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Empowerment and Subjective and Emotional Well-being in South Africa

Erik Kappelman
University of Montana, Missoula

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By

Erik Desmond Kappelman

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Approved by:

Scott Whittenburg, Dean of The Graduate School
Graduate School

Amanda Dawsey, Chair
Economics

Douglas Dalenberg
Economics

David Patterson
Mathematical Sciences

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Abstract

Chair Person: Amanda Dawsey

Gender inequality remains one of the greatest threats to the health and happiness of women around the world. This thesis investigates how gender inequality affects women's levels of happiness. Using household survey data from South Africa and factor analysis, I estimate the effects different levels of empowerment have on women's subjective and emotional well-being. Specifically, I am interested in measuring a pure empowerment effect, or the effect of empowerment on well-being while holding consumption constant. I find that the pure effect of higher levels of empowerment appears to decrease a women's level of well-being. Although some of the models do seem to suffer from specification issues, there is evidence that there is a legitimate negative relationship between a pure empowerment effect and well-being.

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1 Introduction

This research explores the relationships between gender empowerment and subjective well-being (SWB) and emotional well-being (EWB). SWB is generally defined as an individuals stated level of satisfaction or happiness. Measures of EWB attempt to show the quality of a person's emotions, e.g., how many days a week a person feels depressed. When viewing households through the lens of intrahousehold bargaining models, women with greater levels of empowerment will also exhibit higher levels of both SWB and EWB. This increase in EWB and SWB may be wholly a result of greater access to household resources due to higher levels of empowerment, or gender empowerment may have an effect on SWB and EWB independent of household consumption. The goal of this research is to explore the existence and measure the magnitude of any pure effect increased levels of gender empowerment have on SWB and EWB. I define a pure empowerment effect as the changes occurring in EWB and SWB as empowerment changes, while consumption levels are held constant. This is an important distinction, because much of the existing economic literature studying empowerment actually attempts to isolate empowerment's affect on EWB or SWB through consumption.
Amaytra Sen's 1990 article in *The New York Review of Books* titled "More than 100 Million Women Are Missing" describes the results of gender bias seen throughout the world. Sen details the many reasons women around the world end up dying at higher rates relative to men. These reasons range from poorer treatment within a household, such as spending less money on female healthcare, to female infanticide. The wide range of causes of increased relative female mortality is indicative of the scope of the issue of gender inequality. The United Nations' measure of gender equality, the Gender Equality Index, varies from 2.1 percent to 73.3 percent with 100 percent representing a country without gender inequality.[1] So it is clear, that issues related to gender inequality and empowerment can be vastly different from country to country.
Kabeer (2005) defines empowerment as the ability to make choices, and a lack of empowerment as being denied the ability to make choices. There has been thorough research into the relationship between gender empowerment and access to household consumption and production goods (Udry, 1996; Goldstein and Udry, 2008). It is not surprising more empowered women tend to have more access to household income. If SWB and EWB are related to individual utility, then more access to household income ought to increase SWB and EWB for women. When viewed this way, gender

[1] United Nations Development Program, http://hdr.undp.org/en/content/gender-inequality-index-gii

empowerment is just a tool and not an ends in and of itself. Of course, this view point is over-simplistic. Gender empowerment is more than a tool for access to goods, and utility theory is only a model, not reality. Measuring a pure empowerment effect would quantify the value of empowerment independent of consumption gains associated with increased empowerment.

As previously stated, the goal of this research is to quantify the pure effect a women's level of empowerment has on her level of SWB and EWB. To my knowledge there is no existing economic literature measuring a pure effect of empowerment on SWB or EWB. Finding a pure effect would add to the existing evidence of the inherent importance of policies aimed at increasing empowerment for women around the world. The first step in this process is to explore the theoretical basis for many measures of gender empowerment within a household by examining intrahousehold bargaining theory. Once the theoretical methods for measuring empowerment have been established, it is necessary to explore the theoretical basis for measures of SWB and EWB, and empirical studies of SWB and EWB. A review of theoretical and empirical economic literature directly related to gender empowerment is also necessary.

The remainder of this document is broken into five sections. In Section 2 I review the relevant literature studying gender empowerment, intrahousehold bargaining and EWB and SWB. Section 3 provides institutional background on South Africa. Section 4 describes the data I use to empirically address my research questions. Section 5 describes the methods I use to analyze the data. Section 6 presents results of my empirical analysis. Section 7 considers sensitivity testing and Section 8 concludes.

2 Literature Review

2.1 Intrahousehold Bargaining Literature

2.1.1 The Altruism Model

Samuelson (1956) motivates the need to use intrahousehold bargaining to model consumer choice as opposed to treating households as if they are individual economic actors. When grouped together in households, towns, counties or countries a group's preferences cannot necessarily be modeled as if they are one autonomous unit. Samuelson proves that using, so called, 'community indifference curves' to represent the preferences of large groups of people cannot be supported by traditional microeconomic theory without very restrictive assumptions. Samuelson uses the

example of international trade. He suggests it is unlikely the choice of one country to trade with another country is the result of a combined preference schedule of all the individual preferences of its citizens. Although Samuelson's international trade example is correct, a household is much smaller than a country, and households do sometimes appear to act as a single unit.

Samuelson (1956) uses altruism to explain why households make decisions together. Specifically, in a two-person household the consumption of person 1 enters into the utility function of person 2, and visa versa. But altruism alone does not force household preferences to conform to the usual restrictions of consumer demand. Samuelson goes on to state that if individual household members have conventional preferences, if the social welfare function is also conventional and if optimal lump-sum transfers are always made, then a household's demand can be observed as a function of market prices and total income. This function will have properties associated with regular consumer preferences. Under these restrictive assumptions, Samuelson claims the theories used to describe a single consumer can be used when describing the family. These assumptions are too restrictive to assume they apply to all (or any) households. Samuelson's work shows that in order to gain true understanding of individual economic decisions and outcomes within a household, like a relationship between gender empowerment and SWB and EWB, a more sophisticated model of consumer choice in the context of the household is needed.

Becker (1974) offers an intermediary model of household bargaining. This model forms the basis for the more pragmatic bargaining models outlined by Manser and Brown (1980) and McElroy and Horney (1981). Becker's explanation for intrahousehold interactions is based on the notion of social income and altruism. Social income is the sum of a persons' monetary earnings and their self-perceived social status, multiplied by a shadow price. Becker's model allows an individual to affect the view of themselves held by those around them. This implies a person incorporates actions related to preserving or changing their social standing into their utility maximization problem. This theory is applied to household allocation of goods.

Becker (1974) defines the head of a household as a person who cares enough about the other members of the household to share their resources with them. The model assumes this head of household acts out of altruism and transfers some of their resources to other members of the household. The model links the head of household's income to each individual's utility through these transfers. Other household members

then aim to please the head of household either altruistically or selfishly in order to maintain their transfers.

The primary issue with using this model to describe households in general is that altruism is far too specific. Although altruism is certainly at work in many households around the world, it is not likely that people's altruistic tendencies provide the most complete explanation of how households are organized.

2.1.2 Cooperative Nash Models

Manser and Brown (1980) and McElroy and Horney (1981) move towards a more complete explanation of household bargaining. They use two-person cooperative games to describe intrahousehold bargaining. Manser and Brown point out that Becker's (1974) altruism explanation of the household ignores the necessary question of bargaining. Manser and Brown's models examine the marriage decision in a world of two people. These two people each have regularly defined and well-behaved utility functions, and choose to marry because they both gain from the pooling of resources as well as the love and companionship of marriage. Additionally, their preferences remain constant as they enter their marriage. Under these conditions, Manser and Brown give each individual in the marriage a threat point. Their threat point is the level of utility they could achieve at the current prices and wages if they were unmarried. If the distribution of goods within a household reaches a point where one person's utility is lower than their potential utility as a single person, they are no longer gaining from the marriage and they divorce and leave the household.

The Nash two-person cooperative bargaining model is detailed in his 1953 *Econometrica* paper, and is certainly worth discussing here, because it is the theoretical underpinning of the Manser and Brown (1980) and McElroy and Horney (1981) models. Nash introduces the term cooperative in the model not as a statement of shared interests or goals of the two-players, but rather a confirmation that the two-players can and will negotiate. Defining cooperative in this manner fits within a marriage where individuals may have opposing views or preferences, but maintain the ability to communicate. In Nash's game, each player begins with the space, S_i, of mixed strategies, s_i. These strategies are the options each player has independent of the other. These decisions could be deliberate or random. The inclusion of randomization reduces the number of strategies each player begins with, which simplifies the problem (Nash, 1953). Players could combine their spaces, s_i, and act

together, if they so chose. If they do not choose to act with the same set of strategies, Nash outlines a negotiation model to explain how the game could proceed. In order to form the negotiation model, Nash adds some assumptions to the game setup. Each player fully understands the rules and operations of the game. Additionally, each player is fully informed of their own utility function and the other player's utility function. Both players are rational. The solution to the game relies on each player's known course of action if negotiations fail, the threat (the basis for Manser and Brown's threat point). In order for this model to work, the threat of each player must *always* be carried out if negotiations fail. The game proceeds as follows, each player i picks their strategy, s_i, their threat, which they will enact if their demands are incompatible with the other player's. The players then inform each other of their threats, t_i. Each player then independently determines their demand, d_i. Each player will only cooperate if cooperation ensures at least a d_i utility level. The payoffs, u_i, are then determined. If $u_1 \succeq d_1|d_2 \wedge u_2 \succeq d_2|d_i$, then each players accepts the others demand and the game is over, no threats are enacted. In any other case, the threats must be executed. In this case, each player's payoff is $p_i(t_1, t_2)$. The choice of threats in the game determines the payoff structure of the game if the players do not cooperate (Nash, 1953). This incentives players to restrict their demands in order to achieve cooperation. Nash shows that under these conditions there is a stable equilibrium in which players use pure, non-random, strategies. Players find a way to cooperate by adjusting their threats and demands. These conditions would seem to mimic the conditions of many marriages, depending on social structure and attitudes of the society in which a marriage exists.

Manser and Brown (1980) present the Nash cooperative model and an asymmetric dictatorial model. The dictatorial model assumes that one person, the dictator, autocratically maximizes their utility function, such that, the utility of the other household member is never below their threat point. Manser and Brown find that a dictatorial model can be Pareto efficient and conform to the usual constraints of neoclassical demand.

Manser and Brown (1980) apply the Nash model as a maximization of the product of the difference between each person's current utility and threat point. Manser and Brown also consider a many-person marriage market. They argue that although a more complex set of assumptions would have to be used, their models and predictions would continue to function. In addition to possible changes stemming from the inclusion of

other people in the marriage market, Manser and Brown point out that exogenous changes to the inputs of each individual's utility function would need to be taken into account in an application of this theory. Changes in wages or prices could certainly effect individual's threat points and, in turn, their marriage bargaining decisions. McElroy and Horney (1981) also discuss the Nash-Bargaining approach to household demand. Their focus is specific to examining empirical methods for testing their hypothesis that the Nash demand model collapses to the neoclassical model of demand. There are a few theories put forth by McElroy and Horney that could be used in testing a household's bargaining structure, or the power differential between individuals in a household. One example is testing the non-wage income elasticity of goods that are privately consumed by a specific household member. If the non-wage income elasticity of a male-specific good is found to be magnifying the importance of that good relative to other goods, then McElroy and Horney would describe that male as selfish. This method also allows one to work backwards towards modeling the bargaining structure of a household.

Browning and Chirappori (1998) empirically test the theory put forth by McElroy and Horney (1981) and Manser and Brown (1980). Using household survey data from Canada, Browning and Chirappori look for evidence of the unitary and collective household structures using three strata of data. Their strata are couples, single females and single males. In order to infer whether or not a household exhibits a unitary structure, Browning and Chirappori estimate each household's Slutsky matrix. If the Slutsky matrix is symmetric enough, then the household is considered to be operating under a unitary structure. In order to estimate elasticities for estimations of the Slutsky matrices, Browning and Chirappori use data with seven panels collected between 1974 and 1992. Econometric estimation of a household's demands is done using the Quadratic Almost Ideal Demand System. Browning and Chirappori included parameters such as car ownership, province of residence and education levels to estimate preferences. Their tests of the unitary model find that the unitary model is not rejected for the single male and single female strata, but is rejected for the couples stratum. These results empirically support the use of a more sophisticated model when analyzing multiperson household consumption. Browning and Chirappori go on to test for the presence of a collective household bargaining structure among the couples stratum. By adding two variables to the right hand side of their estimates, the log of the wife's income minus the log of the husband's income and the wife's gross income,

Browning and Chirappori test for symmetry of the Slutsky matrix resulting from the collective demand specification. They find that they cannot reject the symmetry of Slutsky matrix after including the collective parameters. Browning and Chirappori provide hard evidence that a collective bargaining model is at work in multiperson households. These results are consistent with the earlier results of Browning et al. (1993) who used a structural approach, also with data from Canada. They also find that households do not make consumption decisions as an autonomous unit. Individuals in households make individual decisions within a collective context.

2.1.3 The Separate Spheres Model

Lundberg and Pollak (1993) and Lundberg and Pollak (1994) outline a intrahousehold bargaining model that is something of an extension of the the cooperative Nash model. This model's construction is predicated on the Nash and altruistic models' seeming inability to explain the common held belief that increased income in a household has differential effects depending upon the household member the income is given too. Lundberg and Pollak use the example of a 1970's change in the British system of allocation of childcare funds too households. The allocation was changed to a cash transfer directly to the mother. According to Lundberg and Pollak, some British men felt this change would negatively impact them. These men's feelings are incorrect under the Nash cooperative or altruistic intrahousehold allocation models. In both of these models, once the allocation scheme of a household has been constructed, who initially receives the household's income is irrelevant. Lundberg and Pollak describe a model that accounts for the belief that who receives a cash transfer affects the distribution of utility in a household.

The primary difference between the Nash cooperative model and the separate spheres bargaining model has to do with the threat point. Lundberg and Pollak still use a threat point based bargaining structure, but propose a threat point of non-cooperative Cournot-Nash equilibrium instead of divorce. The game does not end when the threat point is reached in the separate spheres model. Instead, a new non-cooperative game begins. Lundberg and Pollak describe a situation in which there is a public good each spouse in a two person household can make voluntary contributions too. Within this situation, a Cournot-Nash equilibrium can be determined. In a one-shot version of the game a transfer of something like a child care credit has a null effect. The husband's contribution to the public good decreases and the wife's contribution increases by the

same amount. Lundberg and Pollak expand the game into an infinitely repeated game. In this game, players can punish one another for deviation from any agreements that may form. In an infinitely repeated context, a Cournot-Nash system would give the wife of a household more power as the child care credit is transferred to her from her husband (Lundberg and Pollak, 1994). This outcome fits with how many people who are not student's of economics view households (Lundberg and Pollak, 1994).

Lundberg and Pollak point out many of the benefits to using non-cooperative models, such as their separate spheres model, to study the household. For one thing, using a threat point of a less desirable bargaining structure keeps the enforcement for agreements internal instead of external (Lundberg and Pollak, 1994). This would seem to produce a more robust model that could be applied to different types of cultures independent of divorce laws. Also, non-cooperative bargaining models rely on self-enforcing agreements. Self-enforcing agreements are often times more believable explanations of human behavior. Lundberg and Pollak display that the field of intrahousehold bargaining is not only vast, but also far from reaching a consensus on how the household is best described.

When measuring relationships between gender empowerment and SWB and EWB I use the Manser and Brown and McElroy and Horney threat points model for intrahousehold bargaining. Although the separate spheres model does seem more intuitive, empirical evidence such as Browning and Chirappori (1998) and Browning et al. (1993) supports the cooperative Nash model.

Measuring gender empowerment is essentially placing the household in which a women resides on a spectrum between the asymmetric dictatorial model and the symmetric Nash bargaining model. My empirical analysis assigns each women a level of empowerment under the assumption there is a bargaining process at work in their household. I then analyze the relationships between this level of empowerment and EWB and SWB. Before detailing the existing empirical research measuring levels of gender empowerment, I discuss the theoretical foundations for economic investigations of SWB and EWB.

2.2 SWB and EWB

2.2.1 SWB and EWB: Welfare Proxies?

There are essentially two ways to estimate a person's utility level. The first method consists of observing a person's actions or asking questions that might reveal a

person's preferences. One example would be measuring the average willingness-to-pay for newly paved streets in a neighborhood. The average willingness-to-pay could be used as a crude estimate of the group utility increase from paving the roads. This stated willingness-to-pay could even be compared with the willingness-to-pay for a new swing set at the local school, or some other improvement to the neighborhood. Comparing stated or revealed willingness-to-pay for various goods or improvements is one way to build preference schedules for individuals. Another method would be to ask people very direct questions about their preferences such as, do you prefer coffee to tea? or are happy or not? Measures of SWB are the result of this method of direct questioning. In the case of SWB, the questions are often times as a simple as, on a scale of 1 to 10 how happy are you?

Easterlin (1974) is considered to be the first prominent use of happiness data in economics (Di Tella and MacCulloch, 2006). Easterlin discusses the use of two types of reported happiness measures. The first type are responses to questions that ask an individual to rate their level of happiness on a scale given by a survey. The other type of responses come from Cantril's Self-Anchoring Scale. Under this scale an individual is asked to rate their happiness on a scale on which they have set their real world reference points for a happiness score of 10 and a happiness score of 1. Easterlin makes clear there is a difference between economic and social welfare, however, Easterlin also points out that, within economic research, the two are usually conflated. This suggests SWB or EWB might be a reasonable proxy for economic welfare.

The results of Easterlin (1974, 1995) are referred to as the Easterlin Paradox. The paradox is, Easterlin shows evidence that the average SWB in a country seems to remain constant as mean income in that country rises. This seems to contradict the use of SWB as a reflection of utility, however, the answer might have to do with differences between relative and actual income (Easterlin, 1974, 1995; Luttmer, 2005; Di Tella and MacCulloch, 2006). Studying determinants of SWB within groups of people at any given time is considered to yield usable estimations of various inputs to an individual's welfare. Clark et al. (2008) review happiness research in order to better understand, among other things, the Easterlin Paradox. Clark et al. reviews the Easterlin Paradox itself and points out that there are some exceptions. One example includes East Germany following the reunification of Germany. In this case, the measures of happiness for the East German people and their incomes rose together. Clark et al. discuss relative income as a potential explanation for the Easterlin

Paradox in great detail. They create utility functions that correctly reflect utility when of relative income inputs are included. There are other explanations for the Easterlin Paradox other than relative income. Clark et al. review literature related to adaptation as a possible explanation for the Easterlin Paradox. Adaptation refers to an individual becoming accustomed to their new lifestyle as their income increases. This would nullify the effect of increases in income, especially at the aggregate level. Not only will individuals also get used to the new comforts their new found wealth has given them, they also must adjust to the new discomforts their wealth has brought them. Clark et al. also bring up important empirical challenges that come along with studying happiness that are quite relevant to this research. One issue is the noisey nature of income's relationship with consumption. As is pointed out be Clark et al., utility theory actually uses consumption, not income, as it's main input. Economists have long used income as a proxy for consumption. Especially today, in a financially driven marketplace, income does not necessarily reflect an individual's level of consumption. Luckily, household survey data tends to include ample information directly related to consumption and expenditure. So, studies of SWB can more easily take income and consumption into account. There is also the issue of missing variables and endogeneity. Clark et al. review issues related to missing variables, and endogeneity and offer natural experiments as one solution.

Clark et al. reviews only some of discussion of the reliability of responses to happiness surveys. Many happiness researchers consider SWB to reflect an individual's true level of utility with some noise included (Di Tella and MacCulloch, 2006). There is a suggestion that true measurements of differences in happiness could get lost in translation (Sen, 1999; Easterlin, 1974). A language barrier could come from using different languages to describe happiness, or different definitions within the same language (Easterlin, 1974; Sen, 1999). Sen (1999) suggests a more precise approach to assessing wellbeing or utility levels between individuals would be more appropriate. Due to subjective differences in definitions of happiness or welfare, interpersonal comparisons of SWB might be essentially meaningless (Sen, 1999). Sen suggests an approach that takes the results of an individual's income and choice set into account as opposed to a stated measure of happiness.

Kahneman and Deaton's (2010) findings even further complicate the discussion of using SWB to describe economic welfare. Kahneman and Deaton use data that allows them to distinguish between the EWB and life evaluation of their subjects. Life

evaluation is SWB as described thus far. EWB is measured with respondents' answers to questions about their emotional state at present, and in the recent past. The most common example is, how many days a week do you usually feel depressed? In their study of people living in the United States, Kahneman and Deaton find that EWB and SWB are both positively correlated with increased income when controlling for other possible determinants of wellbeing. However, Kahneman and Deaton find that once household income reaches $75,000, increases in EWB plateau while SWB continues to increase. If EWB and SWB diverge at $75,000 they could be measuring different latent phenomena. Becker's (1974) theory of a social income input to a consumer's utility may help explain the observations of Kahneman and Deaton. Perhaps SWB is increased as income increases access to social income, and EWB is increased because income increases concrete utility inputs, such as access to healthcare. Access to goods like healthcare has diminishing marginal returns. Access to more social income may not have diminishing marginal returns, or the returns may diminish at a slower rate. This could explain the divergence of SWB and EWB observed by Kahneman and Deaton. Whatever the explanation, Kahneman and Deaton's results make clear that while SWB is certainly related to income and utility, it should not be the only measure considered when evaluating a policy change's effect on welfare. Other measures, such as EWB, should also be included

Helliwell (2006) approaches the the study of happiness and SWB from the standpoint of social capital. This approach offers some interesting implications. Helliwell describes social capital as the support network an individual has access to. Helliwell includes observations on the importance of feeling involved in one's society in order to increase happiness. This involvement could be political or social. Helliwell also provides evidence that workplace environment has a much greater effect on workers' happiness than their pay does. Helliwell highlights the importance of happiness studies and investigations into measures of well-being, such as SWB and EWB. The importance is, more and more of the studies related to well-being find that the impact of monetary income is significantly less than that of other inputs, such as safety, education etc. Helliwell points out that if this indeed the case, too much of economic thought and research is devoted to income maximization.

2.2.2 Empirical Studies of SWB and EWB

Empirical studies of SWB and EWB are relevant at both the macro and micro scales. Deaton (2008) examines well-being around the world over time. Deaton uses data from the Gallup Organization's 2006 World Poll. This poll includes 132 countries, and was most complete world poll to data at the time (Deaton, 2008). National average life satisfaction varies greatly across the world, with richer countries like the United States and Japan within the ranges of 7.5-8.5 (out of 10), to much lower life satisfaction in other places, such as sub-Saharan Africa and Haiti with ranges of 3.1-4.5. Deaton finds that higher per capital GDP continuously increases average life satisfaction across the world without any leveling-off effect. Stevenson and Wolfers (2008) examine relationships between income inequality and happiness inequality in the United States. Their analysis uses data from the General Social Survey, using years 1972 to 2006. Stevenson and Wolfers attempt to decompose aggregate happiness measures in order to gain more insight into changes in happiness overtime in the United States. Using variance as a measurement for happiness inequality, Stevenson and Wolfers find happiness inequality declined in the United States until the early 1990's, and then rose again. This is interesting considering that throughout the years in their sample income inequality continuously rose in the United States. They find a similar results after decomposing happiness measures between racial groups. Stevenson and Wolfers find that happiness inequality has actually decreased between racial groups in the United States. This is also not in line with the increased levels of income inequality seen over the same time period. The findings of Stevenson and Wolfers show that happiness research is a living field, and that much remains unknown about the determinants of measures of happiness. Another example of the macro approach to analysis of happiness is Blanchflower and Oswald (2004). Blanchflower and Oswald also use data from the General Social Survey, but they use the years 1972 to 1998. Blanchflower and Oswald report the same general trend of decreasing happiness as Stevenson and Wolfers. They highlight that this decrease has been especially hard on women, and Black Americans have actually experienced happiness increases. They also find a U shaped relationship between happiness and age. In an effort to broaden the scope of their analysis, Blanchflower and Oswald also include data from Great Britain. They use survey data from the Eurobarometer Survey from the years 1973 to 1998. The data from Great Britain reveals patterns that are similar to those of the United States. Blanchflower and Oswald find that many non-monetary covariates have dramatic

effects on happiness levels. Some of these include years of education and marital status. That being said, income is still highly influential on level of happiness. Happiness decreases with age until a person reaches their 30's, then happiness begins to improve again. Large scale analysis of the determinants of happiness, such as these studies, provides an important baseline for studies concerning happiness. The above studies make clear the any study concerned with happiness needs to control for individual characteristics well beyond income. Sex, race, education and marital status are only a few of the covariates found to be important in these empirical studies. Happiness or well-being are also studied at the household level. Bookwalter and Dalenberg (2004) and Bookwalter and Dalenberg (2010) both study different household factors' impact on individual SWB. These studies examine household survey data from South Africa. This makes them indispensable in forming a research strategy for this thesis. Bookwalter and Dalenberg (2004) and Bookwalter and Dalenberg (2010) use data collected by the South African Labour and Development Research Unit. These data were collected in late 1993 and early 1994, and are consider representative of South Africa at the time. Although these papers are useful to my research due to their country of study, both papers contribute to the broader empirical discussion of modeling and understanding SWB. The research of Bookwalter and Dalenberg (2004) focuses on investigating the functionality of the, so called, 'bottom-up' approach to modeling SWB. This approach is inspired by the observations of Sen (1999), and others, that well-being or SWB is influenced by the abilities and freedoms one enjoys both economic and civil. The 'bottom-up' approach, as described by Bookwalter and Dalenberg (2004), suggests that having certain freedoms or abilities available to a person will influence their SWB more than anything else. From a functional stand-point, this means modeling SWB using inputs such as housing type, access to running water or indoor plumbing or transportation options would be more effective than using a model focused on income. Indeed, Bookwalter and Dalenberg (2004) find that within their model the most important inputs ended up being available transportation modes, durable goods owned by the household and household sanitation. In the specific and broader contexts, Bookwalter and Dalenberg (2004) show that using factors beyond traditional economic inputs and outputs is helpful when modeling SWB. One could theorize the same would hold true for EWB. In their 2010 article, Bookwalter and Dalenberg use the same data, but expand the scope of the analysis to focus on relative economic status as a determinant of SWB in South

Africa. They include measures of household wealth with respect to the wealth of the sampling cluster the household resides in. This allows for the identification of two separate impacts of relative standing on SWB. The first impact is, being in a cluster of higher wealth increases SWB for non-whites, and the other impact is, if a person felt they are less wealthy than their parents they are more likely to have lower levels of SWB. Bookwalter and Dalenberg (2004) and Bookwalter and Dalenberg (2010) both offer important guidance in how to construct an empirical model of SWB. Their guidance is most likely also relevant to a model of EWB.

These empirical studies of EWB and SWB all show the importance of income. However, a common theme among these studies is the importance of non-monetary inputs in models of happiness. In order to model empowerment's relationship to EWB and SWB, I included numerous covariates related to personal characteristics. These covariates will hopefully add validity to my model.

2.3 Gender Empowerment

2.3.1 Gender Equality and Economic Development

Women are a group that have not been equal benefactors of society's gains in wealth and well-being until relatively recently. There is growing body of economic literature that studies historical and present day issues related to gender in economics. Goldin (2006) examines women's journey from "secondary workers", making their labor decisions within the context of their husband's labor decisions, to workers who choose to work, and identify with their careers. Goldin (2006) discusses many important issues related to gender empowerment, but the most important take away is the importance of motivation behind labor choices. Goldin (2006) points out that higher female employment is not necessarily an indicator of women's increased status in the household or society at large. Although equal representation of women in the workplace is necessary for a equitable society, it is not sufficient. In order for employment to imply gender equality, employment must be a choice women make independent of their husbands or partners or economic situation. Goldin and Katz (2002) examine the impact of access to oral contraceptives had on women in the United States. Using a difference-in-difference model, Goldin and Katz (2002) find that single women's access to oral contraceptives coincided with a 0.021 decrease in the proportion of women who were married by the age of 23, and a 0.032 decrease in the proportion of women married by the age of 17. Oral contraceptives can also account

for between 1.2 and 1.6 of the overall 1.7 percentage point increase in women employed as lawyers or doctors from 1970 to 1990. Goldin (2006) and Goldin and Katz (2002) focus on women in the United States, but there are elements of the continued struggles of women that are shared internationally. This makes research like Goldin (2006) and Goldin and Katz (2002) pertinent to any study of gender and gender inequality, whatever the location. The reason the research of Goldin (2006) and Goldin and Katz (2002) pertain to study of South Africa is the common denominator of gender equality and female empowerment: decision-making. Access to birth control can enhance female decision-making abilities. Increased involvement in the economy can also enhance female decision-making ability. As I previously stated, Kabeer's (2005) research, which is specifically concerned with international gender equality, considers the most fundamental measure of empowerment to be the ability to make choices. Kabeer highlights that the ability to make decisions is improved by access to education, access to paid work and political representation. These could be considered some of the pillars of a gender equitable society. Although gender equality is far from perfect in the developed world, research in economics and other fields often focus on the developing world when studying determinants and impacts of gender empowerment. There is a significant literature discussing the positive impacts increased female empowerment can have on the development of nations.

The relationship between development economics and female empowerment is reviewed by Duflo (2011). Duflo includes important discussion relating to the bi-directional relationship between female empowerment and economic development. Economic development seems to contribute to gender equality, and gender equality seems to contribute to economic development. Jayachandran and Lleras-Muney (2009) is an example of research supporting the former. Jayachandran and Lleras-Muney study the effects of changes in maternal mortality in Sri Lanka between 1946 and 1953. Reductions in maternal mortality over this period increased the life expectancy of girls, and increased access to education for girls (Jayachandran and Lleras-Muney, 2009). The conceptual framework used by Jayachandran and Lleras-Muney is a little dark, but does explain the change. Essentially, as maternal mortality declined, women where more likely to contribute more to a family or community because they were expected to live longer. If women are expected to live longer, then investing in their education as girls is a more economically attractive choice (Jayachandran and Lleras-Muney, 2009). The changes in female mortality in Sri Lanka at the time were largely driven by

increased access to drugs and treatments from the developed world. Kabeer and Goldin (2006) suggest that this increase in access to education for girls in Sri Lanka will lead to a generation of more empowered women. So, Jayachandran and Lleras-Muney is a clear example of how economic development can directly cause increases in female empowerment. Duflo and Breierova (2004) offer some more evidence of the development leading to empowerment relationship. Duflo and Breierova take advantage of a large national policy to increase school construction in Indonesia during the 1970's. This policy serves as the exogenous variation needed to estimate a causal relationship between increased female education and age of first marriage and early fertility. Duflo and Breierova find that female education levels are a more important determinant of their child's age of first marriage than male levels of education. This is to say, whether or not a women is educated has a greater impact on her life than whether or not a man is educated. Duflo and Breierova's study is predicated on a 61,807 school expansion in Indonesia from 1973-1979. Their study shows, as Indonesia developed, it afforded more opportunity for girls to become educated, which then led to the age at which they were first married or first gave birth to increase. Duflo and Breierova is another case of a country's increased development giving women an opportunity to gain empowerment in their society. Another area of development geared at empowering women that has garnered much attention is the institution of micro-credit programs. Pitt et al. (2006) study the effects of access to micro-credit on female empowerment at the household level. Using data from household survey data from Bangladesh collected in 1991 and 1992, Pitt et al. find that access to micro-credit programs is associated with an increase in measures of empowerment for landless women. Pitt et al.'s (2006) research represents a little of both views on the direction of the relationship between empowerment and development. On one hand, increasing access to micro-credit could be viewed as economic development, and this economic development empowers women. On the other hand, these women are empowered to participate in their economy more effectively, and this is likely to develop their communities even further. Although Pitt et al. studies development through micro-credit programs as a means to empowering women, the scope of their study is also an example of the interwoven nature of development and empowerment. Thomas (1990) is an example of research offering evidence of female empowerment contributing to development. Using household bargaining models and survey data from Brazil in the years 1974 and 1975, Thomas examines the validity of household

bargaining models, gender bias within household resource allocation and the differential effects of female spending and male spending on a household. Thomas finds that households in which women hold a greater share of disposable income often have children with better anthropomorphic health measures. In this case, women who have more access to household income, or greater levels of empowerment, use their empowerment to better the health of their children. A healthier populous is generally regarded as a more productive populous. It is safe to say that as health outcomes improve at the household level, economic development of a country is expedited. This is how Thomas supports the empowerment leading to development side of the economic development - female empowerment relationship. Branisa et al. (2013) take a more direct approach to studying the direction of the relationship between empowerment and development by examining the the effects of social institutions that to promote gender inequality, e.g., certain religious organizations, on economic development at the country level. Branisa et al. find that the presence and intensity of social institutions that promote gender inequality are associated with lower measures of gender empowerment at the country level. These measures of gender empowerment are constructed from measures of education, civil rights and professional opportunities for women. Branisa et al. argue that if countries are interested in spurring development they must address gender inequality promoted by certain social institutions first. By promoting gender equality countries could expedite their development process (Branisa et al., 2013). Many of the examples of evidence of the direction of the relationship between empowerment and development, especially Branisa et al. and Pitt et al., show that although there is some evidence of one direction or the other, the relationship between empowerment and economic development is dynamic to say the least.

Part of the goal of this research is to actually motivate a broader perspective on the relationship between women, empowerment and economic development. Specifically, development policies should as be evaluated carefully to make sure they are having the desired effect. Balasubramanian (2013) provides an example of why some development policies can actually hurt women. As was discussed by Pitt et al. (2006), empowering women through micro-credit programs can lead to gender equality in the household, and allow women to participate in and grow their community's economy. Balasubramanian takes a different perspective using the same intrahousehold bargaining framework. Balasubramanian theorizes, under the threat point models of Manser and Brown (1980) and McElroy and Horney (1981), women can be left worse

off once they gain access to micro-credit. In a circumstance where divorce is not an option, or the social consequences of divorcing are sufficiently negative, a women's threat point in her marriage could reach zero. This means that because the result of divorcing has such a great negative impact on a woman's utility she will endure any amount of personal hardship within her marriage. Balasubramanian claims this is the case within many communities in South Asia. Balasubramanian suggests that if women are asked by their husbands to take out micro-credit loans on their behalf, it is in their best interest to comply. This includes situations in which a women knows her husband will take the money, use it for his own interests and never assist her in repayment. This would leave a women in debt without actually ever receiving any financing. Balasubramanian also suggests that micro-credit agencies hold enough social power in communities to compel these women to repay their loans even if their husbands steal the money. Although Balasubramanian doesn't offer any empirical support of this theory, it is certainly theoretically sound within the observed social structure of Southern Asia and the Manser and Brown and McElroy and Horney threat point model. Balasubramanian offers a reminder that although empowered women clearly can help their communities reach higher levels of development, some development strategies aimed at helping women can actually put them at risk.

2.3.2 Measuring Empowerment

Studies of gender empowerment have the arduous task of identifying a relatively hidden variable. Gender empowerment usually needs to be revealed, as opposed to directly observed by researchers. This is because the reliability of responses on surveys concerning a woman's level of empowerment is likely correlated with a woman's level of empowerment. In other words, unempowered women may be risking physical or psychological harm by revealing the power structure in their household to an outsider or researcher. Empowered women will likely be more than willing and able to share their level of empowerment. This will likely cause levels of empowerment to be overestimated.

One way to reveal empowerment is to take advantage of exogenous shocks to households. It is common for households to engage in consumption smoothing when they are subject to negative or positive income shocks. During this smoothing process the ranking of the needs of girls relative to boys may be different. This difference can result in different health outcomes and different mortality rates for men and women.

Using data from India, Rose (1999) finds empirical evidence of a relationship between shocks to household incomes and female survival rates. Other descriptive variables such as mother's education, landholdings and availability of education are also associated with differences in male and female mortality, and are controlled for in the study. The heterogeneous effects of an increase in household income are largely the result of a household's intrahousehold bargaining structure. Income shocks are estimated using rainfall data. Using these exogenous shocks allows for one method of observing a household's intrahousehold bargaining structure.

In order to identify different levels of gender empowerment, it is often advantageous for researchers to attempt to observe behavior that results in less than Pareto efficient outcomes for individuals or households. One such example, Udry (1996), seeks to measure the loss of productivity in farming households in Burkina Faso resulting from gender biased allocation of household factors of production. Udry finds factors of agricultural production are not spread between male, and female farmers within a household in a Pareto efficient manner. By comparing the yields of agricultural plots tended by female household members with an estimated average yield of a similar plot, Udry finds female tended plots produce on average less than an average plot and less than an average male tended plot. Once the distribution of household resources is taken into account, Udry presents evidence that the difference in yields can be attributed to male household members using more of the available factors of agricultural production for their plots. Furthermore, Udry claims this is not a utility maximizing trade off. Male farmers overuse household factors of production to the point at which their marginal contribution to the yield is less than if these factors were employed by the female household members. Udry's study exemplifies many studies of the household related to gender, because the dispersion of household resources between the genders is the primary explanatory variable used in the analysis. This method can be employed when explaining production or consumption within a household.

Consumption choices are commonly used to reveal evidence of bias in household expenditures. For example, Deaton (1989) uses household expenditure data to measure any difference between household expenditure on girls and boys in Thailand and Côte d'Ivorie. Deaton considers that an increase in the number of children in a household could be compared to a decrease in adult income as resources must be diverted to the new child. Deaton constructs the ratio, π_{ir}, for various goods, x, for the households in the sample using the formula shown below.

$$\pi_{ir} = \frac{\delta p_i q_i / \delta n_r}{\delta p_i q_i / \delta x} \cdot \frac{n_r}{x} \tag{1}$$

In the formula, $p_i q_i$ is household i's total expenditure and n_r is the number of people of gender category r in the household. As Deaton further explains, a value of -0.5 for π_{ir} for an additional girl means that the reduction in spending on good x associated with this additional girl entering the household corresponds to the spending reduction that would accompany a 50% decrease in income. If good x is an adult good like tobacco or alcohol then the π_{ir} ratios associated with additional boys and girls could be compared. If π_{ir} is more negative for boys relative to girls, the household exhibits favoritism towards boys. The π_{ir} ratios are estimated using an empirical Engel curve. The results from Côte d'Ivorie and Thailand do not show a statistically significant difference in the spending allocated towards boys and girls. Deaton does observe a difference between the π_{ir} ratios of men and women in the 15 to 55 age group in Côte d'Ivorie by analyzing male exclusive and female exclusive goods. This method of identifying gender biased behavior within households has been widely applied because it uses consumption habits reported on household surveys, which are more reliable than stated household structure.

Under the right circumstances, researchers can get a more direct view into the intrahousehold decision-making process. Some survey instruments are very specific to household decision-making. This allows for easier analysis of the gender relationships within a household. Frankenberg and Thomas (2001) provides insight into the construction of survey instruments of this type. The findings of Frankenberg and Thomas can be used as a template for survey design or as a resource for interpreting surveys that may not be directly concerned with empowerment or household decision-making. Frankenberg and Thomas report on the development of a decision-making module for the 1997 and 1998 Indonesia Family Life Survey. Their survey module examines household decision-making using three batteries of questions. The three areas of focus are concerned with how couples deal with money, how couples make decisions about spending and time use and what the relative standing of the husbands and wives is within the household. Frankenberg and Thomas also analyze the results of their survey module. They find results that are not surprising. Increased levels of education for both household members increase the amount of money the female household member is able keep under her own control. Also, increased education for women is related to increased control of household food expenditures.

Frankenberg and Thomas show that direct questions about household structure can reveal information about the effects and determinants of female empowerment. Pitt et al. (2006) use a factor analytic approach in their study of micro-credit and female empowerment in Bangladesh. Their factor analysis uses results of direct questioning about the household decision-making process and other empowerment related issues, similar to the analysis of Frankenberg and Thomas. Pitt et al. examine 9 different latent factors representing empowerment in different contexts. These range from simple purchasing power in the household to fertility choices and involvement in community activism. I use an approach to empowerment measurement similar to that of Frankenberg and Thomas and Pitt et al.. Direct observation of empowerment has its drawback. As I mentioned earlier, women who are unempowered may be unwilling to report that they are unempowered due to the fear of harm from their husbands. However, a factor analytic approach like that of Pitt et al. may be able to more directly reveal empowerment by analyzing questions that only skirt the edges of these issues and still allow unempowered women to answer freely and safely.

Agarwal (1997) points out an important caveat to many of the studies of gender empowerment within economics. Agarwal argues that the research related to gender empowerment limits the scope of study to the household. This is problematic because there may be external limits to empowerment imposed by social norms (Agarwal, 1997). It is worth noting that although Agarwal writes from 1997, most of the more recent literature I have encountered related to female empowerment is still only focused on the household. Agarwal argues that even if women are more powerful in their households, if they live in a society that is largely inequitable their household bargaining power will have exogenous limitations. Agarwal offers an important reminder that gender relations are multifaceted in even the simplest of cases. Drawing broad conclusions about the effects or determinants of gender empowerment based solely on household level observation could be problematic.

After reviewing existing empirical research concerning intrahousehold bargaining, gender empowerment and EWB and SWB, I have chosen data and empirical methods that should effectively explore the relationship between EWB and SWB and gender empowerment. These choices are informed both by the existing research in the field and by the gaps in the research that exist.

3 Institutional Background

3.1 Climate and Geography

South Africa covers a land area of about 472,281 square miles. The country's coastlines rise sharply up to a plateau that consists of approximately two thirds of the country's land. Within this plateau, there are four geographic areas that are commonly described using the Dutch word 'veld.' These areas are called the High Veld, the Bush Veld, the Low Veld and the Middle Veld. These areas range from about 6,000 to 2,000 feet above sea level. Figure 1 should provide some reference for this section. (Beck, 2014) There are three major rivers in South Africa, the Orange, Vaal and the Limpopo. The Orange River is the longest river in South Africa running about 1,300 miles along the border of South Africa and Namibia. Rainfall in eastern South Africa averages about 35-40 inches annually, the High Veld receives 15-30 inches of rainfall annually and the Northwestern Cape is much dryer, receiving about 5 inches of rainfall annually. The Cape peninsula receives about 22 inches of rain from the Atlantic Ocean. This allows the Cape peninsula to support heavy agriculture. The temperatures in Durban, on the southeastern coast, are often highest averaging between 50 and 75 degree Fahrenheit during the winter months. During the summer the temperature in Durban ranges from around 70 to 80 degrees. Cape Town, on the southern tip, tends to be the coolest city in the country. With winter temperature ranging between 45 and 65 degrees. Summer temperatures tend to be between 60 and 80 degrees. Snow is usually only seen in regions of higher elevation. (Beck, 2014)

South Africa is home to exceptional biodiversity in both plants and animals. The Cape Floral Kingdom, an area of South Africa along the Atlantic and Indian oceans meeting at the Cape of Good Hope, is reported to contain the most species of flower per acre of anywhere in the world. South Africa is home to grasslands on the plateaus, rain forests in the Eastern Low Veld, prairie in the High Veld and savanna in the Bush Veld. In terms of animals, South Africa is home to many of animals the African continent is famous for. These include hippopotami, elephants, lions and zebras. South Africa's Kruger National Park is a 7,523 square mile game reserve on the border of Mozambique. This is the oldest and most well known game reserve in South Africa. (Beck, 2014)

[2] http://www.africa-continent.com/south-africa.htm

Figure 1: Map of South Africa[2]

3.2 History

South African history stretches back to the dawn of humanity. There has been extensive archaeological investigations throughout Africa and South Africa. Many of the predecessors of modern humans resided in South Africa. These include, *Australopithecus africanus*, *Homo habilis* and *Homo erectus*. South Africa became an attractive home to modern humans, *Homo sapians sapians*, after climate change reduced the amount of inhabitable land across Africa. One area early humans could and did survive was the southern coast of South Africa. The San people of South Africa, often called Bushmen by Europeans, are the modern day descendants of these 'original' South Africans. The San people lived predominantly as hunter-gatherers. A San group, the Khoikhoi, did domesticate animals, but neither group were agrarian. (Beck, 2014)

The Khoikhoi were one of the first groups to suffer as a result of European contact. As early as 1652, South Africa's Cape Town was used as a stopping point for Dutch traders on trade routes between the Netherlands and Asia. The Khoikhoi suffered from violence and disease that accompanied the Dutch traders. Some Dutch traders became settlers, and began farming throughout South Africa. Over the years, South Africa was tossed between European countries and endured significant hardship as a results. The country was considered strategically significant, but Europeans where otherwise fairly uninterested. Once diamonds were discovered in South Africa in 1867, creation of European settlements and European immigration increased. South Africa fell under British rule in 1902 after the Second South African War. This rule continued through Apartheid, established in 1948. Apartheid is one of the most well known instances of mass state driven racism in human history. Under Apartheid, marriages between people of different races were illegal, sexual relations between people of different races were illegal and races were segregated into certain living areas. There were vocal and violent protests to Apartheid. This time in South Africa saw mass arrests, mass imprisonments and police brutality and, less frequently, state sanctioned murders. The grips of Apartheid began to loosen through the 1960's and early 1970's. Changes in the economy made business owners desire more workers. This led to Black Africans filling jobs that were officially 'White' jobs. Struggles continued and Black Africans continued to suffer under White rule. Eventually the need for more workers as well as

pressure from within and outside of South Africa became too strong. Apartheid officially ended after majority elections were held in 1994.[3] (Beck, 2014)

3.3 Economy

South Africa is classified as middle-income emerging market. Economically, South Africa has endured hardship. The estimated unemployment rate was 25.9% in 2015 and 35.9% of the country was living below the poverty line in 2012. With a GDP of $724 Billion in 2015, South Africa ranks about 31st in the world for economy size.[4] President Thabo Mbeki, who was in office from 1999 to 2008, receives criticism and praise for his economic policies. Although the country's economy did grow relatively well during his tenure, this growth included the loss of many industrial jobs which increased unemployment among lower skilled workers. Jacob Zuma, the current president of South Africa also garners criticism for his economic policies.[5]
There is a significant migrant labor population in South Africa, specifically in the mining industry. The current migrant labor system is probably a result of a the historical migrant labor system that evolved due to a need introduced by some early 20th century racially discriminatory laws regarding land use. These laws restricted the amount of land available to African Blacks and forced many young men to travel in order to find work in mines.[6] This migrant labor system continues to put significant stress on the migrant laborers and their families. (Beck, 2014)
The average exchange rate in 2008 for U.S. dollars South African Rands was $1 to 8.25 R. In the empirical section I use household level monthly income and spending. These values are displayed in 10,000 R's. As a point of reference, 10,000 R's was about $1212.65 in 2008.[7]

3.4 South African People

Studying gender empowerment and SWB and EWB in South Africa offers an opportunity for research within the context of a very diverse population. The population consists of Black Africans: 80.2%, Whites: 8.4%, Coloureds:[8] 8.8% and Indians/Asians 2.5%. South Africans enjoy complete freedom of religion, and their

[3] https://www.cia.gov/library/publications/resources/the-world-factbook/geos/sf.html
[4] https://www.cia.gov/library/publications/resources/the-world-factbook/geos/sf.html
[5] http://www.economist.com/news/leaders/21684158-nation-brink-deserves-better-jacob-zuma-try-again-beloved-country?zid=309&ah=80dcf288b8561b012f603b9fd9577f0e
[6] http://www.sahistory.org.za/article/land-labour-and-apartheid
[7] http://www.usforex.com/forex-tools/historical-rate-tools/historical-exchange-rates
[8] Coloured is an official term used in South Africa to describe people of mixed ethnic ancestry

government is secular. The 2001 census describes the population's religious choices as: Protestant 36.6% (Zionist Christian 11.1%, Pentecostal/Charismatic 8.2%, Methodist 6.8%, Dutch Reformed 6.7%, Anglican 3.8%), Catholic 7.1%, Muslim 1.5%, other Christian 36%, other 2.3%, unspecified 1.4% and none 15.1%.[9] Most of the South African people live in the eastern half of the country. This is due to the eastern area's resource rich soil and other economic opportunities. About one third of people in South Africa live in an urban area. There has been a general trend of movement toward urban areas since the end of Apartheid in 1994. This is due to the lifting of certain restrictions on movement within the country. South Africa maintains 11 official languages. According to the 2011 census, 22.7% of South Africans speak Zulu, 16% speak Xhosa, 13.5% speak Afrikaans, 9.6% speak English, 9.1% speak Northern Sotho, 8% speak Tswana, 7/6% speak Southern Sotho, 4.5% speak Tsonga, 2.5% speak Swazi, 2.4% speak Venda, 2.1% speak Nedebele and the remaining 1.6% speak other languages. South Africa's population is wonderfully diverse in language, ethnicity and religion. (Beck, 2014)

3.5 Gender Equality

The South African government states its desire for legal gender equality in its constitution. Section 9 of Chapter 2, the Bill of Rights, of the Constitution of South African includes, "The state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language and birth." Constitutional guarantees of legal sexual equality are present in about 85% of world constitutions.[10] This is not to suggest that due to the presence of this constitutional amendment gender equality is not an issue of concern in South Africa.[11,12] Violence against women and equal access to resources remain major problems. (Beck, 2014)

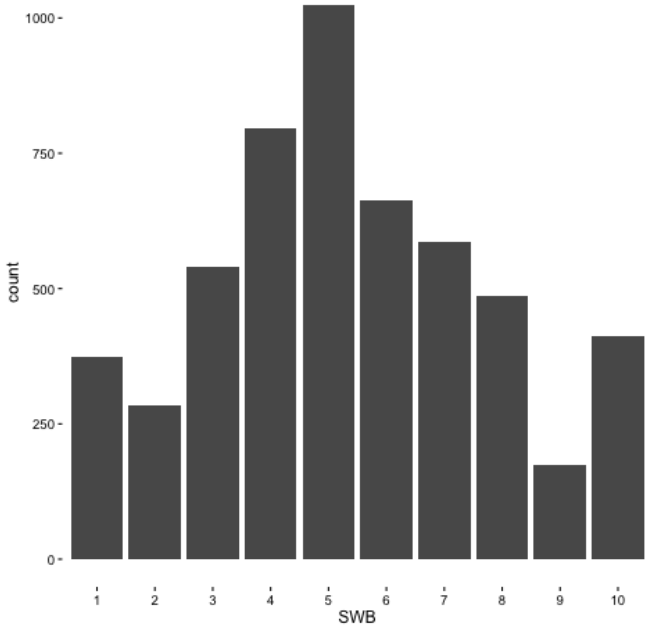
[9] https://www.cia.gov/library/publications/resources/the-world-factbook/geos/sf.html
[10] http://www.aclumaine.org/us-lagging-behind-when-it-comes-gender-equality
[11] https://www.cia.gov/library/publications/resources/the-world-factbook/geos/sf.html
[12] http://www.sahistory.org.za/womens-struggle-1900-1994/women-new-democracy

4 Data

4.1 Data Sources

I use data from the South Africa National Income Dynamics Study (NIDS) Wave 1 for my empirical analysis. These data are survey data from a representative sample of private households and people living in workers' hostels, convents and monasteries in all nine provinces of South Africa in 2008. The sampling method is a stratified, two-stage cluster design. 409 sampling units were randomly selected from a total of 3,000 sampling units created in South Africa for previous research. Within each of these 409 selected sampling units, there are 8 sub units. Previous surveys had not used 2 of the 8 sub units in each of the larger sampling units. These 2 previously unused sub units did not geographically overlap, and could be used in this survey.
The target population of the sample is private households and people living in workers' hostels, convents and monasteries in all nine provinces in South Africa. This excludes collective living situations such as student hostels, old age homes and prisons. During Wave 1, fieldworkers attempted to survey 10,642 households, and were successful with 7,305 households. The final dataset from Wave 1 includes data from 7,296 of those households. Questionnaires for 31,141 people were gathered. Some of these responses are surveys by proxy. Of these 31,141 people 7,032 identify as resident heads of households, 3,208 spouses of heads of households, 10,794 children of heads of household and 5,580 grandchildren of heads of household.
In order to best understand the relationships between SWB, EWB and empowerment I chose between four subsets of the NIDs data I created. The first subset consists of all adults with complete observations of covariates, the second subset is all women in the data, the third subset is all women who are the partner or spouse of the head of household and the fourth subset consists of women who are married. My primary analysis is reserved to the subset of all women in these data. I made this choice based on that fact that my primary interest is how women react to higher levels of empowerment. Including men in the dataset could introduce unnecessary noise. The other two subsets suffered from low numbers of observations. I use the other subsets for specificity and robustness checks.

Figure 2: SWB Bar Plot



4.2 Data Descriptions

Table 1 displays the summary statistics for pertinent variables for all women within the NIDS data with full observations. There are 5,339 observations for all variables. Figure 2 displays a bar plot of the SWB variable. This bar plot shows that SWB follows a distribution that is relatively normal.

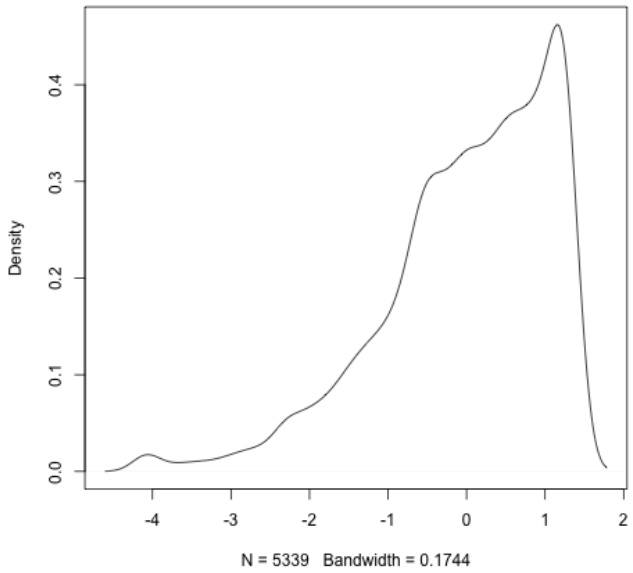
Table 1: Summary Statistics

	Min	Mean	Median	Max	IQR	Std. Dev.
Age	15	44.48	43	102	26	17.42
EWB	-4.08	0	0.19	1.26	1.45	1.08
SWB	1	5.34	5	10	3	2.42
Empowerment	-0.98	0	-0.68	1.03	2.01	0.98
Income	0	0.47	0.22	13.7	0.32	0.83
Food Spending	0	0.09	0.07	1.48	0.07	0.08
Non-Food Spending	0	0.22	0.05	12.03	0.14	0.58
Happy	1	2.67	3	4	2	1.06

n = 5,339

Table 1 shows that SWB has a mean of 5.34 with a minimum of 1 and maximum of 10. The median is 5 which is close to the mean, which also suggests symmetry. SWB has a standard deviation of 2.42 and an interquartile range (IQR) of 3. There seems to be sufficient variation in SWB. Figure 3 shows that the EWB factor scores are left skewed and not very normal, however, they are generally mound shaped. The mean of the EWB scores is zero with a minimum of -4.08 and a maximum of 1.26. The median is

Figure 3: EWB Factor Score Density



0.19. The mean and median are similar which is a good sign of relative symmetry. The standard deviation is 1.08 and the IQR is 1.45. Both of these statistics suggests there is enough variation in EWB to use regression analysis. Figure 4 shows the distribution of the empowerment factor scores. The distribution is bi-modal with a peak at about -1 and at about 1. The bi-modal nature of the empowerment score may be a reflection of insufficient variation in the empowerment inputs. This means that although there is a lot of variation within each of the inputs, women might essentially fall into one of two categories, empowered or unempowered. The distribution of the empowerment factor scores may create problems in regression analysis. I will address this issues more in the results section. The empowerment scores have a mean of 0. The median of -0.68 is quite different from the mean, which stems from the non-normal distribution. The scores vary from -0.98 to 1.03 with an IQR of 2.01 and a standard deviation of 0.98. Although these data follow a bi-modal distribution, at least there is a decent amount of variation. Figure 5 displays a bar plot of the responses to the survey question concerning happiness. The bar plot also shows that more women were in the higher happiness categories than lower happiness categories. The plot also shows that there are many women in each category. The happiness variable is used as a EWB proxy in my regression analysis. The bar plot suggests that this variable has enough variation to use in regression analysis. Whether or not a woman is the main decision-maker in her home in the realm of day to day expenses is used as a proxy variable. Figure 6

Figure 4: Empowerment Factor Score Density

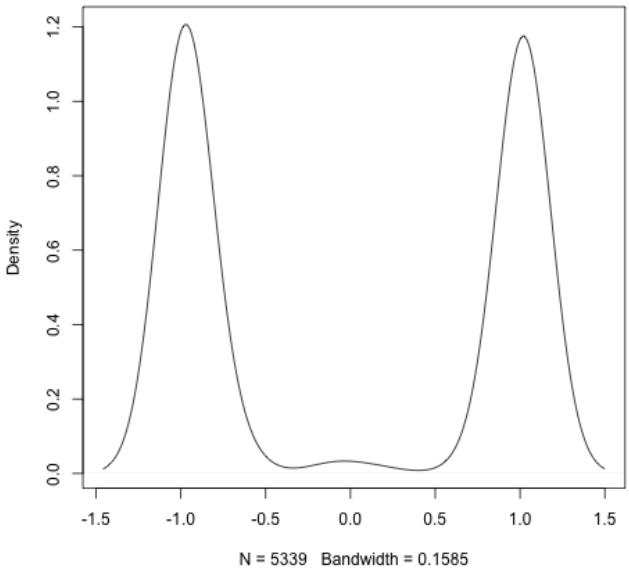


Figure 5: Happiness Response Bar Plot

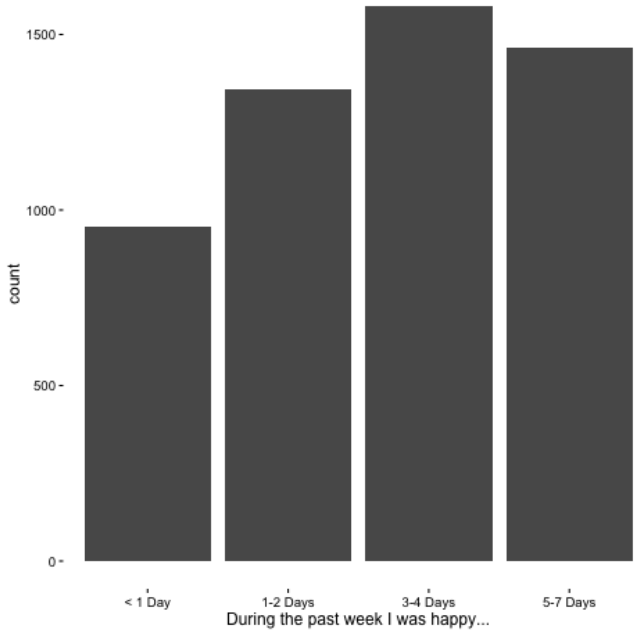
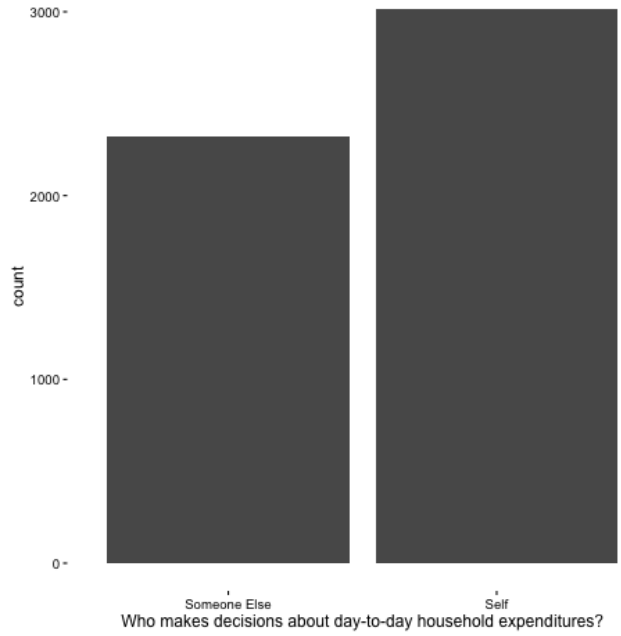
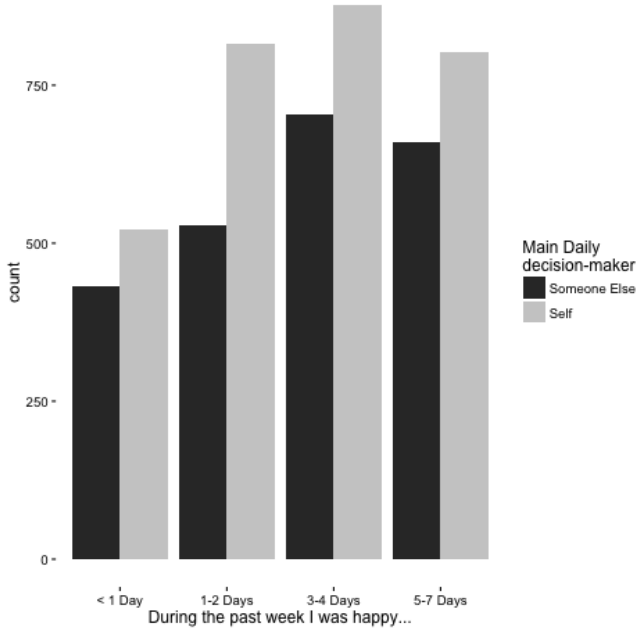


Figure 6: Main Daily Spending Response Bar Plot



displays a bar plot of distribution of this variable. Figure 6 shows that many women are in both category. More women identify themselves as the main decision-maker in their home than do not, but I do not think the distribution is too unequal. There are plenty of observations in both categories. Figure 7 shows the distribution of women in each happiness category while also indicating their decision-making status. Figure 7 shows that women who are main decision-makers tend to be in one of the top three categories of happiness more often than the lowest category. The most noticeable difference between the two subgroups is in the happy 1-2 days a week category. This difference may drive a result of making women who are the main decision-makers in day-to-day spending appear to be more unhappy. Women in the data are between the ages of 15 and 102 as shown in Table 1. The mean age of 44.48 and median age of 43 are close enough to suggest relative symmetry. The IQR of 26 and standard deviation of 17.42 show that the sample contains women of varying ages. This is preferred because this study is aimed at women in general. More variation in age will allow the results to be interpreted more generally. Household income is shown in 10,000's R, and is disaggregated to monthly household income. Income varies from less than 0.00004 to 13.7. The median is 0.22 and mean is 0.47. The differences in the mean and median, especially because income is displayed in 10,000's R, shows that the income distribution is right skewed. This is not surprising due to the known income inequalities in South Africa. Income does vary quite a bit with an IQR of 0.32 and a standard deviation of

Figure 7: Happiness by Main Daily Spending Bar Plot



0.83. These statistics suggest these data contain a good sample of household of different incomes. Monthly household food spending is also displayed in 10,000's R. Food spending varies from less than 0.00004 to 1.48. The median of 0.07 and mean of 0.09 suggest that food spending is less skewed than monthly income, but still skewed to the right. Food spending has an IQR of 0.07 and a standard deviation of 0.08. These statistics show that there is ample variation in monthly household food spending in the sample. Monthly household non-food spending is also displayed in 10,000's R. Non-food spending varies from 0.00004 to 12.03. The median of 0.05 and mean of 0.22 show that non-food spending is also highly skewed to the right. This also makes sense given the known income inequality in South Africa. The IQR of 0.14 and standard deviation 0.58 show that there is ample variation in non-food spending in the sample. Tables 2 and 3 display the means and standard deviations for the variables that serve as inputs when estimating latent empowerment and EWB factors. This is important because variation in these variables creates variation in the empowerment or EWB factor scores.

Table 2: Empowerment Inputs

	Mean	Std. Dev.
Day to Day Expenses	0.56	0.4958
Large Unusual Purchase	0.49	0.5
Which School Children Attend	0.41	0.4926
Who Lives in Household	0.49	0.4999
Where Household Lives	0.49	0.4998

Table 3: EWB Inputs

	Mean	Std. Dev.
Unusually Bothered	1.58	0.8323
Trouble Focusing	1.65	0.8103
Depressed	1.78	0.8973
Everything an Effort	1.97	1.0027
Fearful	1.69	0.8497
Restless Sleep	1.82	0.9038
Lonely	1.66	0.841
Can't Get Going	1.66	0.8419

5 Empirical Methods

5.1 Overview

In order to explore a relationship between gender empowerment and SWB and EWB, I must construct measures for empowerment and EWB. Unfortunately, empowerment and EWB are, by nature, not directly observable. The simplest measure of empowerment available in the dataset is an indicator of whether or not a respondent identifies themselves as the primary decision-maker in the realm of daily household purchases. A simple measure of EWB is each respondent's answer to the question: about how many days do you feel happy each week? The responses are broken down into the four categories: never, one to two days, three to five days and almost everyday. Using Ordinary Least Squares (OLS) and Ordinal Logistic Regression (OLOGIT), these proxy variables, along with other covariates, can be regressed against SWB and EWB, and a relationship can be measured. Using these proxy variables for measures of EWB and empowerment may not capture the entire relationship being examined, because each proxy could be too specific. In order to create more general estimates of each respondent's level of empowerment and EWB, I use polychoric (POLY) and principal component (PCA) factor analysis.

5.2 Factor Analysis

Tables 4 through 7 display the results of the POLY for empowerment and PCA for EWB. The empowerment measure is constructed using five decision-making indicators. These five indicators display if a women is the main decision-maker in her home in the realms of daily spending, large purchases, where children attend school, who lives in the household and where the household resides. These indicators are binary, which is the reason for using POLY instead of factor analysis based on Pearson correlation. The EWB measure is constructed from the answers to 8 four-item scale questions. These questions measure how often a respondent has experience a specific feeling or issue in a week. These include being unusually bothered, having trouble keeping ones' mind focused, feeling depressed, feeling like everything is an effort, a respondent's level of fear, whether or not an individual is having restless sleep, how lonely the respondent is and if they have trouble getting going. The resulting score will eventually be multiplied by a negative so that it reflects EWB in terms of 'happiness', because the chosen factor inputs map to lower levels of EWB. This factor analysis uses a VARIMAX rotation. A VARIMAX rotation maximizes the variance of the factor loadings (Abdi, 2003). I use a VARIMAX rotation, because factor loadings with highest variance will produces factor scores with the highest variance. Factor scores with higher variance should make multiple regression methods more effective.
PCA and POLY are statistical methods that assumes there is a latent factor causing the observed variables to have the values they do. PCA routines in computer programs like Stata measure how much of the within variance in the variance-covariance matrix of the covariates can be explained by a certain number of factors (Acock, 2013). POLY is almost the same but uses polychoric correlation instead of Pearson's correlation. Polychoric correlation is a modified estimate of correlation designed to be used for ordinal or binary variables. Because the empowerment measures are binary, measuring polychoric correlation is more appropriate. Factor analysis produces tables of Eigenvalues that correspond to each factor assuming there is no latent factor. If there is no latent factor each Eigenvalue would be unity. Tables 4 and 6 are tables of Eigenvalues for each potential latent factor revealed in a factor analysis of observed EWB and empowerment data. There are also scree plots of the Eigenvalues in Figures 8 and 9. These Eigenvalues are the summed squares of the factor loadings that are assigned to each covariate based on how closely their variances match the assumed number of latent factors. Higher factor loadings are considered better as they create

higher Eigenvalues, and suggest a stronger relationship between the variables. Generally speaking, if an Eigenvalue is less than 1.0, then the latent factor it measures is unlikely to legitimately exist. If a factor loading value is less than 0.40, then that covariate cannot be considered significantly related to the latent factor (Acock, 2013). Another test of the robustness of factor analysis is Cronbach's alpha. Researchers consider a combined alpha value above 0.80 necessary, but not sufficient, for factor analysis (Acock, 2013). Tables 5 and 7 include an estimate of these factors' combined Cronbach's alpha.

Table 4 displays the Eigenvalues for the POLY of the empowerment variables. The high Eigenvalue for the first factor supports my hypothesis that these variables indeed represent a single latent factor. The scree plot displayed in Figure 8 also suggests these inputs represent a single factor. Table 5 displays the factor loadings for resulting for the POLY of the empowerment variables. All loadings exceed 0.40, implying these variables are related to the single latent factor. Additionally, the combined Cronbach's alpha value exceeds 0.80, which provides more support for this factor analysis.

Table 4: Latent Empowerment Eigenvalues

	Factor Loadings
Factor 1	4.14
Factor 2	0.48
Factor 3	0.24
Factor 4	0.11
Factor 5	0.03

Table 5: Latent Empowerment Factor Loadings with Cronbach's alpha

	Factor Loadings
Day to Day Expenses	0.978
Large Unusual Purchase	0.992
Which School Children Attend	0.859
Who Lives in Household	0.998
Where Household Lives	0.998
Alpha Value	0.947

Table 6 displays the Eigenvalues for the PCA of the EWB variables. The first Eigenvalue is well above 1.0, and the remaining Eigenvalues are below 1.0. This supports my hypothesis that these variables represent a single latent factor. The scree plot in Figure 9 also provides evidence of a single latent factor. Table 7 displays the factor loadings for the EWB variables. All the factor loadings exceed 0.40 and Cronbach's alpha exceeds 0.80.

Figure 8: Empowerment Factors Scree Plot

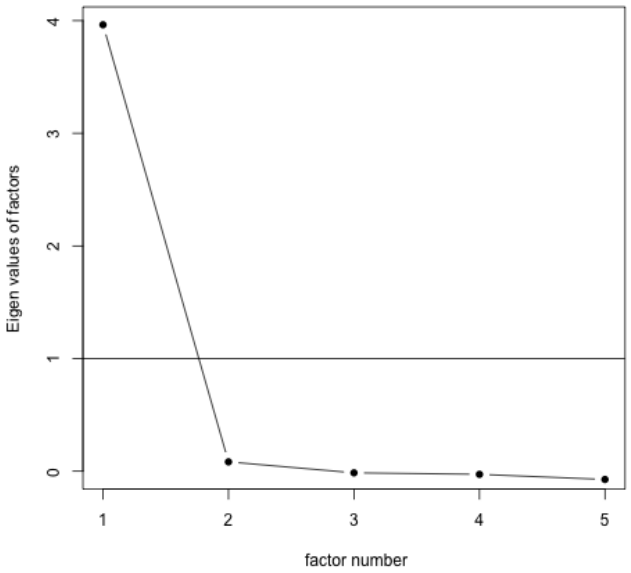


Figure 9: EWB Factors Scree Plot

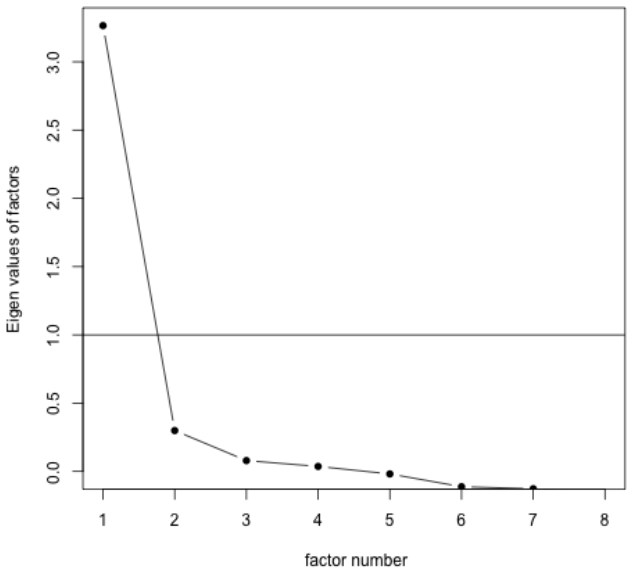


Table 6: Latent EWB Eigenvalues

	Factor Loadings
Factor 1	3.84
Factor 2	0.88
Factor 3	0.73
Factor 4	0.68
Factor 5	0.52
Factor 6	0.49
Factor 7	0.47
Factor 8	0.39

Table 7: Latent EWB Factor Loadings with Cronbach's alpha

	Factor Loadings
Unusually Bothered	0.650
Trouble Focusing	0.725
Depressed	0.724
Everything an Effort	0.537
Fearful	0.614
Restless Sleep	0.593
Lonely	0.580
Can't Get Going	0.659
Alpha Value	0.842

Factor scores are estimated for each individual using Bartlett's scoring method. Bartlett scores are unbiased, because they are estimated with maximum likelihood. Bartlett's scoring method is most likely to produce "true" estimates of the factor scores (DiStefano et al., 2009). The Bartlett scores for these factors are produced with the weights displayed in equations 2 and 3. These weights are applied to standardized values of each input variable. These weights will become important for empirical inference.

$$\begin{aligned} Empowerment\ Score_i = 0.0377 \cdot Daily\ Spending_i + 0.1089 \cdot Large\ Spending_i \\ +0.0055 \cdot School_i + 0.4185 \cdot Who\ Lives_i + 0.4335 \cdot Where\ Lives_i \end{aligned} \tag{2}$$

$$\begin{aligned} EWB\ Score_i = -1 \cdot (0.1953 \cdot Unusually\ Bothered_i + 0.265 \cdot Trouble\ Focusing_i \\ +0.2637 \cdot Depressed_i + 0.1307 \cdot Everything\ An\ Effort_i + 0.1708 \cdot Fearful_i \\ +0.1587 \cdot Restless\ Sleep_i + 0.1515 \cdot Lonely_i + 0.2014 \cdot Can't\ Get\ Going_i) \end{aligned} \tag{3}$$

It is worth noting that the questions with the highest weights for the empowerment scores are related to who lives in the household and where the household resides. This would suggest a respondent's answer to these questions is the main driver of their empowerment score. The EWB factors have weights that are more homogeneous. How

often someone has trouble focusing and how often someone is depressed have the highest weights. As previously stated, the EWB score is multiplied by a negative because the factors in this case are actually indicating a lack EWB. Multiplying by a negative correctly reverses the sign and meaning of the EWB factor score.

5.3 Empirical Strategy

With the the Nash bargaining model of Manser and Brown (1980) and McElroy and Horney (1981) in mind, I assume households have an explicit or implicit agreement of how resources will be distributed. Men and women in each household have reached an agreement of how to distribute resources, both physical goods and abstract resources like time or freedom. In this way each woman's utility, U, is a combination of welfare, τ, and an unknown conversion factor, Θ.

$$U = \Theta \cdot \tau \tag{4}$$

τ is a function of x and y which are actual and abstract consumption goods, respectively. An example of an abstract consumption good is membership in a local women's group.

$$\tau = f(x, y) \tag{5}$$

Actual resources x and abstract resources y are both functions of market prices, p, wages, w, and empowerment, ξ.

$$x = g(p, w, \xi) \tag{6}$$

$$y = h(p, w, \xi) \tag{7}$$

Empowerment, ξ, is a function of ϕ, household bargaining structure, and, ϱ personal characteristics.

$$\xi = j(\phi, \varrho) \tag{8}$$

Holding p and w constant,

$$\frac{\delta U}{\delta \xi} = \frac{\delta \tau}{\delta \xi} \tag{9}$$

We can then differentiate welfare in terms of empowerment.

$$\frac{\delta \tau}{\delta \xi} = \frac{\delta f(x,y)}{\delta \xi} \tag{10}$$

$$\frac{\delta f(x,y)}{\delta \xi} = \frac{\delta f}{\delta x}\frac{\delta x}{\delta \xi} + \frac{\delta f}{\delta y}\frac{\delta y}{\delta \xi} \tag{11}$$

We can then differentiate x and y in terms of ξ.

$$\frac{\delta x}{\delta \xi} = \frac{\delta g(\xi; p, w)}{\delta \xi} = \frac{\delta g}{\delta \xi} \tag{12}$$

$$\frac{\delta y}{\delta \xi} = \frac{\delta h(\xi; p, w)}{\delta \xi} = \frac{\delta h}{\delta \xi} \tag{13}$$

We can then substitute the results of the above differentiation into Equations 10 and 11.

$$\frac{\delta \tau}{\delta \xi} = \frac{\delta f}{\delta x}\frac{\delta g}{\delta \xi} + \frac{\delta f}{\delta y}\frac{\delta h}{\delta \xi} \tag{14}$$

In the final equation, the terms $\delta f/\delta x \cdot \delta g/\delta \xi$ is the welfare change resulting from a change in empowerment that provides a women more, or less, access to physical goods. The pure empowerment effect is $\frac{\delta f}{\delta y}\frac{\delta h}{\delta \xi}$, changes in τ resulting from access to abstract goods. This is the effect I intend to measure. If consumption of abstract and physical goods, as well as prices, income and personal characteristics are held constant through regression,

$$\frac{\delta \tau}{\delta \xi} = \frac{\delta f}{\delta y}\frac{\delta h}{\delta \xi} \tag{15}$$

The model theoretically produces a measure of a change in empowerment's pure effect on a women's welfare.

Allowing SWB and EWB to stand in for τ, the theoretical model can be formalized by equations 16 and 17. Vectors $\mathbf{X}$, $\mathbf{Y}$, and $\mathbf{Z}$ are included in order to hold access to goods, income and personal characteristics constant. Prices are considered constant.

$$SWB_i = \beta_0 + \beta_1 Empowerment_i + \beta_4 \mathbf{X}_i + \beta_5 \mathbf{Y}_i + \beta_6 \mathbf{Z}_i + \epsilon_i \tag{16}$$

$$EWB_i = \beta_0 + \beta_1 Empowerment_i + \beta_4 \mathbf{X}_i + \beta_5 \mathbf{Y}_i + \beta_6 \mathbf{Z}_i + \epsilon_i \tag{17}$$

$$\mathbf{X} = \{Income, Spending, Belongings\}$$

$$\mathbf{Y} = \{Marital\ Status, Parent's\ Education, Perceived\ Wealth, Location, Ethnicity\}$$

$$\mathbf{Z} = \{Tobacco\ Use, Alcohol\ Use, Perceived\ Health, Employment\}$$

I begin the regression analysis with a simpler model that does not include the aforementioned factor analysis. The first empirical model uses a simple indicator of whether or not a women is the primary decision-maker in the realm of day-to-day household purchases as a proxy for her empowerment. In order to estimate EWB, each respondent's happiness level is used as a proxy. I use OLS and OLOGIT to measure these relationships.

After this initial analysis, I include factor scores in my regression models. Using the factor scores as measures of empowerment, I use OLS and OLOGIT methods to measure the effect empowerment has on SWB. I then use OLS to measure the effect empowerment has on EWB. All regression analysis includes standard errors clustered at the individual level in order to better account for individual level error variance. The results of these regressions follow in Section 6.

6 Primary Empirical Results

6.1 SWB Primary Results

Table 8 displays the results of four regressions in which SWB is the dependent variable. Models (1) and (2) use OLS to investigate the relationship between SWB and the empowerment proxy and SWB and the empowerment factor score. Model (1) explains about 32.4% of the variation in SWB. The main decision-maker variable enters model (1) as significant at the 5% level. The p-value is approximately 0.01. This p-value gives strong evidence of statistical significance. The value its the coefficient, -0.174, implies that a women who is the main decision-maker in her home will have lower level of SWB by 0.174 than a women who is otherwise the same, but is not the main decision-maker in her home. This is not the expected result, however, such a small reduction in SWB is probably not practically significant. The empowerment factor score does not enter model (2) significantly. Its p-value, 0.115, does not imply statistical significance even by the most liberal standards. Model (2) does not explain any more of the variation in SWB than model (1). This is not surprising because the only difference is the measurement of empowerment. Model (3) and (4) use OLOGIT

Table 8: SWB

	OLS	OLS	OLOGIT	OLOGIT
	(1)	(2)	(3)	(4)
	SWB	SWB	SWB	SWB
Empowerment Factor Score		-0.0593		-0.0462
		(0.115)		(0.162)
Main decision-maker	-0.174*		-0.147*	
	(0.010)		(0.013)	
Age	-0.0308**	-0.0329**	-0.0285**	-0.0304***
	(0.003)	(0.002)	(0.002)	(0.001)
Age^2	0.000372***	0.000390***	0.000348***	0.000365***
	(0.000)	(0.000)	(0.000)	(0.000)
Household Income	0.0327	0.0312	-0.000875	-0.00202
(10,000's R)	(0.448)	(0.470)	(0.981)	(0.957)
Household Food Expenditure	1.252*	1.305*	1.131**	1.176**
(10,000's R)	(0.014)	(0.010)	(0.007)	(0.005)
Household Non-Food Expenditure	-0.0560	-0.0586	-0.00879	-0.0108
(10,000's R)	(0.416)	(0.394)	(0.869)	(0.840)
Divorced/Separated	0	0	0	0
	(.)	(.)	(.)	(.)
Living with partner	0.00544	0.00926	-0.0230	-0.0157
	(0.976)	(0.959)	(0.881)	(0.919)
Married	0.244	0.245	0.209	0.215
	(0.123)	(0.129)	(0.121)	(0.117)
Never Married	0.0672	0.0701	0.0639	0.0678
	(0.684)	(0.671)	(0.653)	(0.633)
Widow/Widower	0.155	0.152	0.116	0.113
	(0.352)	(0.362)	(0.416)	(0.428)
Above Average Income	0	0	0	0
	(.)	(.)	(.)	(.)
Average Income	-0.476***	-0.479***	-0.426***	-0.426***
	(0.000)	(0.000)	(0.000)	(0.000)
Below Average Income	-1.555***	-1.559***	-1.492***	-1.493***
	(0.000)	(0.000)	(0.000)	(0.000)
Relative Income: Don't Know	0.216	0.209	0.250	0.245
	(0.299)	(0.316)	(0.198)	(0.209)
Much Above Average Income	0.253	0.251	0.266	0.264
	(0.336)	(0.340)	(0.240)	(0.242)
Much Below Average Income	-2.240***	-2.244***	-2.163***	-2.166***
	(0.000)	(0.000)	(0.000)	(0.000)
Relative Income: Not Applicable	-0.187	-0.198	-0.201	-0.208
	(0.733)	(0.722)	(0.644)	(0.641)
Not Spouse of Head	0	0	0	0
	(.)	(.)	(.)	(.)
Spouse of Head	-0.284*	-0.265*	-0.258*	-0.241*
	(0.033)	(0.048)	(0.026)	(0.038)
Observations	5339	5339	5339	5339
R^2	0.324	0.324		
Pseudo R^2			0.095	0.095
Root MSE	2.016	2.017		
District Council FE	Yes	Yes	Yes	Yes

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

to investigate the relationship between SWB and the empowerment proxy and SWB and the empowerment factor score. The main decision-maker variable enters into model (3) significantly at the 5% level. The p-value, 0.013, is only slightly higher than the OLS p-value. This p-value also offers strong evidence of statistical significance. Table 9 displays the predicted distributions of the model with the main decision-maker indicator set to 0 and 1. All other variables are set to their means. Although many variables are indicators and their means are irrelevant, the results in table 9 are reasonable approximations.

Table 9: Main decision-maker Marginal Effects At Means

SWB	Main = 0	Main = 1	Marginal Change
1	0.0349	0.0401	+0.0052
2	0.0333	0.0379	+0.0046
3	0.0838	0.0938	+0.0070
4	0.1694	0.1823	+0.0129
5	0.2571	0.2596	+0.0025
6	0.1577	0.1499	−0.0078
7	0.1196	0.1093	−0.0103
8	0.0772	0.0687	−0.0085
9	0.0222	0.0195	−0.0027
10	0.0449	0.0370	−0.0079

In agreement with the negative sign on the coefficient in model (3), all of the marginal changes in the lower five categories of SWB are positive, and all of the marginal changes in SWB in the upper five categories are positive. These results are also the opposite of what is expected, however, they are not practically significant. Only two marginal changes show a change in distribution that is greater than 1 percentage point. These marginal changes are in the 4 and 7 SWB categories. Furthermore, the Pseudo R^2 is only 0.095. The Pseudo R^2 cannot be interpreted in the same way as the R^2 in OLS, however, such a low Pseudo R^2 does suggest some problem with the model. These models do not find evidence of a strong pure effect of empowerment on SWB. The weak effect models (2) and (4) find has a negative sign when a positive is expected. In order to better evaluate the models as a whole, we can examine the other results. Blanchflower and Oswald (2004) and Stevenson and Wolfers (2008) both found that happiness and age display a U-shaped relationship. Blanchflower and Oswald found that happiness tends to reach a minimum around the age of 30. All four of the models show a U-shaped relationship between SWB and age. Model (1) suggests that SWB reaches its minimum around the age of about 41, all else equal, and model (2) suggests SWB reaches its minimum at around 42, all else equal. A household's food

expenditure enters into all four models significantly. Models (1) and (2) suggest a 10,000 R increase in household monthly food expenditures (1,212.65 2008 U.S. Dollars) increases SWB by 1.252 and 1.305, respectively. These results are practically significant in two ways. First of all, this confirms the model is correctly modeling SWB when it comes to household food expenditure, almost all of the reviewed studies related to SWB highlighted consumption as a determinant of SWB. Second of all, this change in SWB is practically significant. Following the lead of Bookwalter and Dalenberg (2010) I include information about relative income in the regressions. With a base case of a respondent answering that their household is above average income, categories of average income, below average income and much below average income enter the model significantly, and negatively. Furthermore, the coefficient on much below average income is about 1.79 times greater in absolute value than the coefficient on household food expenditure. This also falls in line with the findings of Bookwalter and Dalenberg. Finally, the indicator of whether or not a women is the spouse of the head of household enters all four models significantly and negatively. Although the effect is quite small, I think this result could be the basis for further research into household structure and SWB.

Table 10 further investigates model (1) from Table 8. I chose to further investigate model (1) over model (3) because the approximate p-value of the empowerment proxy was slightly lower, 0.010 versus 0.013, and the sizes of the effect are relatively similar. I also chose model (1) following the principle of parsimony. Model (1) uses OLS instead of OLOGIT, barring the presence of other considerations, the relative simplicity of model (1) makes it more attractive.

Models (1) through (4) in Table 10 display how results change as progressively more controls are added. Model (1) contains no controls. The coefficient on the decision-making variable is significant at the 5% level, however, the model only accounts for about 0.1% of the variation in SWB. Model (2) sees the addition of controls measuring personal characteristics such as their age, ethnicity and marital status. The coefficient decreases by a factor of about 1.45. This is an interesting change. Adding more covariates would usually reduce the absolute size of the coefficient by accounting for unobserved heterogeneity that is correlated with the primary dependent variable. The p-value also decrease by factor 10. Age enters the model in the same expected fashion seen in Table 8. Model (2) accounts for about 18.2% of the variation in SWB, a significant increase from model (1). Model (3) adds

Table 10: SWB: Main Daily Spending

	(1) SWB	(2) SWB	(3) SWB	(4) SWB
Main decision-maker	-0.171*	-0.248***	-0.169*	-0.174*
	(0.010)	(0.001)	(0.015)	(0.010)
Age		-0.0375***	-0.0317**	-0.0308**
		(0.001)	(0.003)	(0.003)
Age^2		0.000486***	0.000378***	0.000372***
		(0.000)	(0.000)	(0.000)
Divorced/Separated		0	0	0
		(.)	(.)	(.)
Living with partner		0.0564	0.113	0.00544
		(0.769)	(0.536)	(0.976)
Married		0.407*	0.294	0.244
		(0.017)	(0.070)	(0.123)
Never Married		0.00768	0.0607	0.0672
		(0.966)	(0.721)	(0.684)
Widow/Widower		0.117	0.160	0.155
		(0.518)	(0.350)	(0.352)
Not Spouse of Head		0	0	0
		(.)	(.)	(.)
Spouse of Head		-0.242	-0.271*	-0.284*
		(0.097)	(0.050)	(0.033)
Household Income (10,000's R)			0.0435	0.0327
			(0.302)	(0.448)
Household Food Expenditure (10,000's R)			0.983	1.252*
			(0.052)	(0.014)
Household Non-Food Expenditure (10,000's R)			-0.0475	-0.0560
			(0.487)	(0.416)
Above Average Income			0	0
			(.)	(.)
Average Income			-0.480***	-0.476***
			(0.000)	(0.000)
Below Average Income			-1.515***	-1.555***
			(0.000)	(0.000)
Relative Income: Don't Know			0.462*	0.216
			(0.024)	(0.299)
Much Above Average Income			0.322	0.253
			(0.187)	(0.336)
Much Below Average Income			-2.200***	-2.240***
			(0.000)	(0.000)
Relative Income: Not Applicable			-0.0873	-0.187
			(0.907)	(0.733)
Observations	5339	5339	5339	5339
R^2	0.001	0.182	0.278	0.324
Root MSE	2.422	2.205	2.074	2.016
Personal Charcs.	No	Yes	Yes	Yes
Household Charcs.	No	No	Yes	Yes
Geo. FE	No	No	No	Yes

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

controls related to each women's household, specifically, household monthly income and monthly food and non-food expenditures and perceived relative income. The addition of household information increase the R^2 value to 0.278, another significant change. The coefficient on the empowerment proxy then returns to a similar value as model (1) and remains statistically significant at the 5% level. Model (4) is model (1) from Table 8. Model (4) displays results after the addition of political district fixed effects. The coefficient on the empowerment proxy is almost identical to the coefficient in model (1). The p-values are approximately the same. The addition of geographic fixed effects allows the model to explain about 32.4% of the variation in SWB.
The model improves with the progressive addition of the control variables. The lack of change in the coefficient on the empowerment proxy paired with the significant increase in the R^2 suggests there is minimal bias included in coefficient in model (4). One way to consider these results is by first considering the remaining 67.6% of variation SWB that is not explained by model (4). It is possible this remaining 67.6% represents variation that is correlated with the decision-making variable. If this is the case, then the effect of decision-making on SWB reported in model (4) would change or diminish as these currently unobserved variables were included. The results displayed in Table 10 suggest the measured effect of the proxy variable is unbiased.

In order to further examine the results displayed in model (1) in Table 8, the regression is repeated on subsets of data divided by household income quintiles. These results are shown in Table 11. As can be seen in the models, the statistical significance of the main decision-making variable diminishes once the data are subset by income quintile. This result challenges the conclusion of unbiasedness shown by the results in Table 10. If the model successfully predicts the relationship between the empowerment proxy, then it ought to continue to measure this relationship among these subsets. A potential counter to the evidence of bias, is the loss of statistical significance on the age coefficients in all but model (4). The quadratic relationship between age and SWB has been established (Blanchflower and Oswald, 2004; Stevenson and Wolfers, 2008). If most of the models also lose significance on the age coefficient, then the loss of significance on the empowerment proxy may not imply the relationship shown in model (1) of Table 8 is invalid. Other interesting features of the models in Table 11 include, similar effects of being in different relative income groups regardless of income quintile and a very large coefficient on household food expenditure in the bottom quintile. Women living the bottom income quintile are probably struggling to feed

Table 11: SWB By Income Quintiles

	(1) Quint 1	(2) Quint 2	(3) Quint 3	(4) Quint 4	(5) Quint 5
Main decision-maker	-0.104	0.145	-0.185	-0.127	-0.167
	(0.556)	(0.395)	(0.257)	(0.402)	(0.235)
Age	-0.0163	-0.0331	-0.0409	-0.0628*	-0.0221
	(0.508)	(0.114)	(0.078)	(0.012)	(0.478)
Age^2	0.000226	0.000336	0.000347	0.000649**	0.000426
	(0.370)	(0.091)	(0.110)	(0.010)	(0.191)
Household Income	2.935	2.571	3.407	1.040	0.0907
(10,000's R)	(0.249)	(0.420)	(0.155)	(0.253)	(0.066)
Household Food Expenditure	10.43***	1.955	1.315	1.825	-0.727
(10,000's R)	(0.000)	(0.387)	(0.458)	(0.154)	(0.276)
Household Non-Food Expenditure	-0.417	0.0111	0.381	0.165	-0.0472
(10,000's R)	(0.449)	(0.984)	(0.553)	(0.474)	(0.505)
Divorced/Separated	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Living with partner	0.426	0.866*	-0.944*	-0.492	0.431
	(0.272)	(0.021)	(0.017)	(0.250)	(0.321)
Married	0.488	0.851*	-0.262	0.107	0.172
	(0.167)	(0.017)	(0.481)	(0.768)	(0.584)
Never Married	0.401	0.640	-0.387	-0.200	0.349
	(0.253)	(0.063)	(0.317)	(0.613)	(0.334)
Widow/Widower	0.425	0.710*	-0.195	0.257	-0.300
	(0.240)	(0.044)	(0.616)	(0.523)	(0.402)
Above Average Income	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Average Income	-0.190	0.0157	-0.730*	-0.487	-0.519**
	(0.702)	(0.971)	(0.019)	(0.114)	(0.002)
Below Average Income	-1.484**	-1.157**	-1.777***	-1.317***	-1.430***
	(0.002)	(0.007)	(0.000)	(0.000)	(0.000)
Relative Income: Don't Know	0.817	1.179*	-0.503	0.0358	-0.323
	(0.168)	(0.046)	(0.341)	(0.942)	(0.405)
Much Above Average Income	-0.621	1.159*	-0.491	0.340	0.689
	(0.407)	(0.032)	(0.556)	(0.499)	(0.131)
Much Below Average Income	-1.738***	-1.808***	-2.215***	-1.929***	-2.775***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Relative Income: Not Applicable			-1.347*		0.000327
			(0.019)		(1.000)
Not Spouse of Head	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Spouse of Head	-0.494	-0.437	-0.366	-0.0977	-0.306
	(0.144)	(0.139)	(0.217)	(0.703)	(0.338)
Observations	1068	1070	1066	1068	1067
R^2	0.384	0.361	0.301	0.319	0.368
Root MSE	2.035	1.924	2.020	2.009	1.917
District Council FE	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

themselves and their families. This makes marginal increase in household food expenditure much more powerful in this quintile than the others, all else equal. The coefficient implies that an increase of about $118 (U.S. 2008) per month in household food spending would move a women up one level of SWB. For many people around the world it would be difficult to even notice a $118 increase in monthly household food spending. This value reflects the quality of life people in South Africa, and elsewhere, struggle with. The R^2's of the models suggest the model best predicts SWB in the bottom quintile and most poorly predicts SWB in the middle quintile. That said, the R^2's are not demonstrably different across models.

6.2 EWB Primary Results

Table 12 displays the results of five regressions relating empowerment and EWB. Models (1) and (2) use the EWB factor score as a dependent variable and the main day-to-day spending decision-maker empowerment proxy and empowerment factor score as measures of empowerment. Models (3) through (5) show results using respondent's happiness level as a measure of EWB. Models (3) and (4) use the empowerment proxy as the primary independent variable, and model (5) uses the empowerment factor score. The only primary independent variable that enters any of the models with statistical significance is the empowerment factor score in model (2). The sign on this coefficient is negative suggesting more empowered women have lower levels of EWB. The p-value for this coefficient is less than 0.004. This provides strong evidence that the coefficient is not equal to zero. The coefficient on the empowerment factor score in model (2) can be interpreted using linear combinations of the Bartlett scoring weights and standard deviations of the binary empowerment inputs. Table 13 displays a summary of these results. Table 14 displays the change to each women's EWB if they were move up one category in the EWB inputs. Table 13 shows, that only the combined effect of moving from having no decision-making power in any household areas to making decisions in all of recorded household areas begins to approach any of the effects of any one category increase in the EWB inputs. The combined effect is about -0.1071. The effect of moving up one more level in the everything is an effort factor input is -0.1304. Unfortunately, due to the nature of factor analysis there is no way to tell if the difference between these two values is an inch or a mile. From a purely ordinal standpoint, because -0.1071 is less in absolute

Table 12: EWB

	OLS	OLS	OLS	OLOGIT	OLOGIT
	(1)	(2)	(3)	(4)	(5)
	EWB Score	EWB Score	Happy	Happy	Happy
Empowerment Factor Score		-0.0533**			0.0208
		(0.004)			(0.547)
Main decision-maker	-0.0435		0.0112	0.0103	
	(0.196)		(0.741)	(0.872)	
Age	-0.0120*	-0.00984	-0.00428	-0.00939	-0.0105
	(0.016)	(0.052)	(0.379)	(0.296)	(0.245)
Age^2	0.000139**	0.000121*	0.0000582	0.000131	0.000140
	(0.006)	(0.018)	(0.225)	(0.137)	(0.113)
Household Income	0.0387	0.0352	0.0106	0.0303	0.0320
(10,000's R)	(0.060)	(0.089)	(0.648)	(0.585)	(0.565)
Household Food Expenditure	0.265	0.244	0.749**	1.725**	1.741**
(10,000's R)	(0.287)	(0.326)	(0.008)	(0.003)	(0.003)
Household Non-Food Expenditure	-0.0868*	-0.0854*	0.0122	0.00112	0.000438
(10,000's R)	(0.012)	(0.013)	(0.731)	(0.989)	(0.996)
Divorced/Separated	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Living with partner	0.211*	0.178*	0.0924	0.188	0.203
	(0.013)	(0.039)	(0.259)	(0.222)	(0.192)
Married	0.237**	0.197*	0.0634	0.155	0.173
	(0.002)	(0.012)	(0.377)	(0.254)	(0.212)
Never Married	0.173*	0.165*	0.0479	0.132	0.135
	(0.030)	(0.039)	(0.523)	(0.351)	(0.338)
Widow/Widower	0.0899	0.0898	0.0293	0.0639	0.0637
	(0.273)	(0.274)	(0.702)	(0.657)	(0.658)
Above Average Income	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Average Income	0.0305	0.0308	0.0725	0.163	0.162
	(0.599)	(0.594)	(0.254)	(0.205)	(0.207)
Below Average Income	-0.116	-0.113	0.0397	0.109	0.107
	(0.056)	(0.062)	(0.549)	(0.411)	(0.419)
Relative Income: Don't Know	-0.0115	-0.00370	-0.0217	-0.0267	-0.0313
	(0.888)	(0.964)	(0.812)	(0.881)	(0.861)
Much Above Average Income	-0.418***	-0.411***	-0.206	-0.404	-0.407
	(0.000)	(0.000)	(0.082)	(0.075)	(0.073)
Much Below Average Income	-0.456***	-0.451***	0.0821	0.200	0.198
	(0.000)	(0.000)	(0.251)	(0.159)	(0.164)
Relative Income: Not Applicable	-1.820	-1.817	0.387	0.757	0.753
	(0.056)	(0.052)	(0.479)	(0.519)	(0.525)
Not Spouse of Head	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Spouse of Head	0.0493	0.0314	0.00817	0.00299	0.0116
	(0.395)	(0.589)	(0.898)	(0.980)	(0.922)
Observations	5339	5339	5339	5339	5339
R^2	0.191	0.192	0.161		
Pseudo R^2				0.069	0.069
Root MSE	0.986	0.985	0.984		
District Council FE	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Empowerment Score Inference

	Std. Dev.	Factor Weight	Est. Effect
Day to Day Expenses	0.4958	0.0377	-0.0041
Large Unusual Purchase	0.5000	0.1089	-0.0116
Which School Children Attend	0.4926	0.0055	-0.0006
Who Lives in Household	0.4999	0.4185	-0.0446
Where Household Lives	0.4998	0.4335	-0.0462
Total			-0.1071

Table 14: EWB Score: One Catagory Increase

	Std. Dev.	Factor Weight	Est. Effect
Unusually Bothered	0.8323	0.1953	-0.2346
Trouble Focusing	0.8103	0.2650	-0.3270
Depressed	0.8973	0.2638	-0.2940
Everything an Effort	1.0027	0.1307	-0.1304
Fearful	0.8497	0.1708	-0.2011
Restless Sleep	0.9038	0.1587	-0.1755
Lonely	0.8410	0.1515	-0.1801
Can't Get Going	0.8419	0.2014	-0.2392

value -0.1304, it is safe to say the model finds no practical relationship between the empowerment factor score and the EWB factor score.

There are other elements of the models in Table 12 that can help judge their validity. There is a quadratic statistically significant relationship between age and EWB score in model (1). The relationship is also U shaped, like that of age and SWB. The age of minimum EWB reported by the model is about 43 years of age. This is very similar to the ages of minimum SWB from models (1) and (2) from Table 8, which showed a age of minimum of 41 and 42, respectively. This suggests that age has a similar U-shaped relationship with EWB as it does with SWB. This also suggests that at least model (1) is showing the expected relationships between other variables and EWB. This suggest the relationships shown between the empowerment proxy might also be legitimate. The effect of age loses some of the statistical significance it displays in model (1) in model (2) after the inclusion of the empowerment factor score instead of the empowerment proxy. That being said, the p-value on the for the unsquared age coefficient is still approximately 0.052. This provides weaker evidence of statistical significance, but 0.052 is still a relatively small p-value. In any case, model (2) suggests the age of minimum EWB is about 41. Once again, this is similar to the results of the SWB models. Interestingly, food expenditure enters models (3) through (5) significantly, and non-food expenditure enters models (1) and (2) significantly. This could be due to the collinear nature of the income and spending variables. Also, this

might suggest that the EWB proxy, stated happiness, and the EWB score aren't interchangeable. An important caveat I've mentioned several times is the negation of the EWB score. This suggests that higher levels of EWB in this model are actually lower levels of the original EWB score, which really measured sadness. In this case I have assumed the absence of sadness is happiness. Due to the differences between these results, this assumption, at least in this case, may be incorrect.

Table 15: Relative Income Inference

	EWB Marginal Effects	Much Above	Much Below
Unusually Bothered	-0.2346	1.7517	1.9222
Trouble Focusing	-0.3270	1.2568	1.3791
Depressed	-0.2940	1.3980	1.5341
Everything an Effort	-0.1304	3.1522	3.4589
Fearful	-0.2011	2.0440	2.2429
Restless Sleep	-0.1755	2.3413	2.5692
Lonely	-0.1801	2.2817	2.5038
Can't Get Going	-0.2392	1.7179	1.8851

Relative income has in interesting interaction with EWB score in models (1) and (3). The marginal effects measured in model (2) of moving from the perceived relative income category above average income to, much above average income or much below average income are summarized in Table 15. The first column in Table 15 shows the marginal effects in EWB factor score of increasing the level of a respondent in any of the EWB input categories. The second and third columns of Table 15 show the coefficients from model (2) divided by the marginal effect on the score from column 1. This produces estimates of the number of levels a respondent would have to move up in any one of categories in order to create an effect on their EWB score that is equal to that of moving from the base case to either of the relative income categories displayed in the table. The results of Table 15 suggest that moving from the relative income base case to either of the categories displayed in the table equates to about a 3 category increase in the everything is an effort category. This is essentially a women going from saying they feel like everything is an effort, never, to everyday, the entire scale. In the restless, unusually bothered, can't get going and lonely categories, either of these two changes in perceived relative income equates to about a 2 level change in category. This equates to a women feeling these emotions never, to three to five days a week. These results suggest relative income has a pronounced effect a women's EWB. What is truly interesting about these results is that the two categories are the polar extreme perceived relative income categories. This would suggest that a women's relative income has a similar effect on her EWB if she believes she is very wealthy or if she

believes she is very poor. The former result is unexpected given the results of Kahneman and Deaton (2010), the latter is not. This could mean there is a problem with the model, however, Kahneman and Deaton use data from the United States. Maybe this quasi-inverted U shaped relationship is specific to developing countries or the South African region. Perhaps the rich feel guilty, because they share a country with individuals in total poverty. Helliwell (2006) might suggest the trappings of wealth leaves these richer women unhappy. There is also the potential for women who believe themselves richer to be concerned about theft or other crime. This quasi-inverted U relationship could certainly be researched further.
At the model level, the models in Table 8 tended to be more explanatory than the models in Table 12. The R^2 values for models (1) through (3) are fairly low. Model (3) only explains about 16.1% of the variation in EWB scores. Models (1) and (2) explain about 19.1% and 19.2% of the variation in EWB scores, respectively. All of these values are lower than the R^2 values in the OLS regressions of SWB. Once again the Pseudo R^2 values are not as readily interpretable, however, the Pseudo R^2 values for models (4) and (5) are smaller than those in the OLOGIT models in Table 8. This suggests that these models are poorer predictors of happiness category than the OLOGIT models in Table 8 were of SWB.

In order to test robustness of the results of model (2), I perform a similar incremental addition of covariates as I did with SWB. The results of this procedure are displayed in Table 16. In this case, there are more pronounced changes in the coefficient on the empowerment factor score than the changes seen during the similar procedure in Table 10. While the coefficient stays statistically significant through all models, it changes by about 61%. This suggest that the covariates added to the model are correlated with both EWB and the empowerment factor score. The most noticeable changes occurs after the inclusion of personal characteristics in model (2). This reduces the magnitude of the effect the empowerment factor score has on EWB by about 50%. This effect continues to decrease, but at a slower rate, as additional covariates are added. It is intuitive that the inclusion of personal characteristics would reduce the effect the empowerment factor score has on EWB. Personal characteristics are most likely a determinant of both empowerment and EWB. The R^2 of the model increase from 0.016 in the uncontrolled model to 0.192 in the fully controlled model. Even in the full model, 80.8% of the variation in EWB is not accounted for. Unlike the results in Table 10, the coefficient is not stable and there is still quite a bit of unaccounted for

Table 16: EWB: Empowerment Scores

	(1) EWB	(2) EWB	(3) EWB	(4) EWB
Empowerment Factor Score	-0.138***	-0.0695***	-0.0568**	-0.0533**
	(0.000)	(0.000)	(0.003)	(0.004)
Age		-0.0123*	-0.0110*	-0.00984
		(0.016)	(0.031)	(0.052)
Age^2		0.000168**	0.000143**	0.000121*
		(0.001)	(0.006)	(0.018)
Divorced/Separated		0	0	0
		(.)	(.)	(.)
Living with partner		0.193*	0.207*	0.178*
		(0.030)	(0.018)	(0.039)
Married		0.249**	0.227**	0.197*
		(0.002)	(0.004)	(0.012)
Never Married		0.177*	0.189*	0.165*
		(0.033)	(0.020)	(0.039)
Widow/Widower		0.107	0.115	0.0898
		(0.208)	(0.167)	(0.274)
Not Spouse of Head		0	0	0
		(.)	(.)	(.)
Spouse of Head		0.0338	0.0271	0.0314
		(0.565)	(0.641)	(0.589)
Household Income (10,000's R)			0.0224	0.0352
			(0.278)	(0.089)
Household Food Expenditure (10,000's R)			0.328	0.244
			(0.183)	(0.326)
Household Non-Food Expenditure (10,000's R)			-0.0883**	-0.0854*
			(0.010)	(0.013)
Above Average Income			0	0
			(.)	(.)
Average Income			0.0446	0.0308
			(0.433)	(0.594)
Below Average Income			-0.110	-0.113
			(0.066)	(0.062)
Relative Income: Don't Know			-0.0387	-0.00370
			(0.634)	(0.964)
Much Above Average Income			-0.355**	-0.411***
			(0.003)	(0.000)
Much Below Average Income			-0.450***	-0.451***
			(0.000)	(0.000)
Relative Income: Not Applicable			-1.931	-1.817
			(0.076)	(0.052)
Observations	5339	5339	5339	5339
R^2	0.016	0.127	0.153	0.192
Root MSE	1.075	1.019	1.004	0.985
Personal Charcs.	No	Yes	Yes	Yes
Household Charcs.	No	No	Yes	Yes
Geo. FE	No	No	No	Yes

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

variation. These results suggest there is likely an endogeneity problem in this model. Although there is no way to know for sure, it is unlikely of the remaining 80.8% of variation in EWB is not at all related to the empowerment factor score. This suggests a more complex identification strategy might be appropriate.

Similar to the procedure performed with the SWB regressions, I have chosen to break the data used in model (2) from Table 12 down by income quintiles. Model (2) is the obvious choice because it is the only model with a statistically significant result for a primary independent variable. Statistical significance diminishes on almost all covariates after the data are broken down by income quintile. The empowerment factor score enters models (2) and (5) with statistical significance. Tables 18 and 19 summarize the effect of a change in any of the empowerment inputs on EWB in the same way Tables 13 and 14. These tables show, in the 2^{nd} income quintile a women who is the main decision-maker in all of the measured areas of the household will have lower EWB than a women who is not the main decision-maker in any of the areas of her household. This reduction in EWB is at least greater than a one category increase the prevalence of fear, loneliness, restless sleep or feeling like everything is an effort. The tables also show that, in the 5^{th} quintile, a women who is the main decision-maker in her home in all realms will have a lower EWB than a women who is not. This difference in EWB is greater than the reduction in EWB associated with a one category increase in the feeling that everything is an effort. Some of the relative income covariates remain significant in models (3) through (5). This suggests, at least as far as EWB is concerned, relative income is less important for women of relatively lower incomes. These results are more practically significant than the results found when the the data were not broken down by income quintile. All of the models account for a similar amount of variation in EWB. Model (5) accounts for the most variation, approximately 31.1%, and model (1) accounts for the least, 24.3%. I address the broad conclusions that may be drawn from all of these results in the Section 8.

7 Sensitivity Testing

7.1 SWB Sensitivity Testing

In order to test the sensitivity of the the results in Section 6, I investigate the differences in effects after using different subsets of data using model (1) for SWB in from Table 8 and model (2) for EWB in Table 12. The three different subsets I use to

Table 17: EWB By Income Quintiles

	(1) Quint 1	(2) Quint 2	(3) Quint 3	(4) Quint 4	(5) Quint 5
Empowerment Factor Score	0.00534	-0.114*	-0.0377	-0.0248	-0.0776*
	(0.906)	(0.013)	(0.416)	(0.577)	(0.048)
Age	-0.00691	-0.0120	-0.0124	-0.00605	0.00888
	(0.577)	(0.275)	(0.223)	(0.615)	(0.498)
Age^2	0.0000605	0.000176	0.000127	0.000114	-0.0000571
	(0.646)	(0.102)	(0.207)	(0.347)	(0.661)
Household Income	0.0649	1.133	0.372	-0.111	0.0362
(10,000's R)	(0.959)	(0.492)	(0.764)	(0.804)	(0.076)
Household Food Expenditure	0.260	0.330	0.225	0.945	-0.193
(10,000's R)	(0.814)	(0.793)	(0.803)	(0.164)	(0.576)
Household Non-Food Expenditure	0.120	0.0822	-0.352	0.0737	-0.0769*
(10,000's R)	(0.674)	(0.673)	(0.292)	(0.475)	(0.042)
Living with Partner	0.220	-0.231	0.178	-0.162	-0.136
	(0.260)	(0.244)	(0.331)	(0.433)	(0.436)
Married	0.200	0.133	0.0500	0.122	-0.152
	(0.191)	(0.341)	(0.714)	(0.402)	(0.419)
Widow	0.0393	0.0846	0.0418	0.238	0.0991
	(0.749)	(0.461)	(0.742)	(0.068)	(0.443)
Never Married	0.142	0.0912	0.165	0.140	0.144
	(0.257)	(0.453)	(0.181)	(0.236)	(0.197)
Above Average Income	-0.0565	0.212	0.102	0.865***	0.533*
	(0.874)	(0.547)	(0.738)	(0.001)	(0.011)
Average Income	0.0743	0.624	0.221	0.751**	0.441*
	(0.792)	(0.050)	(0.447)	(0.002)	(0.026)
Below Average Income	0.00611	0.480	0.141	0.496*	0.201
	(0.983)	(0.129)	(0.627)	(0.039)	(0.338)
Much Below Average Income	-0.535	0.142	-0.169	0.462	-0.226
	(0.059)	(0.657)	(0.570)	(0.069)	(0.375)
Not Applicable	0	0	-3.373***	0	0.0847
	(.)	(.)	(0.000)	(.)	(0.835)
Don't Know	-0.281	0.664	0.584	0.646*	0.533*
	(0.361)	(0.063)	(0.067)	(0.018)	(0.028)
Much Above Average Income	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Observations	1068	1070	1066	1068	1067
R^2	0.243	0.267	0.256	0.267	0.311
Root MSE	1.040	0.989	1.003	0.972	0.866
District Council FE	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 18: Empowerment Score Inference: Relative Income

	Std. Dev.	Factor Weight	Est. Effect Q2	Est. Effect Q5
Day to Day Expenses	0.4958	0.0377	-0.0087	-0.0059
Large Unusual Purchase	0.5000	0.1089	-0.0248	-0.0169
Which School Children Attend	0.4926	0.0055	-0.0013	-0.0009
Who Lives in Household	0.4999	0.4185	-0.0954	-0.0650
Where Household Lives	0.4998	0.4335	-0.0989	-0.0673
Total			-0.2291	-0.1559

Table 19: EWB Score: One Catagory Increase

	Std. Dev.	Factor Weight	Est. Effect
Unusually Bothered	0.8323	0.1953	-0.2346
Trouble Focusing	0.8103	0.2650	-0.3270
Depressed	0.8973	0.2638	-0.2940
Everything an Effort	1.0027	0.1307	-0.1304
Fearful	0.8497	0.1708	-0.2011
Restless Sleep	0.9038	0.1587	-0.1755
Lonely	0.8410	0.1515	-0.1801
Can't Get Going	0.8419	0.2014	-0.2392

investigate sensitivity are all adults, married women and women who are the spouse of the head of their household.

Model (1) in Table 20 displays the results of using an almost identical regression to that of model (1) in Table 8 with all adults. The only difference is an added gender dummy and interaction term between the gender dummy and the empowerment proxy. The effect of begin the main decision-maker in the household is no longer statistically significant, however, the interaction term is significant. The interaction term suggests that women who are the main decision-makers in their households have lower levels of SWB than women who are not the main decision-makers in their households. The effect in this regression is slightly more pronounced. The coefficient on the gender-main decision-maker interaction term is about 0.061 units more negative than the corresponding coefficient in model (1) of Table 8. Model (1) also shows similar results in terms of the relationship between age and SWB. This model shows a U-shaped relationship with a minimum at about 43 years. Household food expenditures are again statistically and practically significant, as they were in the primary SWB model. The relationships between different levels of relative income and SWB are almost identical between the primary SWB regression and model (1) in this table. The similarity between these results suggests that the primary regression for SWB is robust to changes in data inputs.

Table 20: Sensitivity Testing: SWB

	(1) All Adults	(2) Married Women	(3) Female Spouses
Main decision-maker	0.122	-0.145	-0.0480
	(0.130)	(0.119)	(0.928)
Female	0.132		
	(0.093)		
Female X Main	-0.234*		
	(0.017)		
Age	-0.0308***	-0.00431	-0.120*
	(0.000)	(0.832)	(0.026)
Age^2	0.000359***	0.000134	0.00124
	(0.000)	(0.500)	(0.054)
Household Income	0.0487	0.0115	0.597
	(0.138)	(0.815)	(0.057)
Household Food Expenditure	1.299***	0.986	4.736
	(0.001)	(0.117)	(0.154)
Household Non-Food Expenditure	-0.0187	0.0367	-0.774
	(0.726)	(0.632)	(0.090)
Divorced/Separated	0	0	0
	(.)	(.)	(.)
Living with partner	0.00174		1.944
	(0.991)		(0.225)
Married	0.184		3.094*
	(0.166)		(0.040)
Never Married	0.0312		2.452
	(0.822)		(0.111)
Widow/Widower	0.112		2.816
	(0.436)		(0.082)
Above Average Income	0	0	0
	(.)	(.)	(.)
Average Income	-0.488***	-0.344*	-1.256
	(0.000)	(0.032)	(0.376)
Below Average Income	-1.573***	-1.461***	-2.317
	(0.000)	(0.000)	(0.111)
Relative Income: Don't Know	0.000260	0.0963	0.0453
	(0.999)	(0.779)	(0.977)
Much Above Average Income	0.615**	0.496	-0.974
	(0.003)	(0.175)	(0.636)
Much Below Average Income	-2.187***	-2.214***	-2.600
	(0.000)	(0.000)	(0.083)
Relative Income: Not Applicable	-0.229		
	(0.766)		
Not Spouse of Head	0	0	0
	(.)	(.)	(.)
Spouse of Head	-0.110	0.0359	
	(0.293)	(0.910)	
Observations	8655	1895	322
R^2	0.300	0.361	0.568
Root MSE	2.046	1.923	2.031
District Council FE	Yes	Yes	Yes

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Models (2) and (3) show fewer statistically significant variables. Part of this is due to a much lower sample size. Married women do show the expected relationship with respect to relative income and SWB, but the regression is otherwise inconclusive. Model (3) has a much lower sample size. The lack of significance on the empowerment proxy is likely due to insufficient variation in the empowerment proxy due the sample size. That said, the model's inability to produce similar results in these subsets of women is concerning. If the relationship between empowerment and SWB is strong and robust, than it ought to appear in these samples. There is the possibility that either theses subsets of the women were inadvertently sampled in a way that introduced some kind of bias. This would be one explanation for the different results. Given the quality of the data collection process, I find this unlikely. The overall result from the specificity testing in the table is inconclusive. Model (1) seems to support the robustness of the original SWB model, while models (2) and (3) suggest there is a specification problem with the original model.

7.2 EWB Sensitivity Testing

Table 21 performs the same specificity testing displayed in Table 20. Neither the empowerment factor score nor the gender interaction term are statistically significant in model (1). The coefficient on the female dummy variable is significant, and has a relatively large value. This is concerning. If the primary model of EWB is correct, the gender-empowerment interaction term ought to be significant in this regression. The fact that it is not and the female dummy is suggests the EWB regression might be picking up some trend among women that is unrelated to empowerment. This problem is reinforced by the similar nature of the other results displayed in model 1. This model also shows a U-shaped relationship between age and EWB with a minimum of about 43. Household non-food expenditures are also significant, just as they were in the primary EWB model. Some of the marital status dummies enter significantly, which was also true in the primary EWB model. The relationship between EWB and relative income in this model is almost identical to that of the primary EWB model. The same coefficients are significant, and their values are within two hundredths of each other. Models (2) and (3) also suffer from the smaller sample sizes displayed in Table 20. Model (2) does show a significant relationship between empowerment factor score and EWB. However, given the results of model (1) this results is suspect. It is also interesting, and perhaps coincidental, that the empowerment score coefficient in model

Table 21: Sensitivity Tests: EWB

	(1) All Adults	(2) Married Women	(3) Female Spouses
Empowerment Factor Score	-0.0260	-0.150**	-0.105
	(0.212)	(0.006)	(0.156)
Female	-0.158***		
	(0.000)		
Female X Empowerment Score	-0.0296		
	(0.246)		
Age	-0.0130**	0.0168	-0.00132
	(0.001)	(0.111)	(0.957)
Age^2	0.000151***	-0.000132	-0.00000977
	(0.000)	(0.210)	(0.973)
Household Income	0.0385*	0.0305	-0.117
	(0.015)	(0.191)	(0.537)
Household Food Expenditure	0.234	0.238	-1.564
	(0.199)	(0.474)	(0.257)
Household Non-Food Expenditure	-0.0908**	-0.0665	0.0646
	(0.001)	(0.113)	(0.696)
Divorced/Separated	0	0	0
	(.)	(.)	(.)
Living with partner	0.269***		1.177
	(0.000)		(0.072)
Married	0.270***		0.483
	(0.000)		(0.433)
Never Married	0.236**		0.536
	(0.001)		(0.391)
Widow/Widower	0.152*		0.615
	(0.042)		(0.344)
Above Average Income	0	0	0
	(.)	(.)	(.)
Average Income	0.0618	0.0629	0.274
	(0.155)	(0.472)	(0.494)
Below Average Income	-0.0583	-0.178	-0.190
	(0.206)	(0.068)	(0.625)
Relative Income: Don't Know	0.0171	0.166	0.0452
	(0.789)	(0.274)	(0.924)
Much Above Average Income	-0.420***	-0.522**	-1.680**
	(0.000)	(0.005)	(0.002)
Much Below Average Income	-0.431***	-0.505***	-0.108
	(0.000)	(0.000)	(0.790)
Relative Income: Not Applicable	-1.832		
	(0.066)		
Not Spouse of Head	0	0	0
	(.)	(.)	(.)
Spouse of Head	0.0219	-0.00356	
	(0.637)	(0.979)	
Observations	8655	1895	322
R^2	0.182	0.243	0.519
Root MSE	0.991	0.977	0.944
District Council FE	Yes	Yes	Yes

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(2) differs from the coefficient in model (1) by only about eight thousandths. This could be a case of apples and oranges, or it could be another sign of misspecification in the EWB model. Only the coefficient on much above average income enters the model (3) significantly. This is unsurprising given the small sample size. Unfortunately, the specificity tests displayed in Table 21 present evidence of misspecification in the primary EWB model.

8 Conclusion

The relationship between empowerment and well-being is undeniably important. The effect increasing women's agency in their homes and their communities has on their well-being can help further inform policy makers about the implications of many development policies. Although the empirical results of the primary model between SWB and empowerment did appear to be relatively robust, the direction was negative. This is not the relationship I initially expected to measure, however, This doesn't mean this couldn't be the actual relationship. The results of the EWB model are partially suspect given the results of the specificity testing on this model. One solution to some of the identification problems would be expanding the scope of the data to include the NIDS Wave 2 data. This would allow for individual-level fixed effects on women in the data set. Individual fixed effects ought to control for most of the unobservable variation between women that effects both empowerment and SWB and EWB. Using fixed effects would definitely bring more validity to both regressions, however, during preliminary experiments the use of fixed effects did not change the direction of the relationship between well-being and empowerment. The direction of this relationship could actually make sense in context.

The goal of this research was to obtain the pure empowerment effect on well-being. Empowerment brings more access to real and abstract goods. This access will likely lead to greater measures of well-being. My models intentionally try to mitigate the effect of consumption in order to find a pure empowerment effect. The pure empowerment effect boils down to whether or not making decisions makes a person happier independent of the increased access to resources their level of empowerment brings them. Making decisions is difficult, especially if you are faced with the series of less than optimal choices available to many people living in the developing world. There is also the possibility that women who are the main decision-makers in their households became the main decision-makers not by choice. Some women could be

forced into a role of authority after the head of household leaves, dies or becomes disabled. The new power may have some perks for this woman, but there would almost certainly be an increase in stress. Changes in welfare depend on the circumstances under which a women gained empowerment. This is similar to the theories and findings of Goldin (2006) concerning women joining the workforce. Another way to more effectively measure the relationship between empowerment and SWB and EWB would be measure a change in welfare after an exogenous change in empowerment. One such example would be measuring women's welfare after a country grants women suffrage. Another identification strategy could be formed by studying differences between married and divorced women.

Understanding how decision-making affects women in the developing world as women gain positions of authority could lead to a better ways of improving the status of women around the world. Decision-making is difficult. This research offers another example of the complexities of freedom, choice and happiness. Anecdotally, a person who is free to make their own choices should be happier than a person who is not. This research suggests that this relationship is not as simple as it may seem. In the context of economic development, further research in this field may allow for new ways of increasing empowerment and well-being for women around the world.

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A Appendix

A.1 SWB Full Regression Tables

Table 22: SWB Full Regressions

	OLS (1) SWB	OLS (2) SWB	OLOGIT (3) SWB	OLOGIT (4) SWB
Empowerment Factor Score		-0.0593		-0.0462
		(0.115)		(0.162)
Main decision-maker	-0.174*		-0.147*	
	(0.010)		(0.013)	
Age	-0.0308**	-0.0329**	-0.0285**	-0.0304***
	(0.003)	(0.002)	(0.002)	(0.001)
Age^2	0.000372***	0.000390***	0.000348***	0.000365***
	(0.000)	(0.000)	(0.000)	(0.000)
Household Income	0.0327	0.0312	-0.000875	-0.00202
(10,000's R)	(0.448)	(0.470)	(0.981)	(0.957)
Household Food Expenditure	1.252*	1.305*	1.131**	1.176**
(10,000's R)	(0.014)	(0.010)	(0.007)	(0.005)
Household Non-Food Expenditure	-0.0560	-0.0586	-0.00879	-0.0108
(10,000's R)	(0.416)	(0.394)	(0.869)	(0.840)
Asian	0	0	0	0
	(.)	(.)	(.)	(.)
Asian/Indian	1.218***	1.220***	1.257***	1.257***
	(0.000)	(0.000)	(0.000)	(0.000)
Coloured	1.021***	1.018***	0.912***	0.908***
	(0.000)	(0.000)	(0.000)	(0.000)
White	0.922***	0.912***	0.705***	0.696***
	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	0	0	0	0
	(.)	(.)	(.)	(.)
Employed	0.149*	0.142	0.133*	0.126*
	(0.042)	(0.053)	(0.032)	(0.042)
Divorced/Separated	0	0	0	0
	(.)	(.)	(.)	(.)
Living with partner	0.00544	0.00926	-0.0230	-0.0157
	(0.976)	(0.959)	(0.881)	(0.919)
Married	0.244	0.245	0.209	0.215
	(0.123)	(0.129)	(0.121)	(0.117)
Never Married	0.0672	0.0701	0.0639	0.0678
	(0.684)	(0.671)	(0.653)	(0.633)
Widow/Widower	0.155	0.152	0.116	0.113
	(0.352)	(0.362)	(0.416)	(0.428)
Owns Radio	0.155*	0.151*	0.120*	0.117*
	(0.017)	(0.020)	(0.032)	(0.038)
Owns Stereo	0.213**	0.213**	0.201**	0.199**
	(0.008)	(0.009)	(0.004)	(0.004)
Owns Sewing Machine	0.0786	0.0798	0.0706	0.0727
	(0.505)	(0.499)	(0.492)	(0.479)
Owns Car	0.0531	0.0561	0.0841	0.0879
	(0.700)	(0.684)	(0.478)	(0.459)
Owns Bicycle	0.265	0.262	0.254	0.250
	(0.214)	(0.219)	(0.159)	(0.165)
Owns Computer	-0.210	-0.206	-0.231	-0.225
	(0.185)	(0.194)	(0.094)	(0.102)
Owns Camera	0.293	0.298	0.255	0.258
	(0.063)	(0.058)	(0.063)	(0.059)
Owns Cell Phone	0.0211	0.0149	0.0457	0.0402
	(0.749)	(0.821)	(0.427)	(0.484)
Don't Know Father's Ed	0	0	0	0
	(.)	(.)	(.)	(.)
Father's Ed: Grade 1	0.106	0.118	0.172	0.177
	(0.762)	(0.736)	(0.589)	(0.576)
Father's Ed: Grade 10	-0.0640	-0.0608	-0.0760	-0.0705
	(0.704)	(0.718)	(0.597)	(0.623)
Father's Ed: Grade 11	0.964*	0.953*	0.766*	0.753
	(0.018)	(0.019)	(0.049)	(0.052)
Father's Ed: Grade 12	0.141	0.146	0.113	0.119
	(0.401)	(0.385)	(0.430)	(0.404)
Father's Ed: Grade 2	0.539	0.535	0.389	0.391
	(0.073)	(0.073)	(0.126)	(0.123)
Father's Ed: Grade 3	-0.107	-0.111	-0.0619	-0.0650
	(0.606)	(0.591)	(0.751)	(0.739)
Father's Ed: Grade 4	0.209	0.206	0.130	0.129
	(0.393)	(0.398)	(0.565)	(0.568)
Father's Ed: Grade 5	-0.0352	-0.0338	-0.00434	0.00182
	(0.869)	(0.874)	(0.981)	(0.992)
Father's Ed: Grade 6	0.253	0.247	0.215	0.211
	(0.234)	(0.245)	(0.223)	(0.231)
Father's Ed: Grade 7	-0.268	-0.261	-0.263	-0.257
	(0.136)	(0.146)	(0.080)	(0.088)
Father's Ed: Grade 8	0.152	0.153	0.139	0.140
	(0.354)	(0.355)	(0.328)	(0.326)
Father's Ed: Grade 9	-0.0202	-0.00974	0.0516	0.0588

	(0.930)	(0.967)	(0.799)	(0.772)
Father's Ed: Grade R//O	-0.498	-0.475	-0.416	-0.406
	(0.467)	(0.492)	(0.439)	(0.451)
Father's Ed: No Schooling	-0.0381	-0.0359	-0.0357	-0.0329
	(0.725)	(0.741)	(0.703)	(0.726)
Father's Ed: Refused	0.505	0.377	-0.0268	-0.142
	(0.327)	(0.460)	(0.950)	(0.735)
Mothers Ed: Cert w < Grade 12	0	0	0	0
	(.)	(.)	(.)	(.)
Mothers Ed: Don't Know	-0.334	-0.338	-0.594*	-0.600*
	(0.265)	(0.261)	(0.016)	(0.015)
Mothers Ed: Grade 1	-0.689	-0.704	-0.941*	-0.957*
	(0.184)	(0.174)	(0.040)	(0.035)
Mothers Ed: Grade 10	-0.310	-0.326	-0.525*	-0.542*
	(0.313)	(0.288)	(0.039)	(0.033)
Mothers Ed: Grade 11	-0.286	-0.293	-0.609	-0.618
	(0.527)	(0.517)	(0.153)	(0.147)
Mothers Ed: Grade 12	-0.351	-0.363	-0.535*	-0.552*
	(0.274)	(0.258)	(0.045)	(0.039)
Mothers Ed: Grade 2	-0.363	-0.359	-0.547	-0.550
	(0.282)	(0.287)	(0.053)	(0.051)
Mothers Ed: Grade 3	-0.218	-0.224	-0.449	-0.460
	(0.514)	(0.502)	(0.113)	(0.104)
Mothers Ed: Grade 4	-0.129	-0.136	-0.368	-0.379
	(0.692)	(0.675)	(0.177)	(0.164)
Mothers Ed: Grade 5	-0.208	-0.214	-0.465	-0.475
	(0.520)	(0.508)	(0.083)	(0.077)
Mothers Ed: Grade 6	-0.250	-0.263	-0.553*	-0.569*
	(0.438)	(0.416)	(0.042)	(0.036)
Mothers Ed: Grade 7	-0.136	-0.149	-0.351	-0.365
	(0.667)	(0.638)	(0.185)	(0.168)
Mothers Ed: Grade 8	-0.650*	-0.657*	-0.806**	-0.817***
	(0.029)	(0.027)	(0.001)	(0.001)
Mothers Ed: Grade 9	-0.0923	-0.0991	-0.346	-0.358
	(0.807)	(0.793)	(0.304)	(0.288)
Mothers Ed: Grade R//O	0.266	0.241	0.0715	0.0565
	(0.794)	(0.815)	(0.953)	(0.963)
Mothers Ed: No Schooling	-0.494	-0.500	-0.695**	-0.705**
	(0.089)	(0.086)	(0.004)	(0.003)
Mothers Ed: Refused	0	0	0	0
	(.)	(.)	(.)	(.)
No Driver's License	0	0	0	0
	(.)	(.)	(.)	(.)
Driver's License: Refused	-0.987	-0.973	-0.822	-0.811
	(0.118)	(0.118)	(0.271)	(0.272)
Has Driver's License	-0.0863	-0.0894	-0.0550	-0.0596
	(0.523)	(0.509)	(0.635)	(0.608)
Perceived Health: Don't Know	0	0	0	0
	(.)	(.)	(.)	(.)
Perceived Health: Excellent	-0.340	-0.361	-0.455	-0.473
	(0.507)	(0.484)	(0.333)	(0.317)
Perceived Health: Fair	-0.565	-0.589	-0.633	-0.653
	(0.270)	(0.254)	(0.177)	(0.166)
Perceived Health: Good	-0.522	-0.545	-0.558	-0.577
	(0.306)	(0.288)	(0.232)	(0.220)
Perceived Health: Poor	-0.905	-0.931	-0.953*	-0.975*
	(0.078)	(0.072)	(0.042)	(0.039)
Perceived Health: Very Good	-0.367	-0.389	-0.449	-0.468
	(0.474)	(0.451)	(0.338)	(0.322)
Alfred Nzo(DC44)	0	0	0	0
	(.)	(.)	(.)	(.)
Amajuba(DC25)	1.360***	1.339***	1.505***	1.486***
	(0.000)	(0.000)	(0.000)	(0.000)
Amathole(DC12)	-0.507	-0.518	-0.503	-0.510
	(0.264)	(0.256)	(0.359)	(0.357)
Bojanala(DC37)	1.058**	1.064**	1.027**	1.030**
	(0.007)	(0.007)	(0.004)	(0.004)
Buffalo City(BUF)	-0.377	-0.381	-0.198	-0.201
	(0.429)	(0.423)	(0.702)	(0.697)
Cacadu(DC10)	-0.251	-0.259	-0.0368	-0.0415
	(0.471)	(0.456)	(0.907)	(0.895)
Cape Winelands(DC2)	0.549	0.540	0.588*	0.578*
	(0.057)	(0.061)	(0.023)	(0.025)
Capricorn(DC35)	-0.544	-0.537	-0.710	-0.703
	(0.171)	(0.178)	(0.084)	(0.088)
Central Karoo(DC5)	1.404***	1.389***	1.322***	1.312***
	(0.000)	(0.000)	(0.000)	(0.000)
Chris Hani(DC13)	0.0705	0.0647	0.203	0.201
	(0.796)	(0.813)	(0.426)	(0.429)
City of Cape Town(CPT)	0.394	0.397	0.456	0.459
	(0.192)	(0.189)	(0.097)	(0.094)
City of Johannesburg(JHB)	0.703*	0.705*	0.737**	0.740**
	(0.020)	(0.019)	(0.006)	(0.006)
City of Tshwane(TSH)	1.031***	1.023***	1.048***	1.040***
	(0.000)	(0.000)	(0.000)	(0.000)
Dr Kenneth Kaunda(DC40)	0.653	0.667	0.620	0.631
	(0.070)	(0.064)	(0.072)	(0.066)
Dr Ruth Segomotsi Mompati(DC39)	0.643*	0.653*	0.674*	0.687*
	(0.045)	(0.042)	(0.016)	(0.014)
Eden(DC4)	0.805*	0.804*	0.831**	0.829**

	(0.013)	(0.013)	(0.004)	(0.005)
Ehlanzeni(DC32)	1.580***	1.589***	1.547***	1.557***
	(0.000)	(0.000)	(0.000)	(0.000)
Ekurhuleni(EKU)	0.480	0.485	0.612*	0.620*
	(0.123)	(0.119)	(0.025)	(0.023)
Fezile Dabi(DC20)	1.005*	1.007*	0.936**	0.945**
	(0.012)	(0.012)	(0.006)	(0.006)
Frances Baard(DC9)	0.220	0.220	0.443	0.444
	(0.540)	(0.542)	(0.162)	(0.159)
Gert Sibande(DC30)	1.200***	1.203***	1.219***	1.222***
	(0.000)	(0.000)	(0.000)	(0.000)
Greater Sekhukhune(DC47)	0.684*	0.692*	0.823**	0.830**
	(0.035)	(0.033)	(0.005)	(0.005)
Joe Gqabi(DC14)	0.270	0.269	0.361	0.361
	(0.321)	(0.323)	(0.140)	(0.139)
John Taolo Gaetsewe(DC45)	1.173***	1.174***	1.159***	1.158***
	(0.001)	(0.001)	(0.000)	(0.000)
Lejweleputswa(DC18)	0.889*	0.892*	0.750*	0.752*
	(0.013)	(0.013)	(0.020)	(0.019)
Mangaung(MAN)	0.497	0.503	0.630	0.633
	(0.272)	(0.266)	(0.131)	(0.129)
Mopani(DC33)	-0.494	-0.488	-0.302	-0.297
	(0.132)	(0.135)	(0.316)	(0.323)
Namakwa(DC6)	1.353***	1.356***	1.381***	1.379***
	(0.000)	(0.000)	(0.000)	(0.000)
Nelson Mandela Bay(NMA)	0.583*	0.570	0.732**	0.724**
	(0.047)	(0.052)	(0.006)	(0.007)
Ngaka Modiri Molema(DC38)	0.0831	0.0925	0.101	0.109
	(0.779)	(0.754)	(0.695)	(0.673)
Nkangala(DC31)	0.620*	0.619*	0.599*	0.600*
	(0.036)	(0.037)	(0.024)	(0.023)
O.R.Tambo(DC15)	1.053***	1.055***	1.053***	1.055***
	(0.001)	(0.001)	(0.000)	(0.000)
Overberg(DC3)	1.108***	1.097***	1.048***	1.042***
	(0.000)	(0.000)	(0.000)	(0.000)
Pixley ka Seme(DC7)	1.561***	1.567***	1.509***	1.515***
	(0.000)	(0.000)	(0.000)	(0.000)
Sedibeng(DC42)	0.588	0.586	0.603*	0.603*
	(0.050)	(0.051)	(0.029)	(0.029)
Sisonke(DC43)	0.324	0.328	0.428	0.433
	(0.208)	(0.202)	(0.068)	(0.064)
Siyanda(DC8)	0.0369	0.0468	0.179	0.188
	(0.919)	(0.897)	(0.569)	(0.548)
Thabo Mofutsanyane(DC19)	1.183***	1.183***	1.134***	1.135***
	(0.000)	(0.000)	(0.000)	(0.000)
UMgungundlovu(DC22)	-0.118	-0.124	-0.0924	-0.0931
	(0.702)	(0.687)	(0.740)	(0.738)
Ugu(DC21)	0.0702	0.0753	0.182	0.187
	(0.787)	(0.772)	(0.439)	(0.425)
Umkhanyakude(DC27)	-0.217	-0.211	-0.0980	-0.0926
	(0.460)	(0.471)	(0.712)	(0.727)
Umzinyathi(DC24)	-0.204	-0.198	-0.0140	-0.00710
	(0.475)	(0.490)	(0.958)	(0.979)
Uthukela(DC23)	-0.0762	-0.0671	0.0509	0.0609
	(0.780)	(0.805)	(0.839)	(0.808)
Uthungulu(DC28)	0.219	0.205	0.352	0.340
	(0.460)	(0.487)	(0.197)	(0.211)
Vhembe(DC34)	0.424	0.419	0.332	0.330
	(0.346)	(0.351)	(0.383)	(0.384)
Waterberg(DC36)	-0.306	-0.305	-0.153	-0.151
	(0.336)	(0.337)	(0.609)	(0.614)
West Coast(DC1)	0.836*	0.827*	0.813**	0.807**
	(0.012)	(0.013)	(0.008)	(0.008)
West Rand(DC48)	0.487	0.497	0.655	0.664
	(0.225)	(0.215)	(0.076)	(0.071)
Xhariep(DC16)	0.939**	0.942**	0.939**	0.943**
	(0.005)	(0.004)	(0.002)	(0.002)
Zululand(DC26)	-0.0284	-0.0227	0.0285	0.0343
	(0.919)	(0.935)	(0.909)	(0.891)
eThekwini(ETH)	0.0590	0.0575	0.0545	0.0565
	(0.853)	(0.856)	(0.854)	(0.849)
iLembe(DC29)	-0.197	-0.200	-0.174	-0.170
	(0.533)	(0.528)	(0.567)	(0.576)
Above Average Income	0	0	0	0
	(.)	(.)	(.)	(.)
Average Income	-0.476***	-0.479***	-0.426***	-0.426***
	(0.000)	(0.000)	(0.000)	(0.000)
Below Average Income	-1.555***	-1.559***	-1.492***	-1.493***
	(0.000)	(0.000)	(0.000)	(0.000)
Relative Income: Don't Know	0.216	0.209	0.250	0.245
	(0.299)	(0.316)	(0.198)	(0.209)
Much Above Average Income	0.253	0.251	0.266	0.264
	(0.336)	(0.340)	(0.240)	(0.242)
Much Below Average Income	-2.240***	-2.244***	-2.163***	-2.166***
	(0.000)	(0.000)	(0.000)	(0.000)
Relative Income: Not Applicable	-0.187	-0.198	-0.201	-0.208
	(0.733)	(0.722)	(0.644)	(0.641)
Drinks Alcohol: 1-2 Days A Week	0	0	0	0
	(.)	(.)	(.)	(.)
Drinks Alcohol: 3-4 Days A Week	-0.720*	-0.708*	-0.683**	-0.674*

	(0.013)	(0.015)	(0.009)	(0.011)
Drinks Alcohol: 5-6 Days a Week	-0.492	-0.502	-0.473	-0.478
	(0.310)	(0.297)	(0.286)	(0.279)
Drinks Alcohol: < 1 Days a Week	-0.345	-0.352	-0.261	-0.270
	(0.245)	(0.238)	(0.308)	(0.293)
Drinks Alcohol: Very Rarely	-0.121	-0.122	-0.130	-0.130
	(0.532)	(0.528)	(0.430)	(0.428)
Drinks Alcohol: Everyday	-0.101	-0.0930	-0.181	-0.168
	(0.785)	(0.801)	(0.584)	(0.611)
Drinks Alcohol: Never Has	-0.128	-0.126	-0.125	-0.124
	(0.466)	(0.471)	(0.393)	(0.399)
Drinks Alcohol: No Longer Drinks	0.0294	0.0244	0.0122	0.00834
	(0.876)	(0.897)	(0.939)	(0.959)
Smoking: Doesn't Know	0	0	0	0
	(.)	(.)	(.)	(.)
Smoking: No	1.778*	1.759*	1.087*	1.075*
	(0.037)	(0.039)	(0.042)	(0.045)
Smoking: Not Applicable	0.365	0.341	-0.109	-0.126
	(0.681)	(0.700)	(0.850)	(0.826)
Smoking: Yes	1.419	1.397	0.819	0.804
	(0.098)	(0.103)	(0.128)	(0.136)
Not Spouse of Head	0	0	0	0
	(.)	(.)	(.)	(.)
Spouse of Head	-0.284*	-0.265*	-0.258*	-0.241*
	(0.033)	(0.048)	(0.026)	(0.038)
Constant	5.202***	5.210***		
	(0.000)	(0.000)		
cut1				
Constant			-3.974***	-3.978***
			(0.000)	(0.000)
cut2				
Constant			-3.269***	-3.273***
			(0.000)	(0.000)
cut3				
Constant			-2.372**	-2.377**
			(0.003)	(0.004)
cut4				
Constant			-1.400	-1.406
			(0.084)	(0.085)
cut5				
Constant			-0.336	-0.342
			(0.678)	(0.675)
cut6				
Constant			0.373	0.367
			(0.645)	(0.652)
cut7				
Constant			1.127	1.121
			(0.164)	(0.168)
cut8				
Constant			1.980*	1.972*
			(0.014)	(0.015)
cut9				
Constant			2.406**	2.398**
			(0.003)	(0.003)
Observations	5339	5339	5339	5339
R^2	0.324	0.324		
Pseudo R^2			0.095	0.095
Root MSE	2.016	2.017		

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.2 SWB Full Regression Tables By Income Quintiles

Table 23: SWB Full Regressions By Income Quintiles

	(1) Quint 1	(2) Quint 2	(3) Quint 3	(4) Quint 4	(5) Quint 5
Main decision-maker	-0.104	0.145	-0.185	-0.127	-0.167
	(0.556)	(0.395)	(0.257)	(0.402)	(0.235)
Age	-0.0163	-0.0331	-0.0409	-0.0628*	-0.0221
	(0.508)	(0.114)	(0.078)	(0.012)	(0.478)
Age^2	0.000226	0.000336	0.000347	0.000649**	0.000426
	(0.370)	(0.091)	(0.110)	(0.010)	(0.191)
Household Income	2.935	2.571	3.407	1.040	0.0907
(10,000's R)	(0.249)	(0.420)	(0.155)	(0.253)	(0.066)
Household Food Expenditure	10.43***	1.955	1.315	1.825	-0.727
(10,000's R)	(0.000)	(0.387)	(0.458)	(0.154)	(0.276)
Household Non-Food Expenditure	-0.417	0.0111	0.381	0.165	-0.0472
(10,000's R)	(0.449)	(0.984)	(0.553)	(0.474)	(0.505)
Asian	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Asian/Indian	-0.510	1.786**	1.491*	0.978	1.134*
	(0.527)	(0.002)	(0.025)	(0.136)	(0.010)
Coloured	0.393	0.826*	0.952*	0.692*	1.278***
	(0.384)	(0.024)	(0.025)	(0.023)	(0.000)
White	0.185	-0.181	1.005	0.541	0.903**
	(0.896)	(0.806)	(0.213)	(0.251)	(0.001)
Unemployed	0	0	0	0	0

	(.)	(.)	(.)	(.)	(.)
Employed	0.212	-0.171	0.318	-0.0380	0.155
	(0.423)	(0.370)	(0.085)	(0.817)	(0.266)
Divorced/Separated	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Living with partner	0.426	0.866*	-0.944*	-0.492	0.431
	(0.272)	(0.021)	(0.017)	(0.250)	(0.321)
Married	0.488	0.851*	-0.262	0.107	0.172
	(0.167)	(0.017)	(0.481)	(0.768)	(0.584)
Never Married	0.401	0.640	-0.387	-0.200	0.349
	(0.253)	(0.063)	(0.317)	(0.613)	(0.334)
Widow/Widower	0.425	0.710*	-0.195	0.257	-0.300
	(0.240)	(0.044)	(0.616)	(0.523)	(0.402)
Owns Radio	0.179	0.265	0.146	0.438**	0.107
	(0.253)	(0.054)	(0.327)	(0.005)	(0.474)
Owns Stereo	0.490*	0.358	0.0436	-0.121	0.283
	(0.029)	(0.096)	(0.826)	(0.482)	(0.077)
Owns Sewing Machine	-0.207	-0.556	-0.231	0.422	0.0342
	(0.721)	(0.199)	(0.470)	(0.137)	(0.837)
Owns Car	0.0814	0.754	0.460	0.346	-0.240
	(0.906)	(0.336)	(0.442)	(0.254)	(0.187)
Owns Bicycle	-0.409	1.612	0.985	-0.454	0.408
	(0.674)	(0.140)	(0.113)	(0.417)	(0.088)
Owns Computer	-2.373**	1.162	-0.948	-0.220	-0.182
	(0.003)	(0.162)	(0.182)	(0.651)	(0.310)
Owns Camera	2.090	0.772	0.132	0.508	0.284
	(0.169)	(0.234)	(0.808)	(0.293)	(0.121)
Owns Cell Phone	-0.111	-0.191	-0.156	0.204	0.215
	(0.456)	(0.173)	(0.291)	(0.184)	(0.226)
Don't Know Father's Ed	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Father's Ed: Grade 1	0.622	-0.449	-1.006	1.220	1.067
	(0.424)	(0.474)	(0.133)	(0.092)	(0.052)
Father's Ed: Grade 10	0.324	0.470	-0.389	0.459	-0.332
	(0.521)	(0.317)	(0.495)	(0.320)	(0.217)
Father's Ed: Grade 11	4.496	1.553	-0.265	1.696*	-0.128
	(0.100)	(0.091)	(0.839)	(0.030)	(0.815)
Father's Ed: Grade 12	0.950	-0.233	-0.294	0.440	0.00280
	(0.087)	(0.618)	(0.452)	(0.336)	(0.992)
Father's Ed: Grade 2	0.870	1.049	0.683	0.401	-0.368
	(0.115)	(0.070)	(0.320)	(0.536)	(0.659)
Father's Ed: Grade 3	0.109	0.175	-0.218	-0.0576	-0.428
	(0.818)	(0.692)	(0.671)	(0.908)	(0.239)
Father's Ed: Grade 4	0.677	-0.858	0.742	-0.298	0.427
	(0.166)	(0.087)	(0.146)	(0.679)	(0.514)
Father's Ed: Grade 5	0.878	-0.587	0.138	-0.622	0.0162
	(0.082)	(0.349)	(0.760)	(0.154)	(0.973)
Father's Ed: Grade 6	1.038	-0.342	0.640	0.0577	0.0347
	(0.169)	(0.441)	(0.257)	(0.905)	(0.934)
Father's Ed: Grade 7	-0.0167	-1.038**	-0.452	0.266	-0.140
	(0.966)	(0.010)	(0.409)	(0.513)	(0.682)
Father's Ed: Grade 8	0.276	0.0982	-0.217	0.428	-0.0981
	(0.542)	(0.850)	(0.562)	(0.237)	(0.727)
Father's Ed: Grade 9	0.215	-0.0561	-0.191	0.0757	-0.0984
	(0.711)	(0.918)	(0.684)	(0.896)	(0.845)
Father's Ed: Grade R//O	-0.635	-1.456	-1.627*	-0.744	-0.140
	(0.380)	(0.071)	(0.038)	(0.113)	(0.946)
Father's Ed: No Schooling	0.308	-0.277	0.0883	0.0507	-0.0123
	(0.199)	(0.262)	(0.731)	(0.834)	(0.968)
Mothers Ed: Don't Know	0	0	0	0.775	0
	(.)	(.)	(.)	(0.287)	(.)
Mothers Ed: Grade 1	-0.569	-0.786	-1.847*	-0.545	3.168*
	(0.354)	(0.369)	(0.041)	(0.679)	(0.020)
Mothers Ed: Grade 10	0.0943	-0.387	0.220	0.0932	0.336
	(0.884)	(0.444)	(0.634)	(0.897)	(0.233)
Mothers Ed: Grade 11	1.001	0.789	-0.190	-0.520	0.383
	(0.240)	(0.397)	(0.782)	(0.647)	(0.579)
Mothers Ed: Grade 12	-0.872	0.966	-0.110	0.825	0.197
	(0.110)	(0.063)	(0.821)	(0.300)	(0.525)
Mothers Ed: Grade 2	-0.245	-0.00755	-0.194	1.001	0.700
	(0.623)	(0.987)	(0.650)	(0.191)	(0.185)
Mothers Ed: Grade 3	0.0791	0.170	-0.0577	0.794	0.00635
	(0.859)	(0.668)	(0.922)	(0.325)	(0.990)
Mothers Ed: Grade 4	0.756	0.212	0.113	0.204	0.557
	(0.107)	(0.577)	(0.779)	(0.802)	(0.245)
Mothers Ed: Grade 5	-0.102	0.106	0.872	0.924	-0.0272
	(0.803)	(0.817)	(0.138)	(0.215)	(0.952)
Mothers Ed: Grade 6	0.392	0.766	0.354	0.548	-0.0420
	(0.417)	(0.120)	(0.470)	(0.467)	(0.920)
Mothers Ed: Grade 7	-0.186	-0.149	0.614	1.084	0.289
	(0.663)	(0.723)	(0.162)	(0.151)	(0.420)
Mothers Ed: Grade 8	-0.396	-0.146	-0.175	0.338	-0.288
	(0.283)	(0.651)	(0.641)	(0.644)	(0.286)
Mothers Ed: Grade 9	0.442	0.392	-0.145	0.989	-0.134
	(0.415)	(0.625)	(0.846)	(0.240)	(0.801)
Mothers Ed: Grade R//O	-2.694**	5.178***	-0.105	2.664*	-0.547
	(0.009)	(0.000)	(0.832)	(0.041)	(0.812)
Mothers Ed: No Schooling	-0.164	-0.0262	-0.0443	0.475	-0.397
	(0.561)	(0.924)	(0.870)	(0.496)	(0.204)
No Driver's License	0	0	0	0	0

	(.)	(.)	(.)	(.)	(.)
Driver's License: Refused	-1.093**		0.703	-2.503***	
	(0.001)		(0.145)	(0.000)	
Has Driver's License	0.782	0.307	-0.631	-0.0705	-0.0969
	(0.128)	(0.583)	(0.091)	(0.839)	(0.604)
Perceived Health: Don't Know	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Perceived Health: Excellent	-2.987***	-0.581	0.370	0.655	0.410
	(0.000)	(0.196)	(0.673)	(0.326)	(0.617)
Perceived Health: Fair	-3.793***	-0.310	0.486	0.383	0.195
	(0.000)	(0.478)	(0.592)	(0.560)	(0.814)
Perceived Health: Good	-3.633***	-0.587	0.495	0.816	0.160
	(0.000)	(0.177)	(0.578)	(0.215)	(0.845)
Perceived Health: Poor	-3.924***	-0.741	0.199	0.0472	-0.524
	(0.000)	(0.084)	(0.829)	(0.944)	(0.537)
Perceived Health: Very Good	-3.305***	-0.470	0.598	0.826	0.178
	(0.000)	(0.284)	(0.506)	(0.213)	(0.828)
Alfred Nzo(DC44)	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Amajuba(DC25)	-0.0711	1.094*	2.796***	2.307***	2.058
	(0.920)	(0.031)	(0.000)	(0.000)	(0.083)
Amathole(DC12)	-0.259	-1.214	1.162	1.404*	
	(0.758)	(0.072)	(0.238)	(0.043)	
Bojanala(DC37)	0.694	0.523	1.617	2.866***	0.177
	(0.396)	(0.422)	(0.056)	(0.000)	(0.853)
Buffalo City(BUF)	-2.100**	-1.308	3.105*	1.117	1.391
	(0.001)	(0.143)	(0.016)	(0.090)	(0.105)
Cacadu(DC10)	-1.870**	1.051	1.960**	0.0889	0.606
	(0.003)	(0.133)	(0.008)	(0.885)	(0.611)
Cape Winelands(DC2)	-0.493	1.275*	2.154**	1.264*	0.0641
	(0.427)	(0.032)	(0.002)	(0.016)	(0.911)
Capricorn(DC35)	-1.689*	-0.701	1.349	-0.181	1.601
	(0.012)	(0.342)	(0.183)	(0.765)	(0.298)
Central Karoo(DC5)	0.822	1.406	2.370***	2.092***	1.781**
	(0.437)	(0.051)	(0.000)	(0.000)	(0.007)
Chris Hani(DC13)	-1.093*	0.424	1.763**	1.069*	0.182
	(0.026)	(0.432)	(0.001)	(0.039)	(0.772)
City of Cape Town(CPT)	0.532	-0.644	2.254**	1.020	0.0339
	(0.459)	(0.316)	(0.002)	(0.075)	(0.952)
City of Johannesburg(JHB)	-0.314	0.672	2.629***	1.273*	0.541
	(0.627)	(0.276)	(0.000)	(0.011)	(0.405)
City of Tshwane(TSH)	-0.440	1.393*	2.542***	1.518*	0.897
	(0.511)	(0.024)	(0.000)	(0.012)	(0.087)
Dr Kenneth Kaunda(DC40)	1.090	1.608*	1.670	1.195	0.606
	(0.344)	(0.036)	(0.050)	(0.051)	(0.372)
Dr Ruth Segomotsi Mompati(DC39)	-0.0634	0.980	2.248***	0.651	-0.165
	(0.912)	(0.111)	(0.001)	(0.332)	(0.807)
Eden(DC4)	-0.521	0.617	1.939*	1.062*	0.885
	(0.426)	(0.693)	(0.046)	(0.042)	(0.128)
Ehlanzeni(DC32)	0.547	1.658**	3.701***	1.582**	1.635**
	(0.362)	(0.002)	(0.000)	(0.002)	(0.009)
Ekurhuleni(EKU)	-1.013	1.273*	1.631*	0.461	0.602
	(0.291)	(0.020)	(0.014)	(0.549)	(0.286)
Fezile Dabi(DC20)	-0.571	0.367	3.621**	1.524**	0.357
	(0.510)	(0.807)	(0.003)	(0.009)	(0.598)
Frances Baard(DC9)	-0.688	-1.046	2.282**	1.080*	-0.508
	(0.497)	(0.198)	(0.001)	(0.028)	(0.543)
Gert Sibande(DC30)	0.444	1.754**	2.675***	1.615***	1.022
	(0.518)	(0.001)	(0.000)	(0.001)	(0.111)
Greater Sekhukhune(DC47)	-0.198	0.230	2.760***	1.149*	0.595
	(0.781)	(0.738)	(0.000)	(0.023)	(0.464)
Joe Gqabi(DC14)	0.321	0.357	1.438**	0.765	-0.608
	(0.563)	(0.491)	(0.008)	(0.087)	(0.424)
John Taolo Gaetsewe(DC45)	0.694	2.080**	2.214**	1.675	0.460
	(0.315)	(0.001)	(0.002)	(0.091)	(0.632)
Lejweleputswa(DC18)	0.00237	1.142	2.543***	1.549*	-0.453
	(0.997)	(0.130)	(0.000)	(0.015)	(0.574)
Mangaung(MAN)	-0.570	0.0334	4.798***	-0.502	0.752
	(0.679)	(0.974)	(0.000)	(0.525)	(0.307)
Mopani(DC33)	-0.696	-0.0239	0.391	-0.595	-0.423
	(0.234)	(0.972)	(0.500)	(0.442)	(0.565)
Namakwa(DC6)	2.471*	1.329	2.927***	1.524*	0.934
	(0.028)	(0.288)	(0.001)	(0.018)	(0.144)
Nelson Mandela Bay(NMA)	-0.0988	0.276	1.614**	1.351**	0.975
	(0.876)	(0.650)	(0.008)	(0.009)	(0.085)
Ngaka Modiri Molema(DC38)	-0.0151	0.770	1.255*	0.357	-1.041
	(0.982)	(0.244)	(0.036)	(0.494)	(0.126)
Nkangala(DC31)	-0.699	1.318	1.725**	0.982	0.793
	(0.182)	(0.116)	(0.006)	(0.091)	(0.158)
O.R.Tambo(DC15)	0.764	1.224	2.320**	1.737*	-0.529
	(0.149)	(0.066)	(0.001)	(0.049)	(0.416)
Overberg(DC3)	1.824	0.743	2.039**	1.622**	0.708
	(0.051)	(0.327)	(0.007)	(0.002)	(0.197)
Pixley ka Seme(DC7)	1.507*	2.123**	2.917***	1.968**	1.524*
	(0.046)	(0.003)	(0.001)	(0.003)	(0.016)
Sedibeng(DC42)	-0.360	0.367	1.679**	1.460**	0.117
	(0.563)	(0.514)	(0.009)	(0.005)	(0.855)
Sisonke(DC43)	0.0236	0.478	1.332**	0.511	0.222
	(0.961)	(0.331)	(0.008)	(0.219)	(0.702)
Siyanda(DC8)	-1.112	-0.535	2.380**	0.368	-0.0551

	(0.481)	(0.379)	(0.004)	(0.620)	(0.929)
Thabo Mofutsanyane(DC19)	1.383*	0.925	3.114***	1.202	0.814
	(0.025)	(0.141)	(0.000)	(0.069)	(0.273)
UMgungundlovu(DC22)	-1.312*	0.215	1.734*	-0.145	-0.102
	(0.018)	(0.725)	(0.011)	(0.798)	(0.864)
Ugu(DC21)	-0.681	-0.0168	1.380*	0.692	-0.394
	(0.196)	(0.971)	(0.012)	(0.093)	(0.488)
Umkhanyakude(DC27)	-1.510**	-0.406	1.239*	1.452*	-0.629
	(0.003)	(0.427)	(0.039)	(0.018)	(0.272)
Umzinyathi(DC24)	-1.397*	0.657	0.802	-0.318	0.832
	(0.015)	(0.207)	(0.152)	(0.611)	(0.209)
Uthukela(DC23)	-0.870	-0.0828	1.831***	0.708	1.660
	(0.068)	(0.879)	(0.001)	(0.177)	(0.398)
Uthungulu(DC28)	-0.221	0.734	1.228*	0.547	-0.952
	(0.710)	(0.149)	(0.050)	(0.371)	(0.259)
Vhembe(DC34)	-0.773	1.879	1.807*	-0.330	0.957
	(0.315)	(0.060)	(0.041)	(0.758)	(0.344)
Waterberg(DC36)	-0.503	0.395	-0.0199	0.136	-0.0467
	(0.536)	(0.667)	(0.977)	(0.774)	(0.941)
West Coast(DC1)	1.288	2.091*	1.907*	1.550**	0.288
	(0.082)	(0.023)	(0.045)	(0.008)	(0.616)
West Rand(DC48)	2.083	1.585	0.926	-0.0141	0.147
	(0.057)	(0.059)	(0.337)	(0.981)	(0.840)
Xhariep(DC16)	0.203	0.666	3.273***	1.453*	0.252
	(0.796)	(0.274)	(0.000)	(0.047)	(0.674)
Zululand(DC26)	-0.630	-0.122	1.183*	0.484	-0.873
	(0.258)	(0.820)	(0.046)	(0.381)	(0.156)
eThekwini(ETH)	-0.481	-1.154*	1.655*	0.435	0.607
	(0.454)	(0.036)	(0.010)	(0.525)	(0.365)
iLembe(DC29)	-0.874	-0.465	1.673*	0.0632	0.360
	(0.101)	(0.425)	(0.022)	(0.936)	(0.649)
Above Average Income	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Average Income	-0.190	0.0157	-0.730*	-0.487	-0.519**
	(0.702)	(0.971)	(0.019)	(0.114)	(0.002)
Below Average Income	-1.484**	-1.157**	-1.777***	-1.317***	-1.430***
	(0.002)	(0.007)	(0.000)	(0.000)	(0.000)
Relative Income: Don't Know	0.817	1.179*	-0.503	0.0358	-0.323
	(0.168)	(0.046)	(0.341)	(0.942)	(0.405)
Much Above Average Income	-0.621	1.159*	-0.491	0.340	0.689
	(0.407)	(0.032)	(0.556)	(0.499)	(0.131)
Much Below Average Income	-1.738***	-1.808***	-2.215***	-1.929***	-2.775***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Drinks Alcohol: 1-2 Days A Week	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Drinks Alcohol: 3-4 Days A Week	-0.679	-2.005**	-1.761*	-0.727	0.483
	(0.263)	(0.002)	(0.010)	(0.351)	(0.387)
Drinks Alcohol: 5-6 Days a Week	-0.808	-1.715	-1.280	0.201	0.341
	(0.285)	(0.152)	(0.218)	(0.840)	(0.709)
Drinks Alcohol: < 1 Days a Week	-1.416	0.189	0.655	-1.243	-0.0233
	(0.083)	(0.817)	(0.429)	(0.098)	(0.958)
Drinks Alcohol: Very Rarely	-0.336	0.222	-0.142	-0.723	0.218
	(0.570)	(0.647)	(0.795)	(0.096)	(0.482)
Drinks Alcohol: Everyday	-0.163	0.392	-0.134	-0.760	0.581
	(0.938)	(0.605)	(0.921)	(0.513)	(0.265)
Drinks Alcohol: Never Has	-0.638	0.178	-0.113	-0.642	0.261
	(0.223)	(0.675)	(0.820)	(0.096)	(0.386)
Drinks Alcohol: No Longer Drinks	-0.474	0.384	-0.374	-0.254	0.530
	(0.374)	(0.395)	(0.459)	(0.578)	(0.120)
Smoking: Doesn't Know	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Smoking: No	0.397	1.609	-0.622	1.423*	4.278
	(0.483)	(0.109)	(0.365)	(0.049)	(0.124)
Smoking: Yes	0.300	1.361	-0.924	1.127	3.917
	(0.617)	(0.174)	(0.190)	(0.135)	(0.160)
Not Spouse of Head	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Spouse of Head	-0.494	-0.437	-0.366	-0.0977	-0.306
	(0.144)	(0.139)	(0.217)	(0.703)	(0.338)
Relative Income: Not Applicable			-1.347*		0.000327
			(0.019)		(1.000)
Smoking: Not Applicable			-1.398		
			(0.122)		
Mothers Ed: Cert w < Grade 12				0	
				(.)	
Father's Ed: Refused					1.386*
					(0.040)
Mothers Ed: Refused					0
					(.)
Constant	8.400***	3.298*	5.342***	3.897**	1.257
	(0.000)	(0.028)	(0.000)	(0.004)	(0.681)
Observations	1068	1070	1066	1068	1067
R^2	0.384	0.361	0.301	0.319	0.368
Root MSE	2.035	1.924	2.020	2.009	1.917

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.3 EWB Full Regression Tables

Table 24: EWB Full Regression

	OLS (1) EWB Score	OLS (2) EWB Score	OLS (3) Happy	OLOGIT (4) Happy	OLOGIT (5) Happy
Empowerment Factor Score		-0.0533**			0.0208
		(0.004)			(0.547)
Main decision-maker	-0.0435		0.0112	0.0103	
	(0.196)		(0.741)	(0.872)	
Age	-0.0120*	-0.00984	-0.00428	-0.00939	-0.0105
	(0.016)	(0.052)	(0.379)	(0.296)	(0.245)
Age^2	0.000139**	0.000121*	0.0000582	0.000131	0.000140
	(0.006)	(0.018)	(0.225)	(0.137)	(0.113)
Household Income	0.0387	0.0352	0.0106	0.0303	0.0320
(10,000's R)	(0.060)	(0.089)	(0.648)	(0.585)	(0.565)
Household Food Expenditure	0.265	0.244	0.749**	1.725**	1.741**
(10,000's R)	(0.287)	(0.326)	(0.008)	(0.003)	(0.003)
Household Non-Food Expenditure	-0.0868*	-0.0854*	0.0122	0.00112	0.000438
(10,000's R)	(0.012)	(0.013)	(0.731)	(0.989)	(0.996)
Asian	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Asian/Indian	-0.0719	-0.0726	0.460***	0.739**	0.741**
	(0.569)	(0.564)	(0.000)	(0.002)	(0.002)
Coloured	0.0253	0.0208	0.292***	0.592***	0.594***
	(0.707)	(0.757)	(0.000)	(0.000)	(0.000)
White	0.219*	0.212*	0.171	0.227	0.230
	(0.012)	(0.015)	(0.062)	(0.232)	(0.227)
Unemployed	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Employed	0.0459	0.0519	0.0346	0.0793	0.0763
	(0.199)	(0.145)	(0.369)	(0.286)	(0.303)
Divorced/Separated	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Living with partner	0.211*	0.178*	0.0924	0.188	0.203
	(0.013)	(0.039)	(0.259)	(0.222)	(0.192)
Married	0.237**	0.197*	0.0634	0.155	0.173
	(0.002)	(0.012)	(0.377)	(0.254)	(0.212)
Never Married	0.173*	0.165*	0.0479	0.132	0.135
	(0.030)	(0.039)	(0.523)	(0.351)	(0.338)
Widow/Widower	0.0899	0.0898	0.0293	0.0639	0.0637
	(0.273)	(0.274)	(0.702)	(0.657)	(0.658)
Owns Radio	-0.0205	-0.0140	-0.00212	-0.00729	-0.0106
	(0.506)	(0.651)	(0.946)	(0.902)	(0.858)
Owns Stereo	-0.0107	-0.00509	0.0471	0.106	0.103
	(0.778)	(0.893)	(0.238)	(0.172)	(0.184)
Owns Sewing Machine	-0.0567	-0.0612	0.0544	0.106	0.108
	(0.313)	(0.276)	(0.353)	(0.363)	(0.355)
Owns Car	-0.00399	-0.00191	0.187**	0.409**	0.408**
	(0.950)	(0.976)	(0.008)	(0.006)	(0.006)
Owns Bicycle	-0.162	-0.163	-0.0535	-0.0971	-0.0966
	(0.098)	(0.096)	(0.613)	(0.676)	(0.678)
Owns Computer	-0.00948	-0.00560	-0.0596	-0.188	-0.190
	(0.890)	(0.935)	(0.460)	(0.278)	(0.273)
Owns Camera	0.172*	0.172*	-0.0136	0.0124	0.0131
	(0.010)	(0.010)	(0.870)	(0.946)	(0.943)
Owns Cell Phone	0.0409	0.0436	0.0411	0.110	0.108
	(0.203)	(0.175)	(0.194)	(0.060)	(0.064)
Don't Know Father's Ed	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Father's Ed: Grade 1	0.170	0.172	0.0484	0.156	0.156
	(0.358)	(0.350)	(0.805)	(0.680)	(0.680)
Father's Ed: Grade 10	-0.0880	-0.0878	0.232**	0.484**	0.484**
	(0.343)	(0.344)	(0.008)	(0.007)	(0.007)
Father's Ed: Grade 11	0.0523	0.0560	-0.144	-0.277	-0.278
	(0.785)	(0.770)	(0.447)	(0.465)	(0.461)
Father's Ed: Grade 12	0.0432	0.0492	0.117	0.227	0.225
	(0.561)	(0.507)	(0.148)	(0.159)	(0.163)
Father's Ed: Grade 2	-0.134	-0.131	0.00465	0.00843	0.00729
	(0.380)	(0.388)	(0.971)	(0.970)	(0.974)
Father's Ed: Grade 3	-0.283*	-0.276*	-0.0294	-0.0738	-0.0770
	(0.014)	(0.016)	(0.794)	(0.726)	(0.714)
Father's Ed: Grade 4	0.0108	0.0141	-0.114	-0.169	-0.170
	(0.904)	(0.874)	(0.281)	(0.379)	(0.377)
Father's Ed: Grade 5	-0.350**	-0.348**	0.0521	0.0868	0.0857
	(0.002)	(0.002)	(0.629)	(0.669)	(0.673)
Father's Ed: Grade 6	-0.00726	-0.00551	0.135	0.300	0.300
	(0.936)	(0.951)	(0.230)	(0.155)	(0.155)
Father's Ed: Grade 7	-0.101	-0.0984	-0.0285	-0.0543	-0.0546
	(0.305)	(0.316)	(0.754)	(0.749)	(0.747)
Father's Ed: Grade 8	-0.0698	-0.0665	0.0466	0.123	0.122
	(0.339)	(0.362)	(0.548)	(0.402)	(0.407)
Father's Ed: Grade 9	-0.0751	-0.0728	0.171	0.271	0.271
	(0.459)	(0.471)	(0.120)	(0.202)	(0.202)
Father's Ed: Grade R//O	-0.108	-0.0943	-0.589	-1.044	-1.045
	(0.767)	(0.800)	(0.060)	(0.081)	(0.082)
Father's Ed: No Schooling	-0.0315	-0.0287	-0.0510	-0.0921	-0.0929

	(0.535)	(0.572)	(0.325)	(0.342)	(0.338)
Father's Ed: Refused	0.379	0.338	0.638*	12.81***	12.82***
	(0.102)	(0.145)	(0.011)	(0.000)	(0.000)
Mothers Ed: Cert w < Grade 12	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Mothers Ed: Don't Know	0.0759	0.0884	1.800***	14.72***	14.71***
	(0.623)	(0.567)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 1	-0.0447	-0.0306	1.631***	14.40***	14.40***
	(0.875)	(0.914)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 10	0.0645	0.0712	1.720***	14.61***	14.61***
	(0.691)	(0.661)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 11	0.0821	0.0940	1.741***	14.69***	14.68***
	(0.681)	(0.637)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 12	-0.0172	-0.00673	1.782***	14.74***	14.73***
	(0.918)	(0.968)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 2	0.195	0.206	1.596***	14.31***	14.30***
	(0.255)	(0.229)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 3	-0.0161	-0.00583	1.701***	14.53***	14.53***
	(0.924)	(0.973)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 4	0.0200	0.0276	1.781***	14.70***	14.70***
	(0.904)	(0.867)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 5	0.0125	0.0272	1.754***	14.63***	14.63***
	(0.939)	(0.869)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 6	0.182	0.197	1.752***	14.66***	14.65***
	(0.246)	(0.209)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 7	0.148	0.156	1.770***	14.72***	14.71***
	(0.359)	(0.334)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 8	-0.0485	-0.0373	1.774***	14.66***	14.66***
	(0.756)	(0.811)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade 9	-0.0193	-0.00945	1.571***	14.28***	14.28***
	(0.916)	(0.959)	(0.000)	(0.000)	(0.000)
Mothers Ed: Grade R//O	-0.0599	-0.0566	1.956***	14.97***	14.97***
	(0.887)	(0.895)	(0.000)	(0.000)	(0.000)
Mothers Ed: No Schooling	-0.00495	0.00644	1.712***	14.57***	14.56***
	(0.974)	(0.967)	(0.000)	(0.000)	(0.000)
No Driver's License	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Driver's License: Refused	-0.0751	-0.0768	0.0778	0.141	0.142
	(0.920)	(0.919)	(0.795)	(0.761)	(0.759)
Has Driver's License	0.000419	0.00207	0.0285	0.0982	0.0971
	(0.995)	(0.975)	(0.694)	(0.499)	(0.504)
Perceived Health: Don't Know	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Perceived Health: Excellent	0.876**	0.869**	-0.0114	-0.124	-0.122
	(0.003)	(0.003)	(0.981)	(0.903)	(0.904)
Perceived Health: Fair	0.485	0.478	-0.263	-0.635	-0.634
	(0.102)	(0.105)	(0.574)	(0.531)	(0.531)
Perceived Health: Good	0.654*	0.646*	-0.170	-0.468	-0.467
	(0.027)	(0.028)	(0.715)	(0.644)	(0.644)
Perceived Health: Poor	0.0538	0.0467	-0.346	-0.774	-0.774
	(0.857)	(0.875)	(0.460)	(0.445)	(0.445)
Perceived Health: Very Good	0.715*	0.709*	-0.125	-0.358	-0.357
	(0.016)	(0.016)	(0.789)	(0.724)	(0.724)
Alfred Nzo(DC44)	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Amajuba(DC25)	0.205	0.181	0.108	0.132	0.142
	(0.150)	(0.203)	(0.369)	(0.498)	(0.467)
Amathole(DC12)	0.708***	0.691***	-0.0701	-0.109	-0.102
	(0.000)	(0.000)	(0.670)	(0.689)	(0.710)
Bojanala(DC37)	-0.181	-0.182	0.242	0.421	0.422
	(0.340)	(0.335)	(0.126)	(0.162)	(0.161)
Buffalo City(BUF)	0.551**	0.548**	-0.508*	-0.948*	-0.949*
	(0.006)	(0.006)	(0.028)	(0.029)	(0.029)
Cacadu(DC10)	-0.0817	-0.0844	-0.0508	-0.106	-0.106
	(0.638)	(0.627)	(0.730)	(0.687)	(0.688)
Cape Winelands(DC2)	0.524***	0.525***	-0.299*	-0.629*	-0.631*
	(0.000)	(0.000)	(0.025)	(0.013)	(0.013)
Capricorn(DC35)	0.0995	0.0956	-0.150	-0.348	-0.346
	(0.480)	(0.498)	(0.309)	(0.185)	(0.188)
Central Karoo(DC5)	0.543***	0.530***	0.514***	0.994***	0.998***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Chris Hani(DC13)	0.949***	0.942***	-0.0529	-0.100	-0.0968
	(0.000)	(0.000)	(0.622)	(0.563)	(0.577)
City of Cape Town(CPT)	0.559***	0.556***	-0.0398	-0.0383	-0.0373
	(0.000)	(0.000)	(0.760)	(0.882)	(0.885)
City of Johannesburg(JHB)	0.320**	0.319**	0.200	0.388	0.389
	(0.008)	(0.008)	(0.104)	(0.094)	(0.093)
City of Tshwane(TSH)	0.462***	0.451***	0.376***	0.812***	0.817***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Dr Kenneth Kaunda(DC40)	0.466**	0.463**	0.0459	0.132	0.134
	(0.002)	(0.002)	(0.760)	(0.645)	(0.639)
Dr Ruth Segomotsi Mompati(DC39)	0.116	0.107	0.0581	0.0922	0.0963
	(0.415)	(0.452)	(0.643)	(0.667)	(0.653)
Eden(DC4)	0.541***	0.533***	0.272*	0.559*	0.562*
	(0.000)	(0.000)	(0.039)	(0.024)	(0.023)
Ehlanzeni(DC32)	0.470***	0.463***	0.468***	0.975***	0.979***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ekurhuleni(EKU)	0.302*	0.300*	0.154	0.179	0.180
	(0.029)	(0.030)	(0.224)	(0.443)	(0.441)
Fezile Dabi(DC20)	0.428**	0.418**	0.159	0.247	0.253

	(0.005)	(0.006)	(0.339)	(0.428)	(0.419)
Frances Baard(DC9)	0.225	0.224	0.350*	0.588*	0.588*
	(0.151)	(0.153)	(0.017)	(0.029)	(0.029)
Gert Sibande(DC30)	0.445***	0.433***	0.319**	0.604**	0.609**
	(0.000)	(0.000)	(0.008)	(0.006)	(0.005)
Greater Sekhukhune(DC47)	0.124	0.114	0.470***	0.847***	0.851***
	(0.294)	(0.334)	(0.000)	(0.001)	(0.001)
Joe Gqabi(DC14)	0.596***	0.592***	-0.375**	-0.678**	-0.675**
	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)
John Taolo Gaetsewe(DC45)	0.264*	0.248	0.185	0.265	0.271
	(0.038)	(0.050)	(0.159)	(0.227)	(0.216)
Lejweleputswa(DC18)	-0.0589	-0.0642	0.435**	0.873**	0.875**
	(0.697)	(0.670)	(0.003)	(0.003)	(0.003)
Mangaung(MAN)	0.182	0.172	0.151	0.258	0.264
	(0.368)	(0.398)	(0.400)	(0.446)	(0.436)
Mopani(DC33)	0.337*	0.341*	0.583***	1.150***	1.149***
	(0.019)	(0.017)	(0.000)	(0.000)	(0.000)
Namakwa(DC6)	0.279	0.288	0.370*	0.921**	0.917**
	(0.058)	(0.051)	(0.017)	(0.003)	(0.003)
Nelson Mandela Bay(NMA)	0.389***	0.377**	-0.169	-0.300	-0.296
	(0.001)	(0.001)	(0.127)	(0.092)	(0.096)
Ngaka Modiri Molema(DC38)	-0.101	-0.112	0.173	0.275	0.281
	(0.406)	(0.355)	(0.118)	(0.139)	(0.131)
Nkangala(DC31)	0.500***	0.495***	0.302*	0.503*	0.505*
	(0.000)	(0.000)	(0.017)	(0.030)	(0.029)
O.R.Tambo(DC15)	0.0630	0.0610	-0.324**	-0.548**	-0.547**
	(0.630)	(0.642)	(0.007)	(0.007)	(0.008)
Overberg(DC3)	0.612***	0.602***	0.293*	0.581*	0.585*
	(0.000)	(0.000)	(0.018)	(0.016)	(0.015)
Pixley ka Seme(DC7)	0.832***	0.826***	0.191	0.393	0.397
	(0.000)	(0.000)	(0.258)	(0.209)	(0.204)
Sedibeng(DC42)	0.0272	0.0201	0.383***	0.669***	0.672***
	(0.834)	(0.877)	(0.001)	(0.001)	(0.001)
Sisonke(DC43)	0.194	0.187	-0.454***	-0.733***	-0.730***
	(0.087)	(0.098)	(0.000)	(0.000)	(0.000)
Siyanda(DC8)	0.468**	0.464**	0.269	0.477	0.478
	(0.002)	(0.003)	(0.083)	(0.099)	(0.098)
Thabo Mofutsanyane(DC19)	0.397*	0.389*	0.127	0.253	0.258
	(0.013)	(0.015)	(0.436)	(0.488)	(0.479)
UMgungundlovu(DC22)	0.260*	0.248*	-0.0441	-0.101	-0.0968
	(0.021)	(0.027)	(0.650)	(0.507)	(0.526)
Ugu(DC21)	0.139	0.131	-0.168	-0.298*	-0.294
	(0.220)	(0.248)	(0.079)	(0.049)	(0.053)
Umkhanyakude(DC27)	0.169	0.163	-0.187	-0.322	-0.319
	(0.283)	(0.300)	(0.082)	(0.062)	(0.065)
Umzinyathi(DC24)	0.386***	0.373**	-0.0348	-0.0792	-0.0734
	(0.001)	(0.001)	(0.734)	(0.630)	(0.656)
Uthukela(DC23)	0.406***	0.396***	-0.273**	-0.520**	-0.516**
	(0.001)	(0.001)	(0.009)	(0.003)	(0.003)
Uthungulu(DC28)	0.140	0.122	-0.0333	-0.0834	-0.0757
	(0.283)	(0.350)	(0.757)	(0.623)	(0.656)
Vhembe(DC34)	0.149	0.150	-0.0489	-0.147	-0.148
	(0.402)	(0.397)	(0.766)	(0.626)	(0.623)
Waterberg(DC36)	0.405***	0.394**	0.558***	1.118***	1.124***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
West Coast(DC1)	0.727***	0.716***	0.481***	1.048***	1.051***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
West Rand(DC48)	-0.106	-0.113	0.149	0.193	0.197
	(0.497)	(0.469)	(0.311)	(0.455)	(0.447)
Xhariep(DC16)	0.277*	0.273*	0.279	0.575	0.578
	(0.038)	(0.040)	(0.074)	(0.068)	(0.067)
Zululand(DC26)	0.408**	0.397**	-0.126	-0.247	-0.241
	(0.003)	(0.004)	(0.266)	(0.201)	(0.212)
eThekwini(ETH)	0.426***	0.419***	-0.281*	-0.515**	-0.512**
	(0.001)	(0.001)	(0.011)	(0.006)	(0.007)
iLembe(DC29)	0.314**	0.300*	-0.291**	-0.515**	-0.510**
	(0.009)	(0.012)	(0.005)	(0.002)	(0.002)
Above Average Income	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Average Income	0.0305	0.0308	0.0725	0.163	0.162
	(0.599)	(0.594)	(0.254)	(0.205)	(0.207)
Below Average Income	-0.116	-0.113	0.0397	0.109	0.107
	(0.056)	(0.062)	(0.549)	(0.411)	(0.419)
Relative Income: Don't Know	-0.0115	-0.00370	-0.0217	-0.0267	-0.0313
	(0.888)	(0.964)	(0.812)	(0.881)	(0.861)
Much Above Average Income	-0.418***	-0.411***	-0.206	-0.404	-0.407
	(0.000)	(0.000)	(0.082)	(0.075)	(0.073)
Much Below Average Income	-0.456***	-0.451***	0.0821	0.200	0.198
	(0.000)	(0.000)	(0.251)	(0.159)	(0.164)
Relative Income: Not Applicable	-1.820	-1.817	0.387	0.757	0.753
	(0.056)	(0.052)	(0.479)	(0.519)	(0.525)
Drinks Alcohol: 1-2 Days A Week	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Drinks Alcohol: 3-4 Days A Week	-0.242	-0.236	-0.247	-0.450	-0.451
	(0.237)	(0.249)	(0.142)	(0.156)	(0.155)
Drinks Alcohol: 5-6 Days a Week	-0.300	-0.310	-0.343	-0.571	-0.567
	(0.185)	(0.169)	(0.157)	(0.206)	(0.210)
Drinks Alcohol: < 1 Days a Week	-0.217	-0.208	-0.175	-0.347	-0.351
	(0.104)	(0.120)	(0.197)	(0.178)	(0.173)
Drinks Alcohol: Very Rarely	-0.00269	-0.00483	-0.0373	-0.0189	-0.0175

	(0.975)	(0.956)	(0.702)	(0.922)	(0.927)
Drinks Alcohol: Everyday	-0.251	-0.257	-0.179	-0.447	-0.442
	(0.168)	(0.162)	(0.213)	(0.121)	(0.125)
Drinks Alcohol: Never Has	-0.0211	-0.0209	-0.0103	-0.0137	-0.0130
	(0.794)	(0.796)	(0.907)	(0.936)	(0.939)
Drinks Alcohol: No Longer Drinks	-0.108	-0.108	-0.0902	-0.168	-0.168
	(0.233)	(0.230)	(0.352)	(0.371)	(0.372)
Smoking: Doesn't Know	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Smoking: No	0.492	0.495	0.295	0.521	0.521
	(0.337)	(0.335)	(0.517)	(0.640)	(0.639)
Smoking: Not Applicable	0.481	0.515	-0.548	-0.891	-0.904
	(0.363)	(0.332)	(0.249)	(0.436)	(0.429)
Smoking: Yes	0.294	0.297	0.248	0.421	0.421
	(0.567)	(0.565)	(0.587)	(0.706)	(0.706)
Not Spouse of Head	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Spouse of Head	0.0493	0.0314	0.00817	0.00299	0.0116
	(0.395)	(0.589)	(0.898)	(0.980)	(0.922)
Constant	-1.266*	-1.333*	0.506		
	(0.047)	(0.037)	(0.463)		
cut1					
Constant				13.59***	13.56***
				(0.000)	(0.000)
cut2					
Constant				14.96***	14.93***
				(0.000)	(0.000)
cut3					
Constant				16.45***	16.42***
				(0.000)	(0.000)
Observations	5339	5339	5339	5339	5339
R^2	0.191	0.192	0.161		
Pseudo R^2				0.069	0.069
Root MSE	0.986	0.985	0.984		

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A.4 EWB Full Regression Tables By Income Quintiles

Table 25: EWB Full Regression By Income Quintiles

	(1) Quint 1	(2) Quint 2	(3) Quint 3	(4) Quint 4	(5) Quint 5
Empowerment Factor Score	0.0246	-0.119**	-0.0445	-0.0201	-0.0849*
	(0.592)	(0.010)	(0.347)	(0.657)	(0.033)
Age	-0.00279	-0.0120	-0.0136	-0.00645	0.0100
	(0.823)	(0.277)	(0.186)	(0.592)	(0.444)
Age^2	0.0000263	0.000177	0.000133	0.000114	-0.0000728
	(0.842)	(0.102)	(0.191)	(0.347)	(0.579)
Household Income	0.106	1.063	0.491	-0.132	0.0362
(10,000's R)	(0.932)	(0.522)	(0.691)	(0.768)	(0.080)
Household Food Expenditure	-0.160	0.275	0.276	0.953	-0.226
(10,000's R)	(0.887)	(0.827)	(0.759)	(0.161)	(0.513)
Household Non-Food Expenditure	0.128	0.102	-0.409	0.0824	-0.0773*
(10,000's R)	(0.644)	(0.597)	(0.182)	(0.427)	(0.039)
Asian	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Asian/Indian	-0.216	0.101	-0.268	-0.426	0.0890
	(0.549)	(0.858)	(0.423)	(0.257)	(0.602)
Coloured	-0.211	-0.151	-0.229	0.0699	0.0739
	(0.353)	(0.438)	(0.245)	(0.601)	(0.558)
White	0.740	-0.959	0.463	0.324	0.143
	(0.053)	(0.139)	(0.350)	(0.118)	(0.222)
Unemployed	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Employed	-0.0134	-0.118	0.130	0.0483	0.0871
	(0.917)	(0.219)	(0.155)	(0.543)	(0.181)
Divorced/Separated	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Living with partner	-0.00226	0.355	-0.103	0.290	-0.00961
	(0.991)	(0.082)	(0.587)	(0.177)	(0.964)
Married	-0.0782	0.323	0.01000	0.313	0.254
	(0.685)	(0.101)	(0.957)	(0.109)	(0.095)
Never Married	-0.196	0.318	-0.0919	0.409*	0.231
	(0.294)	(0.097)	(0.613)	(0.049)	(0.186)
Widow/Widower	-0.225	0.230	-0.139	0.170	0.130
	(0.245)	(0.246)	(0.443)	(0.411)	(0.455)
Owns Radio	0.0384	-0.0470	-0.136	0.0260	0.107
	(0.611)	(0.505)	(0.064)	(0.725)	(0.110)
Owns Stereo	-0.0518	-0.147	0.0302	0.0121	0.0392
	(0.634)	(0.162)	(0.755)	(0.885)	(0.576)
Owns Sewing Machine	-0.504	0.624***	-0.0926	-0.320*	-0.0669
	(0.236)	(0.000)	(0.597)	(0.011)	(0.388)
Owns Car	0.579	-0.265	-0.424	-0.180	0.0197
	(0.194)	(0.389)	(0.227)	(0.210)	(0.806)
Owns Bicycle	-0.586	0.325	-0.391	-0.287	-0.181

	(0.120)	(0.196)	(0.228)	(0.272)	(0.166)
Owns Computer	-0.616	-0.0757	0.240	-0.0993	-0.0477
	(0.104)	(0.859)	(0.492)	(0.616)	(0.565)
Owns Camera	0.558	0.352	0.246	0.170	0.156
	(0.308)	(0.145)	(0.451)	(0.424)	(0.060)
Owns Cell Phone	-0.0684	0.125	0.0315	0.139	-0.1000
	(0.367)	(0.073)	(0.665)	(0.063)	(0.225)
Don't Know Father's Ed	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Father's Ed: Grade 1	0.450	0.0439	-0.423	0.654	-0.0381
	(0.522)	(0.900)	(0.383)	(0.077)	(0.922)
Father's Ed: Grade 10	-0.407	-0.499	-0.295	0.529**	-0.0259
	(0.094)	(0.151)	(0.371)	(0.003)	(0.837)
Father's Ed: Grade 11	1.112**	0.119	0.311	-0.181	-0.0254
	(0.007)	(0.752)	(0.486)	(0.743)	(0.907)
Father's Ed: Grade 12	-0.0394	-0.0807	0.0733	0.312	-0.0174
	(0.870)	(0.781)	(0.753)	(0.059)	(0.884)
Father's Ed: Grade 2	0.467	-0.466	-0.201	0.123	-1.112*
	(0.094)	(0.119)	(0.517)	(0.788)	(0.033)
Father's Ed: Grade 3	0.0513	-0.665**	0.152	-0.260	-0.567*
	(0.804)	(0.005)	(0.570)	(0.480)	(0.048)
Father's Ed: Grade 4	0.0619	0.264	-0.0904	-0.301	-0.165
	(0.744)	(0.247)	(0.548)	(0.323)	(0.442)
Father's Ed: Grade 5	-0.0804	-0.257	-0.836*	-0.640*	-0.232
	(0.695)	(0.396)	(0.010)	(0.016)	(0.309)
Father's Ed: Grade 6	-0.0314	0.129	-0.0166	0.00629	0.0159
	(0.890)	(0.477)	(0.944)	(0.977)	(0.930)
Father's Ed: Grade 7	-0.232	-0.173	0.101	0.180	-0.220
	(0.421)	(0.525)	(0.592)	(0.397)	(0.252)
Father's Ed: Grade 8	-0.317	0.0281	-0.295	0.247	-0.106
	(0.212)	(0.876)	(0.156)	(0.156)	(0.370)
Father's Ed: Grade 9	-0.182	0.0927	-0.149	0.148	-0.0423
	(0.521)	(0.629)	(0.533)	(0.517)	(0.848)
Father's Ed: Grade R//O	0.0194	-0.584	0.388	0.283	0.820
	(0.984)	(0.098)	(0.303)	(0.380)	(0.197)
Father's Ed: No Schooling	-0.0524	-0.0685	-0.0518	0.0806	0.0626
	(0.636)	(0.601)	(0.621)	(0.484)	(0.673)
Mothers Ed: Don't Know	0	0	0	0.937**	0
	(.)	(.)	(.)	(0.004)	(.)
Mothers Ed: Grade 1	-0.364	1.323**	0.132	0.285	0.218
	(0.320)	(0.006)	(0.759)	(0.771)	(0.552)
Mothers Ed: Grade 10	-0.0204	0.378	-0.519*	0.860**	0.108
	(0.924)	(0.134)	(0.032)	(0.008)	(0.410)
Mothers Ed: Grade 11	0.431	-0.136	-0.398	1.062*	-0.143
	(0.102)	(0.702)	(0.269)	(0.031)	(0.543)
Mothers Ed: Grade 12	0.0996	-0.197	-0.110	0.755*	-0.00590
	(0.687)	(0.564)	(0.650)	(0.041)	(0.965)
Mothers Ed: Grade 2	-0.150	0.343	0.291	1.299***	0.218
	(0.446)	(0.115)	(0.117)	(0.000)	(0.366)
Mothers Ed: Grade 3	0.118	-0.0898	-0.297	1.247***	-0.378
	(0.584)	(0.729)	(0.284)	(0.000)	(0.211)
Mothers Ed: Grade 4	0.168	-0.271	0.0452	1.236***	-0.227
	(0.420)	(0.212)	(0.828)	(0.000)	(0.298)
Mothers Ed: Grade 5	0.0232	-0.0601	0.118	0.818*	-0.194
	(0.918)	(0.820)	(0.697)	(0.017)	(0.428)
Mothers Ed: Grade 6	0.0292	0.195	0.394*	0.801*	0.133
	(0.877)	(0.317)	(0.040)	(0.016)	(0.466)
Mothers Ed: Grade 7	0.129	0.0774	0.109	0.778*	0.102
	(0.580)	(0.646)	(0.597)	(0.019)	(0.452)
Mothers Ed: Grade 8	-0.126	-0.0593	-0.166	0.805*	-0.157
	(0.459)	(0.700)	(0.385)	(0.015)	(0.192)
Mothers Ed: Grade 9	0.372	0.269	-0.117	0.612	-0.364
	(0.061)	(0.273)	(0.615)	(0.149)	(0.207)
Mothers Ed: Grade R//O	-0.709	0.360	0.425	0.313	-1.133**
	(0.489)	(0.487)	(0.140)	(0.652)	(0.010)
Mothers Ed: No Schooling	-0.0213	0.0477	-0.0781	0.902**	-0.347*
	(0.873)	(0.732)	(0.491)	(0.004)	(0.015)
No Driver's License	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Driver's License: Refused	-1.299***		1.765***	-0.807**	
	(0.000)		(0.000)	(0.003)	
Has Driver's License	-0.403	0.278	-0.0730	0.0742	-0.0277
	(0.087)	(0.370)	(0.733)	(0.706)	(0.723)
Perceived Health: Don't Know	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Perceived Health: Excellent	-0.501	0.370	1.350	1.053***	1.294**
	(0.061)	(0.154)	(0.115)	(0.000)	(0.002)
Perceived Health: Fair	-0.831**	-0.0882	0.827	0.478*	1.022*
	(0.003)	(0.729)	(0.337)	(0.029)	(0.013)
Perceived Health: Good	-0.696*	0.136	0.975	0.692**	1.112**
	(0.012)	(0.591)	(0.255)	(0.002)	(0.006)
Perceived Health: Poor	-1.392***	-0.600*	0.543	0.126	0.522
	(0.000)	(0.018)	(0.531)	(0.583)	(0.219)
Perceived Health: Very Good	-0.601*	0.135	0.982	0.851***	1.178**
	(0.025)	(0.602)	(0.254)	(0.000)	(0.004)
Alfred Nzo(DC44)	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Amajuba(DC25)	0.0878	0.475*	0.152	0.0762	-1.222***
	(0.813)	(0.043)	(0.733)	(0.792)	(0.000)
Amathole(DC12)	0.450	0.731**	1.211**	0.289	

	(0.207)	(0.006)	(0.004)	(0.612)	
Bojanala(DC37)	0.168	-0.113	-0.547	-0.337	0.585
	(0.511)	(0.783)	(0.351)	(0.486)	(0.100)
Buffalo City(BUF)	0.332	0.646**	1.630**	-0.325	0.968*
	(0.401)	(0.005)	(0.009)	(0.655)	(0.010)
Cacadu(DC10)	0.0823	-0.654*	0.404	-0.00328	0.282
	(0.801)	(0.011)	(0.477)	(0.993)	(0.441)
Cape Winelands(DC2)	0.452	0.648*	1.035*	0.596*	0.534*
	(0.145)	(0.023)	(0.018)	(0.044)	(0.043)
Capricorn(DC35)	0.252	-0.0594	0.527	-0.0741	0.338
	(0.267)	(0.880)	(0.288)	(0.810)	(0.557)
Central Karoo(DC5)	0.439	0.212	1.058*	0.310	1.137***
	(0.516)	(0.628)	(0.021)	(0.354)	(0.000)
Chris Hani(DC13)	1.322***	0.638**	1.046**	0.562*	1.574***
	(0.000)	(0.002)	(0.006)	(0.050)	(0.000)
City of Cape Town(CPT)	0.654	1.495***	0.577	0.314	0.509*
	(0.051)	(0.000)	(0.188)	(0.325)	(0.043)
City of Johannesburg(JHB)	0.310	0.477	0.622	0.0204	0.582
	(0.202)	(0.072)	(0.149)	(0.944)	(0.058)
City of Tshwane(TSH)	0.525	0.971***	0.658	-0.0984	0.577*
	(0.061)	(0.000)	(0.130)	(0.756)	(0.016)
Dr Kenneth Kaunda(DC40)	0.120	0.00689	0.220	0.812*	0.623*
	(0.738)	(0.991)	(0.672)	(0.022)	(0.025)
Dr Ruth Segomotsi Mompati(DC39)	0.201	-0.140	0.334	0.244	0.279
	(0.581)	(0.632)	(0.417)	(0.482)	(0.522)
Eden(DC4)	0.944**	0.638	1.085*	0.594*	0.461
	(0.004)	(0.133)	(0.049)	(0.033)	(0.101)
Ehlanzeni(DC32)	0.359	0.585**	0.716	0.389	0.679*
	(0.175)	(0.006)	(0.069)	(0.168)	(0.025)
Ekurhuleni(EKU)	-0.0472	0.379	0.0809	0.196	0.627*
	(0.922)	(0.201)	(0.869)	(0.534)	(0.014)
Fezile Dabi(DC20)	0.952**	0.348	0.869	0.159	0.538
	(0.002)	(0.231)	(0.121)	(0.556)	(0.063)
Frances Baard(DC9)	0.618*	0.907***	0.359	-0.0710	0.166
	(0.049)	(0.001)	(0.451)	(0.846)	(0.622)
Gert Sibande(DC30)	0.643**	0.165	0.655	0.466	0.362
	(0.004)	(0.477)	(0.103)	(0.095)	(0.176)
Greater Sekhukhune(DC47)	0.475	0.131	0.182	-0.215	0.471
	(0.098)	(0.644)	(0.636)	(0.472)	(0.122)
Joe Gqabi(DC14)	0.790**	0.669**	0.859*	0.0224	0.428
	(0.001)	(0.003)	(0.027)	(0.949)	(0.366)
John Taolo Gaetsewe(DC45)	0.407	0.133	0.491	-0.482	0.437
	(0.051)	(0.613)	(0.280)	(0.124)	(0.270)
Lejweleputswa(DC18)	0.216	-0.314	0.203	-0.199	0.0558
	(0.528)	(0.420)	(0.651)	(0.584)	(0.878)
Mangaung(MAN)	0.437	-0.609	1.064	0.157	0.322
	(0.516)	(0.244)	(0.073)	(0.745)	(0.333)
Mopani(DC33)	0.119	0.219	0.733	0.538*	0.403
	(0.665)	(0.457)	(0.080)	(0.040)	(0.265)
Namakwa(DC6)	0.602	0.446	0.526	0.0407	0.601*
	(0.122)	(0.502)	(0.303)	(0.898)	(0.042)
Nelson Mandela Bay(NMA)	0.597*	0.445	0.542	0.316	0.287
	(0.028)	(0.068)	(0.194)	(0.248)	(0.312)
Ngaka Modiri Molema(DC38)	-0.278	-0.356	0.487	-0.0345	-0.0757
	(0.347)	(0.156)	(0.236)	(0.906)	(0.799)
Nkangala(DC31)	0.571*	0.306	0.600	0.248	0.796**
	(0.033)	(0.421)	(0.151)	(0.361)	(0.003)
O.R.Tambo(DC15)	0.221	0.0520	-0.139	-0.725	0.539*
	(0.331)	(0.813)	(0.773)	(0.123)	(0.041)
Overberg(DC3)	1.016**	0.701	0.812	0.521	0.586*
	(0.004)	(0.070)	(0.066)	(0.072)	(0.026)
Pixley ka Seme(DC7)	1.145*	0.910*	1.155*	0.573	0.873**
	(0.014)	(0.018)	(0.012)	(0.073)	(0.001)
Sedibeng(DC42)	-0.321	0.161	0.281	0.0294	0.0739
	(0.302)	(0.483)	(0.525)	(0.925)	(0.816)
Sisonke(DC43)	-0.0641	0.500*	0.682	0.197	0.298
	(0.779)	(0.016)	(0.074)	(0.490)	(0.371)
Siyanda(DC8)	1.134*	0.332	0.634	0.493	0.620*
	(0.049)	(0.446)	(0.164)	(0.177)	(0.035)
Thabo Mofutsanyane(DC19)	0.0592	0.441	0.692	0.394	0.692
	(0.891)	(0.088)	(0.147)	(0.294)	(0.095)
UMgungundlovu(DC22)	0.260	0.401*	0.498	-0.114	0.305
	(0.328)	(0.045)	(0.218)	(0.715)	(0.289)
Ugu(DC21)	0.282	0.0631	0.380	-0.154	0.314
	(0.253)	(0.795)	(0.344)	(0.574)	(0.245)
Umkhanyakude(DC27)	0.573	-0.0620	-0.224	0.574*	-0.485
	(0.068)	(0.842)	(0.636)	(0.048)	(0.057)
Umzinyathi(DC24)	0.567*	0.368	0.708	0.261	0.0505
	(0.045)	(0.129)	(0.070)	(0.330)	(0.882)
Uthukela(DC23)	0.748***	0.302	0.613	-0.341	1.637***
	(0.000)	(0.172)	(0.114)	(0.344)	(0.000)
Uthungulu(DC28)	0.515	0.230	0.180	-0.239	0.545
	(0.063)	(0.357)	(0.665)	(0.433)	(0.414)
Vhembe(DC34)	0.188	-0.359	0.431	-0.139	0.753*
	(0.463)	(0.371)	(0.457)	(0.853)	(0.025)
Waterberg(DC36)	0.239	0.566	0.478	0.0925	0.596*
	(0.502)	(0.067)	(0.278)	(0.733)	(0.018)
West Coast(DC1)	0.727	0.930	1.497**	0.640*	0.739**
	(0.249)	(0.069)	(0.002)	(0.038)	(0.006)
West Rand(DC48)	-0.105	-0.485	0.883	-0.451	0.191

	(0.815)	(0.189)	(0.078)	(0.136)	(0.546)
Xhariep(DC16)	0.179	0.143	0.939*	-0.124	0.440
	(0.561)	(0.557)	(0.030)	(0.758)	(0.231)
Zululand(DC26)	0.738*	0.646*	0.894*	0.161	-0.493
	(0.016)	(0.013)	(0.034)	(0.615)	(0.144)
eThekwini(ETH)	0.695**	0.412	0.739	0.152	0.463
	(0.008)	(0.257)	(0.065)	(0.658)	(0.108)
iLembe(DC29)	0.250	0.172	0.710	0.175	0.552
	(0.319)	(0.444)	(0.085)	(0.603)	(0.067)
Above Average Income	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Average Income	0.123	0.447*	0.131	-0.120	-0.0979
	(0.596)	(0.038)	(0.384)	(0.316)	(0.255)
Below Average Income	0.0555	0.306	0.0571	-0.376**	-0.342**
	(0.811)	(0.156)	(0.709)	(0.003)	(0.003)
Relative Income: Don't Know	-0.237	0.499	0.499*	-0.238	-0.0169
	(0.351)	(0.063)	(0.011)	(0.179)	(0.919)
Much Above Average Income	0.0660	-0.190	-0.0718	-0.860***	-0.523*
	(0.854)	(0.591)	(0.817)	(0.001)	(0.012)
Much Below Average Income	-0.497*	-0.0379	-0.263	-0.417**	-0.759***
	(0.036)	(0.861)	(0.120)	(0.006)	(0.000)
Drinks Alcohol: 1-2 Days A Week	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Drinks Alcohol: 3-4 Days A Week	0.0348	0.237	-1.120	-0.317	-0.121
	(0.935)	(0.703)	(0.134)	(0.429)	(0.654)
Drinks Alcohol: 5-6 Days a Week	-0.619	0.417	-0.596	-0.796	0.0186
	(0.245)	(0.190)	(0.158)	(0.124)	(0.909)
Drinks Alcohol: < 1 Days a Week	-0.0201	0.119	-0.264	-0.338	-0.236
	(0.966)	(0.757)	(0.491)	(0.338)	(0.185)
Drinks Alcohol: Very Rarely	0.160	-0.215	-0.0101	-0.259	0.113
	(0.526)	(0.328)	(0.966)	(0.241)	(0.356)
Drinks Alcohol: Everyday	-0.221	-0.251	0.291	-0.927*	0.107
	(0.838)	(0.367)	(0.363)	(0.024)	(0.667)
Drinks Alcohol: Never Has	0.0920	-0.159	-0.192	-0.242	0.106
	(0.688)	(0.407)	(0.365)	(0.216)	(0.360)
Drinks Alcohol: No Longer Drinks	-0.0448	-0.0387	-0.348	-0.173	-0.245
	(0.857)	(0.857)	(0.133)	(0.413)	(0.092)
Smoking: Doesn't Know	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Smoking: No	1.165***	0.505	-0.529	3.715***	-0.442
	(0.000)	(0.244)	(0.167)	(0.000)	(0.077)
Smoking: Yes	1.096***	0.352	-0.724	3.386***	-0.592*
	(0.001)	(0.421)	(0.054)	(0.000)	(0.024)
Not Spouse of Head	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Spouse of Head	0.380**	-0.134	-0.177	0.0315	-0.0924
	(0.008)	(0.333)	(0.174)	(0.797)	(0.430)
Relative Income: Not Applicable			-3.520***		-0.444
			(0.000)		(0.220)
Smoking: Not Applicable			-0.334		
			(0.464)		
Mothers Ed: Cert w < Grade 12				0	
				(.)	
Father's Ed: Refused					-0.0263
					(0.924)
Constant	-0.692	-1.348	-0.438	-5.417***	-1.189
	(0.274)	(0.065)	(0.667)	(0.000)	(0.076)
Observations	1068	1070	1066	1068	1067
R^2	0.249	0.269	0.261	0.268	0.320
Root MSE	1.037	0.988	1.002	0.972	0.861

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$