahmed S, M A, C R. A Multidimensional Approach to Measure Poverty in Rural Bangladesh. Journal of Health Populations and Nutrition. 2007; 25(2):134–45.

Camfield L, Choudhury K, Devine J. Wellbeing, Happiness and Why Relationships Matter: Evidence from Bangladesh. Journal of Happiness Studies. 2007

Chirkov V, Ryan RM, Kim Y, Kaplan U. Differentiating autonomy from individualism and independence: a self-determination theory perspective on internalization of cultural orientations and wellbeing. Journal of Personality and Social Psychology. 2003; 84:97–109. [PubMed: 12518973]

Clark DA. Adaptation, Poverty and Weil-Being: Some Issues and Observations with Special Reference to the Capability Approach and Development Studies. Journal of Human Development and Capabilities. 2009; 10(1):21–42.

Chambers R. Editorial: Responsible wellbeing: a personal agenda for development. World Development. 1997; 25(11):1743–54.

Deaton, A. Income, aging, health and wellbeing around the world: Evidence from the Gallup world poll. 2007. http://www.nber.org/papers/wl3317

Diener E. Assessing subjective well-being: Progress and opportunities. Social Indicators Research. 1994; 31(2):103–157.

Easterlin RA. Income and Happiness: towards a unified theory. Economic Journal. 2001; 111:465–484.

Elster, J. Explaining Technical Change-A Case Study in the Philosophy of Science. Cambridge, UK: Cambridge University Press; 1983.

Ferguson, J. Expectations of modernity: myths and meanings of urban life on the Zambian copperbelt. University of California Press; Berkeley: 1999.

Foster, James E. Handbook of Social Choice and Welfare. Vol. 2. Elsevier; 2011. Freedom, Opportunity, and Weil-Being; p. 687-728.

Fox J. Structural equation modeling with the sem package in R. Structural Equation Modeling. 2006; 13:465–486.

Friedman, M. A Theory of the Consumption Function. Princeton: Princeton University Press; 1957.

Friis-Hansen E, Duveskog D. The Empowerment Route to Well-being: An Analysis of Farmer Field Schools in East Africa. World Development. 2011

Gough, I.; McGregor, A. Wellbeing in Developing Countries From Theory to Research. Cambridge: Cambridge University Press; 2007.

Graham, C. The Pursuit of Happiness: An Economy of Weil-Being. Washington: Brookings Institution Press; 2011.

Graham, Carol; Lora, E. Paradox and Perception: Measuring Wellbeing in Latin America. Washington; Brookings: 2009.

Harrell, F. Regression Modeling Strategies. New York: Springer; 2001.

Ibrahim, Solava; Alkire. Agency and Empowerment: A Proposal for internationally comparable indicators. OPHI Working Paper. 2007

INE. National 2007 Population Census. 2008. [cited 2010 may 2]; Available from: http://www.ine.gov.mz/

I.N.d.S. (INS). , editor. NSIDA. Mozambique National Survey on Prevalence, Behavioral Risks and Information about HIV and AIDS. Maputo: Mozambique; 2009.

Jöreskog KG. Statistical Estimation in Factor Analysis. Almqvist and Wicksell. 1963

Kahneman, D. Thinking fast and slow. New York: Farrar, Strauss, Giroux; 2011.

Kahneman D, Deaton A. High income improves evaluation of life but not emotional well-being. Psychological and Cognitive Sciences. 2010; 107(38):5.

Kotan M. Freedom or happiness? Agency and subjective well-being in the capability approach. Journal of Socio-Economics. 2010; 39(3):369–375.

Krueger, AB., editor. Measuring the Subjective Weil-Being of Nations: National Accounts of Time Use and Weil-Being. Chicago: University of Chicago Press; 2009.

Layard R. Measuring Subjective Weil-Being. Science. 2010; 327(5965):534–535. [PubMed: 20110492]

Little, R.; Rubin, D. Statistical Analysis with Missing Data. New York: Wiley; 1987.

Marmot M, Wilkinson RG. Psychosocial and Material Pathways in the Relation between Income and Health: A Response to Lynch et al. BMJ. 2001; 322(7296):1233–6. [PubMed: 11358781]

McGregor, A. Researching wellbeing: from concepts to methodology. In: Gough, I.; McGregor, A., editors. Wellbeing in Developing Countries. From Theory to Research. Cambridge: Cambridge University Press; 2007. p. 316-350.

Merton, Robert. Optimum Consumption and Portfolio Rules in a Continuous Time Model. Journal of Economic Theory. 1971; 3:373–413.

(INSIDA), INE. , editor. MISAU. Inquérito Nacional de Prevalência, Riscos Comportamentais e Informação sobre o HIV e SIDA em Moçambique. MINISTRY OF HEALTH, MOZAMBIQUE; MAPUTO: 2009.

MPD. Poverty and Wellbeing in Mozambique: Third National Poverty Assessment. Ministry of Planing and Development; Maputo: 2010. p. 132

Müller, Tanja R. Changing Resource Profiles: Aspirations Among Orphans in Central Mozambique in the Context of an AIDS Mitigation Intervention. Journal of Development Studies. 2010; 46(2): 254–273.

Narayan, D. Measuring Empowerment: Cross-Disciplinary Perspectives. Washington: The World Bank; 2005.

Narayan, D.; Petesch, P. Voices of the Poor: From Many Lands. World Bank; 2002.

Nussbaum. Women and Human Development: The Capabilities Approach. Cambridge: Cambridge University Press; 2000.

OPHI. Mission Dimensions of Poverty Data: A Proposal for Internationally Comparable Indicators. University of Oxford Poverty and Human Development Initiative (OPHI). Queen Elizabeth House (QEH) University of Oxford; 2008.

Measure, DHS. ORCMacro. Model Questionnaire with Commentary. DHS; Calverton, Maryland: 2006. p. 1-w-63.

Pradhan MR, Martin. Measuring Poverty Using Qualitative Perceptions of Consumption Adequacy. The Review of Economics and Statistics. 2007; 82(3):462–471.

Pulerwitz JB, Gary. Measuring Attitudes toward Gender Norms among Young Men in Brazil Development and Psychometric Evaluation of the GEM Scale. Men and Masculinities. 2008; 10(3):322–338.

Ryan RM, Deci EL. On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. Annual Review of Psychology. 2001; 52:141–166.

Sen AK. Well-being, Agency, and Freedom. Journal of Philosophy. 1985; 82(4):169–221.

Sen, AK. Development as Freedom. Cambridge MA: Belknap Press; 1999.

Sen, AK. Rationality and Freedom. Cambridge MA: Belknap Press; 2002.

Stiglitz, J.; Sen, A.; Fitoussi, J. Mis-Measuring Our Lives. New York: NewPress; 2010.

Singh, I.; Squire, L.; Strauss, J. Agricultural Household Models: Extensions, Applications and Policy. Baltimore: Johns Hopkins University Press; 1986.

UNICEF. Multiple Indicator Cluster Surveys. 2010

UNICEF. Childinfo. Monitoring the situation of women and children. 2010. Available from: http://www.childinfo.org/mics4_questionnaire.html

Varkey P, Kureshi S, Lesnick T. Empowerment of women and its association with the health of the community. Journal of Womens Health. 2010; 19(1):71–6.

Vergara, A., et al. (1022) SCIP – Ogumaniha: Improving health and livelihoods of children, women and families in the Province of Zambezia, Republic of Mozambique. Baseline Survey Report, Vanderbilt Institute for Global Health. Can be accessed at: http://www.globalhealth.vanderbilt.edu/community-and-service/SCIP/scip_docs/report_20110531.pdf/view

WHO. Mozambique country profile. WHO > Countries > Mozambique. 2011. Available from: http://www.who.int/countries/moz/areas/health_system/en/index.html

WHO. WHOQOL: Measuring Quality of Life, in Programme on Mental Health. World Health Organizaiton; Geneva Switzerland: 1997. p. 1-13.

WHO. WHOQOL-HIV Instrument Scoring and Coding for the WHOQOL - HIV Instrument. World Health Organization; Genevea Switzerland: 2002. p. 1-13.

Wold, BK. A Sustainable Household Survey Based Poverty Monitoring System. Norway Development Cooperation; 2004.

World Bank. Pesquisa de Orcamentos Familiares. 2007

	Low agency	Sufficient agency
Low wealth	Absolute poverty	Frustrated freedom
Sufficient wealth	Unfreedom	Substantive freedom

Figure 1. Four Conditions of Poverty
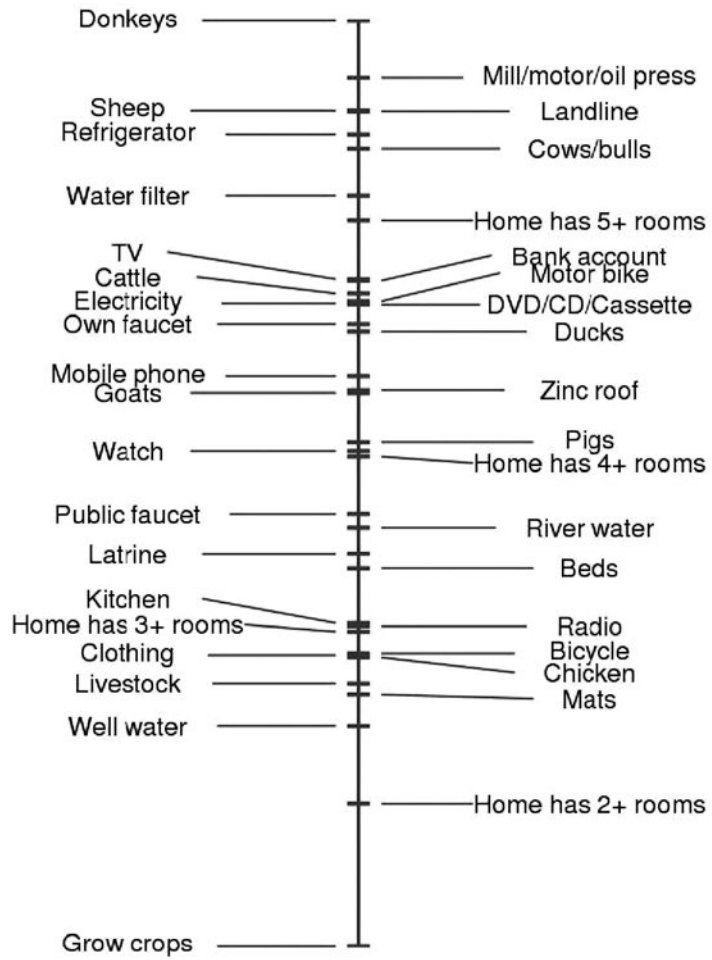
Figure 2. Permanent Income Indicator Variable Ladder for 37 Indicators – Zambezia, Mozambique (2010)
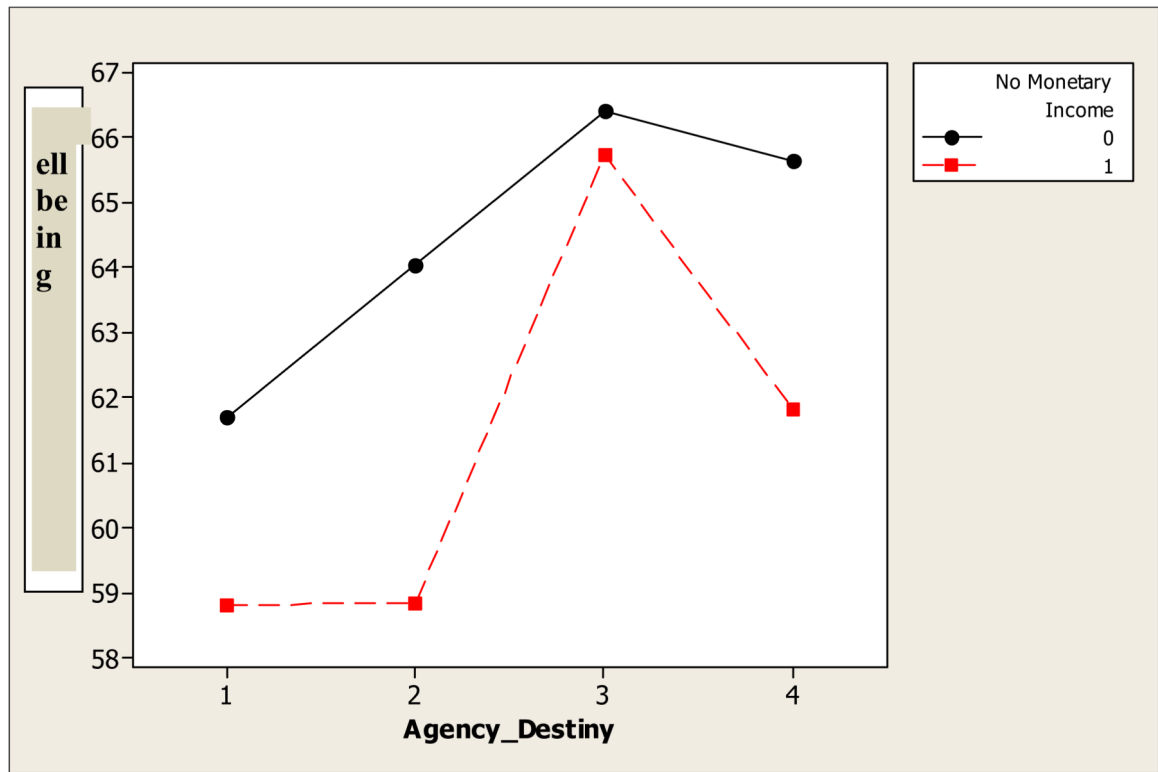
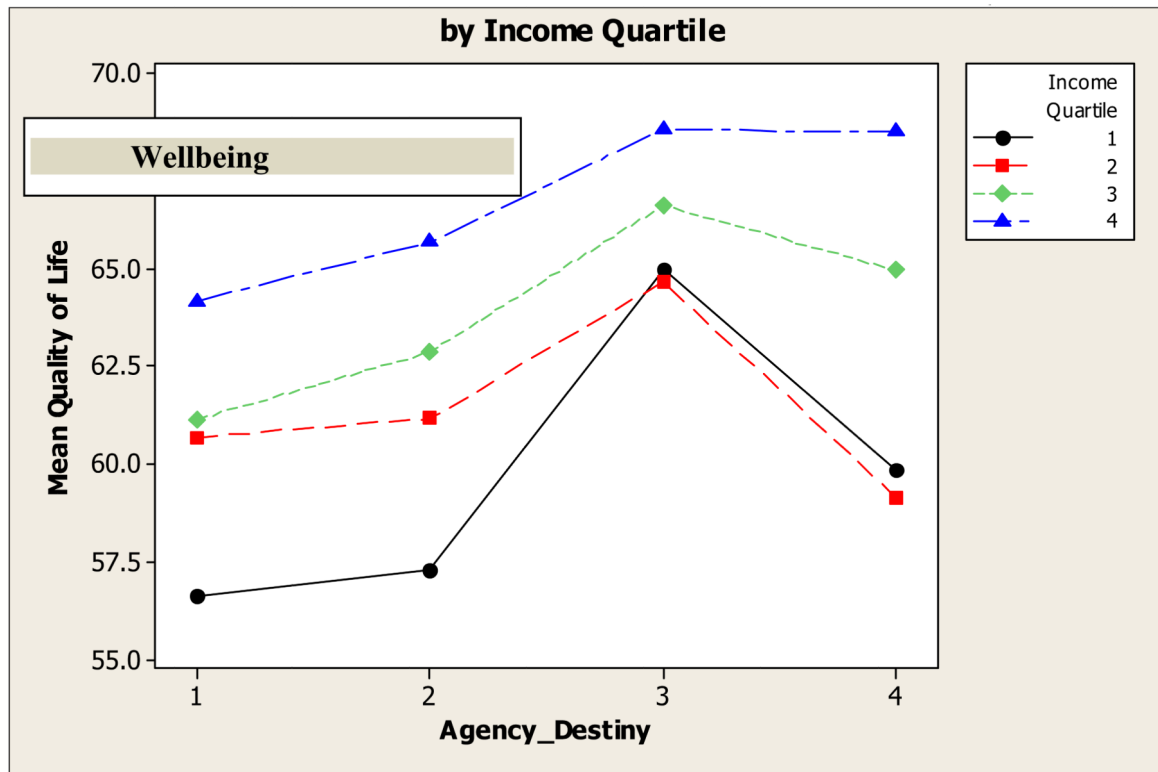**Figure 3. Agency_Destiny Curves for Wellbeing by Monetary Income Groups**

Figure 4. Agency_Destiny Curves for Wellbeing by Permanent_Income Quartile

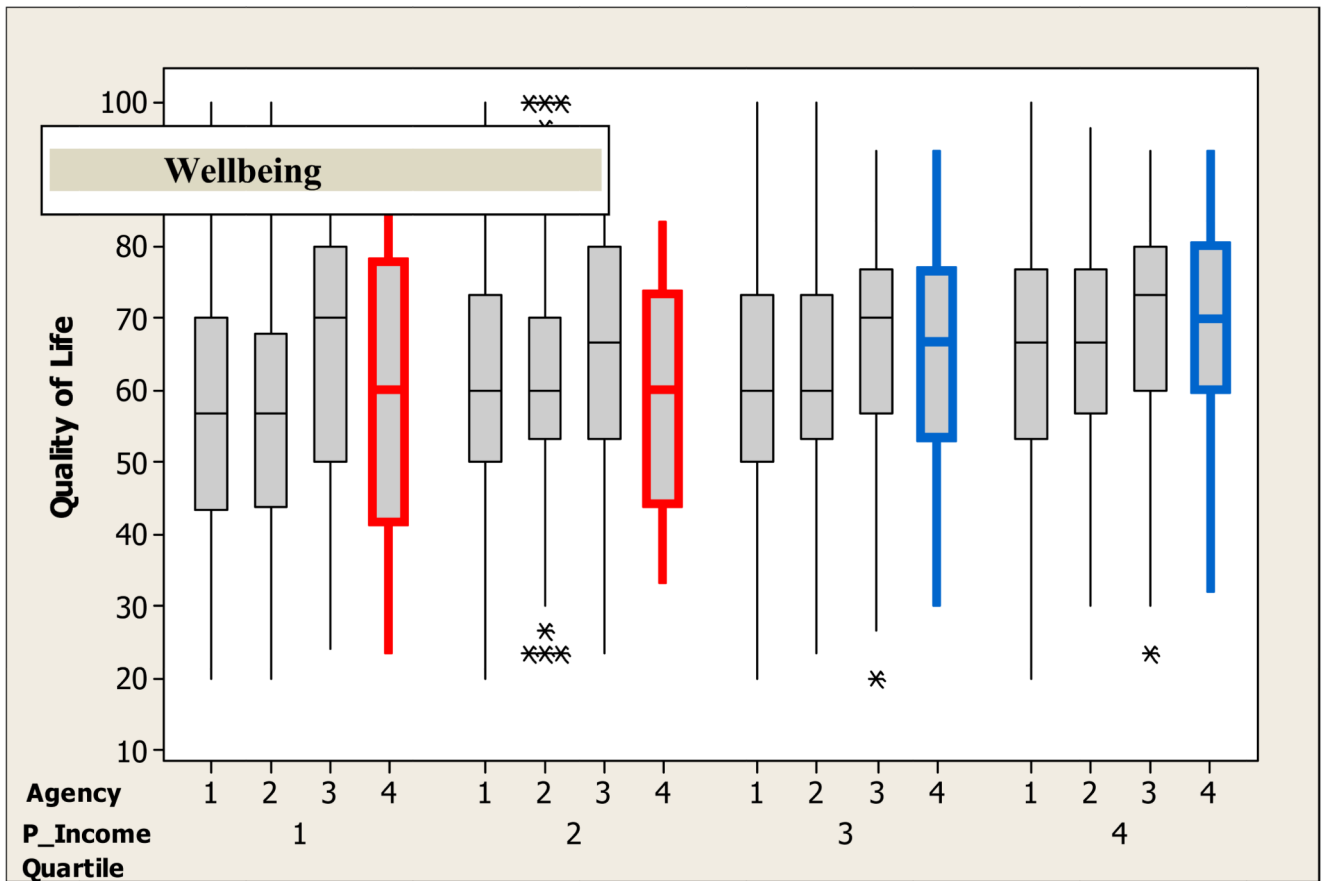**Figure 5. Wellbeing by Agency_Destiny Level**

Table 1

Scale Item Reliability

Scale	Number of Survey Items	Cronbach's Alpha
Wellbeing	6	0.84
Geographic Isolation	5	0.89
Community Participation	7	0.78
Social Support	5	0.80
Legal Rights	3	0.57
Religious Rights	3	0.60

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Table 2

Descriptive Statistics.

Variables	Mean	SD	Quartiles		
			1st Quartile	Median	3rd Quartile
Wellbeing	61.7	16.0	52.0	60.0	73.3
Permanent Income	0.44	0.40	0.14	0.42	0.70
Permanent Income when No Monetary					
Income	0.58	0.39	0.30	0.57	0.83
Permanent Income when There is					
Monetary Income	0.28	0.36	0.01	0.25	0.54
Monetary Income (Indicator)	0.46	0.50	0	0	1
Agency_Destiny	1.78	0.80	1.00	2.00	2.00
Agency_GE	1.71	0.75	1.00	2.00	2.00
Controls					
Time in the Same Location (years)	12.3	14.8	3.0	6.0	17.0
Community Participation	84.4	16.5	75.0	89.3	100
Legal Rights	80.0	21.8	61.1	83.3	100
Religiosity	70.1	11.9	58.3	66.7	75.0

Table 3

Models for Wellbeing

Model	1	2	3	4
Sample size	3194	3124	3079	3079
Variable				
Permanent Income when No Monetary Income	8.05***	7.67***	7 49***	7.58***
Permanent Income when There is Monetary Income	4.76***	3.84***	3.20***	3.33***
Monetary Income (Indicator)	-3.90***	-3.66***	-3 95***	-3.87***
Agency_Destiny (Levels):				
Contrast Relative to Level 4				
1	-1.94***	-1.87***		
2	-1.31**	-1.52 **		
3	2.84***	2.81***		1.92^H
(Agency_Destiny)-(Agency_GE) (Levels) Contrast Relative to Level +3				
-3			2.43	2.71
-2			-0.63	-0.33
-1			-3.99***	-3.83***
0			-3.60***	-3.36***
1			-0.14	-0.48
2			4.87***	3.96*
Controls				
Time in the Same Location (years)		-0.064***	-0.063***	-0.064***
Community Participation		0.056***	0.058***	0.058***
Legal Rights		0.080***	0.078***	0.078***
Religiosity		0.083***	0.083***	0.083***

^{H} $p<0.1$

* $p<0.05$,

** $p<0.01$,

*** $p<0.001$ (two-sided levels)

Note. The coefficients of the two permanent income variables are significantly different in each model (Model 1: p=0.026; and in Models 2-4: p 0.01). The other coefficients are not significantly different between these two income groups (Wald's test, p>0.1).