

**Essays on the relationship between subjective assessment of well-being and
economic and social variables**



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University of Malaga

PhD Student: Hugo Nicolás Acosta González

Supervisor:

Prof. Oscar D. Marcenaro Gutiérrez

Department of Applied Economics (Statistics and Econometrics)


University of Malaga, C/ Ejido, 6. 29071 - Malaga, Spain

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UNIVERSIDAD
DE MÁLAGA

AUTOR: Hugo Nicolás Acosta González

 <http://orcid.org/0000-0002-3782-1115>

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Realizada bajo la tutorización de OSCAR DAVID MARCENARO GUTIÉRREZ y dirección de OSCAR DAVID MARCENARO GUTIÉRREZ (si tuviera varios directores deberá hacer constar el nombre de todos)

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En tal sentido supone una contribución de indudable relevancia en el ámbito científico. Y para que así conste y tenga efectos oportunos, en Málaga, a 29 de marzo de 2021.



Fdo.: Oscar David Marcenaro Gutiérrez

Catedrático de Universidad

Departamento de Economía Aplicada (Estadística y Econometría)

Universidad de Málaga

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Para Rosa, en el cielo.

..... y para Felipe, en camino.

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Introduction

Traditionally the study of happiness belonged to philosophy and positive psychology, but in the last decades from a multidisciplinary perspective happiness studies have progressed remarkably with contributions from different disciplines such as medicine, neuroscience, economics, sociology, and political science. In this sense, happiness is considered a new science that helps to understand (i) how to measure subjective well-being (ii) what factors make people happy, and (iii) what should policymakers do to improve the quality of life. From the economic perspective, measuring happiness is very useful since it could be approached as a proxy for utility or welfare, which is the goal for agents in economic models. Besides, economists are interested in understanding how some factors and life domains drive happiness, which is crucial for public policy design and allocation of resources.

In economics, per capita income, unemployment rate, poverty rate, inequality rate and life expectancy are considered as objective indicators of well-being. Other measures of well-being have been constructed from some of these indicators, the most well-known is the Human Development Index (HDI) which contains dimensions of health (life expectancy), education (literacy and schooling) and wealth (GDP), or the Multidimensional Poverty Index that covers multiple dimensions such as health, education, and standard of living.

Public policy has focused mainly on these objective indicators of well-being; however, subjective indicators are also useful because they could be considered more direct measures of well-being. There are situations in which objective metrics are related to subjective ones, for example, there is a positive correlation between income and happiness. On the other hand, there are situations in which objective and subjective metrics are not related; for example, upon a certain level of income or when basic needs have not been met, there is no relationship between the level of income and happiness. Hence, the idea of studying subjective indicators of well-being is to complement objective indicators in understanding people's quality of life rather than limit the use of objective indicators. Besides, subjective indicators might help to identify potential problems and evaluate public policy, especially in cases where there are non-market outcomes, that is, social, political, or cultural results, which are not characterized by a market price.

Diener (2006) considers that subjective well-being is an “umbrella” term to define any evaluation, positive or negative, that the person makes about his life; it includes (i) cognitive evaluations such as life satisfaction, job satisfaction, interest and engagement, and (ii) affective evaluations such as joy and sadness. OECD (2013) uses a similar conceptual framework based on three concepts: (i) life evaluation, (ii) affect, (iii) eudaimonia. Life evaluation is a reflective assessment of a person's life (life as a whole) or in certain aspects such as work, health, family, etc. Affect refers to the feelings of a person that can be positive, such as happiness, joy, satisfaction, and negative, such as sadness, anger, fear, and anxiety. Finally, eudaimonia captures the functioning and realization of the person's potential.

Subjective well-being measurement consists of asking people about their well-being perception. World Happiness Report from United Nations uses the ladder of life (Cantril's ladder) to measure happiness, it asks people to imagine of a ladder, being 10 the best possible life and 0 the worst possible life, and then people rate their current lives on a scale from 0 to 10. Similarly, World Values Survey measures life satisfaction by asking how satisfied with their life as a whole are these days on a scale from 1 to 10, being 1 completely dissatisfied and 10 completely satisfied.

Rayo and Becker (2007) argue that happiness measured in surveys represents only one of the arguments of the entire utility function, then people could exchange happiness for other arguments. Graham (2005) considers that the revealed preferences approach in traditional microeconomics could provide limited information on the utility and well-being of a person since there is non-rational behavior or bounded rationality involved. The problem with this choice is that it is an ex-ante approach under uncertainty, which may differ with the experienced utility in the future as a result of decision making. However, the concept of experienced utility was considered unobserved and already contained in the maximization of utility. Kahneman et al. (1997) remarks that the experienced utility can be measured and it is different from that obtained under the choice theory since there may be systematic errors in the evaluation of past decisions that make it difficult to “maximize utility”. Following Kahneman and Krueger (2006) there is a difference between what people choose (revealed preferences) and their stated intentions (subjective approach).

Di Tella et al. (2003) found that changes in the Gross Domestic Product (GDP) are associated with more happiness temporarily because the increase in happiness wears off over time once people adapted to their new income level. On the contrary, when there is an economic recession, the effects tend to be long-lasting, unemployed people are afraid and experience a fear-of-unemployment effect or psychic

loss. Arthur Okun in the 1970s created the Misery Index, which increases when inflation and unemployment rise. Di Tella et al. (2001) show that people are happier when unemployment and inflation rates are low, but in terms of well-being, the cost of unemployment is higher than inflation.

Unemployment is the loss of an income source (pecuniary cost), but also a loss of self-esteem and deterioration in social relationships (non-pecuniary cost or psychic loss). Winkelmann and Winkelmann (1998) found that the effect of the psychic loss of unemployment is much larger than the economic loss of income. The loss of well-being in unemployment is influenced by social norms and social comparison (Clark 2003, Marcenaro et al., 2010, Stutzer and Lalive 2004). When people are reemployed, happiness does not completely recover to the initial levels before unemployment, refers to as a *scarring effect* (Gielen and Van Ours 2014).

Layard (2004) argues that in terms of happiness is more important whether or not the individual has a job rather than the type of job. In developing countries, the idea that any job is preferred to unemployment in terms of happiness has not been studied. Dewan and Peek (2007) mention that in developing countries employment covers heterogenous job characteristics; for example, informal jobs with no social protection. Besides, unemployment is a luxury that poor people cannot afford, then they might be forced to take any job, even low-quality jobs. In the same line, ILO (2019) argues that being in employment is not a synonym for decent living. Hence, I suggest that in developing countries the main concern in terms of happiness is employment in bad jobs rather than unemployment.

The relationship between income and happiness has been the most studied topic on happiness economics since the Easterlin Paradox, but the research in the last two decades has focused on the effect of relative income rather than absolute income. The idea behind is that income buys happiness to the extent to which income comparison puts the individual in a better position. The literature has exploited the idea the individual compares her income against a reference constructed group (Ferrer-i-Carbonell 2005; Oshio et al., 2010; Kingdon and Knight 2007, Rojas 2019).

Health status is another determinant of subjective well-being considering that people with a good health status declare to be happy (Hellevik 2013, Angner et al., 2013, Gandelman and Hernández-Murillo 2013 and Mizobuchi 2017). On the other way of causation, there is evidence that subjective well-being explains the state of health. Diener et al. (2017) present an extensive review of studies showing that subjective well-being affects health in terms of acting healthy, accelerating recovery, reducing inflammation, immunity, cardiovascular health, survival, and longevity.

Sabatini (2014) based on other studies suggests that the main transmission channel that explains how happiness affects health is through the Autonomous Nervous System (ANS) since attitudes towards life activate physiological reactions that determine health; for example, losing a job influences the ANS, which in turn worsens health status, and increases mortality rates (Rozanki et al., 1999). In the same way, happiness and positive emotions motivate to act healthy; for instance, to exercise (Rasciute and Downward, 2010), to smoke less and have a lower body mass index (Hamer and Chida, 2011), or to have a healthy diet (Blanchflower et al., 2013). Self-reported health has proven to be a good predictor of mortality rate (Mossey and Shapiro 1982; Idler and Benyamini, 1997) and a good predictor of a person's health status (Brooks et al., 2013). Sabatini (2014) concludes that happiness is the best predictor of subjective health after controlling for a series of socioeconomic variables.

Health is more than just physical health, Flèche and Layard (2017) remarks that mental health has been ignored in happiness studies, which assumes that misery (dissatisfaction with life) and mental health are the same. Graham (2017) argues that negative emotions and depression are not the opposite of life satisfaction. Flèche and Layard (2017) show that in UK, US, Germany and Australia the correlations between depression and life satisfaction is only between 0.1 and 0.4, and using a multivariate model, they found that depression explains much more misery than unemployment, poverty and physical health.

Another determinant of happiness are social relationships. Cooper et al. (1992) estimated that satisfaction with social activities was the stronger predictor of subjective well-being. Sirgy and Cornwell (2002) argue that community satisfaction plays a crucial role in life satisfaction, but what really matters for happiness is the quality rather than the quantity of friendships (Lucas et al., 2008). According to David et al. (2014) papers focusing on quality of friends have a larger effect size on happiness compared to those focusing on friendship quantity. Gouveia et al. (2016) after reviewing 37 papers concluded that friends network predicts better life satisfaction rather than family networks.

Although I have discussed the main domains that drive happiness, but the process by which individuals become happier is not straightforward. The understanding of aspirations and adaptation are crucial to avoid puzzling and misleading findings. The aspiration theory considers that happiness depends on the ratio of the person's satisfied desires over the total desires. In other words, as higher the aspirations, people tend to be less happy. Stutzer (2004) mentions that the aspiration theory is conducted by hedonic adaptation and social comparison, which makes individuals struggle for higher aspirations.

For instance, an increase in income is accompanied by higher aspirations, and thus the positive effect on happiness might be only temporary, smaller than expected, or even negative. The author found that higher income aspirations are associated with less life satisfaction. Fuentes and Rojas (2001) found the perception of satisfied material needs has a greater effect on subjective well-being than the level of income. McBride (2010) using an experimental approach found that the aspirational formation factors affect life satisfaction.

Hedonic adaptation refers to the process by which the initial effects of life events on happiness dissipates with time. In terms of income, people might adapt to their new level of income, therefore income might not have a permanent effect on happiness, this is known as preference drift. Groot and Van Den Brink (1999) argue that preference drift depends on the level of subjective well-being already attained, and they found that preference drift only occurs at higher levels of happiness. Brickman et al. (1978) show that lottery winners after a while do not have greater happiness than their control group, even they had less satisfaction before a series of daily events. Adaptation to events takes time, Suh et al. (1996) found that life events during the previous 3 months influenced life satisfaction, positive and negative affect, nonetheless, further life events did not correlate with subjective well-being. There are other cases that take more time of adaptation like unemployment or long-lasting events like becoming widowed (Lucas 2007). Health is a special case since deterioration in health has a permanently negative effect on happiness (Easterlin, 2005).

This thesis evaluates the relationship between subjective well-being and income, unemployment, and health. I use quantitative methods to test happiness theories using subjective well-being data never explored before in academic literature. For instance, the Ecuadorian Household Living Conditions Survey 2013-2014 and the Ecuadorian Quarterly Labor Market Survey (ENEMDU). The idea is to identify coincidences with previous results for European and developed countries and determine the sensitivity of happiness theory. In case of contradictions or new findings, I will suggest possible mechanisms to explain the results.

The rest of the document is structured as follows. First, chapter 1 addresses the relationship between subjective well-being (evaluative and emotional) and self-reported health for Ecuador. Chapter 2 test whether job transitions from bad jobs to good jobs and vice versa affect subjective well-being (life satisfaction and job satisfaction) for Ecuador. Chapter 3 assesses the relative income hypothesis and the rank-income hypothesis for Ecuador. Chapter 4 addresses the main sources of misery

(unhappiness) for 28 European Union countries. Finally, I present conclusions and recommendations for future research.

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Chapter 1: The relationship between subjective well-being and self-reported health: evidence from Ecuador

Introduction

There is a growing literature explaining how subjective well-being (SWB) influences on health outcomes. Ong (2010) and Diener et al. (2017) review many ways that SWB affects mortality and health, such as healthy behavior, cardiovascular, and immune system functioning. The relationship between going from SWB to self-reported health (SRH) is limited. Siahpush et al. (2008) argue that their study is the first on this topic. They found in Australia that SWB is positively associated with future SRH (at wave 3). Sabatini (2017) found for Italy that feeling happy increases the probability of good SRH by 23%. There are no further studies on this topic. In this paper, we test how SWB influences on SRH in Ecuador, considering potential bias due to reverse causality.

Previous studies relate health objective measures such as life expectancy, longevity, and some medical diseases with happiness (a dimension of SWB). However, there is also strong evidence that associates with subjective health measures. SRH appears to be more important than objective health measures because coping abilities and adaptation could offset potential losses in SWB due to poor health, but severe diseases indeed lower SWB (Diener et al. 1999). For instance, Angner et al. (2013) found that the association between health status and happiness depends on how health is measured. The results using subjective health measures were statistically significant, while using objective health measures were not. In the same vein, based on other studies, Veenhoven (2008) mentioned that the correlations of happiness with SRH are somewhat stronger than the correlations between happiness and health ratings based on medical examinations.

SWB does not cure diseases, but it seems to protect from getting sick in some way (Veenhoven 2008). Pressman and Cohen (2005) reviewed several papers that show the connection between positive affect with: (i) lower morbidity, fewer symptoms, and pain, (ii) increase in longevity, (iii) acceleration in immunological, cardiovascular, and pulmonary functions. There is a mature literature explaining how SWB dimensions influences on health. Diener et al. (2017) on its appendix, shows a very large review of studies that explains how SWB influences on health, for instance, in terms of health behavior, speed of recovery, immune, improved cardiovascular health, reduce inflammation, survival, and longevity. For short-term outcomes, SWB is correlated with immune functioning, while for long-term outcomes

SWB is associated with cardiovascular health and longevity (Howell et al. 2007). Emotional state might contribute to vulnerability of cardiac dysfunction in everyday life (Bhattacharyya and Steptoe, 2011), positive affect is associated with stronger immune system, for instance, lowering the risk of developing a cold (Cohen et al. 2003), or reducing neuroendocrine, inflammatory, and cardiovascular activity (Steptoe et al. 2005). Whereas negative affect is a reliable predictor of heart rate (Daly et al. 2010), related to blood pressure (Ilies et al. 2010). Even clinical depression is associated with lower levels of SWB (Gargiulo and Stokes, 2009), and depression predicts the development of coronary heart disease (Rugulies, 2002)

Sabatini (2014) based on other studies, mention that the main channel of transmission explaining how SWB impacts on health is the autonomic nervous system (ANS) since attitudes towards life prevent the ANS from activating physiological reactions that determine health. Happy people are motivated to act healthy, for instance, exercising and not smoking (Boehm et al. 2012; Grant et al. 2009), eating a healthy diet (Blanchflower et al. 2013), having lower levels of body mass index (Hamer and Chida 2011). Conversely, people with poor SWB are related to destructive behaviors that can worsen health problems, for example, persons with anxiety or depression are likely to be obese, to smoke, and drink alcohol (Strine et al. 2008) or having more insomnia symptoms (Hamilton et al. 2007). Receiving bad news or having a poor perception of life could worsen the state of health due to stress caused by adverse life changes (Martinson et al. 1985).

We believe that SWB might affect health, but a common concern dealing in this relationship is reverse causation. The most common approach to deal with reverse causality is to use instrumental variables; using this method Sabatini (2017) found that happiness is the strongest predictor of SRH. On the other hand, there is a bunch of literature going from health to SWB. Health problems that interfere with daily activities affect happiness (Mukuria and Brazier 2013). Graham et al. (2011) found that anxiety, pain/discomfort are associated with lower happiness.

When using SRH instead of objective health measures, there are several studies. On average, people with a better perception of health would score a high value of SWB compared to those with a poor perception of health. Palmore and Kivert (1977) found that initial levels of SRH were the most critical factor that influenced future life satisfaction. Angner et al. (2013) found a positive correlation between happiness and SRH in older adults. Helliwell (2003) estimated that an increase in one unit of health on a five-point scale is associated with a 0.61-point increase in SWB. Ljunge (2016) found that SRH is a crucial determinant of individual well-being, quantitatively much more important than other

demographic and economic characteristics. Mizobuchi (2017) recommends that health should be the highest priority for improving happiness motivated by the fact that in a sample of 36 developed countries, health factors account for the largest part of the cross-country variation in SWB. Graham (2012) for Latin America found that when explaining happiness, SRH has the stronger coefficient.

Literature Review

Subjective Well-Being

Over the last decades, the study of SWB became popular in social sciences and psychology since more surveys were available such as Gallup World Poll, World Values Survey, European Values and many other national surveys. According to Diener et al. (2003), SWB includes cognitive and emotional evaluations of people's lives. Cognitive refers to life satisfaction (life as a whole), whereas emotional relates to emotions, feelings, or moods. Steptoe et al. (2015) identify three groups: (i) evaluative well-being that alludes to life satisfaction, (ii) hedonic well-being that refers to positive affect a negative affect and (iii) eudemonic well-being that is the sense of purpose and meaning in life. In OECD (2011) and OECD (2013), emotional well-being is expressed as positive affect (happiness, excitement, joy) and negative affect (anger, pain, sadness, etc.). By construction, SWB dimensions are conceptually distinct, but they might be correlated with each other. For instance, Kahneman and Krueger (2006), using data from Germany found a net affect¹ is 0.38 correlated with life satisfaction. OECD (2013) using Gallup World Poll across countries, shows that life satisfaction is correlated with (i) positive affect (0.229) and (iii) negative affect (-0.231).

Bjornskov (2003) and Frey and Slutzer (2002) use happiness and life satisfaction interchangeably. Veenhoven (2012) describes happiness, as how much one likes the life one leads, and then suggest life satisfaction and happiness are synonymous. Conversely, Deaton (2008) remarks that in questions about life satisfaction, respondents make an overall evaluation of their lives based on thoughts. In contrast, happiness refers to affect and ask for experiences such as smiling, feeling happy and absence of depression some days before the interview. Kimball and Willis (2006) remarks that happiness is the sum of two components: (i) short-term, which depends on recent events in life, and (ii) long-term, which depends on aspects such as entertainment, health or nutrition. Life satisfaction is usually measured by asking people to rate their current life in scale from 0 (worst possible life or completely

¹ Net affect results from the difference between positive and negative episodes. See Kahneman and Kruger (2006, p. 11)

dissatisfied) to 10 (best possible life or completely satisfied), whereas happiness is usually measured with the question "taken all together, would you say that you are very happy, pretty happy, or not too happy". When comparing answers from happiness questions with life satisfaction questions, there is no significant difference (Helliwell and Putnam 2004 and Helliwell et al. 2012).

Self-reported health

Self-reported health (SRH) is a very frequently health measure used in social sciences that consists of a questionnaire in which the person based on perceptions rates their health. It is an easy and fast way to collect reliable information about health, especially in cases where objective data are insufficient to reflect disease severity or in cases with undiagnosed disease. In general, morbidity measures rely on specific external observations for each type of disease. At the same time, in other cases such, as pain or discomfort, subjective evaluation of health is the only valid source of information that even could coincide with objective measures (Lora 2011).

Jylhä (2009) suggests that the mechanism of SRH is a cognitive process that is subjective and circumstantial, based on the biological and psychological state of the person, and it might predict mortality rate. Indeed, SRH has proven to be associated with mortality rate (Mossey and Shapiro 1982; Idler and Benyamini 1997; Benyamini and Idler 1999; Idler et al. 2000; Murata et al. 2006). Besides, SRH is consistent with the objective health status measured by examining the prevalence of diseases and laboratory parameters (Wu et al. 2013), life expectancy (Bourne 2009), risk factors, disease indicators (Kaplan 1996), and walking difficulty (Jylhä et al. 2001). Au and Johnston (2014) found that the strongest predictor of SRH is vitality, and then physical functioning and bodily pain.

Despite several findings relating SRH with objective health measures, SRH has not been exempt from critics. According to Sen (2002) in India, a person who arrives to a community with many diseases and few health facilities would consider their symptoms normal when they are clinically preventable, while people with more education and access to better health facilities are in a better position to diagnose and perceive their own health than people who live in disadvantaged places. However, Subramanian et al. (2009) with data from India, found that people with lower education are more likely to report some diseases and poor health status than those with higher levels of education. They conclude that the skepticism in the use of self-reported health has little empirical support. Another critic is Huisman and Deeg (2010) who argue that SRH could not be considered as a true measure of health status, but only as a perception of health. In response, Jylhä (2010) argued that in medicine, the

state of health is usually approached with diagnoses, laboratory values, functional tests, etc. However, there is no rule or equation that encompasses all dimensions into a single indicator of health.

Data, Variables and Methods

Ecuador Living Conditions (ECV) 2014 is a cross-sectional nationwide (urban-rural) survey that contains information on different aspects and dimensions of life and welfare such as income, expenditure of family units, own production, health, education, habits, social capital among others. For the first time, this survey includes SWB questions in their questionnaire. SWB is measured in terms of cognitive and emotional dimensions. The cognitive or evaluative dimension of SWB is measured by the question “In a scale of 1 to 10, meaning 1 completely unhappy and 10 completely happy, how do you feel taking into account all aspects of your life. This question asks for happiness in a life-evaluative mode. In the following results we will refer to as happiness. The emotional well-being is measured through the average of the 16 questions of psychosocial well-being in scale of 0 to 7 (see Table 1 –Appendix- for description of the variables). Each question asks how many days from the last seven days the person had a negative mood such as depression, poor self-esteem, upset, among others; thus, the higher is the value, more days in a negative emotional state the person has been (poor emotional well-being). On the other hand, SRH is measured by the question “In a scale of 1 to 10, meaning 1 completely unsatisfied and 10 completely satisfied, how do you feel about your health status?”.

Table 2 shows the summary and description of questions from the survey used to model SWB and SRH. Table 3 presents descriptive statistics for SRH; Panel A shows bivariate statistics for ordered variables, computing the mean for each category, and the Goodman and Kruskal's Gamma (γ) statistic (it is a measure of association between categorical variables). Happiness is positively associated with SRH, which means that if one person has better SRH than another, we would expect that person to report a higher level of happiness. As well as if a person has a low level of happiness, we expect this person to report poor SRH². The association between these variables is the highest among all variables. The relationship between SRH and income perception is negative, which indicates a person that considers his income poor to live would report worse SRH than a person that considers his income good to live. As education increases, people report higher SRH. On the other hand, there is no pattern with age and health importance.

² In Goodman and Kruskal's Gamma (γ) statistic is not defined which variable is dependent or independent.

Panel B (Table 3) indicates the results of a difference mean test for binary variables; people that have not experienced illness and practiced any sport in the last month report on average less SRH than people that experienced illness and did not practice any sport. Panel C (Table 3) indicates that people that report high SRH had fewer days in the negative emotional state. Conversely, people that report low SRH had more days in a negative emotional state. Furthermore, in Figure 1 (Appendix) is shown the relationship between SWB and SRH; the database is collapsed by means into cities to facilitate visualization. This Figure indicates that SRH is positively correlated with happiness (cognitive dimension in Figure 1A) and negatively correlated with emotional well-being (emotional dimension in Figure 1B) in concordance with the previous evidence.

A common concern when measuring SWB is that people use the response categories differently (Kahneman and Krueger, 2006), or that answers might be weighted with judgment and affect (Diener et al. 2009). A plausible approach is to use a binary variable, =1 if happy and =0 if unhappy. For instance, in Sabatini (2014), happiness is measured on a scale from 1 to 10, the cutoff-point is 8, and then a person is happy if the response is equal or greater than 8, and 0 otherwise. When modeling SRH as a dependent variable, some alternatives could be considered. First, assuming that health is an unobservable latent variable normally distributed and an ordered outcome, the most common approach is to estimate an ordered probit/logit model as Graham (2012). Another alternative is to use a Log-Normal OLS because of the distribution of SRH could be skewed, since most people in the sample report good health with high concentration at the end of the scale. To ensure skewed distribution in the right direction Cubí-Mollá et al. (2014) and Cubí-Mollá and Herrero (2012) SRH is inverted as $i = 11 - \text{SRH}$, which is closer to a standard log-normal distribution.

Despite SRH is an ordinal variable; we do not use an ordered model because the interpretation is complicated, considering a scale with 10 points. Alternatively, we use a probit model with a dummy variable indicating good health that equals 1 if SRH is equal or greater than 7 and 0 otherwise. This cutoff was selected, considering the mean of SRH is 6.8. Using this same rule, we transform the independent variables happiness and emotional well-being into dummy variables. The mean of happiness is 7.6, and emotional well-being is 1.1 (see Table 2). Because the data comes from a cross-sectional survey, it is not possible to isolate for endogeneity: (i) potential unobservable variables and (ii) reverse causality that could bias the estimation. As a solution for endogeneity, we use a probit model using instrumental variables. The general set up is:

$$h_{1i}^* = \beta s_i + \delta e_i + x'_{1i} \gamma + \varepsilon_i \quad (1)$$

$$s_{2i} = \delta e_i + x'_{1i} \pi_1 + c\pi_2 + v_i \quad (2)$$

where: $i = 1, \dots, N$; h_{1i}^* is a latent binary variable equals 1 if a person has good health status and 0, otherwise; s_i = represents happiness, and e_i represents the emotional well-being; x'_{1i} is a vector of additional explanatory variables; c is the instrument Sense of Community (SoC) that equals 1 if the person feels part of its community, and equals 0 otherwise. Equation 1 is called “structural” and equation 2 is refers to as “first-stage” or “reduced-form”. The reduced-form explains the variation of happiness in terms of exogenous variables, including the instrument. Indeed, the instrument should hold the relevance condition, which means that it should be correlated with happiness. Conceptually, SoC "reflects the feelings of attachment and belonging that an individual has towards a community" (Pooley et al. 2005, pp.71).

Pooley et al. (2005) argue that SoC allows an understanding of how the person connects to the community, which is a key aspect of the concept of social capital³. There is a bunch of literature that explains how social capital dimensions: trust and obligations, information channels, norms, and sanctions are correlated to happiness and life satisfaction. Wakefield et al. (2017) is the first study to explore how the sense of commonality with the group's members is related to life satisfaction. They found higher levels of identification with the local community predict higher levels of life satisfaction, and this effect is highly statistically significant at 0.01. In the reduced form, we will test the correlation between SoC and happiness and perform the test of weak instrument.

Moreover, the instrument should hold the exogeneity condition, which means the instrument should not be correlated with the error term of the structural equation. Carpiano and Hystad (2011) argue that the connection from SoC to SRH is to know people well to ask them for favors. We consider that in Ecuador, this is not a concern since public free healthcare reduces health disparities and declines the effect of social capital to determine health. In 2014 out of 32 countries of Latin America & Caribbean, health expenditure as a percentage of GDP in Ecuador was 8.64%⁴, the second-highest indicator in the region. We use a very similar argument to Sabatini (2014) who tests whether happiness affects SRH for the province of Trento in Italy. He uses social capital variables: quality of friends and social trust as instruments. The author remarks for their study the exogeneity condition holds since the public

³ According to Paxton (1999, p.89.) ‘Social capital is the idea that individuals and groups can gain resources from their connections to one another (and the type of these connections)’.

⁴ According to World Health Organization / Global Health Expenditure Data Base <http://apps.who.int/nha/database/Select/Indicators/en>

healthcare system scales down the role of social capital in facilitating access to healthcare services. In the results section, we discuss the exogeneity of the instrument using the Wald test of exogeneity.

Results

Table 4 shows a simple probit model. Column 1 reports the influence of feeling happy raises the probability of reporting good SRH by 27.3% controlling for personal, education, work, subjective economic well-being variables. In contrast, emotional well-being has no statistically significant effect. More educated people, with a job and with better subjective income perception, are more likely to report good SRH, which might indicate health disparities by socioeconomic status. Column 2 controls additionally for health variables such as recent illness, practicing sport and health importance, the effect slightly decrease to 26.8%. This might indicate happiness predicts much more SRH than any other variable, even objective health measure; having a recent illness decreases the probability of declaring good SRH by 9.6%. Column 3 includes SoC as a control variable. Feeling part of the community does not have any significant influence on SRH, this is crucial because SoC could be exogenous to other health determinants contained in the error term of the structural equation in the following instrumental variable estimation.

Table 5 indicates the estimation of the probit model using SoC to solve for reverse causality (IV Probit). Column 1 reports the results of the first-stage, indicating SoC explain happiness; the coefficient is significant at 0.01, which suggests that SoC holds the relevance condition. Column 2 reports the result of the instrumental variables estimation, feeling happy increases the probability of having good SRH by 37.7%. As in the simple probit model at Table 5 people with better income perception and who did not experience an illness in the last month report greater probability of good SRH. The reason could be that people with better income perception have better habits and take care of their health, so they experienced less illness then report high SRH.

Furthermore, we find that married people declare higher SRH than non-married. There are two plausible reasons. First, marriage selection theory means that healthier individuals are more likely to get married and to stay married, whereas the less healthy people remain single or are likely to become divorced or widowed (Goldman, 1993). Second, and more convincing is marriage protection by which marriage protects against adverse health outcomes since the tie reduces risky behavior and increase preventive behavior (Broman, 1993). At regional level, Coast Region has worse SRH than Highlands

Region; this might be due to individuals in Coast Region report more illness and have a poorer income perception than persons in Highlands Region, besides the fact that epidemiological profile varies across region due to weather, altitude, and cultural aspects.

The coefficient of age is positive, and the coefficient of age squared is negative, indicating a marginal decreasing effect of age on having a good SRH. For people younger than 40 years, SRH is 7.1, whereas SRH for older than 40 is 6.4. Idler (1993) outlines the debate in gerontology literature around the relationship between SRH and age. As age increases, people are exposed to aches, pains, and physical discomfort, and they might tend to exaggerate their health as poor. However, people might also perceive these symptoms as normal signs of aging, and they might be optimistic about their health. The author finds a positive relationship between age and SRH.

A critical concern in our study is the validity of the instrument SoC. First, the instrument should be relevant. In Table 5, we test in the first-stage that SoC does explain happiness, which gives the idea that instrument is reasonable in terms of relevance. An instrument is referred to as a weak instrument when it does not hold the relevance condition. The problem is when using a weak instrument, the instrumental variable estimator is biased, and the hypothesis test has largely size distortions (Stock and Yogo 2002). To ensure the instrument is not a weak instrument, we use the Stock and Yogo test; the minimum eigenvalue statistic is 116.79 that greatly exceeds the critical value of 16.38. Then, we reject the null hypothesis of a weak instrument in favor of the alternative hypothesis⁵. Thus, SoC is a relevant instrument. Secondly, the instrument should be exogenous. As shown in Table 4, SoC is not correlated with reporting good health, which gives the first idea the instrument might be exogenous. We use the Wald test of exogeneity that accounts for whether the error terms in the structural equation and the reduced-form equation for the endogenous variable are correlated. The Wald test of exogeneity has a p-value of 0.28, which is weak evidence against the null hypothesis that happiness is exogenous.

Table 6 shows the same probit and IV probit model, but using illness the only objective health measure in the survey as the dependent variable. Illness equals one if the person had a recent illness (objective health measure). Column 1 shows for the simple probit model SoC does not explain illness. Therefore, we confirm again our instrument is exogenous since it is not related to any subjective or objective

⁵ The minimum eigenvalue statistic of 116.79 equals the F-statistic of 100.49 when the instrument (SoC=0) when using normal standard errors. In this model, we use robust standard errors to heteroskedasticity, and Cameron y Trivedi (2013) mentioned that in this case since both statistics greatly exceed the critical value of 16.38, it is appropriate to reject the null hypothesis.

health outcome. The results of the second stage indicate the effect of happiness on illness is not statistically significant. This result seems similar to Angner (2013), who found the correlation between happiness and objective health measures were not statistically significant, but the correlation was significant using subjective health measures.

To validate previous results, we use ECV (2014), in Table 7 to test the same relationship between SRH and happiness using a 2013-2014 panel data from the National Survey of Employment, Unemployment, Underemployment (ENEMDU). We use a probit model allowing for fixed effects to control for unobserved individual characteristics that could bias the estimation. We use the same variables as previous estimates except for SoC, sport, emotional well-being, and health importance that were not available in ENEMDU. As expected, using fixed effects, regional and racial minority variables are omitted. The result indicates that happiness does explain SRH; the coefficient is 53%, somewhat greater than the IV Probit model using ECV (2014) shown in Table 5.

Conclusions

Health is instrumental to many aspects of people's lives, such as working, training, education, and participating in social activities. A person with a good health status might do better on all these aspects compared to a person with poor health status. One of the most common measures in social sciences to measure health is by self-reported health (SRH) that encompasses an overall measure of health based on people's perceptions. Previous research found evidence that health status is highly correlated with cognitive (evaluative) and emotional well-being dimensions. When dealing with the relationship between SRH and SWB there are two logics of causality; one possibility is that people report high SWB because of their good health. While another alternative based on medical and psychological findings connects SWB to health. Using Household Living Conditions Survey 2014 for Ecuador, we estimate the effect of cognitive and emotional well-being on SRH using the sense of community (SoC) as an instrumental variable to solve for reverse causality.

The results indicate happiness or the cognitive dimension of well-being is the main predictor of SRH, quantitatively more important than having a recent illness (objective health variable), habits (sport) or health care (health importance), likewise income perception and marital status also explain SRH. In contrast, emotional well-being does not predict SRH. Despite solving for reverse causality, the results of this study that uses cross sectional data should not be interpreted as a causal relation. In some cases,

health variations occur over long periods; therefore, we cannot argue that SWB improves/deteriorates health status.

This study is the first evidence that associates the two dimensions of SWB to explain SRH for Latin America and Ecuador. Unlike the only previous studies (Siahpush et al. 2008 and Sabatini 2017), we test whether happiness and emotional well-being affect SRH rather than only happiness. Our results are entirely new since; in general, health policy in Ecuador rarely considers the potential spillovers. We suggest that in addition to public free healthcare policy, health outcomes might improve by increasing SWB. For future research to reinforce our results, it would be needed to test whether various dimensions of SWB affect specific health outcomes such as cardiovascular indicators, immune indicators, healthy behavior, etc., preferably using longitudinal data. However, in Latin America SWB variables are usually missing in health surveys. A more plausible alternative is experimental design; for instance, testing interventions to increase positive affect reduce stress and physiological therapy to avoid unhealthy behavior might improve health diseases or reduce mortality.

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Appendix

Figure 1: Self-reported health and subjective well-being

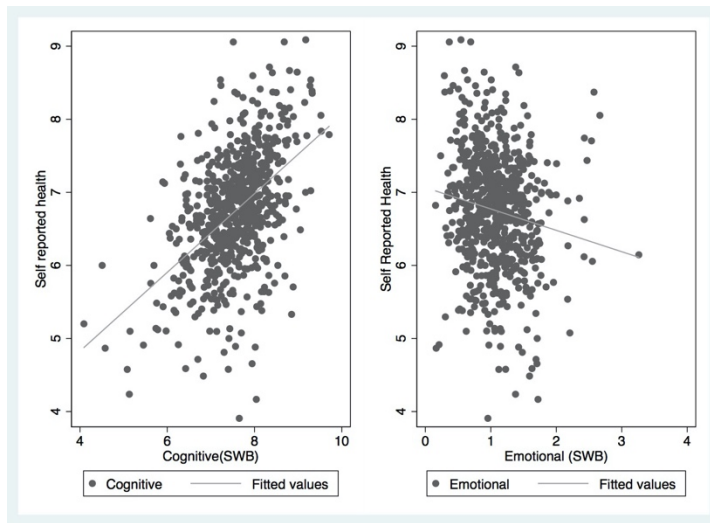


Table 1: Description of psychosocial well-being questions used to calculate emotional dimension of well-being

Variable	Description
1	In the last 7 days how many days have you feel upset for things that usually would not bother you?
2	In the last 7 days how many days have you not have appetite?
3	In the last 7 days how many days you could not stop crying even with friends or family support?
4	In the last 7 days how many days you could not concentrate even when nobody was interrupting?
5	In the last 7 days how many days have you feel depressed?
6	In the last 7 days how many days have you feel that everything you did was a sacrifice?
7	In the last 7 days how many days have you feel that your life is a failure?
8	In the last 7 days how many days have you feel fear?
9	In the last 7 days how many days have not get enough sleep?
10	In the last 7 days how many days have speak less than usual?
11	In the last 7 days how many days have you feel alone?
12	In the last 7 days how many days have that people were not friendly?
13	In the last 7 days how many days have you cried?
14	In the last 7 days how many days have you sad?
15	In the last 7 days how many days have you feel people did not like you?
16	In the last 7 days how many days have you do want to do nothing?

Table 2: Summary statistics

Variable	Description	Mean	Std. Dev.
Happiness	in scale of 1 to 10	7.657	1.503
Emotional Well-Being	average number of days	1.113	0.0038
Self-Reported Health	in scale of 1 to 10	6.888	19492
Age	in years	34.435	9.998
Age Squared	in years	1285.77	761.037
Male	=1 if men, =0 otherwise	0.586	0.492
High School	=1 if graduated from high school, =0 otherwise	0.444	0.496
Racial Minority	=1 if is indigenous or black, =0 otherwise	0.247	0.431
College	=1 if graduated from college, =0 otherwise	0.252	0.434
Marital Status	=1 if married or free union, =0 otherwise	0.654	0.475
Home Activities	number of hours in home activities per week	13.885	11.464
Working	=1 worked at least one-hour last week=1, =0 otherwise	0.704	0.456
Labor Stability	=1 if has a permanent work, =0 otherwise	0.595	0.120
Good Income Perception	=1 if report good living status with actual income, =0 otherwise	0.182	0.387
Acceptable Income Perception	=1 if report acceptable living status with actual income, =0 otherwise	0.762	0.426
Poor Income Perception	=1 if report poor living status with actual income, =0 otherwise	-	-
Illness Health	=1 if had an illness last month (non-ARI nor-ADD), =0 otherwise	0.430	0.495
Importance	in a scale of 1 to 4 (1=very, 4=none) 4=nothing	1.119	0.335
Sport	=1 if practiced any sport last month, =0 otherwise	0.481	0.481
Region 1	=living in Highlands Region, =0 otherwise	-	-
Region 2	=living in Coast Region, =0 otherwise	0.290	0.453
Region 3	=living in Amazon Region, =0 otherwise	0.124	0.330
Region 4	=living in Galápagos Region, =0 otherwise	0.042	0.200
Sense of Community	=1 if feels part of the community, =0 otherwise	0.878	0.327

Table 3: Descriptive Statistics

A		B		C	
Ordered Data		Binary variables		Emotional Well-Being	
Happiness	mean (SRH)	Sex	mean (SRH)	SRH	mean (emotional)
1 (very unhappy)	5.897	Male (1)	7.374	1	1.253
2	5.571	Women (0)	7.424	2	1.223
3	5.467	t-statistic = -1.0496		3	1.223
4	5.685	Pr(0-1 ≠ 0)=0.29391		4	1.221
5	5.958	Marital	mean (SRH)	5	1.284
6	6.377	Married (1)	7.050	6	1.082
7	6.857	otherwise (0)	7.590	7	1.046
8	7.423	t-statistic = -1.2651		8	0.954
9	8.001	Pr(0-1 ≠ 0)=0.2059		9	0.915
10 (very happy)	8.222	Work	mean (SRH)	10	0.926
Y = 0.2785		at least one hour last week (1)	7.170		
Age	mean (SRH)	otherwise (0)	7.408		
<20 (1)	6.998	t-statistic = -1.4969			
20-34 (2)	7.139	Pr(0-1 ≠ 0)=0.1345			
35-49 (3)	6.480	Labor Stability	mean (SRH)		
50-64 (4)	7.065	has a permanent job (1)	7.373		
>65 (5)	5.883	otherwise (0)	7.424		
Y = 0.086		t-statistic =-1.0708			
Education	mean (SRH)	Pr(0-1 ≠ 0)=0.2824			
< High School (1)	7.167	Illness	mean (SRH)		
High School (2)	7.429	had an illness last month (1)	7.064		
>High School (3)	7.643	otherwise (0)	7.638		
Y= -0.090		t-statistic =12.1589			
Income Perception	mean (SRH)	Pr(0-1 ≠ 0)=0.000			
Good Income (1)	8.1395	Sport	mean (SRH)		
Acceptable Income (2)	7.3245	practiced any sport last month(1)	7.276.411		
Poor Income (3)	6.0474	otherwise (0)	7.539.735		
Y= -0.2008		t-statistic =5.6191			
Health Importance	mean (SRH)	Pr(0-1 ≠ 0)=0.000			
Very Important (1)	7.438				
Important (2)	7.167				
Somewhat Important (3)	5.889				
Nothing Important (4)	7.001				
Y= -0.0512					
Region	mean (SRH)				
Highlands	7.481				
Coast	7.125				
Amazon	7.505				
Galápagos	8.017				

values in parenthesis for indicate the order category

Goodman and Kruskal's Gamma (Y)

t-statistic and Pr() correspond to difference of means test



Table 4: Probit estimation (dependent variable SRH)

	Model 1	Model 2	Model 3	Model 4
Happiness	0.273*** (52.14)	0.268*** (47.11)	0.267*** (47.03)	0.267*** (46.91)
Emotional Well-Being	0.0187* (2.42)	0.192 (1.18)	0.190 (1.16)	0.191 (1.17)
Age	0.000638 (0.74)	0.00517*** (4.60)	0.00525*** (4.67)	0.00526*** (4.68)
Age Squared	-0.0000516*** (-4.88)	-0.000102*** (-6.97)	-0.000103*** (-7.04)	-0.000104*** (-7.06)
Male	0.0133** (2.62)	-0.00163 (-0.28)	-0.000851 (-0.15)	-0.000875 (-0.15)
High School	0.0489*** (10.34)	0.0399*** (8.16)	0.0388*** (7.92)	0.0390*** (7.95)
University	0.0996*** (12.99)	0.0816*** (10.26)	0.0798*** (10.03)	0.0799*** (10.05)
Racial Minority	0.0284*** (5.59)	0.0306*** (5.59)	0.0268*** (4.79)	0.0270*** (4.84)
Marital Status	0.0854*** (17.08)	0.0880*** (16.82)	0.0878*** (16.78)	0.0879*** (16.80)
Home Activities	0.000476** (2.81)	0.000535** (2.94)	0.000541** (2.98)	0.000540** (2.97)
Work	0.00639 (1.30)	0.0127* (2.37)	0.00999 (1.85)	0.00987 (1.83)
Good Income	0.260*** (29.86)	0.244*** (25.74)	0.237*** (24.87)	0.237*** (24.86)
Acceptable Income	0.132*** (18.64)	0.120*** (15.63)	0.118*** (15.24)	0.117*** (15.22)
Illness		-0.0963*** (-21.91)	-0.0951*** (-21.60)	-0.0951*** (-21.60)
Health Importance		-0.0509*** (-8.79)	-0.0494*** (-8.52)	-0.0494*** (-8.52)
Sport		0.0408*** (8.36)	0.0389*** (7.92)	0.0388*** (7.91)
SoC				0.00702 (1.07)
Region 2			-0.0209*** (-4.19)	-0.0211*** (-4.22)
Region 3			-0.0163* (-2.57)	-0.0164** (-2.59)
Region 4			0.0826*** (5.45)	0.0820*** (5.41)
N	56137	47808	47808	47808

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: IV Probit Estimation (dependent variable SRH)

	First-Stage	IV
Self-Reported Health	0.161*** (45.99)	
Happiness		0.377*** (3.94)
Emotional Well-Being	-0.0972 (-0.85)	0.196 (1.24)
Age	0.000215 (0.25)	0.00490*** (4.28)
Age Squared	0.00000977 (0.86)	-0.0000984*** (-6.49)
Male	-0.00966* (-2.15)	0.000371 (0.07)
High School	0.0315*** (8.14)	0.0328*** (4.43)
University	0.0889*** (12.27)	0.0666*** (4.54)
Racial Minority	-0.0214*** (-5.11)	-0.0229*** (-3.48)
Marital Status	0.0256*** (6.32)	0.0797*** (8.33)
Home Activities	-0.000373** (-2.64)	0.000559** (3.17)
Work	-0.0178*** (-4.27)	0.0118* (2.17)
Good Income	0.153*** (20.96)	0.202*** (5.91)
Acceptable Income	0.0971*** (19.35)	0.0949*** (4.18)
Illness	-0.00890* (-2.55)	-0.0885*** (-11.11)
Health Importance	-0.0139** (-3.22)	-0.0447*** (-6.12)
Sport	0.0172*** (4.40)	0.0347*** (5.52)
Sense of Community	0.0501*** (10.42)	
Region 2	0.0342*** (8.73)	-0.0243*** (-4.35)
Region 3	0.00498 (1.03)	-0.0161** (-2.62)
Region 4	0.0981*** (6.43)	0.0695*** (3.61)
N	47808	47808

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: IV Probit Estimation (dependent variable health objective measure)

	Probit	IV Estimation	
	Estimation	First-Stage	IV
Happiness	-0.0407*** (-7.01)		-0.186 (-1.72)
Emotional Well-Being	-0.00463 (-0.03)	-0.0798 (-0.71)	-0.0194 (-0.13)
Age	0.00350** (3.06)	0.00118 (1.34)	0.00360** (3.21)
Age Squared	0.0000456** (3.05)	-0.00000776 (-0.67)	0.0000426** (2.86)
Male	-0.0537*** (-9.12)	-0.0100* (-2.18)	-0.0536*** (-9.16)
High School	-0.0178*** (-3.53)	0.0396*** (10.00)	-0.0115 (-1.66)
University	-0.0384*** (-4.72)	0.107*** (14.50)	-0.0246 (-1.83)
Racial Minority	-0.00000589 (-0.00)	-0.0259*** (-6.01)	-0.00389 (-0.63)
Marital Status	-0.0209*** (-3.89)	0.0413*** (9.97)	-0.0141 (-1.89)
Home Activities	0.000182 (0.98)	-0.000295* (-2.04)	0.000129 (0.69)
Work	0.0295*** (5.33)	-0.0176*** (-4.11)	0.0258*** (4.13)
Good Income	-0.0978*** (-10.16)	0.197*** (26.61)	-0.0637* (-2.20)
Acceptable Income	-0.0549*** (-7.26)	0.120*** (23.14)	-0.0309 (-1.51)
Illness		-0.0257*** (-7.22)	
Health Importance	0.0204*** (3.47)	-0.0227*** (-5.15)	0.0163* (2.42)
Sport	0.0101* (2.00)	0.0238*** (5.97)	0.0131* (2.42)
Sense of Community	-0.00851 (-1.28)	0.0526*** (10.65)	
Region 2	0.0411*** (8.06)	0.0329*** (8.19)	0.0447*** (8.17)
Region 3	-0.0320*** (-4.92)	0.00283 (0.57)	-0.0307*** (-4.67)
Region 4	-0.0838*** (-5.36)	0.118*** (7.60)	-0.0697*** (-3.53)
N	47808	47808	47808

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.01$

Table 7: Probit Estimation (dependent variable SRH) using panel ENEMDU 2013-2014

Happiness	0.529*** (36.09)
Age	-0.0300* (-2.02)
Age Squared	0.0000219 (0.15)
High School	0.0520 (1.53)
University	0.105 (1.78)
Racial Minority	0.0632 (1.40)
Work	0.0568* (2.56)
Racial Minority	-0.0339 (-1.26)
Good Income	0.121*** (5.70)
Acceptable Income	0.186*** (10.03)
<hr/>	
<i>N</i>	19654

t statistics in parentheses

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

Chapter 2: Bad jobs versus good jobs: does it matters for life and job satisfaction? Evidence from Ecuador

Introduction

Past research for European countries has shown a negative effect of becoming unemployed on life satisfaction, based on the idea that unemployment is an adverse situation because people experience a loss of income and reduced subjective well-being. In terms of happiness, Layard (2004) argues that any job is better than unemployment; in this sense, Grün et al. (2010) found that even low-quality jobs are better off than unemployment.

Dewan and Peek (2007) argue that in developing countries, the *employment vs. unemployment* dichotomy is not a good proxy for the variations in the composition of good and bad jobs in the labour market. These authors mention two reasons. First, employment covers a wide range of wages, working hours, types of contracts, and does not differentiate the formal from the informal sector. Second, poverty influences on unemployment decision since poor people must take bad jobs. Likewise, ILO (2019) argues that being in employment is far from having a decent standard of life; it forces workers to accept any job, even in the informal sector with low remuneration and practically neither labour rights nor social protection. In Ecuador, unemployment is a minor concern for three reasons. First, unemployment represents only 3.2% of the labour force in panel 2013-2014 (the years under evaluation). Canelas (2019) argues that in Ecuador, those who have an informal job are relatively low-educated with low wages, which supports the idea of Dewan and Peek (2007) that these workers have no better option than having a poor-quality job (informally). Second, there is no unemployment insurance⁶ in Ecuador; therefore, unemployment duration is relatively low (3.3 months⁷). Third, as shown in Table 1, in Ecuador people in unemployment experience higher life satisfaction, are more educated and with better health status than those employed in bad

⁶ From March 2016 workers in Ecuador could benefit from unemployment insurance up to 5 months.

⁷ According to the Socio-Economic Database for Latin America and the Caribbean for 2014 using the National Employment, Unemployment and Underemployment Survey (ENEMDU). Available at <http://www.cedlas.econo.unlp.edu.ar/wp/en/estadisticas/sedlac/estadisticas/#1496165509975-36a05fb8-428b>

jobs⁸. It could be argued that those in unemployment are the ones best able to avoid bad jobs.

In contrast, the main concern in Ecuador is the workers employed in bad jobs. Labour market in Latin America exhibits high levels of informality and relatively rigid regulation (David et al., 2020). An employment contract is a key instrument for accessing a good job, with legal and social security benefits (Ramos et al., 2015; Roethlisberger and Weller 2011). In 2008, Ecuador's labour market regulation changed severely since the subcontracting of complementary services (outsourcing workers), and hiring workers by the hour were abolished⁹. For some employed workers, this regulation implied accessing to higher pay, this earning equal or higher than the minimum wage, and accessing to social security benefits. From the social point of view, this was considered as a gain since people might be changing precarious work to decent work (the winners). On the other hand, this regulation might have harmed workers employed in the informal sector with poor quality job conditions, since for firms is more costly to offer a formal job (the losers).

We suggest that people in bad jobs experienced pecuniary cost (loss of income) and non-pecuniary cost (reduced life satisfaction and job satisfaction) similar to unemployment costs studied in previous literature for European countries. In this paper we test for Ecuador, whether job transitions into a different quality of jobs (based on objective measures) affect job satisfaction (subjective measure). To the best of our knowledge, this is the first study in Latin America on this topic. We select Ecuador because in this country, earning the minimum wage and having workings benefits seems to be attainment for people employed in bad jobs. Besides, the official labour market survey in Ecuador has complete information on person-wellbeing in panel data structure, which allows us to deal with endogeneity.

The definition of quality of jobs starts decades ago since the concepts of decent work (ILO 1999) and quality of employment (Presidency Conclusions Lisbon European Council 2000). There are have been several attempts to construct a definition of quality of job, based on objective measures and subjective measures. The most common measure in the subjective approach is job satisfaction, whereas in the objective approach there are

⁸ In this paper we defined as a bad job if the worker meets either of the following conditions: i) earns less than the minimum wage, i) is employed in the informal sector, iii) is not affiliated to social security (formal employment).

⁹ Constitutional Mandate No. 8 of 2008.

numerous variables of job characteristics and job values incorporated. Both approaches suffer from conceptual and empirical concerns (Brown et al., 2007; Brown et al., 2012, Eichhorst et al., 2015; Budd and Spencer 2015; Nikolova and Cnossen 2020).

We believe that there is still a debate in the literature on what a job quality represents for a worker. Moreover, it is unlikely that a definition of job quality could be extrapolated from one country to another. For instance, Grün et al. (2010) for West Germany defines a bad job in terms of (i) low wages, (ii) type of contract (permanent or fixed-term) and (iii) job satisfaction. For these authors, if the wage is two thirds below the median wage of a full-time employee, it is considered a low paid. In contrast, this criterion would hardly work for Ecuador, considering the income distribution is more asymmetrical than in Germany; hence the low paid threshold would be underestimated. Besides, the type of contract seems less relevant in Ecuador. Instead, what should matter is whether the worker has a contract or not because it determines labour stability and access to social security benefits.

The rest of the paper is structured as follows. First, we present a brief literature review, followed by a description of the data and methodology employed. The results are then presented, and conclusions drawn.

Literature review

Employment and well-being

The analysis of a worker's well-being has paid particular attention to changes in life satisfaction between unemployed and employed people. When a person becomes unemployed, his welfare falls for two reasons: (i) the loss of income, (ii) the loss of self-respect and sense of significance, called the psychic loss or non-pecuniary cost (loss of social relationship, identity in society and individual self-esteem). Winkelmann and Winkelmann (1998) found that the non-pecuniary effect of unemployment is much larger than the economic loss of income. Unemployed people have much lower levels of mental well-being than those in work (Wilson and Walker 1993; Clark and Oswald 1994; Carroll 2007). Besides, Clark (2003) found that unemployed well-being is correlated with the reference unemployment group, which determines the level of adherence to the social

norm (regional, partner, or household level). This author, likewise Marcenaro et al. (2010), argue that unemployment always hurts, but it hurts less when there are more unemployed people around. In the same way, Stutzer and Lalive (2004) found that unemployed people experienced lower levels of life satisfaction because of the social norm to work; their reduction in life satisfaction is the larger the stronger the norm is.

We mentioned that unemployed experience lower levels of life satisfaction than employed, but a question that goes beyond is what happens when they find a job? Gielen and Van Ours (2014) suggest a *scarring effect*, in the sense that unemployed people, who experienced a drop in life satisfaction, do not completely recover life satisfaction when finding a job. The authors argue that unhappiness does not affect the probability of finding a job; rather, it increases only search job effort. Grün et al. (2010) found that people who take-up a new job, even in bad jobs report higher life satisfaction compared to those who remain unemployed. Chandola and Zhang (2018) found that re-employed people into poor quality job was associated with higher levels of stress biomarkers in comparison with those who remain unemployed.

An important related question that arises is whether people choose to be in certain labour status. Clark and Oswald (1994) suggest that because of the negative effect of unemployment on happiness, unemployment is predominantly involuntary. In search models, workers could become dissatisfied with their jobs, and then become voluntarily unemployed, so it is questionable the association between unemployment and life satisfaction (Kassenboehmer and Haisken-DeNew 2009). From the empirical point of view, this discussion is crucial because if unemployment is involuntary can be treated as an exogenous variable, whereas if it is voluntary should be treated as an endogenous variable. Kassenboehmer and Haisken-DeNew (2009) distinguish between voluntary and involuntary unemployment using questions on the reason for job termination¹⁰. Similarly, Chadi and Hetschko (2017) found that switching workplace affects positively job satisfaction only in the short term. To address endogeneity, the authors use the plant closure as an exogenous trigger of job changing.

¹⁰ A person becomes involuntary unemployed if the employer fires him or if the company closed within the last 12 months. On the contrary, a person becomes voluntary unemployed if he reports 'wanting to look for another job', 'personal reasons', 'time-limited work contract', 'quit on one's own', 'giving up working' and 'other reasons' in combination with entry into unemployment

In this paper, we consider having a bad job could be considered involuntary or exogenous for people in adverse conditions, who do not have an outside option because unemployment is costly, and they may be forced to take any job, even a poor-quality job or an informal job (Dewan and Peek 2007; Canelas 2019). Nonetheless, this is hardly the case for all workers; there are also better-educated workers and entrepreneurial workers in informal jobs (poor quality jobs). On the contrary, having a good job could be considered endogenous since on average more educated people, not racial minorities, with better health status are employed in good jobs (see Table 1). In either case, considering this is an observational study, we do not make any causal inference of job transition on the outcome variables.

Quality of employment and well-being

The concept of quality of employment is a complex definition; it might depend on the perspective taken, i.e., whether it assesses the quality of employment from the societal, the corporate or the individual point of view (Vermeulen, 2005 as cited in United Nations Economic Commission for Europe, 2015). Burchell et al. (2007) explore the debate around the quality of employment and decent work through the years and criticize the definition of decent work because it is vague and all-encompassing. There are various attempts to measure decent work (ILO, 2008; Anker et al., 2013; Bescond et al., 2003; Bonnet et al., 2003) and quality of employment (European Commission 2008). Although, there is not a consensus about what exactly makes up a good job when measuring decent work or quality of employment. Both concepts suffer the same problems such as (i) difficulty to measure across countries, (ii) lacking information on relevant variables/indicators, and (iii) not a standardized methodology with insights from diverse academic disciplines (Burchell et al., 2007). One of the most common approaches to measure the quality of employment is job satisfaction that relates to hedonic values of jobs and expresses the worker's experienced preference revealing over opportunities or mentally experienced alternatives (Lévy-Garboua and Montmarquette 2004).

Clark and Oswald (1996) found that job satisfaction is negatively related to comparison levels of earnings. Hence people's reported job satisfaction could be treated as a proxy of

utility from work. Layard (2005) agrees that it might approach the quality of a job through job satisfaction surveys made to workers. Green (2010) found that job satisfaction predicts subsequent quitting better than mental health assessments. Lévy-Garboua and Montmarquette (2004) found that job satisfaction correlates with wage gaps in the past and present and recommends the use of job satisfaction in econometric studies of job mobility.

Nonetheless, the use of job satisfaction as a proxy for worker well-being has two important critics. First, people employed in bad quality jobs report to be satisfied with their job even when the job quality measured objectively is poor (Brown et al., 2007 and Brown et al., 2012). This occurs because the responses in satisfaction questions may be influenced by adaptation and norms; workers may adapt to poor quality jobs, which makes them satisfied with bad jobs (Brown et a. 2012). So, there is skepticism whether job satisfaction decrease when objective conditions worsen (Eichhorst et al., 2015).

Lora (2008) describes that the quality of a job in Latin America is disappointing in terms of wages, working hours, productivity growth, informality, and social security affiliation, but job satisfaction is high. The author argues that one plausible explanation is that workers may have a misleading perception of their reality, probably because of low expectations. Despite their situation, poor people give a positive answer (aspiration paradox). De Bustillo-Llorente and Fernandez-Macias (2005) conclude for Spain that job satisfaction cannot measure the quality of job. First, in case of been unsatisfied with their job people will try to change it until finding a good one that fits their expectations. Second, unsatisfied workers get used to their actual job, lower their expectations, and declare a positive level of job satisfaction. Besides adaptation, another concern is preference drift, which means that higher wages increase job satisfaction, but this effect fades away over time (Groot and Van den Brink 1999). This happens because the preferences and aspirations also change, and hence the higher wage-job satisfaction effect disappears.

Alternatively, the quality of work can be assessed using objective characteristics that capture what is important for workers (job values) and why they get in labour market. Brown et al. (2007) defines job quality in terms of pay, creative content of work, the interest of work itself, relations with colleagues, position within organizational and class

hierarchy, influence and discretion over work, skill and effort levels. Similarly, the ISSP Research Group (2017) uses six dimensions: pay, hours of work, future prospects, hard work, job content, and interpersonal relationships. OECD (2014) defines a good job in terms of earnings quality, labour market security, and quality of working environment. For Latin America, Roethlisberger and Weller (2011) propose twenty-one indicators to measure employment quality in Latin America, divided into five groups: income source, stability, social protection, organization, social integration, and personal development. However, the authors recognize that their proposal suffers from several data restrictions, limiting its implementation, but they suggest that low-quality jobs with low productivity are concentrated mainly on the informal sector.

Likewise, subjective measures, objective measures are not exempt from critics. Budd and Spencer (2015) mention two important critics on the objective approach. First, there is no universal agreement over what variables define job quality and how these variables should weight it to construct a multidimensional measure. Besides, the selected variables may depend on data availability on surveys and the researcher's discretion. Second, job objective measures are focused mainly on job characteristics (job-centric) and ignore what work means in people's lives (worker-centric).

A recent criticism to the objective and the subjective approach is Nikolova and Cnossen (2020), who argue that job quality does not consider work as a source of meaning, called eudaimonic dimension. As subjective well-being science pays attention to *eudaimonia* as a measure of a person's well-being, something similar should be incorporated to evaluate job quality.

Data

Data comes from the National Employment, Unemployment and Underemployment Survey (ENEMDU), which is a quarterly labour demand survey that covers urban and rural sectors for Ecuador. The survey uses a “two-two-two” rotating-panel design, which means a panel is visited in two consecutive quarters; it makes no visits in the next two quarters, and in the next two quarters raises the second visit. In consequence, we construct a two-period panel starting from December 2013 to December 2014. During this period no significant macroeconomic or political shocks had occurred in Ecuador. For some

years, ENEMDU incorporated subjective well-being modules, including a life satisfaction question; this is the reason why the 2013-2014 period was selected as it is the only in which this module coincides. Likewise, panel 2009-2010 coincides, but the matching is only possible for the urban sector (we will use it somehow as robustness check).

We define as a good job if the person meets all of the three following conditions: (i) earns equal or more than the minimum wage, (ii) is employed in the formal sector, (iii) is affiliated to social security (formal employment). Alternatively, if either good job conditions are not met, it is considered as a bad job.

To classify formal and informal jobs, we use the guideline of the National Institute of Statistics of Ecuador (2014), which is based on the ILO (2013)¹¹. It considers a person in the formal sector if the working establishment uses taxpayer identification number (RUC) or if the working establishment has equal or more than 100 employees, whereas a worker is considered as informal if the working establishment has less than 100 employees, and not use RUC. On the other hand, there are several criteria to classify informal employment across countries such as labour contract, provident funds, social security registration, health and other social services by virtue of their job (ILO 2013). In Ecuador, there is not a formal definition of formal employment; then we use the criteria of social security registration since, in Ecuador, social security registration allows workers multiple benefits such as retirement pension, health insurance, risk insurance related to the job, and accessing for loans. It is crucial to notice that being employed in the formal sector (establishment perspective) is different from having formal employment (worker perspective). These terms are not interchangeable, but they complement each other for our good job definition.

Table 1 shows comparative statistics between good and bad jobs. Panel A shows that people in good jobs are younger, less likely to be a racial minority, more educated, have a better health status, receive a higher wage, and are more satisfied with their income compared to people in bad jobs. Panel B shows the difference in terms of job

¹¹ In this paper, data excludes domestic work and unpaid worker classification. Then, only formal and informal sectors are considered.

characteristics; by construction, people in good jobs have considerably more access to formal features such as permanent job contract (labour stability), social insurance, 13th salary, 14th salary, training and vacations. Panel C indicates people in good jobs experience overall higher job satisfaction and are less unsatisfied because of low income, labour stability, possibilities to progress, and working on the street. Conversely, people in good jobs are more unsatisfied because of work schedules, working overload and working environment, which is reasonable since they work more hours, have to follow a schedule, and have to deal with workmates. Table 2 shows the differences, in terms of characteristics, for those who move between good jobs and bad jobs before transitions (in year 2013). We can observe that people who move from a bad job to a good job ($G=1$) are more educated, with higher income and work more hours, compared to those who remain in bad jobs ($G=0$). Similarly, people who move from a good job to a bad job ($B=1$) are different compared to those who remain in good jobs ($B=0$). In other words, those in better conditions are best able to find a good job, whereas those in worse conditions are the most likely to lose a good job

Econometric framework

Life satisfaction is measured through the question ‘In a scale of 1 to 10, meaning 1 completely unhappy and 10 completely happy, how do you feel taking into account all aspects of your life?’. Job satisfaction is measured through the question ‘How do you feel at work’ in a scale of 1 to 4, meaning 1 completely dissatisfied, 2 somewhat dissatisfied, 3 somewhat satisfied, 4 satisfied. There is a lengthy discussion about the use of ordinal data regarding life satisfaction and job satisfaction as dependent variable for econometric analysis. Ferrer-i-Carbonell and Fritjers (2004) argue that the assumption of cardinality or ordinality in the dependent variable is less important. Instead, what we should care about is taking into account time-invariant unobserved factors. In this sense, it is important to take individual fixed effects. Consequently, we use a conditional logit model allowing for fixed effects, a similar approach to Booth and Van Ours (2008), Kassenboehmer and Haisken-DeNew (2009) and Grün et al. (2010). Each dependent variable (y_1 =life satisfaction, y_2 =job satisfaction) is transformed into a binary variable that equals one if the individual score is above the average and zero otherwise.

Table 3 performs a mean difference test for covariates used in the econometric models pre-transition in the year 2013. The results indicate that people who move from a bad job in 2013 to a good job in 2014 were different from people that remain in bad jobs in terms of job satisfaction, education, health, income, income perception and, racial minority. A similar pattern occurs for people who move from a good job to a bad job. In order to solve for selection bias, we use the differences in differences estimator to allow for unobserved heterogeneity (the unobserved difference in mean outcomes between people who find/lose a good job). The estimation equation is:

$$Prob(y_{it} = 1) = \alpha + \beta T_{i1} * t + \delta T_{i1} + \rho t + \varepsilon_{it} \quad (1)$$

where T indicates a transition variable from good(bad) to bad(good) job, t is the time dummy, and the interaction of t and T is called the differences in differences estimator. When allowing for individual fixed effects, θ_i the equation takes the following form:

$$Prob(y_{it} = 1) = \alpha + \beta T_{i1} * t + \rho t + \theta_i + \varepsilon_{it} \quad (2)$$

For estimates in transitions from a bad job to a good job $\beta = \pi$, and in transitions from a good job to a bad job $\beta = \kappa$. Table 3 reports estimates for a (i) logit model and (ii) conditional logit model allowing for fixed effects for both dependent variables and including control variables. When performing Hausman test to determinate whether the difference between fixed and random effects coefficients is systematic, we reject the null hypothesis, in favour of the alternative hypothesis that fixed effects model is appropriate. Panel A shows that moving from a bad job to a good job increases job satisfaction, whereas the coefficient for life satisfaction is not statically significant. On the other hand, Panel B indicates that moving from a good job to a bad job reduces job satisfaction; as before the result is not statistically significant on life satisfaction. In this sense, it is interesting to note that subjective income perception (Ferrer-i-Carbonell 2005; Clark et al., 2008; Caporale et al., 2009) and health status (Helliwell 2003; Ljunge 2016; Mizobuchi 2017) explain life satisfaction rather than absolute income or job transition.

In conditional logit models, computing marginal effects with fixed effects panel data is problematic since it calculates the probability of a positive outcome assuming that fixed effects are zero. As an alternative following Kitazawa (2012), we compute average semi-

(elasticities) in Table 4. When a person moves from a bad job to a good job, job satisfaction increases by 9.5% (column 1) whereas when moving from a good job to a bad job, job satisfaction decreases by 8.5% (column 2). To validate the results, we estimate the same model, but with 2009-2010 panel data that contain information only of the urban sector¹². The effect of finding a good job is 8.6% (column 3), and the effect of losing a good job is -11.9% (column 4), which are pretty close to the results in the 2013-2014 panel.

Some evidence suggests a job satisfaction differential in favor of women. Clark (1997) examines the paradox that women, despite having worse jobs than men, report higher job satisfaction. The author concludes that the only plausible explanation is that women have lower expectations since their jobs have been worse in the past, ruling out sample selection bias and differences between types of jobs by gender. In a similar line, Sloane and Williams (2000) also find higher job satisfaction in women than men. However, the differential does not seem to be innate, instead it reflects self-selection into jobs. Other studies (Bender et al., 2005; Gazioglu and Tansel, 2006) also confirm that women report higher satisfaction than men do. Sousa-Poza and Sousa-Poza (2000) find that the gender job satisfaction paradox only holds in eight of twenty-countries, although they use cross-sectional data, limiting the notion of causality since cannot observe job satisfaction during employment transitions.

Table 5 shows the average semi-(elasticities) differentiating by gender for job satisfaction. The effect of job satisfaction for men is greater than for women when finding a good job (10.9% vs. 6.1%) (column 2 vs. column 1) or losing a good job (-9.5% vs. -6.8%) (column 4 vs. column 3). As fewer women than men work (64% vs. 36%), one plausible explanation is selection bias since dissatisfied women might be out of labour force. A solution for this problem would be to use a Heckman model to solve for selection bias as Clark (1997). However, data about the number of children, husband wage, or care economy within the household is not available. Alternatively, another explanation for future research is despite finding a better job, gender discrimination in favor of men in terms of salary, positions, benefits, etc., would make women value less the gain of finding a better job. Previous studies (Clark 1997; Sloane and Williams 2000; Bender et al., 2005;

¹² Income perception variable is not available for the 2009-2010 panel.

Sousa-Poza and Sousa-Poza 2000) compare the difference in job satisfaction by gender and found that women experience higher job satisfaction than men. Our research is not comparable with these studies since we focus on the gain/loss in job satisfaction by gender when moving between bad and good jobs.

Besides our good and bad job definition, we construct a scale of quality of job (QJ) from 1 to 4, being 4 the best possible job, and 1 the worst possible job. Let *Formal* be a variable whether a person is employed in the formal sector and has formal employment (*Formal* = *Yes*). If either condition does not hold (*Formal* = *No*). Our quality of job of measure is constructed as follows:

Quality of job (QJ)	Earns equal or more than the minimum wage	Formal
1	No	No
2	No	Yes
3	Yes	No
4	Yes	Yes

In Table 6, we show the average semi-(elasticities) transitions from and into each QJ category. The only significant effect is when i) moving from QJ1 to QJ3 and ii) moving from QJ1 to QJ4. In both cases, the job transitions that imply a gain in accessing to the minimum wage are the only significant. Furthermore, a good job implies a better salary allowing people to satisfy their basic needs and have a better living standard. According to National Institute of Statistics of Ecuador (2014) on average between 2013 and 2014 the Basic Food Basket (BFB)¹³ calculated for a household of 4 members was \$623 per month, and considering that 1.6 members of the household work and earn exactly the minimum wage, the household income is \$614. This is a negative \$9 gap to access the BFB. In our sample, on average people in a good job earn \$795 and people in a bad job \$278. This implies on average, with less than one member of the household with a good job the household can access BFB, whereas 2.2 members of the household with bad jobs should work to buy the same basket. When moving from a bad job to a good job the gain in salary is on average \$265, approximately 43% of the cost of BFB.

¹³ Contains (i) food and beverages, (i) housing, (iii) clothing, (iv) miscellaneous (health, personal care, reading material, education, transport, tobacco)

Discussion and limitations

In this paper, we did assume implicitly that only one labour transition had occurred between December 2013 and December 2014. However, more than one transition could have occurred during that year, i.e., people move from a good job to a bad job and then to a good job. We believe that it is more likely the possibility of one transition because after one year, the probability of remaining in a good job is 78%, and to remain in a bad job is 89%. This relatively low rate of transitions could be explained because Ecuador has a rigid labour market. According Gwartney et al. (2016), Ecuador was ranked as the fifth most rigid labour market out of 159 countries studied in 2014. Considering that labour market rigidity makes difficult to hire and fire, and we use a short-scale panel (one-year), it is straightforward that labour mobility is low. It is expected that in a rigid labour market job transitions into a different quality of jobs occur in longer periods.

Unlike Kassenboehmer and Haisken-DeNew (2009) and Chadi and Hetschko (2017), in our study we could not distinguish between voluntary and involuntary job transitions. Therefore, despite taking into account time-invariant unobserved factors, the results should not be interpreted as a causal effect since job transition is not exogenous. Besides, from a macro perspective, macroeconomic trends and institutional performance affect the probability of a good job. From the labour economics perspective, search effort, and asymmetric information between workers and firms also determine the job-finding process.

Compared to previous studies, we could not observe exactly adaptation and preference drift to past conditions considering the short-scale panel data. We suppose in terms of life satisfaction, there is some adaptation to bad jobs; as seen in Table 1, on average, people in bad jobs experience slightly less life satisfaction than people in good jobs. Therefore, people in bad jobs might be adapted to their conditions and having misleading perceptions, so they do not report poor life satisfaction, which could explain why the econometrics estimates of labour transitions on life satisfaction are not statistically significant. However, in the absence of large panel data, we cannot rule out adaptation. Another alternative is that there might be other domains in life satisfaction that compensate for the fact of having a bad job. In terms of job satisfaction considering that

the difference between good jobs and bad jobs is greater and the econometrics estimates are statistically significant, adaptation seems less plausible.

A critical discussion is the relationship between both outcomes (life satisfaction and job satisfaction). Life satisfaction and job satisfaction might be positively correlated because people in poor quality jobs would not be satisfied with their lives (spillover theory). Another alternative is that these variables might be negatively correlated since people find other pleasant activities in their lives to compensate for a poor-quality job (compensation theory). Bowling et al. (2010) based on a broad literature review, argue that the correlation between job satisfaction and life satisfaction ranges from 0.16 to 0.68, and the authors using meta-analysis support the spillover theory. In the case of Ecuador, the correlation is 0.11 and, thus, the evidence on the spillover theory is not conclusive. This low correlation might also indicate that there might be other more important determinants of life satisfaction than job satisfaction, for instance, income, health and others, according to subjective well-being studies. By definition, life satisfaction encompasses many domains in life in a general score, whereas job satisfaction alludes only to job-related aspects.

Conclusions

This paper explores the idea that in developing countries like Ecuador, unemployment is a minor concern since it is relatively low. Unemployment is not an option for economically disadvantaged people; they are forced to take bad jobs. Then, the real concern is the people in labour force are employed in bad jobs; earning less than minimum wage, employed in the informal sector with no social security protection. On the contrary, people in good jobs earns more than the minimum wage, are employed in the formal sector, benefit from labour stability (job contract), extra remunerations, and social security protection.

In this paper, using data from ENEMDU 2013-2014 panel for Ecuador, we explore whether labour transitions from bad to good jobs and vice versa impacts on life satisfaction and job satisfaction. We use a conditional logit model that allows for fixed effects to take into account time-invariant unobserved factors. Considering before the transition in 2013, people who find/lose a good job is different in observable

characteristics than people who remain in the same quality of jobs, consequently, we use the differences in differences estimator. From the results, we can infer that labour transitions between good and bad jobs do not affect life satisfaction. We suggest that work is only one aspect of people's life; other factors such as health status and subjective perception of income are determinants of life satisfaction in concordance with the subjective well-being literature.

We found that labour transitions between quality of jobs influences on job satisfaction. The effect of moving from a bad job to a good job (9.5%) is slightly greater than moving from a good job to a bad job (-8.5%). Using data from 2009-2010, that contains information only for the urban sector, we found similar results. Despite objective income is not significant for life satisfaction, having a good job on average guarantees a decent standard of living since on average household can access to a BFB and reduces the perception of poverty within the household. Previous studies had found that women experience greater life satisfaction than male. In terms of gender, we found that the effect of labour quality transitions is greater for men than for women. An interesting idea for future research is exploring to what extent gender discrimination in the labour market might justify why those women value less than men the gain of finding a good job.

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Table 1: Descriptive statistics

	Panel A. Individual characteristics			Panel B. Job characteristics			Panel C. Job characteristics		
	Good Job	Bad Job	Unemployment	Good Job	Bad Job		Good Job	Bad Job	
Life Satisfaction	7.94 (1.44)	7.47 (1.59)	7.61 (1.61)	Working Hours	44.47 (15.19)	37.91 (8.91)	Job satisfaction	3.78 (0.56)	3.45 (0.83)
Female	0.37 (0.48)	0.36 (0.48)	0.49 (0.5)	More than one job	0.03 (0.18)	0.06 (0.24)	Dissatisfaction with low income	0.97 (0.35)	0.85 (0.18)
Age	40.43 (12.35)	45.08 (15.95)	31.26 (13.1)	Permanent Job Contract	0.69 (0.45)	0.13 (0.33)	Dissatisfaction with working hours	0.34 (0.47)	0.17 (0.37)
Primary	0.17 (0.38)	0.57 (0.49)	0.19 (1.25)	Temporal Job Contract	0.32 (0.46)	0.28 (0.45)	Dissatisfaction with working schedule	0.23 (0.42)	0.09 (0.28)
Secondary	0.36 (0.47)	0.33 (0.47)	0.53 (0.49)	Vacations	0.86 (0.34)	0.06 (0.25)	Dissatisfaction due working overload	0.28 (0.44)	0.09 (0.28)
University	0.46 (0.50)	0.08 (0.28)	0.28 (0.44)	Health Insurance	0.07 (0.26)	0.01 (0.06)	Dissatisfaction with working instability	0.31 (0.46)	0.61 (0.48)
Marital Status	0.66 (0.47)	0.64 (0.48)	0.34 (0.47)	Training	0.40 (0.49)	0.02 (0.14)	Dissatisfaction with working environment	0.12 (0.32)	0.07 (0.26)
Years working	10.01 (10.25)	15.95 (15.92)		Working establishment size	0.6 (0.48)	0.02 (0.16)	Dissatisfaction with working at street	0.05 (0.21)	0.1 (0.29)
Racial Minority	0.08 (0.27)	0.17 (0.38)	0.12 (0.32)	RUC	1 (0.31)	0.17 (0.31)	Dissatisfaction with working accidents	0.04 (0.20)	0.10 (0.31)
Health Status	7.34 (1.84)	6.63 (2.03)	6.72 (2.01)	Employed in the formal sector	1 (0.25)	0.19 (0.07)	Dissatisfaction with working activities	0.16 (0.35)	0.15 (0.37)
Income	795.25 (1226.19)	278.49 (353.84)		Social Security	1 (0.25)	0.07 (0.25)	Dissatisfaction with possibilities to progress	0.59 (0.49)	0.78 (0.41)
Income Perception	0.49 (0.56)	0.26 (0.31)	0.27 (0.27)				Dissatisfaction with bad labour relations	0.11 (0.32)	0.03 (0.14)
Coast Region	0.54 (0.49)	0.51 (0.49)	0.53 (0.49)						
Highland region	0.42 (0.49)	0.45 (0.49)	0.44 (0.49)						
Amazon Region	0.03 (0.18)	0.02 (0.16)	0.03 (0.16)						

Note: This table shows the average of individual characteristics and job characteristics for people in good jobs, bad jobs, and unemployment using ENEMDU panel 2013-2014.

Table 2: Mean test difference before transition (in year 2013)

	Bad to Good			Good to Bad		
	G=0	G=1	p-value	B=0	B=1	p-value
Job Satisfaction	3.42	3.46	0	3.42	3.73	0
Life Satisfaction	7.46	7.63	0	8.06	7.85	0
Female	0.37	0.27	0	0.37	0.34	0.87
Age	48.41	36.22	0	40.50	40.88	0.71
Primary	0.70	0.32	0	0.15	0.27	0
Secondary	0.25	0.43	0	0.33	0.47	0
University	0.03	0.24	0	0.50	0.25	0
Work Hours	36.27	40.09	0	44.81	44.22	0.66
Health Status	6.44	6.92	0	7.47	7.15	0
Labour Income	151.15	201.18	0	802.29	520.51	0
Income Perception	0.23	0.33	0	0.57	0.37	0
Marital Status	0.61	0.57	0.28	0.68	0.62	0
Racial Minority	0.22	0.13	0	0.07	0.11	0
Coast Region	0.42	0.52	0.03	0.40	0.47	0.14
Highlands Region	0.51	0.47	0.04	0.54	0.55	0.77
Amazon Region	0.02	0.03	0.72	0.03	0.05	0.23

Note: This table shows the average of person's characteristics when employed in good and bad jobs in 2013. The p-value corresponds to test for differences between means. The null hypothesis is that the difference between means equals zero.

Table 3: The effect of job transitions on life satisfaction and job satisfaction

	Bad Job to Good Job				Good Job to Bad Job			
	Life Satisfaction		Job Satisfaction		Life Satisfaction		Job Satisfaction	
	Logit 1	Conditional Logit 2	Logit 3	Conditional Logit 4	Logit 5	Conditional Logit 6	Logit 7	Conditional Logit 8
t	-0.154*** (-4.40)	-0.154** (-3.18)	-0.168*** (-4.47)	-0.128* (-2.51)	-0.200*** (-5.22)	-0.225*** (-4.34)	0.098* (2.11)	0.110 (1.80)
T	0.134** (2.64)		0.348*** (5.57)		-0.023 (-0.50)		-0.197*** (-3.70)	
(T*t) π	0.117 (-1.83)	0.101 (-1.35)	0.314*** (4.02)	0.333*** (3.80)				
(T*t) κ					-0.034 (0.56)	-0.084 (1.16)	-0.289*** (-4.18)	-0.299*** (-3.77)
Hours	-0.001 (-1.25)	-0.002 (-1.11)	0.013*** (10.08)	0.008** (3.26)	-0.001 (-1.03)	-0.002 (-1.10)	0.013*** (9.81)	0.007** (3.14)
Female	-0.001 (-0.03)		0.336*** (8.44)		-0.003 (-0.11)		0.348*** (8.72)	
Age	0.008 (1.57)	-0.112 (-1.66)	-0.06*** (-8.87)	-0.119 (-1.66)	0.009 (1.64)	-0.114 (-1.69)	-0.06*** (-8.86)	-0.118 (-1.65)
Age Squared	-0.000 (-0.91)	0.000 (1.90)	0.001*** (11.14)	0.000 (1.84)	-0.000 (-1.00)	0.001 (1.93)	0.00*** (11.12)	0.001 (1.83)
Secondary	0.200*** (5.29)	0.172 (1.45)	0.0973* (2.23)	0.180 (1.45)	0.209*** (5.55)	0.175 (1.47)	0.116** (2.65)	0.169 (1.36)
University	0.507*** (10.15)	0.530** (2.61)	0.311*** (5.03)	0.355 (1.57)	0.537*** (11.11)	0.532** (2.63)	0.415*** (6.81)	0.363 (1.60)
Health Status	0.373*** (39.64)	0.389*** (23.97)	0.082*** (9.18)	0.066*** (4.31)	0.373*** (39.66)	0.389*** (23.98)	0.082*** (9.18)	0.066*** (4.31)
Marital Status	0.116*** (3.44)	0.084 (0.52)	0.068 (1.70)	0.127 (0.74)	0.118*** (3.48)	0.081 (0.50)	0.061 (1.53)	0.128 (0.75)
Racial Minority	-0.102* (-2.33)	0.086 (0.83)	-0.061 (-1.22)	-0.124 (-1.10)	-0.104* (-2.38)	0.084 (0.81)	-0.057 (-1.15)	-0.119 (-1.05)
Income Perception	0.243*** (7.40)	0.143* (2.43)	0.842*** (20.61)	0.589*** (8.82)	0.245*** (7.46)	0.145* (2.46)	0.835*** (20.44)	0.588*** (8.81)
Income	0.000	0.000	0.000***	0.000***	0.000	0.000	0.000***	0.000***

	(1.48)	(1.46)	(10.88)	(4.13)	(1.75)	(1.48)	(10.74)	(3.69)
Region 2	0.062*		-0.071		0.062*		-0.074*	
	(1.98)		(-1.90)		(1.97)		(-1.97)	
Region 3	0.097		-0.037		0.096		-0.031	
	(1.09)		(-0.35)		(1.08)		(-0.29)	
Industry Occupation Dummies	Yes	No	Yes	No	Yes	No	Yes	No
Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Intercept	-1.627**		0.812		-1.608**		1.015	
	(-2.80)		(1.23)		(-2.76)		(1.53)	
<i>N</i>	23009	7934	23007	5798	23009	7934	23007	5798

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Excluded categories

^a Primary or less education

^b Region 1 (Highland Region)

Hausman Test: $H_0: \beta^{Logit} - \beta^{Conditional Logit} = 0$

Bad Job to Good Job (Life Satisfaction)

Prob $> \lambda^2 = 0.00$

Bad Job to Good Job (Job Satisfaction)

$\lambda^2 = 63.24$

Prob $> \lambda^2 = 0.00$

Good Job to Bad Job (Life Satisfaction)

Prob $> \lambda^2 = 0.00$

Bad Job to Bad Job (Job Satisfaction)

Prob $> \lambda^2 = 0.00$

Table 4: Average (semi-) elasticities for labour transitions on job satisfaction

	2013-2014 Panel		2009-2010 Panel	
	Bad Job to Good Job (1)	Good Job to Bad Job (2)	Bad Job to Good Job (3)	Good Job to Bad Job (4)
t	-0.0364* (-2.51)	0.0313 (1.80)	-0.0528 (-1.06)	0.00316 (0.06)
(T*t) π	0.0950*** (3.79)		0.0857* (2.49)	-0.119*** (-3.71)
(T*t) κ		-0.0851*** (-3.76)		
Hours	0.00229** (3.26)	0.00220** (3.14)	0.00206* (2.42)	0.00205* (2.40)
Age	-0.0339 (-1.66)	-0.0337 (-1.65)	-0.0307 (-1.19)	-0.0285 (-1.10)
Age Squared	0.000358 (1.84)	0.000356 (1.83)	0.000320 (1.18)	0.000301 (1.11)
Secondary	0.0514 (1.45)	0.0482 (1.36)	0.0396 (0.81)	0.0394 (0.80)
University	0.101 (1.57)	0.103 (1.60)	0.0768 (0.92)	0.0812 (0.97)
Health Status	0.0187*** (4.31)	0.0187*** (4.31)	0.0340*** (6.17)	0.0334*** (6.04)
Marital Status	0.0361 (0.74)	0.0365 (0.75)	0.0231 (0.36)	0.0167 (0.26)
Racial Minority	-0.0352 (-1.10)	-0.0338 (-1.05)	-0.116* (-2.30)	-0.125* (-2.46)
Income Perception	0.168*** (8.78)	0.167*** (8.77)		
Income	0.000147*** (4.13)	0.000130*** (3.69)	0.000379*** (5.48)	0.000346*** (5.03)
Industry Occupation Dummies	No	No	No	No
Fixed Effects	Yes	Yes	Yes	Yes
N	7518	7518	3590	3590

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Excluded categories

^a Primary or less education

Region variables are omitted because of fixed effects.

Table 5: Average (semi-) elasticities for labour transitions on job satisfaction by gender

	Bad Job to Good Job		Good Job to Bad Job	
	Female (1)	Male (2)	Female (3)	Male (4)
t	-0.0170 (-0.64)	-0.0442* (-2.51)	0.0399 (1.16)	0.0287 (1.40)
(T*t) π	0.0612 (1.38)	0.109*** (3.53)		
(T*t) κ			-0.0683 (-1.66)	-0.0950*** (-3.43)
Hours	0.000551 (0.43)	0.00291*** (3.40)	0.000522 (0.41)	0.00277** (3.23)
Age	0.00374 (0.10)	-0.0427 (-1.73)	0.00381 (0.10)	-0.0431 (-1.75)
Age Squared	-0.000115 (-0.30)	0.000482* (2.06)	-0.000117 (-0.31)	0.000487* (2.08)
Secondary	0.0692 (0.93)	0.0487 (1.18)	0.0687 (0.92)	0.0450 (1.08)
University	0.116 (1.04)	0.0951 (1.18)	0.117 (1.05)	0.0965 (1.19)
Health Status	0.0215** (2.79)	0.0177*** (3.32)	0.0217** (2.81)	0.0178*** (3.33)
Marital Status	0.162 (1.93)	-0.0253 (-0.41)	0.166* (1.97)	-0.0257 (-0.42)
Racial Minority	-0.0897 (-1.31)	-0.0222 (-0.60)	-0.0921 (-1.34)	-0.0199 (-0.54)
Income Perception	0.168*** (5.11)	0.171*** (7.20)	0.168*** (5.11)	0.170*** (7.16)
Income	0.000223** (2.93)	0.000126** (3.14)	0.000205** (2.67)	0.000110** (2.76)
Industry Occupation Dummies	No	No	No	No
Fixed Effects	Yes	Yes	Yes	Yes
N	1590	4208	1590	4208

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Excluded categories

^a Primary or less education

Region variables are omitted because of fixed effects.

Table 6: Average (semi-) elasticities for labour transitions into different quality of jobs

	Life satisfaction	Job satisfaction
	(1)	(2)
Job quality 1 to job quality 2	0.0566 (0.73) <i>N</i> =2658	0.0935 (1.51) <i>N</i> =2286
Job quality 1 to job quality 3	0.0448 (0.68) <i>N</i> =3118	0.0562 (0.98) <i>N</i> =2576
Job quality 1 to job quality 4	0.0486 (1.27) <i>N</i> =5008	0.103*** (3.59) <i>N</i> =3522
Job quality 2 to job quality 3	0.123 (1.21) <i>N</i> =704	0.119 (1.44) <i>N</i> =518
Job quality 2 to job quality 4	0.0755 (1.29) <i>N</i> =3404	0.0788* (2.19) <i>N</i> =2004
Job quality 3 to job quality 4	0.0154 (0.27) <i>N</i> =3318	0.0178 (0.52) <i>N</i> =1912

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 1: Description of variables

Job Satisfaction (overall): 1=completely dissatisfied, 2=somewhat dissatisfied, 3 somewhat satisfied, 4 satisfied.

Life Satisfaction: in scale of 0-10, where: 0=completely happy, 10=completely unhappy

Female: 1=female, 0=male

Age: age in years

Primary: 1= if primary is the highest degree completed, 0=otherwise

Secondary: 1= if secondary is the highest degree completed, 0=otherwise

University: 1= if university is the highest degree completed, 0=otherwise

Hours: number of work hours last week

Self-Reported Health: in scale of 0-10, where: 10=very good health, 0=very poor health

Income: labour income perceived last month in dollars

Income Perception: 1=if person considers actual income very good or good, =0 if person considers income fair, poor or very poor

Marital Status: 1=if married or in free union, =0 if single or divorced

Racial Minority: 1= if afro-ecuadorian or indigenous, 0=if white or mestizo

Region 1: 1= lives in Coast region

Region 2: 1= lives in Highland region

Region 3: 1= lives in Amazon region

Years Working: number of years working

Working Hours: number of working hours

More than one job: 1= if has more than one job, 0=otherwise

Permanent Job Contract: 1= if worker has a permanent job contract, 0=otherwise

Temporal Job Contract: 1= if worker has a temporal job contract, 0=otherwise

Vacations: 1= if worker has vacation at work, 0=otherwise

Health Insurance: 1= if worker has social insurance, 0=otherwise

Training: 1= if worker receives training at work, 0=otherwise

Working Establishment size: 1= if working establishment has more than 100 employees, 0=otherwise

RUC: 1= if working establishment has more than 100 employees, 0=otherwise

Formal Sector: 1= if worker is employed in the formal sector, 0=otherwise

Social Security: 1= if worker is affiliated to social security, 0=otherwise

Chapter 3: What explains life satisfaction? Relative income or Rank income? The case of Ecuador

Introduction

The effect of income on happiness has been well studied. Clark et al. (2008) and Ferrer-i-Carbonell (2005) remark, in terms of subjective well-being (SWB), the importance of comparison of the individual's income with income from a socially constructed group or with a social norm, i.e., a reference group.

Several studies found that the larger the individual income is, in comparison with the reference group, the happier the person is (Ferrer-i-Carbonell, 2004; Clark et al., 2008; Caporale et al., 2009¹⁴; Rojas, 2019). On the other hand, Caporale et al. (2009)¹⁵ found that the reference group income's influences positively on individual satisfaction; a plausible explanation for this odd result is the Hirschman's conjecture, i.e., the individuals perceive the reference group income as a signal of their success.

The construction of the reference group is based on variables, such as age, education and region (Ferrer-i-Carbonell, 2005); age, gender and education (Oshio et al., (2010); age, gender and country (Rojas, 2019). Alternatively, Oshio et al. (2010) used the Yitzhaki relative deprivation income index¹⁶ within the reference group and found a negative association between the Yitzhaki index and happiness.

When differentiating by income level, in terms of SWB, the income comparisons between richer and poorer individuals could be asymmetrical; Ferrer-i-Carbonell (2005) found the poorer individuals are influenced negatively by their reference group income (upward comparison), while the richer people are not (the effect is not significant and smaller than the effect for the poorer).

14 For Western European countries.

15 For Eastern European countries.

16 The higher the Yitzhaki index, the higher the gap between the actual income with the reference group income.

Recent research has focused on the rank-income hypothesis, which suggests that the utility of income comes from a higher position in the income rank of the income distribution. Powdthavee (2009) found that individuals care about current income and family expenditure but also about their rank-position. Conversely, Boyce et al. (2010) found that only ranked positions explain life satisfaction rather than absolute income or relative income.

In this paper we test for Ecuador whether relative-income hypothesis or rank-income hypothesis explain life satisfaction. To the best of our knowledge, this is the first paper on this topic for Ecuador.

Data and Methods

The empirical analysis uses the National Employment, Unemployment and Underemployment Survey (ENEMDU), a quarterly rotating panel data survey. We use the 2013-2014 panel since it is the last survey available that includes subjective well-being questions (i.e., life satisfaction). Table 1 presents the descriptive statistics of the variables used to construct the reference groups. We can observe that life satisfaction and income are higher for those with university or greater education, for men, between 30-50 years and those living in the Amazon region.

The dependent variable is life satisfaction measured on a scale from 1 to 10, where 10 means very happy and 1 very unhappy; this question asks for happiness in a life-evaluative mode. We use an ordered logit model with fixed time effects and individual random effects. The fixed time effects control for variables that are constant across individuals, but change over time. Conversely, the individual random effects account for characteristics that differ across individuals, but are constant over time, for instance, positive or negative traits that might affect life satisfaction.

The first approach is to test whether income affects life satisfaction (model 1); we express income in logarithms since the relationship between income and life satisfaction is concave. In the second approach (model 2), we test whether the relative income affects life satisfaction. We construct the reference group based on education, gender, and age. Then, we create a variable that is the difference between a person's income and reference

group income [$\ln(inc) - \ln(refinc)$]. A positive coefficient means that the greater is the income in comparison to the reference group, the greater life satisfaction is.

In order to test asymmetric comparison by income level, a third approach (model 3) consists of creating a variable called *richer*, which equals $\ln(inc) - \ln(refinc)$ if the person's income is greater than reference's group income, whereas equals 0 otherwise. We also create a variable called *poorer* that equals $\ln(inc) - \ln(refinc)$ if the reference's group income is higher than the person's income, whereas equals 0 otherwise. A fourth approach (model 4) consists of using the Yitzhaki index. Finally, a fifth approach (model 5) consists in testing the rank-income hypothesis. We construct a variable called *R* that captures the individual rank within the reference group; $R = \frac{i-1}{n-1}$, where the term $(i-1)$ is the number of individuals with an income worse than a particular individual and the term $(n-1)$ is the number of people with the individual's reference group.

Results and Discussion

In Table 2 we present the econometrics analysis using an ordered logit model with fixed effects. In model 1, we found a positive association between absolute income and life satisfaction. In model 2, we found that the difference between an individual's income with the income of the reference group $\ln(inc) - \ln(refinc)$ does explain life satisfaction. The sign is negative, indicating that the higher the individual's income is compared to the income of the reference group, the higher life satisfaction is. Model 3 shows the asymmetric comparison by income level; the effect for *poorer* is statistically significant, while the effect for *richer* is not. As Ferrer-i-Carbonell (2015), these results indicate that income comparison is asymmetric and upwards. In Model 4, we found a negative coefficient that supports the relative-income hypothesis as Oshio et al. (2010). Finally, in Model 5, we found that rank-income position within the reference group defined as (*R*) explains life satisfaction, supporting the rank-income hypothesis as Boyce et al. (2010).

Table 3 shows the same estimates for the relative-income and rank-income hypothesis controlling for the same variables of Table 1, but with eight different reference groups (A-H) based on age, education, gender and region. For relative income models (2, 3, 4), the statistical significance is ambiguous, it depends on the reference group, and at most,

it is significant for two out of eight combinations. In contrast, for ranking income hypothesis, in seven out of eight different reference groups (A, B, D, E, F, G, H) the income rank by reference group (Model 5) does explain life satisfaction. Moreover, in these seven reference groups, the t-statistic of the rank-income hypothesis (Model 5) is the largest compared to the relative income models (2, 3, 4).

Finally, we test whether the logarithm of income or the effect of absolute income decreases when including the income rank parameter (Model 5). We found in all of the reference groups that the t-statistic of the income rank is greater than the logarithm of income. Furthermore, in four out of eight reference groups, the logarithm of income was no significant. This implies that rank position within the reference group explains significantly more life satisfaction than the absolute income.

Conclusions

We test whether relative-income and rank-income hypothesis and found that rank-income position with the reference group explains significantly more life satisfaction than the absolute income and relative income measures. As Boyce et al. (2010) the rank-income hypothesis does not imply a causal relationship between income and SWB. A higher income does not automatically upgrade life satisfaction since social rank could remain equal, and it is less clear in countries with positively skewed income distribution like Ecuador. Future research could test in what points of the income distribution a higher income upwards the rank and increases life satisfaction.

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Table 1: Descriptive Statistics
Mean Income and Life Satisfaction Values

		Life satisfaction	Income
Age	Age 20-	7.41	259.15
	Age 20	7.62	670.69
	Age 30	7.66	947.32
	Age 40	7.66	1165.73
	Age 50	7.64	1185.09
	Age 60	7.41	871.42
	Age 70+	7.22	515.40
Education	Primary	7.36	618.21
	Secondary	7.62	819.31
	University+	8.06	1822.56
Sex	Male	7.57	1078.08
	Female	7.61	688.35
Region	Highlands	7.59	867.66
	Coast	7.57	992.49
	Amazon	7.72	853.89
Sample		7.61	919.51

Table 2: The effect of relative income on life satisfaction

Reference group (educ, age, region)

	Model 1	Model 2	Model 3	Model 4	Model 5
ln(inc)	0.144*** (10.96)	0.279*** (6.06)	0.281*** (6.10)	0.157*** (10.80)	0.0791** (3.04)
Female	0.0813** (3.25)	0.0822** (3.29)	0.0784** (3.13)	0.0815** (3.26)	0.0827*** (3.31)
ln(age)	1.071 (1.87)	-0.329 (-0.45)	-0.168 (-0.23)	0.741 (1.25)	1.781** (2.86)
ln(age squared)	-0.154* (-1.96)	0.0275 (0.28)	0.00454 (0.05)	-0.113 (-1.41)	-0.247** (-2.92)
High School ^a	0.276*** (9.56)	0.212*** (5.94)	0.213*** (5.97)	0.252*** (8.15)	0.309*** (9.94)
University ^a	0.679*** (19.36)	0.527*** (8.67)	0.529*** (8.71)	0.613*** (13.07)	0.754*** (17.24)
Ethnic Minority ^b	-0.161*** (-4.92)	-0.161*** (-4.92)	-0.161*** (-4.93)	-0.161*** (-4.93)	-0.159*** (-4.86)
Married	0.268*** (10.30)	0.267*** (10.29)	0.263*** (10.13)	0.268*** (10.30)	0.264*** (10.16)
Coast Region ^c	-0.0164 (-0.71)	-0.0429 (-1.73)	-0.0385 (-1.55)	-0.0239 (-1.01)	-0.000954 (-0.04)
Amazon Region ^c	0.104 (1.56)	0.104 (1.55)	0.0996 (1.49)	0.106 (1.58)	0.0994 (1.49)
ln(inc)- ln(refinc)		-0.139** (-3.06)			
Richer			-0.0464 (-0.88)		
Poorer			-0.184*** (-3.89)		
Yitzhaki Index ^d				0.0477* (2.10)	
Income Rank (R)					0.260** (2.89)
Dummy for 2014	-0.237*** (-10.76)	-0.236*** (-10.72)	-0.238*** (-10.83)	-0.236*** (-10.72)	-0.240*** (-10.91)
<i>N</i>	26660	26660	26660	26660	26660

Notes: Excluded categories (^a Primary or less education, ^b White and mestizo, ^c Highland Region)

^d Yitzhaki index is scaled by dividing by the average family income in our sample

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: The effect of relative income on life satisfaction with different reference groups

	A. Reference group: educ, age		B. Reference group: educ, gender		C. Reference group: educ, region		D. Reference group: age, gender		E. Reference group: age, region		F. Reference group: gender, region		G. Reference group: educ, age, gender		H. Reference group: educ, age, gender, region	
	b	t	b	t	b	t	b	t	b	t	b	t	b	t	b	t
<i>Model 2</i>																
ln(inc)-ln(refinc)	-0.0506	(-0.90)	0.0347	(0.35)	-0.463***	(-4.56)	0.00129	(0.02)	-0.0331	(-0.54)	0.0781	(0.60)	-0.00246	(-0.05)	-0.0667	(-1.64)
<i>Model 3</i>																
Richer	0.0301	(0.49)	0.0922	(0.91)	-0.379***	(-3.66)	0.0674	(0.99)	0.0406	(0.62)	0.157	(1.19)	0.0668	(1.20)	0.0189	(0.38)
Poorer	-0.0977	(-1.68)	-0.0237	(-0.23)	-0.536***	(-5.18)	-0.0409	(-0.62)	-0.0783	(-1.25)	0.0220	(0.17)	-0.0388	(-0.77)	-0.105*	(-2.48)
<i>Model 4</i>																
Yitzhaki Index ^d	0.0013	(0.04)	-0.136**	(-2.89)	0.0777	(1.09)	-0.0816	(-1.75)	-0.0241	(-0.54)	-0.2041	(-2.33)	-0.039*	(-1.60)	0.0092	(0.51)
<i>Model 5</i>																
Income Rank (R)	0.483***	(5.03)	0.473***	(4.76)	0.329**	(3.19)	0.452***	(4.54)	0.333**	(3.24)	0.319**	(2.99)	0.406***	(4.69)	0.283***	(3.43)
ln(inc) ^e	0.0221	(0.80)	0.0248	(0.88)	0.0635*	(2.23)	0.0392	(1.48)	0.0685*	(2.56)	0.0733**	(2.71)	0.0388	(1.49)	0.0714**	(2.86)

Notes:

b represents the regression coefficients, and t is the t-statistic (in parentheses); * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

LL is the Log-Likelihood

^dYitzhaki index is scaled by dividing by the average family income in our sample

^eCoefficient of the logarithm of income $ln(inc)$ in the Income Rank (R) model

Chapter 4: Sources of misery in European countries

Introduction

Stiglitz et al. (2009) recommended that national statistical institutions collect information on the subjective well-being of the population to better understand the measurement of people's quality of life and its determinants. A decade later, Stiglitz et al. (2018) recognize that there has been tremendous progress in the methodology and availability of subjective well-being (SWB) data; likewise, the research works focusing on SWB have grown. As a consequence of COVID-19, the importance of SWB studies and their effect on people's lives has received even more attention. According to Eurofound (2020), in the European Union (EU) countries, in April 2020 life satisfaction was on average 6.3, which is much lower than the previous measure before the pandemic¹⁷. Moreover, the pandemic had adverse effects on employment changes, e.g., financial insecurity and disruption in daily life with consequences on people's mental health (Sherman et al., 2020). Preliminary evidence suggests an increase in symptoms of anxiety, depression, stress (Rajkumar 2020), distress and pandemic-fear-related (Bäuerle et al., 2020).

Flèche and Layard (2017) argue that mental health has been ignored in life satisfaction studies and, hence, in policy debate. Including a mental health variable (depression), they explore for the US, UK, Australia and Germany the sources of misery defined as those in the lowest levels of life satisfaction. These authors found that depression explains much more misery than poverty, unemployment or physical health. Similarly, in this paper we study the same sources of misery across 28 EU countries using the European Quality of Life Survey (EQLS) 2016.

Health is not only the absence of symptoms, pain or discomfort (physical health), it is also mental health. Over the last years, mental health has become more important in academics, global development agenda and policy goals. The United Nations (2015) Sustainable Development Goals in 2015 recognize the importance of prevention and

¹⁷ According to European Quality of Life (2016), on average life satisfaction in EU countries was 7.4.

treatment of mental health¹⁸. However, persons suffering from mental health disorders still experience discrimination and stigma, they suffer in silence, in some cases without treatment, and dying sooner than people with physical health problems (Quilter-Pinner and Reader 2018). Furthermore, people with mental health problems could have poor educational and working outcomes and, in societal terms, there are important economic losses. For EU countries the total cost¹⁹ of mental-illness exceed 4% of Gross National Product (OECD 2018).

Depression is the most common mental disorder worldwide affecting 4.4% of the population and it is more common among women (WHO 2017). Across EU countries it affects 4.5% of the population (OECD 2018), being the second most common mental disorder across these countries (just below anxiety). According to Diener (2003), Stone and Mackie (2013) and Steptoe (2015), life satisfaction is a measure of evaluative well-being, while depression captures emotional well-being, experienced well-being or negative affect. Graham (2017) remarks that low levels of life satisfaction are not analogous to depression since the latter is related to negative traits and happiness to positive traits. Using data from Gallup World Poll, the correlation between life satisfaction and negative affect measured by sadness, worry and depression is -0.231 (OECD 2013). Flèche and Layard (2017) argue that usually misery and poor mental health could be understood as the same thing, but they show that the correlation between misery and depression is between 0.1 and 0.4 across four countries. In our study, the correlation between misery and risk of depression across 28 EU countries is between 0.08 and 0.36, which confirms the idea that life misery and mental health capture different things (see Figure 1).

In the following section, we will review the most important studies for each of the following sources of misery (i) income-poverty, (ii) unemployment, (iii) chronic health and (iv) risk of depression.

18 See goal 3 (Good Health and Well-Being) and Target 3.4 (“by 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being”).

19 It includes direct costs (health system and social benefits) and indirect costs (lower employment and lower productivity).

Literature review

Income and poverty

Income has been found to be positively associated with happiness within countries since the Easterling Paradox, and this relationship holds when the basic needs have not been met, often named as satiation point (Veenhoven 1991, Frey and Stutzer 2002, Clark et al., 2008, Di Tella and MacCulloch 2008)²⁰. The relationship between life satisfaction and income depends also on the comparison to other's income (reference group), the higher the income is with the reference group, the higher life satisfaction is (Ferrer-i-Carbonell 2005, Oshio et al., 2010; Acosta-Gonzalez y Marcenaro-Gutiérrez 2020). Using the Yitzhaki index, Oshio et al. (2010) found that relative deprivation of income within the reference group is negatively associated with happiness. Those who cannot reach that socially constructed ideal, "the frustrated achievers", are unhappier (Graham 2004).

Specifically, Clark (2017) asserts that income determines well-being in some points of the income distribution; that is, there is some difference between high-income individuals and low-income individuals or in poverty. In fact, Clark et al. (2016) -using long panel data- found that individuals experience lower life satisfaction when poor compared with the same individual when not poor. There is no adaptation in poverty; this means that when an individual becomes poor until four years later, he/she reports the same level of life satisfaction.

Unemployment

People in unemployment experience pecuniary cost, which could be partially compensated by unemployment insurance, but they also face non-pecuniary costs or loss in SWB, that is much lower levels of mental well-being than those in work (Wilson and Walker 1993, Clark and Oswald 1994, Carroll 2007). Winkelmann (2014) argues that the negative effect of unemployment on life satisfaction has been well-studied over the last decades. The most relevant reference for our study is Wulfgramm (2014) that found, for

²⁰ On the contrary, Stevenson and Wolfers (2013) argue that there is no well-being dataset that supports the existence of the satiation point

21 European countries, that unemployment has a large negative effect on life satisfaction and other many studies support this evidence. Individuals with lower mental well-being suffer approximately twice as much in terms of mental well-being from becoming unemployed than those on average (Binder and Coad 2015).

Chronic Health

Mizobuchi (2017) found that the health factor has the most explanatory power to explain SWB across countries. Some chronic diseases are negatively associated with lower well-being. McNamee and Mendolia (2014) found a large negative effect of chronic pain on life satisfaction since medical treatment is uncertain. Strine et al. (2008) found that individuals with chronic illnesses such as asthma, arthritis, diabetes or heart disease were more likely to report poor life satisfaction. Among these health conditions, arthritis and heart disease were the two most debilitating conditions that worsen life satisfaction. Lim (2020) argues that the chronic illness is accompanied with frustration and then deteriorates life satisfaction; the mechanism is via the aspiration gap since people might compare to those in a similar or attainable situation.

Depression

Fergusson et al. (2015) found that life satisfaction is strongly associated with major depression and other mental health problems, but they argue that the direction of causation between life satisfaction and mental health problems is reciprocal. Koivumaa-Honkanen et al. (2004) using cross-sectional data found a negative relationship between life satisfaction and depression, whereas using longitudinal data (15-year follow-up) the authors found that the less dissatisfied with life are more likely to have severe/moderate depression compared to those reporting higher life satisfaction. Similarly, Nes et al. (2013) found that individuals with major depressive disorder report lower levels of life satisfaction. Swami et al. (2007) argue that the effect of life dissatisfaction on depression is mediated by health. On the other way of causation, Serin et al. (2010) found that life satisfaction can be predicted by depression. Flèche and Layard (2017) found that depression is the main source of life dissatisfaction (misery).

Data and methodology

We use the EQLS 2016 (Eurofound 2018), a cross-sectional survey for analyzing the quality of life using objective and subjective measures, for EU countries. Life satisfaction is measured on a scale from 1-10, being 1 very dissatisfied and 10 very satisfied. The dependent variable is *misery* that captures dissatisfaction with life. We define misery, that equals “1” if life satisfaction is on a 1-4 scale, and equals 0 otherwise. Our sample contains 28 EU countries, misery is approximately the bottom 12%.

Mental health is measured with risk of depression, a variable that equals “1” whether the person has a 50 or lower on the World Health Organization-5 (WHO-5) index and “0” otherwise²¹. The WHO-5 index is based on 5 variables that ask: (1) feeling cheerful and in good spirits, (2) feeling calm and relaxed, (3) feeling active and vigorous, (4) feeling fresh and rested when woke up, (5) life is filled with interesting things. Each question is measured on a scale from 0 (at no time) to 5 (all of the time). If the individual scores 5 on each question the WHO-5 is 100. The study of Todd et al. (2015) presents a review of 213 articles to analyze WHO-05 in terms of (i) clinometric validity, (ii) responsiveness/sensitivity in controlled trials and (iii) screening tool for depression. The authors argue that WHO-05 is a valid measure in terms of these three aspects. Other variables used to explain misery are unemployment, poor and chronic health. Following Flèche and Layard (2017) we define poor that equals “1” whether income is the bottom 10%, and “0” otherwise. Chronic health equals “1” if the individual has a long-standing²² health problem, illnesses, or disability.

Figure 2 shows the mean of the four sources of misery across 28 EU countries. Bulgaria is the country with the highest percent of misery (37%), which is almost three times the average of the whole sample, while the country with the lowest percentage of misery is Netherlands (5%). In terms of risk depression, 20 out of 28 countries have at least 20% of the population at risk of depression. Intriguingly, two Nordic countries, Finland and Denmark, have the lowest percentage of risk of depression, while another Nordic country – Sweden- has the highest one, despite being at the bottom of the distribution of misery

²¹ It is not calculated by the authors. EQLS 2016 survey (Eurofound 2018) includes WHO-5 index.

²² Long standing mean lasted, or are expected to last, for 6 months or more.

(Figure 2). The percentage of unemployed varies across countries, Croatia has the largest percentage of unemployed (11.1%). On average, 30% of the population in the sample has a chronic health problem, this variable has less variability than the others described before. Finally, by definition, poor is the bottom 10% for each country.

Following Flèche and Layard (2017), Table 1 and Figure 3 show the decomposition of the sources of misery: risk of depression, chronic health problem, poor and unemployed. (M) is the percentage of those in misery having each characteristic that equals the relative impact of each characteristic upon misery multiplied by the percentage of the population who have each characteristic (prevalence). For instance, in Italy, 56% of people in misery are at risk of depression, 23% have a chronic health problem, 25% are poor and 14% are unemployed. On average for the 28 EU countries, the percentage of those in misery at risk of depression ($M_d = 59\%$) is the largest across all characteristics followed by having a chronic health problem ($M_c = 48\%$), poor ($M_p = 20\%$) and unemployed ($M_u = 15\%$). Furthermore, except for Belgium, Germany, Finland and Luxembourg, in the other 24 EU countries, M_d is greater than the contribution of the other characteristics. In other words, to some extent being at risk of depression has a higher impact on misery than having a chronic health problem, being poor or unemployed.

We move to multivariate analysis to account for how much our mental illness variable (risk of depression) explains misery considering the effect of other variables. We use a probit model; the dependent variable is misery and the explanatory variables are the four sources of misery mentioned in the descriptive statistics analysis, except that we include the natural logarithm of income instead of poor since in happiness studies the relationship between income and life satisfaction has been well-established to be concave, then we expect a similar relationship with misery. Also, we include other covariables such as age, education, married and sex. Table 2 shows the average marginal effect (AME) of the probit model for the entire sample of the 28 EU countries. Column 1 indicates that the effect (AME coefficient size) and the statistical significance of risk of depression is the greatest across all sources of misery. While columns 2 to 7 show the same model for a subsample by sex, age and education; the results in terms of statistical significance do not vary, but for males and younger than 40 the effect of unemployment is slightly greater than the effect of risk of depression.

Table 3 shows the probit model by each of the 28 EU countries. As the z-statistics indicates, the partial effect of risk of depression on misery is the most significant at 5% compared to the effects of the other covariables in 25 out of 28 EU countries (except for Austria, Finland and Spain). Besides, in 15 of the 25 countries the coefficient of depression is significant; the size of the AME coefficient for depression is greater than the coefficient of unemployed and chronic health. On the other hand, the size of the coefficient on unemployed is the greatest in the other 10 remaining countries. Taking United Kingdom as reference, on average holding other variables at their observed values, being in risk of depression and unemployed increases an individual's probability of being in misery by 12% and 7%, respectively. In countries like Cyprus, Malta, Poland, Portugal and Slovakia the AME for risk of depression on misery is greater than 20%.

Adaptation might be the cause of why our mental health variable (risk of depression) explains much more misery than chronic health. Cubí-Mollá et al. (2017) found that chronic illness affects self-health perception, but this effect is counterbalanced by the ability to adapt in longer periods. McNamee and Mendiola (2014) found that women can adapt to chronic pain over a long period. According to Graham et al. (2011) in terms of happiness, mental health problems have a stronger effect than physical health problems. Individuals are more able to adapt to one-time shocks (physical health problems) than to constant uncertainty (mental health problems). Also, the authors suggest that the negative effect of health problems are larger than the effect of income. In this line, McNamee and Mendiola (2014) suggest that people adapt better to income shocks than to long term health condition. Since adaptation occurs in long periods, in our paper using cross-sectional data for 28 EU countries, we cannot observe or rule out adaptation.

Overall, the multivariate analysis indicates that the risk of depression is the main source of misery followed by unemployment. However, this result cannot be interpreted as a causal effect. In absence of panel data or an instrumental variable, we cannot solve for any source of endogeneity. Even though in the case of solving for endogeneity, puzzling results might still occur since independent variables might be related to each other before explaining misery.

OECD (2018) mentions that living with mental ill-health might be related to lower educational attainment, a higher probability of being unemployed and may suffer from poor physical health.

Ng and Shanks (2020) exhibit a review of studies of the bidirectional relationship between poverty and mental health. First, the social causation hypothesis states that poverty and deprivation lead to mental health problems. On the other hand, the social selection theory states that mental health problems might explain falling into poverty. The authors describe a potential causal model suggesting that low family socioeconomic status increases the risk of early onset of psychological distress that is associated with poverty and unemployment. Besides, in a cross-sectional study, Stankunas (2006) and Mossakowski (2009) found that unemployment is associated with depression. Therefore, in our analysis, a possible path would be that unemployment increases the risk of depression, which in turn explains misery.

We propose a Structural Equation Model (SEM) in Figure 3 for the 28 EU countries. We suggest that having a university degree explains being poor and unemployed, which in turn explains misery. Besides, we expect that chronic health problems are associated with the risk of depression, since there is strong evidence in the literature of comorbidity between mental health problems and physical health (Prince et al., 2007). Firth et al. (2019) in a wide literature review comment that mental health problems are associated with a risk of obesity, diabetes and cardiovascular and cardiometabolic diseases. On the other hand, having a chronic health problem might lead to depression and anxiety. Therefore, the association could be bidirectional, however considering that our mental health variable is risk of depression we suggest that having a chronic health problem explains risk of depression, which in turn explains misery; risk of depression by itself also explains misery.

The Standardized Root Mean Square Residual of the model in Figure 3 is equal to 0.02 that indicates a close-fitting model. Table 4 shows that all of the direct and indirect effects of the SEM model for 28 EU countries are significant. As in multivariate analysis, across all the sources of misery, the effect of risk of depression has the largest coefficient size and statistical significance. The indirect effect of university on misery is through the

channel unemployed-poor-depression, therefore it includes the indirect effect of poor on misery since having a university degree and being unemployed explains being poor. Risk of depression mediates the relationship between chronic health problem and misery and, as expected, this effect has the greatest significance. Table 5 shows the direct and indirect effects of the SEM model for Austria, Finland and Spain. Only in these 3 countries, the multivariate analysis indicates that risk of depression does not explain misery. The SEM model shows that the direct effect of risk of depression on misery is significant for all of these four countries and the greatest across all the sources of misery; while the size of the coefficient of depression is the greatest in 3 out of 4 countries.

Conclusions

In the last decades, SWB studies have become more important in academia and policy agenda. As a consequence of the adverse effects of COVID-19 on people's lives, the importance of mental health has received special attention. The main sources of happiness in the literature review of SWB are income, employment and physical health; Flèche and Layard (2017) argue that mental health has not been considered in life satisfaction studies, therefore they explore for US, UK, Australia and Germany the sources of misery including depression as a mental health variable and found that depression explains much more misery than the other sources. In this paper, we use a similar approach to study the same sources of misery across 28 EU countries using the European Quality of Life Survey (EQLS) 2016.

Our mental health variable is being at risk of depression, a variable that equals "1" whether the person has a 50 or lower on the World Health Organization-5 (WHO-5) index and "0" otherwise. We decompose the source of misery and found, for the 28 EU countries, that the percentage of those in misery at risk of depression for the whole sample is 59%, which is the largest contribution compared to other sources of misery. In the multivariate analysis, using a probit model, the partial effect of being at risk of depression is the most significant to explain misery in 25 out of 28 EU countries and in 15 out of those 25 countries the coefficient size of being at risk of depression is greater than the coefficient of unemployment and having a chronic health problem. These results cannot be interpreted as a causal effect since we use cross-sectional data and we cannot solve for

any source of endogeneity. We go a step forward than Flèche and Layard (2017) by estimating a Structural Equation Model and found that the effect of risk of depression has the largest coefficient size and statistical significance across all sources of misery, which confirms the result of previous methods.

SWB studies have mainly focused to understand the effects of income, employment, physical health and social capital on life satisfaction. This paper outlines the importance of mental health as a crucial dimension of people's well-being. The main implication is that if mental health matters more than the other sources of misery. Thus, EU countries' policy goals should proactively promote mental health attention and prevent early diagnosis of mental health problems. The benefits of improving mental health in population are (i) reduce premature mortality and suicides, (ii) positive effects on recovering and living with physical health problems, (iii) improve working and educational outcomes.

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Figure 1: Correlation between misery and risk of depression

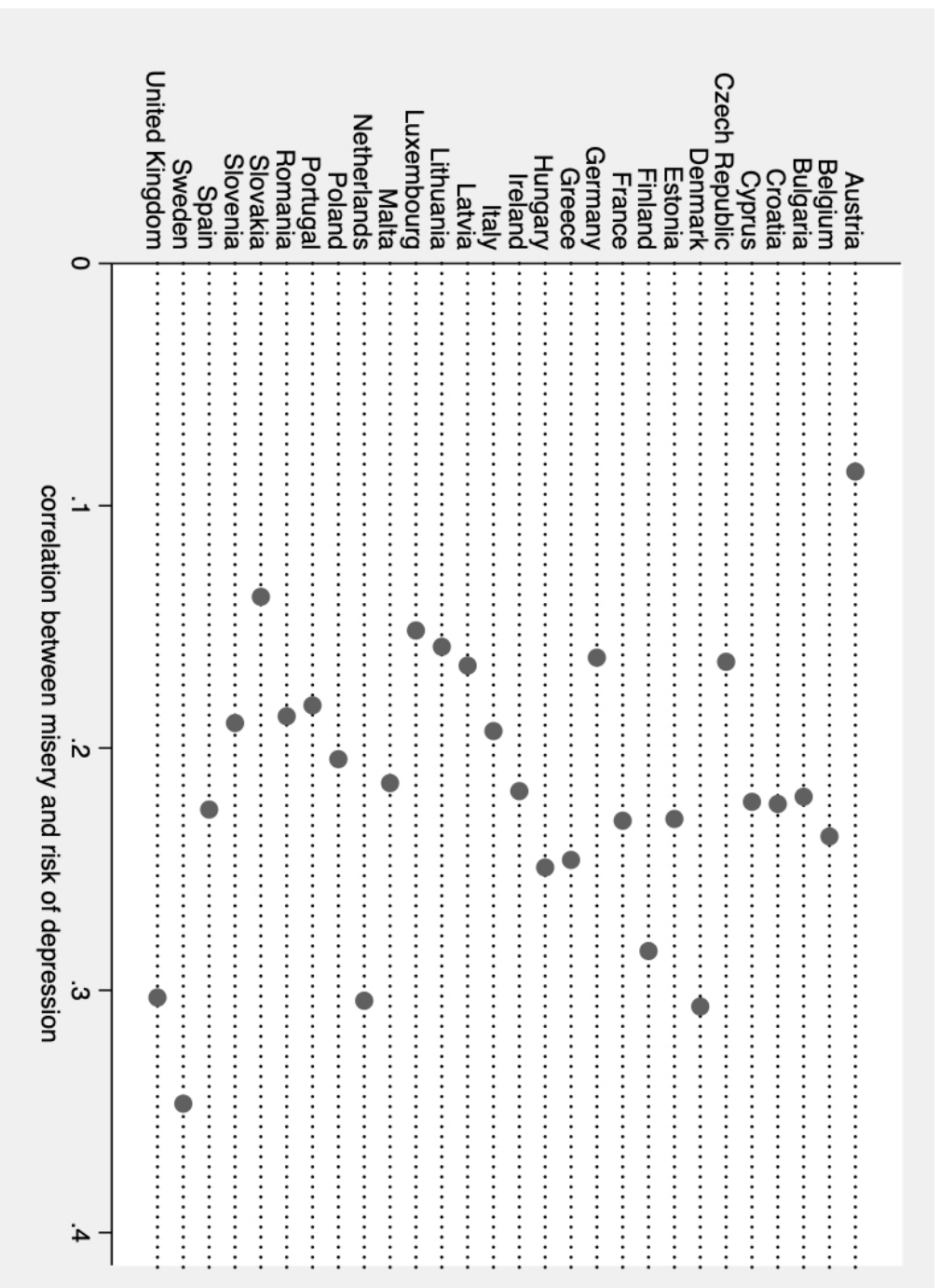


Figure 2: Descriptive statistics

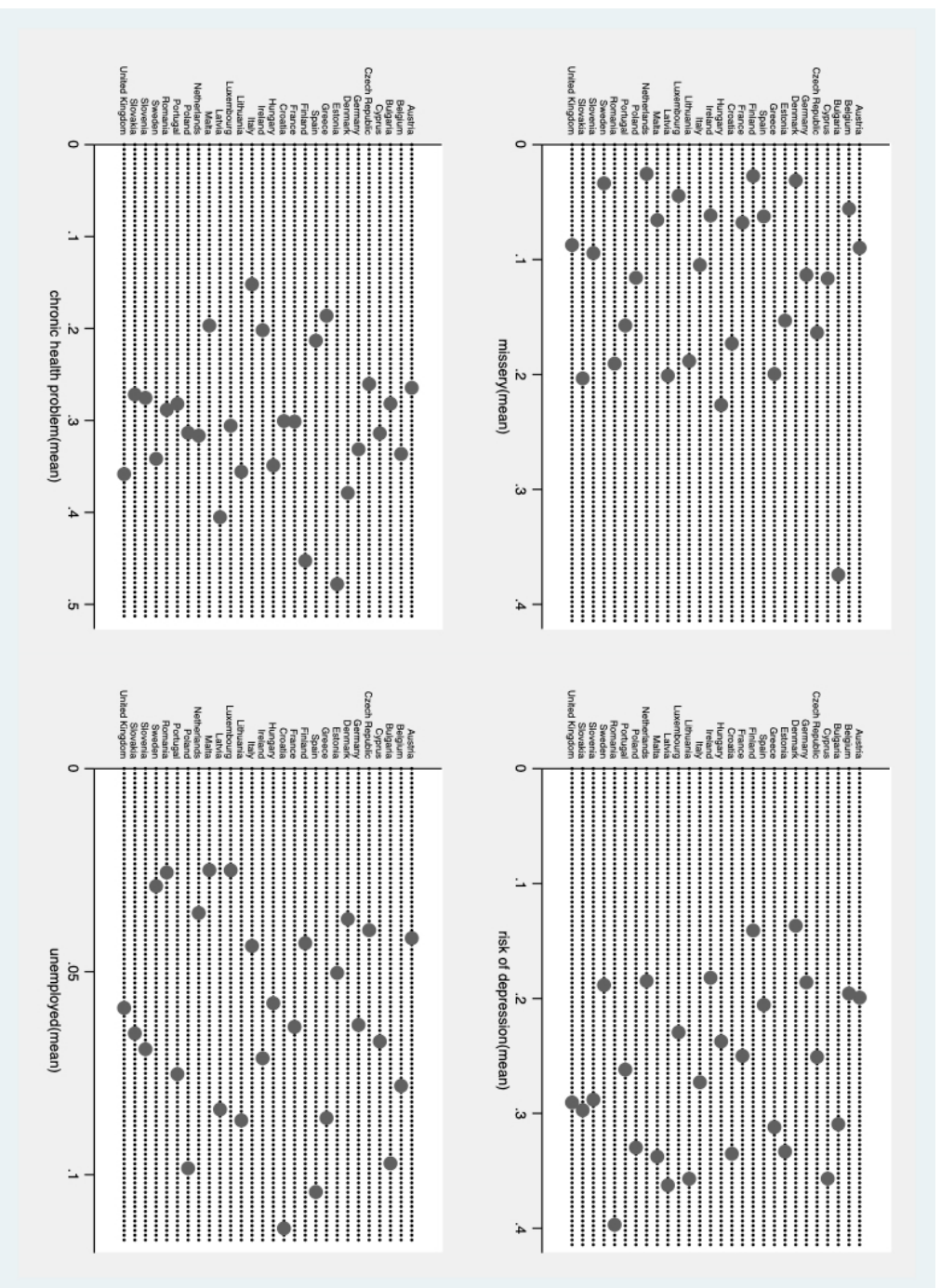


Figure 3: Percentage of those in misery having each characteristic

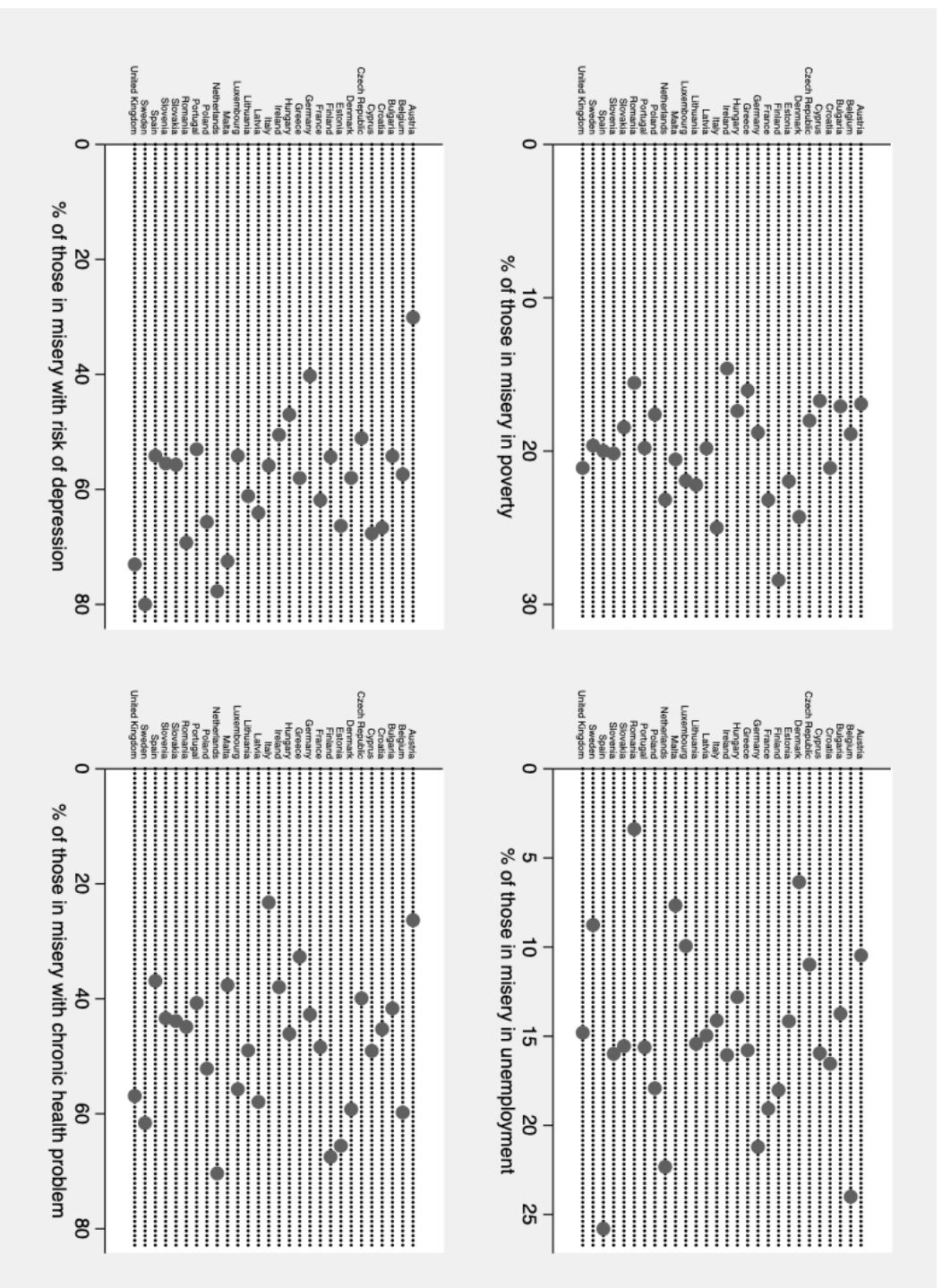


Table 1: Decomposition of Sources of Misery

Country	% of those in misery having each characteristic =				Relative impact of each characteristic upon misery				Prevalence			
	poverty	depression	unemployment	chronic health	poverty	unemployment	depression	chronic health	poverty	unemployment	depression	chronic health
Austria	17	30	10	26	2	2	3	1	8	19	4	29
Belgium	19	57	24	60	2	3	3	2	8	20	8	34
Bulgaria	17	54	14	42	3	2	1	2	6	29	13	26
Cyprus	17	68	16	49	2	2	2	2	8	33	9	27
Czech Republic	18	51	11	40	2	2	3	1	8	24	4	28
Germany	19	40	21	43	3	2	3	1	7	18	7	33
Denmark	24	58	6	59	3	4	2	2	9	14	4	35
Estonia	22	66	14	66	3	2	3	2	7	32	5	43
Greece	16	58	16	33	2	2	1	2	8	31	11	18
Spain	20	54	26	37	2	3	2	2	10	20	13	22
Finland	28	54	18	68	3	4	4	2	9	15	4	41
France	23	62	19	48	2	3	3	2	10	24	7	29
Croatia	21	67	17	45	2	2	1	2	10	34	13	30
Hungary	17	47	13	46	2	2	2	1	11	23	8	33
Ireland	15	51	16	38	1	3	2	2	11	19	9	20
Italy	25	56	14	23	2	2	3	1	11	27	6	18
Lithuania	22	61	15	49	3	2	2	2	8	31	8	29
Luxembourg	22	54	10	56	2	2	3	2	9	22	3	30
Latvia	20	64	15	58	3	2	2	2	7	34	9	38
Malta	21	72	8	38	2	2	4	2	9	34	2	19
Netherlands	23	78	22	70	3	4	6	2	9	18	4	30
Poland	18	66	18	52	2	2	2	2	7	31	9	29
Portugal	20	53	16	41	3	2	1	1	7	26	10	29
Romania	16	69	3	45	2	2	2	2	9	36	2	23
Sweden	20	80	9	62	2	4	3	2	8	19	3	32
Slovenia	20	55	16	43	2	2	2	2	9	29	8	27
Slovakia	18	56	16	44	2	2	2	2	9	28	7	23
United Kingdom	21	73	15	57	2	3	2	2	11	28	6	33
Average 28 EU	20	59	15	48	2	2	2	2	9	26	7	29

Table 2: Probit model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All variables						
		female=1	male=1	age<40	age>=40	secondary education=1	higher education=1
log (income)	-0.031*** (-10.52)	-0.027*** (-7.28)	-0.034*** (-7.55)	-0.021*** (-9.17)	-0.036*** (-5.28)	-0.023*** (-5.54)	-0.008*** (-3.23)
unemployed	0.133*** (10.30)	0.109*** (6.74)	0.151*** (7.56)	0.102*** (7.37)	0.136*** (6.54)	0.150*** (7.72)	0.077*** (3.71)
risk of depression	0.135*** (18.75)	0.126*** (14.55)	0.147*** (12.07)	0.096*** (16.88)	0.151*** (7.85)	0.152*** (13.69)	0.076*** (7.25)
chronic health	0.013* (2.20)	0.009 (1.33)	0.017 (1.76)	0.007* (2.07)	0.015 (0.71)	0.0080 (0.90)	0.012 (1.65)
age	0.0007*** (4.24)	0.0006** (2.98)	0.0007** (2.76)	0.0019 (0.85)	0.0002** (3.00)	0.0001*** (4.63)	0.0005** (2.78)
secondary education	-0.017** (-2.99)	-0.013 (-1.88)	-0.021* (-2.36)	-0.028 (-1.74)	-0.013*** (-3.31)		
higher education	-0.047*** (-6.96)	-0.051*** (-5.88)	-0.043*** (-4.20)	-0.051*** (-5.34)	-0.046*** (-5.18)		
married	-0.152*** (-3.97)	-0.023*** (-3.58)	-0.018* (-2.26)	-0.023*** (-4.13)	-0.028** (-2.82)	-0.019* (-2.55)	-0.020** (-3.26)
female	-0.021*** (-3.83)			-0.009*** (-3.60)	-0.024 (-1.20)	-0.012 (-1.66)	-0.014* (-2.31)
N	24515	14023	10492	6537	17978	10225	6767

t statistics in parentheses.

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

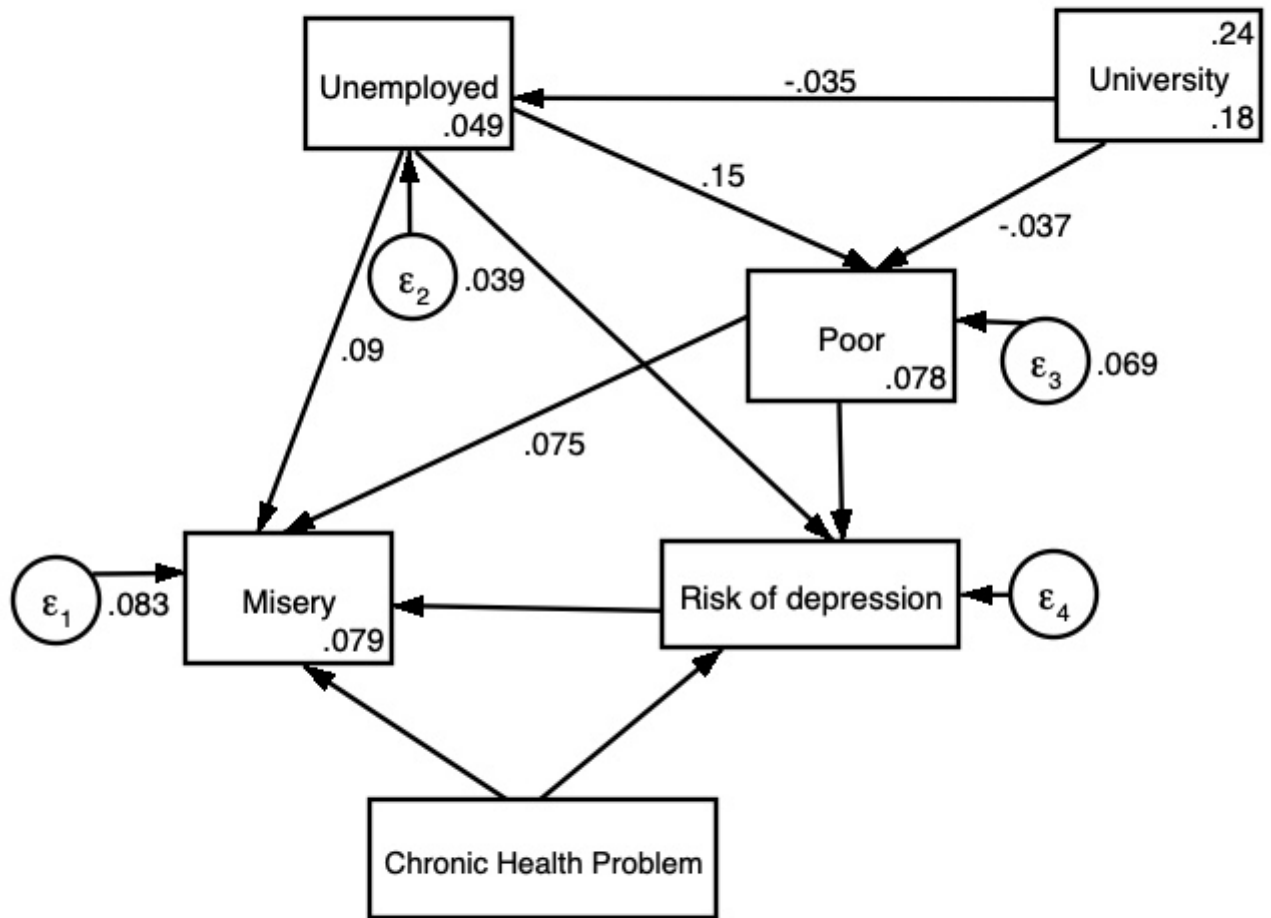
Table 3: Probit model by country

Country	log (income)	unemployed	risk of depression	chronic health	age	secondary education	higher education	married	female	N
Austria	-0.034 (-2.67)**	0.05 (1.62)	0.047 (1.96)	-0.01 (-0.69)	0 (-0.83)	0.012 (0.52)	-0.007 (-0.3)	0.033 (2.54)*	0.011 (0.88)	921
Belgium	-0.016 (-1.85)	0.062 (2.22)*	0.107 (6.29)**	0.029 (1.93)	0 (0.27)	-0.013 (-0.94)	-0.03 (-1.95)	-0.023 (-1.58)	-0.016 (-1.27)	932
Bulgaria	-0.124 (-3.62)**	0.122 (1.4)	0.33 (6.29)**	-0.016 (-0.31)	0 (2.51)*	-0.024 (-0.44)	-0.17 (-3.01)**	-0.058 (-1.3)	0.074 (1.74)	858
Cyprus	-0.057 (-3.23)**	0.203 (3.93)**	0.22 (6.01)**	0.056 (1.97)*	0 (0.08)	-0.064 (-2.08)*	-0.075 (-2.16)*	-0.014 (-0.55)	-0.015 (-0.62)	927
Czech Republic	-0.053 (-1.9)	0.036 (0.45)	0.111 (2.51)*	0.004 (0.09)	0 (1.42)	-0.048 (-0.93)	-0.108 (-2.27)*	-0.041 (-1.18)	0.027 (0.74)	682
Germany	-0.008 (-0.7)	0.085 (2.41)*	0.13 (5.9)**	0.004 (0.27)	0.001 (2.2)*	0 (0.52)	-0.015 (-0.79)	-0.023 (-1.49)	-0.017 (-1.16)	1349
Denmark	-0.009 (-4.81)**	0.006 (0.59)	0.084 (5.93)**	0 (-0.16)	0 (-1.38)	-0.001 (-0.26)	-0.007 (-1.35)	-0.01 (-2.13)*	-0.002 (-0.61)	872
Estonia	-0.052 (-4.11)**	0.024 (0.54)	0.085 (3.58)**	0.056 (2.39)*	0.001 (2.47)*	0.007 (0.31)	-0.003 (-0.11)	-0.054 (-2.71)**	-0.047 (-2.21)*	805
Greece	-0.088 (-2.71)**	0.184 (2.98)**	0.315 (7.2)**	0.111 (2)*	0.003 (2.46)*	-0.092 (-1.82)	-0.076 (-1.31)	-0.037 (-0.94)	-0.103 (-2.65)**	955
Finland	-0.004 (-2.14)*	0.087 (3.73)**	0.012 (1.55)	0.004 (0.94)	0 (0.99)	-0.005 (-1.48)	-0.01 (-1.44)	-0.006 (-1.57)	0.004 (1.2)	871
France	-0.002 (-0.95)	0.118 (4.64)**	0.091 (6.37)**	0.017 (1.99)*	-4.21 (-0.02)	-0.014 (-2.11)*	-0.026 (-3.1)**	-0.021 (-2.64)**	-0.025 (-3.57)**	986
Croatia	-0.027 (-1.12)	0.047 (0.71)	0.156 (4.01)**	0.047 (1.04)	0.001 (1.29)	0.032 (0.57)	-0.062 (-0.91)	-0.074 (-2.03)*	0.012 (0.33)	823
Hungary	-0.05 (-2.83)**	0.184 (2.48)*	0.21 (4.4)**	0.009 (0.28)	0.001 (1.78)	-0.051 (-1.52)	-0.058 (-1.29)	-0.03 (-0.97)	-0.017 (-0.58)	756
Ireland	-0.005 (-1.03)	0.034 (1.5)	0.081 (4.83)**	0.013 (1.13)	0 (0.79)	-0.009 (-0.85)	-0.017 (-1.5)	0 (-0.58)	0.005 (0.73)	836
Italy	-0.029 (-3.47)**	0.107 (2.91)**	0.101 (5.8)**	0.029 (1.56)	0 (-1.84)	-0.046 (-2.82)**	-0.072 (-3.85)**	-0.004 (-0.33)	0.005 (0.73)	1613
Lithuania	-0.037 (-2.82)**	0.03 (0.63)	0.166 (4.34)**	-0.044 (-1.48)	0.002 (3.42)**	0.038 (1.05)	-0.057 (-1.6)	-0.083 (-2.47)*	-0.007 (-0.22)	892
Luxembourg	-0.016 (-2.2)*	0.032 (1.44)	0.029 (2.18)*	0.023 (1.97)*	0 (-0.64)	-0.001 (-0.13)	-0.024 (-2.05)*	-0.006 (-0.59)	-0.006 (-0.69)	712
Latvia	-0.005 (-0.35)	0.121 (2.54)*	0.123 (4.33)**	0.026 (1.02)	0.002 (3.98)**	0.006 (0.24)	-0.079 (-2.75)**	0 (-0.32)	-0.021 (-0.92)	830
Malta	-0.01 (-1.84)	0.223 (3.08)**	0.03 (2.4)*	0.016 (1.24)	0 (1.52)	-0.017 (-1.42)	-0.019 (-1.42)	-0.002 (-0.19)	0.006 (0.59)	816
Netherlands	-0.001 (-1.21)	0.075 (4.06)**	0.041 (4.23)**	0.009 (2.4)*	0 (1.3)	0 (-0.16)	-0.003 (-1.37)	0.001 (0.73)	0 (-0.72)	820
Poland	0 (0.11)	0.248 (4.33)**	0.14 (6.42)**	0.022 (1.42)	0.001 (3.29)**	0 (-0.03)	-0.03 (-1.69)	-0.015 (-1.19)	-0.019 (-1.57)	720
Portugal	-0.026 (-1)	0.281 (3.54)**	0.121 (3.38)**	0.078 (2.11)*	0.002 (2.43)*	0.038 (0.85)	0**	-0.05 (-1.64)	0 (0.01)	612
Romania	-0.044 (-1.89)	-0.128 (-1.16)	0.182 (4.01)**	0.082 (1.73)	3.84 (0)	-0.173 (-3.83)**	-0.112 (-1.59)	-0.044 (-1.04)	0 (-1.57)	812
Sweden	0 (0.36)	0 (0.14)	0.093 (6.5)**	0.001 (0.69)	0 (-0.26)	0 (0.28)	-0.005 (-1.78)	-0.007 (-2.99)**	-0.003 (-1.75)	942
Slovenia	-0.025 (-2.46)*	0.196 (3.9)**	0.061 (2.48)*	0.04 (1.75)	0 (1.93)	-0.013 (-0.59)	-0.081 (-3.05)**	0 (-0.41)	-0.02 (-1.19)	754
Slovakia	-0.011 (-0.48)	0.268 (3.03)**	0.16 (3.37)**	-0.012 (-0.3)	0.002 (1.98)*	-0.062 (-1.52)	-0.153 (-2.94)**	0.005 (0.15)	-0.028 (-0.68)	751
Spain	-0.088 (-0.09)**	0.184 (0.13)	0.315 (0.187)	0.111 (0.037)	0.003 (0)	-0.092 (-0.031)**	-0.076 (0.004)	-0.037 (-0.062)**	-0.103 (-0.03)**	629
United Kingdom	-0.019 (-3.26)**	0.067 (2.09)*	0.12 (6.33)**	0 (-0.3)	0 (0.8)	-0.017 (-1.44)	-0.015 (-1.11)	-0.021 (-1.87)	-0.021 (-1.9)	920

t statistics in parentheses.

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

Figure 3: SEM model



Standardized Root Mean Square Residual (SRMR) = 0.02

Table 4: Direct and indirect effect of SEM model for 28 EU countries

	Panel A: Direct Effects			
	Misery	Poor	Risk of depression	Unemployed
Unemployed	0.157*** (16.15)	0.179*** (18.07)	0.0726*** (6.77)	
Poor	0.0703*** (9.22)		0.0703*** (9.22)	
Risk of depression	0.165*** (33.53)			
Chronic Health Problem	0.0307*** (7.91)		0.220*** (38.04)	
University		-0.0464*** (-13.07)		-0.0347*** (-11.18)

	Panel B: Indirect Effects		
	Misery	Poor	Risk of depression
Unemployed	0.0270*** (13.59)		0.0150*** (18.07)
Poor	0.0139*** (8.49)		
Chronic Health Problem	0.0362*** (25.02)		
University	-0.0103*** (-12.39)	-0.0062*** (-9.27)	-0.0069*** (-9.54)

N= 72373

Standardized Root Mean Square Residual (SRMR) = 0.02

t statistics in parentheses.

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

Table 5: Direct and Indirect Effects in Austria, Spain, Finland, Portugal

	Direct Effects				Indirect Effects		
	Misery	Poor	Risk of depression	Unemployed	Misery	Poor	Risk of depression
Panel A: Austria							
Unemployed	0.089*	0.148**	0.086		0.017***		0.020***
Poor	0.075*		0.135**		0.007**		
Risk of depression	0.05**						
Chronic Health Problem	-0.022		0.206***		0.011**		
University		0.037**		-0.034***	-0.006**	-0.005*	-0.008*
Panel B: Finland							
	Misery	Poor	Risk of depression	Unemployed	Misery	Poor	Risk of depression
Unemployed	0.080*	0.134**	0.004		0.003		0.006**
Poor	0.020		0.045		0.004*		
Risk of depression	0.099***						
Chronic Health Problem	0.023**		0.091***		0.009***		
University		-0.071***		-0.011	-0.002*	-0.001	-0.003
Panel C: Spain							
	Misery	Poor	Risk of depression	Unemployed	Misery	Poor	Risk of depression
Unemployed	0.144***	0.124***	0.098**		0.027***		0.006***
Poor	0.078*		0.052		0.008**		
Risk of depression	0.168***						
Chronic Health Problem	0.029		0.249***		0.041***		
University		-0.056***		-0.010	-0.006**	-0.001	-0.004*

t statistics in parentheses.

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

Results, conclusions and future research

This thesis studies three important domains in subjective well-being: (i) income, (ii) health, and (iii) work. In the first three chapters, we study subjective well-being for Ecuador. In general, the evidence of happiness economics in Latin America is very limited and in Ecuador nonexistent, which is paradoxical since the Household Living Conditions Survey 2013-2014 and the Quarterly Labor Market Survey (ENEMDU) incorporate subjective well-being questions. To the best of my knowledge, there is not previous evidence on academic literature and policy reports that uses this information.

In chapter 1, I study for Ecuador whether self-reported health is related to cognitive and emotional subjective well-being. There are only two previous studies on this topic (Siahpush et al., 2008 and Sabatini 2014), but these studies only use happiness (cognitive dimension) and ignore emotional well-being, which might be relevant since there is evidence that positive or negative emotions also influence on health. The traditional research between subjective well-being and health uses objective health measures such as life expectancy, longevity, and mortality rate. The conclusion in these studies was that happiness affects positively on health objective outcomes. However, health might be also approached using self-reported health, which is a common measure in social sciences derived from a self-assessment of an individual's health. An extensive literature review has found that self-reported health is associated with objective health measures such as the prevalence of diseases and laboratory parameters, life expectancy, risk factors, walking difficulty, pain, and physical functioning. Therefore, self-reported health could be considered as a valid measure of general health status.

When dealing with the relationship between subjective well-being and happiness, it should be noticed that there is not a clear direction of causation. First, people with a good health status might report to be happier, in other words, self-reported health could explain subjective well-being (Graham 2012; Helliwell 2003; Anger et al., 2013; Ljunge 2016; Mizobuchi 2017). On the other hand, happy people have healthy behaviors, for instance not smoking, eating a healthy diet, having a lower body mass index, which in turn

influences self-reported health. In the same sense, destructive behaviors might worsen health status.

I propose an econometric model rather than a correlation analysis. I use a probit model using self-reported health as the dependent variable and life satisfaction (cognitive subjective well-being) and emotional well-being as independent variables. Unlike previous studies, despite self-reported health is an ordered variable we use a binary probit model, since when using an ordered multinomial model, the interpretation might be complicated considering a 10-point scale variable. We defined that an individual who reported more or equal than the mean has a good health status and 0 otherwise. To solve for reverse causality, we use Sense of Community as instrumental variable. I prove that instrument holds the relevance condition (Stock and Yogo test) and exogeneity condition (Wald test of exogeneity), which is crucial to assess the validity of the results. In general, life satisfaction explains much more self-reported health than habits (sport) or having a recent illness, whereas emotional well-being does not explain self-reported health.

I also proposed a Structural Equation Model (SEM) that allows for path analysis to a thorough understanding of how the variables interact with each other. The lack of a causal model might lead to puzzling results despite solving for reverse causality. We found that happiness mediates the relationship between habits (sport) and self-reported health. In concordance with previous literature, it would have been more intuitive that emotional well-being mediates this relationship, but this specification yields a poor model fit, which somehow is consistent with the probit results. Besides, I suggest that this finding is because the emotional well-being is a measure of negative affect rather than positive affect as in Pressman and Cohen (2005) and Pressman et al. (2019). Finally, the SEM model confirms that emotional well-being does not explain self-reported health.

The results of this study are interesting for three reasons. First, it is the first study to test the relationship between both dimensions of subjective well-being and self-reported health. Second, it is the first study in Latin America on this topic. Third, regardless of the empirical method, the evidence is conclusive toward cognitive subjective well-being as the main explanatory source of self-reported health. Finally, it should be noticed that the results do not imply a causal effect since data is cross-sectional survey and changes in individual's health status might occur over time and accompanied by adaptation.

In chapter 2, I study for Ecuador whether job transitions between good jobs and bad jobs affect life satisfaction and job satisfaction. We defined as bad job if the worker holds any of the three following conditions (i) earns less than the minimum wage, (ii) is not affiliated to social security (informal employment) (iii) is employed in an informal working establishment. Alternatively, if it holds the three conditions is considered a good job. Using descriptive statistics, I showed that people in good jobs exhibit better job characteristics than people in bad jobs in terms of job contract (labour stability), 13th salary, 14th salary, vacations, training, and career achievement.

Previous studies in developed countries were focused on the transition between unemployment and employment considering that those who are unemployed experience a psychic loss and less well-being compared to when they were employed. Initially, I showed that unemployment is not the worst condition in labour market as in developed countries, since unemployed in Ecuador are more educated, with better health status, and happier than people in bad jobs. I suggest that unemployment in Ecuador is selective for people with better socioeconomic position, those who are waiting for decent job offers or those that make low job search effort. This could explain why unemployment rate is low (3.2% in panel 2013-2014). While people in disadvantage socioeconomic position are forced to take any job, even bad jobs with poor labour conditions and with no social protection.

To test the effect of job transitions between good jobs and bad jobs, I use a conditional logit model with fixed effects to allow for time-invariant unobserved factors. Before labor transitions, people in good jobs and bad jobs were different in terms of observables variables, therefore to account for preexisting differences, I used the difference and difference estimator. I found that life satisfaction increases 9.5% when finding a good job, while it decreases 8.5% when losing a good job. On the other hand, the effects of job transition on life satisfaction were not statistically significant. The econometric results were consistent using 2013-2014 and 2009-2010 ENEMDU panel. The reason behind job transition does not affect life satisfaction might be that there are other more important variables such as income (see chapter 3), social capital (see table 1 in chapter 1), or mental health (see chapter 4) that explain life satisfaction. Finally, I test whether our results are consistent when shifting the three conditions of our good/bad definition. I proposed a

scale of quality of job (QJ) from 1 to 4, being 1 the worst possible job and 4 the best one. I found a statistically significant effect when moving from QJ1 to QJ3 and from QJ1 to QJ4.

In terms of gender, the effects of job transitions are greater for men than for women. I suggest that this result might be due to selection bias considering that much fewer women work compared to men. The reasons behind this fact might be that (i) women are employed in other types of jobs such as domestic work or non-paid jobs, (ii) based on past disappointing experiences women have low job expectations and they dropped out of the labour force. For future research, it would be interesting to test the motivation behind this fact.

I believe that this study has some key contributions. To the best of my knowledge, it is the first paper to study the effect of labor transitions on subjective well-being in Latin America. Second, previous evidence for the quality of jobs in Latin America is limited and focused on several job dimensions that prevent having a single indicator of good/bad jobs. For instance, Roethlisberger and Weller (2011, pp. 21) propose 21 indicators to measure employment quality in Latin America; but these authors recognize that this proposal suffers from several data restrictions to be implemented.

In chapter 3, we tested for Ecuador whether relative income hypothesis or ranking income hypothesis explains happiness. Previous studies to construct the reference group have used variables such as education, age, sex, region, experience, professional and occupational groups, among others. Nonetheless, in these studies, there is not a clear criterion to select variables nor what would have been the results using other combinations of variables. Hence, in this study, I used the most common variables in previous studies: age, sex, education, and region to construct 9 different reference groups, this is all the possible combinations. Besides, I tested all the previous relative income and the ranking-income measures, this is the classical comparison with the reference, upwards and downward comparisons, Yitzhaki index, and the comparison using the individual position within the reference group.

First, using descriptive statistics I showed that life satisfaction increases until the age bracket (40-50) and then it decreases. Besides, life satisfaction is higher for more

educated people, men, and living in the amazon region. In the econometric section, I used an ordered logit model with individual random effects to account for unobservable factors that are constant across time but vary for each individual; for example, personal traits such as optimism and capacity to deal with adversities (Ferrer-i-Carbonell 2005). Besides, it includes time fixed effects to account for unobservable factors that are constant across individuals but vary across time.

First, I used the reference group constructed with education, age and region, which is the most common combination in previous studies. We found that when the individual income is higher compared to the reference group income, life satisfaction increases (Model 2). Besides the comparison is asymmetric and upwards (Model 3), which means that the effect is significant for the poorer (individual income < reference group income), but not for the richer (individual income > reference group income). Also, the Yitzhaki index is significant (Model 4) as in Oshio et al. (2010). Finally, the measure that captures the individual rank position within the reference group explains life satisfaction as in Boyce et al. (2010) referred to as rank-income hypothesis (Model 5). In Table 3, I constructed 8 additional reference groups that vary according the selection of variables. I found robust evidence that the rank-income hypothesis explains life satisfaction rather than the relative-income hypothesis. In 7 out 8 different reference groups, the rank-income hypothesis holds, whereas the measures of relative income hypothesis are quite sensitive to the selection of variables used to construct the reference group.

First, this finding implies that the connection between income and happiness is not straightforward. Income increasing does not necessarily raise life satisfaction unless the individual's rank position upgrades. Second, it is questionable the extent to which economic growth increases average happiness within a country; the income distribution matters because it determines how many people are in each reference group and how fast the rank moves. For future research, I suggest testing the relative-income and rank-income hypothesis in certain cuts of the income distribution. Usually in economics, it is common to compare inequality indicators and their consequences on well-being across countries, but considering the social comparison effects found in this thesis, it would be better to compare indicators across groups in the same country.

In chapter 4, I study the determinants of dissatisfaction with life referred to as misery. This research question is quite different from the happiness studies that are focused on life satisfaction rather than dissatisfaction with life. The only previous study of misery is Flèche and Layard (2017) who studied for UK, US, Australia, and Germany the sources of misery and found that depression (mental health) explains much more misery than unemployment, poverty, or physical health. I study these same sources of misery for 28 European countries using the European Quality of Life Survey 2016.

First, I showed that the correlation between misery and risk of depression across 28 EU countries is between 0.08 and 0.36, which confirms the idea that misery and mental health capture different things as in Flèche and Layard (2017). Second, I decompose the sources of misery, on average for the 28 EU countries, the percentage of those in misery at risk of depression is the largest across all the sources (59%) followed by having a chronic health problem (48%), poor (20%) and unemployment (15%). Third, I estimated a probit model to account for how much each source explains misery, I found that in 25 out of 28 EU countries (except for Austria, Finland, and Spain) the effect of risk of depression on misery is most significant at 0.5 compared to other sources. In terms of the size of the coefficient, in 15 out these 25 countries, the size of the coefficient for risk of depression is greatest than the coefficient of the other sources.

An interesting result is that the risk of depression (mental health) explains much more misery than physical health, I suggest that adaptation could be reason considering previous research that showed that people adapt to chronic illness over time. For example, Graham (2011) argues that individuals are more able to adapt to one-time shocks (physical health problems) than to constant uncertainty (mental health problems). However, I cannot rule out adaptation since the EQLS 2016 is a cross-sectional survey. To understand the causal relations among variables without inferring causality, I used a Structural Equation Model (SEM). Previous findings suggest that there is comorbidity between mental health problems and physical health, we found that the risk of depression mediates the relationship between chronic health problem and misery.

I consider this study is crucial because traditionally happiness studies have focused on the main domains of life satisfaction such as income, health, work, and social capital, but health is not only the absence of disease or infirmity; it is also mental health, which has

been ignored in happiness studies. As shown in this study and in Flèche and Layard (2017) when studying misery, mental health is the main explanatory variable. For future research, it would be interesting to test the effect of the covid 19 pandemic on people's life. There are several changes: income loss, becoming unemployed, divorcing, getting covid-19, losing a close family member, developing a mental illness such as anxiety or depression. Hence it would be interesting to test the extent to which each of these factors explain misery.

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Summary of the thesis in Spanish (resumen de la tesis en español)

Tradicionalmente el estudio de la felicidad pertenecía a la filosofía y la psicología positiva, pero en los últimos cincuenta años -desde una perspectiva multidisciplinar- los estudios de la felicidad han progresado notablemente con aportes de diferentes disciplinas como la medicina, la neurociencia, la economía, la sociología y la ciencia política. En este sentido, la felicidad se considera una nueva ciencia que ayuda a comprender (i) cómo medir el bienestar subjetivo (ii) qué factores hacen felices a las personas y (iii) qué deben hacer los responsables de la formulación de políticas para mejorar la calidad de vida de las personas. Desde la perspectiva económica, medir la felicidad es muy útil ya que podría abordarse como una variable *proxy* de la utilidad o bienestar, que es el objetivo de los agentes en los modelos económicos.

En la literatura económica tradicional es común encontrar referencias a la renta per cápita, la tasa de desempleo, la tasa de pobreza, el nivel de desigualdad y la esperanza de vida, entre otros, como indicadores de bienestar. A partir de algunos de estos indicadores se han construido índices globales de bienestar de la población, el más conocido el Índice de Desarrollo Humano (IDH) -elaborado por la Organización de Naciones Unidas (ONU)- que contiene dimensiones de salud (esperanza de vida), educación (alfabetización y escolaridad) y riqueza (PIB), o la Tasa de Pobreza Multidimensional -elaborado de manera conjunta por la ONU y la Universidad de Oxford- que abarca múltiples dimensiones como salud, educación y acceso a servicios básicos.

La política pública a nivel global se ha enfocado principalmente en estos indicadores objetivos de bienestar. No obstante, en los últimos años existe gran interés en considerar también indicadores subjetivos, puesto que podrían considerarse medidas más directas de bienestar. Existen situaciones en las que las métricas objetivas se relacionan con las subjetivas, por ejemplo, a nivel general existe una correlación positiva entre el nivel de renta y la felicidad. Por otro lado, existen situaciones en las que las métricas objetivas y subjetivas no guardan relación, por ejemplo, a partir de cierto umbral de renta o cuando ya se hayan superado las necesidades básicas no existe relación entre el nivel de renta y felicidad. De ahí que el objeto de estudiar los indicadores subjetivos de bienestar no es el

de limitar la relevancia de los indicadores objetivos, sino incorporar un complemento adicional que provea mayor información que contribuya a un mejor entendimiento de la calidad de vida de las personas. Además, ayudará a identificar potenciales problemas y evaluar la política pública, especialmente en casos en los que existen *non-market outcomes*, es decir resultados sociales, políticos o culturales, que no vienen caracterizados por un precio de mercado.

En este contexto, Diener (2006) considera que el bienestar subjetivo es un término “comodín”, que define a toda evaluación, positiva o negativa, que hace la persona sobre su vida; incluye evaluaciones: (i) cognitivas como satisfacción con la vida, con el trabajo, interés, compromiso, así como (ii) reacciones afectivas como alegría y tristeza. Por su parte, la OCDE (2013) utiliza un marco conceptual basado en tres conceptos: (i) evaluación de la vida, (ii) afecto, (iii) *eudaimonía* (fortalecimiento psicológico). La evaluación de la vida es una valoración reflexiva sobre la vida de una persona (la vida como un todo) o sobre varios aspectos como el trabajo, la salud, familia, etc. Por su parte, el afecto se refiere a los sentimientos de una persona que pueden ser positivos, como felicidad, alegría, satisfacción, y negativos, como tristeza, ira, miedo y ansiedad. Finalmente, la *eudaimonía* va más allá de la valoración reflexiva de la vida o de sus estados emocionales, pues se concentra en la realización y el potencial de la persona.

La medición del bienestar subjetivo suele basarse en la realización de una encuesta que pregunta directamente a las personas sobre algunas o todas las dimensiones concebidas en el bienestar subjetivo. Por ejemplo, el *World Happiness Report* elaborado por la ONU utiliza la escalera de la vida (*cantril's ladder*) para medir la felicidad o, bajo un enfoque similar, la *World Value Survey* evalúa la satisfacción general con la vida.

Según Rayo y Becker (2007), la felicidad medida en las encuestas solo representa uno de los argumentos de toda la función de utilidad, por lo que las personas podrían intercambiar felicidad por otros argumentos. Graham (2005) considera que el enfoque de preferencias reveladas en la microeconomía tradicional podría proporcionar información limitada sobre la utilidad y el bienestar de una persona, ya que implica un comportamiento no racional o de racionalidad limitada. El problema de la elección es que es un enfoque *ex ante* bajo incertidumbre, lo que puede diferir de la utilidad experimentada a futuro como resultado de la toma de decisiones; no obstante, el concepto de utilidad

experimentada se podría considerar que no puede ser observado y que ya está contenido en la maximización de la función de utilidad. Kahneman et al. (1997) muestra que estos argumentos son erróneos pues la utilidad experimentada se puede medir y es distinta a la obtenida bajo la teoría de la elección, puesto que pueden existir errores sistemáticos en la evaluación de las decisiones pasadas que dificultan “*maximizar la utilidad*”. En resumen, existe una diferencia entre lo que las personas eligen/deciden (preferencias reveladas) y sus preferencias declaradas -subjetivas- (Kahneman y Krueger, 2006).

La economía ha prestado especial atención a la evaluación de la vida entendida como felicidad desde la paradoja de Easterlin (1995), que establece que no existe relación entre el nivel económico de la sociedad y el nivel medio de felicidad de sus integrantes; sin embargo, existe evidencia significativa de que dentro de cada país existe una relación positiva entre el nivel de ingresos y la felicidad. Este es un claro ejemplo de la falacia de la composición, “lo que es cierto para una persona no lo es para todos los miembros”. Una extensión a la Paradoja de Easterlin es que solo existe cuando no se han cumplido las necesidades básicas, mientras que a partir de cierto nivel de ingreso no hay relación entre ingreso y felicidad (Veenhoven, 1991). Di Tella y MacCulloch (2008) defienden la aplicabilidad de esta teoría para algunos países europeos de ingresos altos, aunque advierten que una vez superadas las necesidades básicas existe una habituación completa al nuevo nivel de renta. En un sentido similar, Kahneman y Deaton (2010) encuentran que más dinero no necesariamente compra más felicidad, pero menos dinero está asociado con dolor emocional. Estos autores sugieren un umbral en Estados Unidos para el cual un incremento en el ingreso no mejora el bienestar emocional. Por otra parte, Stevenson y Wolfers (2013) afirman que no existe base de datos alguna que soporte la existencia de un punto de saciedad a partir del cual el ingreso no incremente la felicidad.

La relación entre ingresos y felicidad ha sido el tema más estudiado en la economía de la felicidad desde la paradoja de Easterlin, pero la investigación de las últimas dos décadas se ha centrado en el efecto del ingreso relativo en lugar del ingreso absoluto, debido a la influencia de normas sociales o comparaciones sociales. La felicidad depende de la comparación de ingresos que los individuos hacen con su grupo de referencia (Ferrer-i-Carbonell 2005; Oshio et al., 2010; Kingdon and Knight 2007, Rojas 2019), lo que es conocido en la literatura como la hipótesis del ingreso relativo. Cuando los ingresos del individuo son más altos que los ingresos del grupo de referencia, la felicidad aumenta.

Alternativamente, Senik (2004) y Caporale et al. (2009) encontraron que los ingresos del grupo de referencia influyen positivamente en la satisfacción individual. Una explicación plausible para este extraño resultado es la conjetura de Hirschman, la cual establece que los individuos perciben el ingreso del grupo de referencia como una señal de su éxito; por lo tanto, aumenta la felicidad. Una teoría alternativa es la hipótesis del ingreso por ranking que establece que la felicidad se incrementa en la medida en la que el individuo mejora su ranking dentro de su grupo de referencia. Boyce et al. (2010) encontraron que la hipótesis del ingreso por ranking explica la satisfacción con la vida más que la hipótesis del ingreso relativo.

En estudios previos para construir el grupo de referencia han utilizado variables como educación, edad, sexo, región, experiencia, grupos profesionales y ocupacionales, entre otras. Sin embargo, en estos estudios no existe un criterio claro para seleccionar variables ni cuáles habrían sido los resultados utilizando otras combinaciones de variables. En el capítulo 3 de esta tesis, se utilizó las variables más comunes en estudios anteriores: edad, sexo, educación y región para construir 9 grupos de referencia diferentes, que corresponden a todas las combinaciones posibles de estas cuatro variables. Además, se probó todas las medidas de ingreso relativo e ingreso por ranking utilizadas en la literatura previa. Estas son: la comparación clásica con la referencia, las comparaciones hacia arriba y hacia abajo, el índice de Yitzhaki y la comparación utilizando el ranking individual dentro del grupo de referencia.

Mediante la aplicación de técnicas de estadística descriptiva se mostró, en el contexto de análisis de información relativa a Ecuador, que la satisfacción con la vida aumenta hasta el tramo de edad (40-50) y luego disminuye de manera continua. Además, la satisfacción con la vida es mayor para las personas más educadas, para los hombres y para los que viven en la región amazónica. En la sección de análisis multivariante mediante técnicas econométricas, se utilizó un modelo *logit* ordenado con efectos aleatorios individuales que considera los factores no observables que son constantes a lo largo del tiempo pero que varían para cada individuo, por ejemplo, rasgos personales como el optimismo y la capacidad para lidiar con las adversidades (Ferrer-i- Carbonell 2005). Además, incluye efectos fijos en el tiempo para tener en cuenta los factores no observables que son constantes entre individuos pero que varían a lo largo del tiempo.

En primer lugar, se utilizó el grupo de referencia construido en base a educación, edad y región, que es la combinación más común en los estudios previos. Se encontró que cuando el ingreso individual es mayor en comparación con el ingreso del grupo de referencia, la satisfacción con la vida aumenta (Modelo 2). Además, la comparación es asimétrica y ascendente (Modelo 3), lo que significa que el efecto es significativo para los más pobres (ingreso individual < ingreso del grupo de referencia), pero no para los ricos (ingreso individual > ingreso del grupo de referencia). Además, el índice de Yitzhaki es significativo (Modelo 4) como en el estudio de Oshio et al. (2010). Finalmente, la medida que captura el ranking individual dentro del grupo de referencia (Modelo 5) también fue significativa como en Boyce et al. (2010). En la Tabla 3, se construyeron 8 grupos de referencia adicionales que varían según la selección de variables y se encontró evidencia sólida de que la hipótesis del ingreso por ranking explica la satisfacción con la vida más que la hipótesis del ingreso relativo. En 7 de estos 8 grupos de referencia, la hipótesis del ingreso por ranking cumple, mientras que las medidas de la hipótesis del ingreso relativo muestra alta sensibilidad a la selección de variables empleadas para construir el grupo de referencia.

Primero, el hallazgo de esta investigación implica que la conexión entre ingresos y felicidad no es directa. El aumento de ingresos no necesariamente aumenta la satisfacción con la vida a menos que la posición en el ranking dentro del grupo de referencia mejore. En segundo lugar, es cuestionable hasta qué punto el crecimiento económico aumenta la felicidad promedio dentro de un país; la distribución del ingreso es importante porque determina cuántas personas hay en cada grupo de referencia y qué tan rápido aumenta el ranking. Para futuras investigaciones, sería interesante probar la hipótesis del ingreso relativo y el ingreso por ranking en ciertos tramos de la distribución del ingreso. En economía, generalmente se comparan los indicadores de desigualdad y sus consecuencias en el bienestar entre países, pero considerando los efectos de comparación social encontrados en el capítulo 3, quizás un mejor enfoque sea comparar indicadores entre grupos en el mismo país.

El estado de salud es otro determinante del bienestar subjetivo, considerando que las personas con buen estado de salud declaran estar más felices (Hellevik 2003, Angner et al., 2013, Gandelman y Hernández-Murillo 2013 y Mizobuchi 2017). En el otro sentido causal, existe evidencia de que el bienestar subjetivo explica el estado de salud. Diener et

al. (2017) presentan una extensa revisión de la literatura en la que muestran que el bienestar subjetivo afecta la salud en términos de actuar de manera saludable, acelerar la recuperación, mejorar la inmunidad, la salud cardiovascular, la supervivencia y la longevidad.

En el capítulo 1 se investiga la relación entre salud auto-reportada y la felicidad. La investigación tradicional entre el bienestar subjetivo y la salud utiliza medidas de salud objetivas como la esperanza de vida, la longevidad y la tasa de mortalidad. La conclusión de estos estudios es que la felicidad afecta positivamente los resultados objetivos de salud. Sin embargo, la salud también podría abordarse utilizando la salud auto-reportada, que es una medida común en las ciencias sociales derivada de una autoevaluación de la salud que realiza la misma persona. Una extensa revisión de la literatura ha encontrado que la salud auto-reportada está asociada con medidas de salud objetivas como la prevalencia de enfermedades y parámetros de laboratorio, esperanza de vida, factores de riesgo, dificultad para caminar, dolor y funcionamiento físico. Por lo tanto, la salud auto-reportada podría considerarse una medida válida del estado de salud general.

Sabatini (2014) a partir de otros estudios sugiere que el principal canal de transmisión que explica cómo la felicidad afecta la salud es a través del Sistema Nervioso Autónomo (SNA), ya que las actitudes hacia la vida activan reacciones fisiológicas que determinan la salud; por ejemplo, perder un trabajo influye en el SNA, lo que a su vez empeora el estado de salud y aumenta las tasas de mortalidad (Rozanki et al., 1999). De la misma manera, la felicidad y las emociones positivas motivan a actuar de manera saludable; por ejemplo, hacer ejercicio (Rasciute y Downward, 2010), fumar menos y tener un índice de masa corporal más bajo (Hamer y Chida, 2011), o tener una dieta saludable (Blanchflower et al., 2013). La salud auto-reportada ha demostrado ser un buen predictor de la tasa de mortalidad (Mossey y Shapiro 1982; Idler y Benyamini, 1997) y un buen predictor del estado de salud de una persona (Brooks et al., 2013). Sabatini (2014) concluye que la felicidad es el mejor predictor de la salud subjetiva después de controlar por una serie de variables socioeconómicas.

En el capítulo 1 se comprueba, para el caso de Ecuador, si la salud auto-reportada está relacionada con el bienestar subjetivo cognitivo y emocional. Hasta donde se conoce, solo existen dos estudios previos sobre este tema (Siahpush et al., 2008 y Sabatini 2014), pero

estos estudios solo utilizan la felicidad (dimensión cognitiva) e ignoran la parte emocional del bienestar, que podría ser relevante considerando que existe evidencia de que las emociones positivas o negativas también influyen en la salud. Se utiliza un modelo *probit* que considera a la salud auto-reportada como variable dependiente y la satisfacción con la vida (bienestar cognitivo subjetivo) y el bienestar emocional como variables independientes. A diferencia de estudios anteriores, a pesar de que la salud auto-reportada es una variable ordenada, utilizamos un modelo *probit* binario, ya que cuando se usa un modelo multinomial ordenado la interpretación puede resultar compleja considerando que la variable dependiente se mide en una escala de 10 puntos. Para resolver el problema asociado con la causalidad inversa, se utiliza el sentido de comunidad como variable instrumental. Se demuestra que el instrumento cumple con la condición de relevancia (prueba de Stock y Yogo) y la condición de exogeneidad (prueba de exogeneidad de Wald), que es crucial para evaluar la validez de los resultados. En general, la satisfacción con la vida explica mucho más la salud auto-reportada que los hábitos (deporte) o tener una enfermedad reciente, mientras que el bienestar emocional no explica la salud auto-reportada.

Además, se propuso un Modelo de Ecuaciones Estructurales (SEM), puesto que la falta de un modelo causal podría conducir a resultados desconcertantes a pesar de resolver la causalidad inversa. Se encuentra que la felicidad actúa como variable mediadora de la relación entre los hábitos (deporte) y la salud auto-reportada. De acuerdo con la literatura previa, hubiera sido más intuitivo que el bienestar emocional mediara la relación entre el deporte y la salud auto-reportada, pero esta especificación arroja un ajuste deficiente del modelo, que en cierto modo es consistente con los resultados de modelos *probit* con variables instrumentales. Además, en la tesis se sugiere que este hallazgo se debe a que la medida de bienestar emocional es una medida de afecto negativo en lugar de afecto positivo como en Pressman y Cohen (2005) y Pressman et al. (2019). Finalmente, el modelo SEM confirma que el bienestar emocional no explica la salud auto-reportada.

Los resultados de este estudio son interesantes por tres razones. Primero, es el primer estudio que prueba la relación entre ambas dimensiones del bienestar subjetivo y la salud auto-reportada. En segundo lugar, es el primer estudio en América Latina sobre el tema. En tercer lugar, independientemente de la metodología econométrica, la evidencia es concluyente hacia el bienestar subjetivo cognitivo como la principal fuente explicativa de

la salud auto-reportada. Finalmente, debe notarse que los resultados no implican un efecto causal ya que utilizamos datos de corte transversal y los cambios en el estado de salud del individuo pueden ocurrir a lo largo del tiempo y puede existir adaptación.

El estado de salud no es solo salud física, sino también salud mental, en este sentido Flèche y Layard (2017) señalan que la salud mental ha sido ignorada en los estudios de felicidad, que asumen que la miseria (insatisfacción con la vida) y la salud mental son lo mismo. Graham (2017) sostiene que las emociones negativas y la depresión no son lo opuesto a la satisfacción con la vida. Flèche and Layard (2017) muestran para el Reino Unido, Estados Unidos, Australia y Alemania que la correlación entre depresión y satisfacción con la vida es baja (entre 0.1 y 0.4), y utilizando un modelo multivariado, encontraron que la depresión explica mucho más la miseria que el desempleo, la pobreza y la salud física. En el capítulo 4 se estudian los determinantes de la insatisfacción con la vida (miseria); esta pregunta de investigación es diferente a la de los estudios tradicionales que se centran en la felicidad o satisfacción con la vida más que en la insatisfacción con la vida. Se utilizan las mismas fuentes de miseria identificadas en Flèche and Layard (2017) para 28 países de la Unión Europea utilizando la Encuesta Europea de Calidad de Vida (EQLS) del año 2016.

Primero, se mostró que la correlación entre la miseria y el riesgo de depresión en 28 países de la Unión Europea está entre 0.08 y 0.36, lo que confirma la idea de que la miseria y la salud mental capturan conceptos diferentes. En segundo lugar, se descompuso las fuentes de la miseria, en promedio para los 28 países de la UE el porcentaje de personas en la miseria en riesgo de depresión es el más grande entre todas las fuentes (59%), seguido de tener un problema de salud crónico (48%), ser pobre (20%) y ser desempleado (15%). En tercer lugar, se estimó un modelo *probit* para explicar en qué medida cada fuente explica a la miseria, y se encontró que en 25 de los 28 países (excepto Austria, Finlandia y España) el efecto del riesgo de depresión sobre la miseria es más significativo en comparación con las otras fuentes de miseria. En términos del tamaño del coeficiente, en 15 de estos 25 países, el tamaño del coeficiente de riesgo de depresión es mayor que el coeficiente de las otras fuentes.

Un resultado interesante es que el riesgo de depresión (salud mental) explica más la miseria que la salud física, lo cual sugiere que la adaptación podría ser una explicación,

considerando que investigaciones previas mostraron que las personas se adaptan a las enfermedades crónicas con el tiempo; por ejemplo, Graham (2011) sostiene que los individuos son más capaces de adaptarse a choques únicos (problemas de salud física) que a la incertidumbre constante (problemas de salud mental). Sin embargo, no se puede descartar la adaptación ya que la encuesta EQLS 2016 es una encuesta de corte transversal. Para comprender las relaciones causales entre variables sin inferir causalidad, se utiliza un Modelo de Ecuaciones Estructurales (SEM). Los hallazgos en literatura previa sugieren que existe comorbilidad entre problemas de salud mental y salud física; en el capítulo 4 se encontró que el riesgo de depresión media la relación entre problema de salud crónico y miseria, y este efecto tiene la mayor significancia estadística, similar al resultado encontrado en el análisis multivariado.

Este estudio es crucial porque tradicionalmente los estudios sobre la felicidad se han centrado en los principales dominios de la satisfacción con la vida, como los ingresos, la salud, el trabajo y el capital social, pero la salud no es solo la ausencia de enfermedad o dolencia; también es la salud mental, que se ha ignorado en los estudios sobre la felicidad. Como se muestra en este estudio y el de Flèche y Layard (2017) al estudiar la miseria, la salud mental es el principal factor explicativo. Para futuras investigaciones, sería interesante probar el efecto de la pandemia (Covid-19) en la vida de las personas; han existido muchos cambios que pueden generar insatisfacción con la vida como: pérdida de ingresos, el desempleo, el divorcio, contraer el virus Covid-19, la pérdida de un familiar cercano, desarrollar enfermedades mentales como ansiedad y depresión. Por tanto, se sugiere probar hasta qué punto cada uno de estos factores explica la miseria como consecuencia de la pandemia.

Otro factor importante en los estudios de la felicidad es el trabajo; de manera particular la literatura se ha enfocado en los desempleados, pues se ha encontrado que este grupo experimenta una pérdida de bienestar subjetivo comparado cuando estaban empleados. La razón es que el desempleo no es únicamente la pérdida de una fuente de ingresos (costo pecuniario), sino también la pérdida de la autoestima y el deterioro de las relaciones sociales (pérdida psíquica o costo no pecuniario). Winkelmann y Winkelmann (1998) encontraron que el efecto de la pérdida psíquica del desempleo es mucho mayor que la pérdida económica de ingresos. La pérdida de bienestar subjetivo en el desempleo está influenciada por las normas sociales y la comparación social (Clark 2003, Marcenaro et

al., 2010, Stutzer y Lalive 2004). Cuando las personas vuelven a trabajar, la felicidad no se recupera por completo a los niveles iniciales antes del desempleo, lo que se conoce como un *scarring effect* (Gielen y Van Ours 2014).

Layard (2004) sostiene que en términos de felicidad es más importante si el individuo tiene o no un trabajo que el tipo de trabajo. En los países en desarrollo, no se ha estudiado la idea de que se prefiere cualquier trabajo al desempleo en términos de felicidad. Dewan y Peek (2007) mencionan que en los países en desarrollo el empleo cubre características laborales heterogéneas, por ejemplo, trabajos informales sin protección social. Además, el desempleo es un lujo que la gente pobre no puede permitirse, pues están obligados a aceptar cualquier trabajo, incluso trabajos de baja calidad. En la misma línea, ILO (2019) sostiene que estar en un empleo no es sinónimo de vida digna. Por lo tanto, en los países en desarrollo la principal preocupación en términos de felicidad son los malos trabajos en lugar del desempleo.

Esta tesis estudia por primera vez el efecto de las transiciones laborales sobre el bienestar subjetivo en América Latina. La evidencia previa de la calidad del empleo en América Latina es limitada y se centra en varias dimensiones laborales que impiden tener un solo indicador de buen trabajo o mal trabajo. Por ejemplo, Roethlisberger y Weller (2011, págs. 21) proponen 21 indicadores para medir la calidad del empleo en América Latina; pero estos autores reconocen que esta propuesta adolece de varias restricciones de datos para ser implementadas, además de que no especifica cómo medir un buen/mal trabajo.

En el capítulo 2 se estudia, en el contexto de Ecuador, si las transiciones laborales entre buenos y malos trabajos afectan la satisfacción con la vida y la satisfacción con el trabajo. Se definió como mal trabajo si el trabajador cumple alguna de las tres condiciones siguientes (i) gana menos del salario mínimo, (ii) no está afiliado a la seguridad social (empleo informal) (iii) está empleado en un establecimiento informal. Alternativamente, si cumple las tres condiciones se considera un buen trabajo. Mediante la aplicación de técnicas de estadística descriptiva, se mostró que las personas con buenos trabajos exhiben mejores características laborales que las personas con malos trabajos en términos de contrato de trabajo o estabilidad laboral, remuneraciones adicionales como décimo tercer y décimo cuarto salario, vacaciones, capacitación y logros profesionales.

A diferencia de los estudios para países desarrollados, enfocados en la transición entre el desempleo y el empleo, en el capítulo 2 se mostró que el desempleo no es la peor condición en el mercado laboral como en los países desarrollados, ya que los desempleados en Ecuador tienen mayor nivel educativo, mejor estado de salud y son más felices que las personas con malos trabajos. Por consiguiente, se sugiere que el desempleo en Ecuador es selectivo para las personas con mejor posición socioeconómica, que están esperando ofertas de trabajo decentes o que hacen poco esfuerzo de búsqueda de empleo. Esta podría ser la razón por la que la tasa de desempleo es baja (3.2%) en el panel 2013-2014. Mientras que las personas en situación socioeconómica desfavorecida se ven obligadas a aceptar cualquier trabajo, incluso malos trabajos con malas condiciones laborales y sin protección social.

Para probar el efecto de las transiciones laborales entre buenos y malos trabajos, se utilizó un modelo *logit* condicional con efectos fijos que controla por factores no observados invariantes en el tiempo. Antes de las transiciones laborales, las personas con un buenos y malos trabajo eran diferentes en términos de variables observables, por lo tanto, para corregir por estas diferencias preexistentes, se utiliza el estimador de diferencias en diferencias. Se encontró que la satisfacción con la vida aumenta un 9.5% cuando se encuentra un buen trabajo, mientras que disminuye un 8.5% cuando se pierde un buen trabajo. Por otro lado, los efectos de la transición laboral sobre la satisfacción con la vida no fueron estadísticamente significativos. Estos resultados econométricos son similares a los encontrados usando el panel ENEMDU 2013-2014 y 2009-2010. El hecho de que la transición laboral no afecte a la satisfacción con la vida se debe a que existen otras variables más importantes como los ingresos, la salud, o el capital social. Finalmente, se prueba si los resultados son consistentes al cambiar las tres condiciones de la definición de buenos trabajos y malos trabajos. Se propuso una escala de calidad de trabajo (QJ) de 1 a 4, siendo 1 el peor trabajo posible y 4 el mejor, y se encontró un efecto estadísticamente significativo al pasar de QJ1 a QJ3 y de QJ1 a QJ4.

En términos de género, los efectos de las transiciones laborales son mayores para los hombres que para las mujeres. Este resultado podría explicarse por sesgo de selección considerando que menos mujeres trabajan en comparación con los hombres. Las razones detrás de este hecho podrían ser las siguientes (i) las mujeres están empleadas en otros tipos de trabajos, como el trabajo doméstico o trabajos no remunerados, (ii) en base a

experiencias laborales decepcionantes en el pasado, las mujeres tienen bajas expectativas laborales y han decidido abandonar la fuerza laboral. Para futuras investigaciones, sería interesante probar la motivación que subyace detrás de este hecho.