# Unemployment and Happiness: Evidence from the Kyrgyz Republic

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## Abstract

The paper examines a relationship between unemployment and subjective life satisfaction in Kyrgyz Republic using three years (2011-2013) panel data from Life in Kyrgyzstan Study. Apart from the general question, it also investigates the effect of different social factors such as age, gender and education on the relationship of the key variables. The empirical analysis uses linear regression mainly focusing on the results of the Fixed Effects method. The main finding is that joblessness is negatively related with subjective well-being. Younger generation, females, and people with higher education are more influenced by the absence of the job opportunities, meaning being unemployed makes them less happy on average.

Key words: happiness, subjective life satisfaction, unemployment, Kyrgyz Republic

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## Introduction

People around the world strive to be happy. But what is happiness? Happiness can be defined as an individual's subjective feeling of well-being. So far, income level has been the main indicator of welfare, however, studies show that happiness is much better measure of human well-being (Frey, et al., 2008). According to the annual World Happiness Report some countries that have top income levels are ranked far below regarding their happiness level. In fact, the report found a strong correlation between inequality and unhappiness.

The studies about subjective well-being help us to understand what makes people more satisfied with life and then design appropriate economic policies. For instance, policies that affect employment and income, setting minimum wage laws can be evaluated with respect to how they change happiness levels among the group of individuals. Next to that, the studies of life satisfaction are used as determinants of standards of living, the higher is satisfaction level the higher is the quality of life in a society. That is why a subjective well-being study is one of the key indicators for tracking social progress.

Unemployment is considered as one of the most important factors that have an influence on happiness (Böckerman and Imakunnas, 2006; Winkelman and Winkelman 1995, 1998; Clark and Oswald, 1994; Maennig and Wilhelm, 2012). It restricts people to meet their financial obligations as well as causes anxiety and psychological distress. There are many papers are written on this topic such as social norms of labour market in relation to unemployment (Clark et al., 2001; Clark, 2003), the effects of different types of employment, preferences between unemployment and inflation (Blanchflower et al., 2014).

As most of the studies on life satisfaction and unemployment were conducted based on the data from developed countries (Germany, Nordics, UK, the US, Switzerland etc.) the research on the topic in the developing countries is very scarce. This is mainly driven by the lack of the appropriate happiness data. Positively, Kyrgyz Republic, a low middle-income country, is one of the few that has it. Life in Kyrgyzstan (LiK), a survey-based database that investigates the subjective wellbeing of Kyrgyz citizens. That being said, this paper will be part of the first wave which will make a contribution to the study of the life satisfaction and unemployment in developing countries. Life-satisfaction, subjective well-being and happiness are used as synonyms in this research as well as in many others.

The aim of this paper is to define whether unemployed people of Kyrgyz Republic are relatively happy or unhappy in the period of 2011-2013. Additionally, it will discuss various related questions such as:

- a. Who is less satisfied with life: unemployed women or unemployed men?
- b. How does age impact on happiness of unemployed people?
- c. What are the education implications of unemployment?

Based on the existing literature on this topic and general observation of the Kyrgyz culture, I derived the following four hypotheses:

- 1. *Unemployment has large and negative effect on life satisfaction*. Not being able to find a job makes people stressed and less satisfied with their lives.
- 2. Younger and older individuals are happier when they are unemployed in comparison to middle aged ones. People around their 30-40s have larger families (including children and parents) to take care about, therefore, being unemployed should be more important for them in comparison to others.
- 3. Unemployed men are significantly less happy than unemployed women in *Kyrgyzstan*. In Kyrgyz culture men have cultural pressure on earning money and taking care of family. Thus, similar to the previous point, it creates more distress.

4. *Higher level of education leads to higher level of emotional distress when unemployed.* Highly educated people have more doubts about personal qualities and worthiness when they can't find a job.

The paper is structured as follows: The first chapter will review the existing literature on the topic. The second chapter will explain the empirical model and estimation techniques. The third will look through the data, providing information about the source, general data description, variables and summary statistics. The last sections of the paper will discuss the results of the estimated model, make conclusion remarks and policy recommendations.

#### Chapter 1: Discussions on the topic

Early studies on subjective well-being were conducted in the beginning of the 20<sup>th</sup> century. However, the first work on happiness in the framework of economic research was written only in 1974 by Richard Easterlin. The topic has become popular since then as more and more economists have looked at the different factors influencing the life satisfaction (Clark and Oswald, 1994; Frey and Stutzer, 2002; Di Tella et al., 2001; Fritjers et. al, 2004; Winkelman and Winkelman, 1995-1998; Di Tella and MacCulloch, 2002 etc).

The dilatory application of happiness data into the economic research was mainly driven by the concerns over non-sampling bias that arise during the surveys. The answers of a survey respondents are subjective and might be affected by the factors, such as mood and weather, that present at the time of the interview (Bertrand and Mullainathan, 2001).

Despite the concern on the reliability of the self-rated happiness, many scholars assured that the findings are consistent and have strong correlations with the determinants of life satisfaction. There are positive associations between subjective self-rated happiness and objective measures of happiness (Kahneman and Krueger, 2006; Larsen et al., 1985; Diener, 1984). Moreover, by focusing only on the objective approach we deny other possibilities provided by the subjective approach, which captures the concept of well-being directly (Frey and Stutzer, 2000, 2002).

#### 1.1.How happiness is measured?

The most popular way of measuring individual's happiness is by conducting surveys. These surveys can constitute of one-item or multiple-item questions that help to identify the subjective well-being of the respondent. One-item questions are the most widely used type among economists due to their brevity, however, according to psychologists, they are considered as less reliable due to larger random measurement errors (Powdthavee, 2007). German Socio-Economic Panel (GSOEP) has a one-item question: *"How happy are you at present with your life as a whole?"*, the response to which is given on a scale of 0 to 10 where 0 means "completely unhappy" and 10 means "completely happy". Another similar example, however with only three scaled responses, is the General Social Surveys of the United States with a question: *"Taken all together, how would you say things are these days - would you say that you are very happy, pretty happy, or not too happy?"*. This study will follow the economists' path using the one-item question of happiness.

#### 1.2. Relationship between unemployment and happiness

Happiness of an individual relies upon on many factors including both personal and structural factors. Depending on which some people are more effected by the external shocks such as unemployment. General trend shows a negative correlation between life satisfaction and unemployment (Clark and Oswald, 1994; Clark et al., 2001, Frey and Stutzer, 2000; Winkelmann, 2009). That being said, however, there is no exact answer why unemployed feel less happy than employed people.

There are two possible theories: the unemployment has (1) material component and (2) psychological component of the influence. Therefore, scholars used subjective life satisfaction

data to test not only the general relationship between happiness and unemployment but also the nonpecuniary i.e. psychological effects of unemployment (Clark & Oswald, 1994; Winkelmann & Winkelmann, 1998; Kassenboehmer and Haisken-DeNew, 2008).

The material component of the unemployment is very straightforward. It emphasises loss of income and the economic constraint for the unemployed person which makes it hard to maintain the consumption level. Reduction in consumption may lead to a psychological distress leading to a lower level of life satisfaction. Therefore, income loss can be viewed as a disharmony between psychological and economical defined needs (Forslund, 2015)

From the psychological point of view, being unemployed can destroy one's self-esteem, make person depressed and unhappy because of the psychic costs which are higher than financial costs (Kassenboehmer and Haisken-DeNew,2008). Being employed helps us to fulfil five different psychological functions which are: (1) time structure, (2) social contacts, (3) participation in the collective purposes, (4) status and identity and (5) regular identity (Forslund, 2015). When people become unemployed it is very hard to maintain or substitute these factors.

#### 1.3. Other factors influencing happiness

Regarding other determinants of life satisfaction, Oswald (1997) states that "*Reported* happiness is high among those who are married, on high income, women, whites, the welleducated, the self-employed, the retired, and those looking after the home." These results are consistent across different studies, countries, and time periods (Frijters *et al.*, ,2004; Frey and Stutzer, 2000; Gerdtham and Johannesson, 2001).

Most of the research on life satisfaction is concentrated around the relationship of income and happiness pioneered by Easterlin (1974). It is proven that individuals with higher income are generally happier, showing a significant positive dependence between income and life satisfaction (Easterlin, 1974, 1995, 2001; van Praag et al., 2003; Brown et al., 2008; Ferreri-Carbonell, 2005). Surprisingly, women tend to report higher level of life satisfaction than men, although it is well established that they earn less (Frey and Stutzer, 2005).

Health is the variable that was used in almost all the studies, it has a strong positive impact on life-satisfaction. Higher happiness is also associated with marriage in many studies (Diener et al. 2000; Stack and Eshleman 1998). Marriage has a mutually rewarding exchange and provides a great benefit in terms of love, recognition, as well as insurance against negative life events. Many researchers found that married people earn more, have better physical and psychological health implying the higher happiness (Chun and Lee, 2001; Burman and Margolin 1992; Waite and Gallagher 2000).

Clark and Oswald (2006) shows that the subjective well-being follows a U-shape through the life course with a minimum reached around an individuals' mid-30s. However, the minimum differs across the studies. For instance, the minimum is 40-50 years according to Baker L.E. (2014).

#### Chapter 2: Empirical Model and Methodology

Many scholars used one if not both of the following approaches to analyse the rating dependent variable such as Life Satisfaction.

- Life Satisfaction is treated as a *cardinal variable*; indicating the use of simple linear regression models such as OLS, Fixed Effects, Random Effects (Ferreri-Carbonell and Frijters, 2004).
- Life Satisfaction is treated as an *ordinal variable*; indicating the use of ordered logit or ordered probit models (Clark and Oswald, 1994).

Cardinal interpretation of the variable implies that the delta between j and j+1 is the same as the delta between k and k+1. Thus, in case of life satisfaction when the scale is 0-10, the difference in happiness between 3 and 4 is the same as the difference between 7 and 8. The mindsets of the respondents are positioned in a certain way when they are given a questionnaire (Schwartz, 1995). Seeing a scale of answers, they interpret the values in a cardinal order i.e. trying to maximize the quality of their answers. The following linear model is used (Ferrer-i-Carbonell and Frijters, 2004; Gardner and Oswald, 2001; Easterlin 1974, 1995; Di Tella et al., 2001).

$$life\_sat_{it} = \beta_0 + \beta_1 unemp_{it} + \beta_2 X_{it} + \varepsilon_{it} + v_{it}$$

Where  $life\_sat_{it}$  is a dependent variable, index of the level of satisfaction for individual i at time t.  $unemp_{it}$  is a key variable of interest, a dummy variable, that shows whether an individual i is unemployed or not at time t. The variable is equal to 1 when the individual does not have a job but looking for it. Matrix  $X_{it}$  includes controls such as age, marital status, gender, education, ethnicity, health etc.;  $\varepsilon_{it}$  is a time-varying unobserved factor, while  $v_{it}$  is a time-invariant unobserved factor. To have a real casual effect the model should satisfy the following assumptions:  $cov(\varepsilon_{it}, x_{it})=\omega_{it}^1$ , and  $cov(v_{it}, x_{it})=\omega_{it}^2$  where  $\omega$  is equal to 0 or exogenous (Ferrer-i-Carbonell and Frijters, 2004). These assumptions allow us to have unobserved factors; however, they make sure that the results are not biased.

Unlike cardinal, ordinal interpretation means the delta between j and j+1 is not similar to the delta between k and k+1, and that the respondents have the same understanding of what happiness is. The supporting argument states that people can easily recognize the emotional state of each other, moreover, when they speak the same language the evaluation scale of the happiness is the same among them.

A research conducted by Ferrer-i-Carbonell and Frijters (2004) showed no significant difference in the results between latent ordinal and linear model. Therefore, I will keep my focus on the first approach using a linear model. Panel data gives me an advantage to use Fixed effects and Random effects methods of estimation. Both are good to control for individual specific characteristics which are time-invariant and unobservable. To find which technique suits better the model Hausman test will be run.

As of note, the happiness function implies that the explanatory variable as unemployment on the right-hand side explain the individual's subjective life satisfaction on the left-hand side. However, there is a high possibility of the existence of a reverse casualty problem. For instance, are people less satisfied with the life because they do not have a job or unhappiness is the driving factor that they do not have a job meaning because these individuals are inherently unhappy they are not willing to find a job that would satisfy them enough.

#### Chapter 3: Data and Descriptive Statistics

#### 3.1. Source of data

The paper uses "Life in Kyrgyzstan" Study which investigates wellbeing and behaviour of individuals and households in Kyrgyz Republic. It was established in 2010 by Professor Tilman Bruk and has been repeated three times in 2011, 2012 and 2013. The study tracks 3000 households and 8000 individuals across the country. Household members of the 2010 are tracked for each wave and new ones are added to the survey and tracked as well. The data were collected once per year around October-November. (Life in Kyrgyzstan Study. IDSC of IZA, 2013).

The data covers all the regions of the country including the largest two cities Bishkek and Osh. The 3,000 households were chosen by stratified two-stage random sampling with probabilities proportional to size implying the absence of a selection bias. The selection of the sample was done by the National Statistical Committee (NST) of the Kyrgyz Republic using the 2009 Population Census Data. As only 73% of the original households were found and interviewed in the action, the study used the other 27% from the reserve samples. The attrition of the households from the sample identified in 2010 was moderate as ~82% of the sample was re-interviewed in all the following waves.

The data source is the most suitable for the current research as it is the only source that has information on subjective well-being and all other control variables that are going to be used in the analysis.

#### 3.2. Descriptive Statistics

Since the question on the Subjective Well-Being was introduced only in 2011, the data will contain only three waves out of four. Both household and individual questionnaires are employed.

Individuals starting from age 18 to 60 are analyzed as the unemployment status is the most relevant in this period of life. Observations with missing or N/A values for life satisfaction are excluded from the data set, so that only values with 1-10 are left. Additionally, assuming people who are not looking for a job did not reply to the question on the unemployment status, missing data for unemployment status variable is replaced with the zero value.

The final dataset consists of three years panel data with 18,870 observations. Out of which 570 are considered as unemployed which is only 3% of the whole dataset. Looking into each year there are 238, 219 and 113 unemployed individuals in 2011, 2012 and 2013 respectively. The data is unbalanced so that only 48% of all unique individuals have coverage for all three years. The analysis will focus on the following list of variables as the omission of which may bias the coefficient results:

## The dependent variable:

#### • Subjective Well-Being, scale from 0 till 10

<u>Survey Question</u>: "How satisfied are you with your life, all things considered? Please rate from 0 (completely dissatisfied) to 10 (completely satisfied)".

#### The key independent variable:

• Unemployment status, a dummy variable with 1 if unemployed, and 0 if employed.

#### The matrix of explanatory variables:

- Income, natural logarithm of personal income;
- Health, number of doctor visits during the past year;
- Education, total years of schooling;

- Age and age squared;
- **Female**, a dummy variable with 1 if female and 0 if male;
- Ethnicity, a categorical variable indicating the ethnicity of an individual;
- Marital status, a categorical variable indicating the marital status;
- **Urban,** a dummy variable with 1 if urban and 0 if rural;
- **Oblast,** a categorical variable represents 7 oblasts and the largest 2 cities;

The general summary statistics for all the continuous variables are given below. Pooled mean value of 6.8 is lower than 7.6, the average happiness index of developed countries such as Denmark, Finland, Norway and Japan and slightly higher than 6.2, the average index among less developing countries such as Bangladesh, India, Nigeria and Philippines. It seems like people were less happy in 2011 vs 2012 and 2013 but only marginally. This can be explained by the political turmoil in 2010 followed by the flee of the president and ethnic backlash in the southern regions of the country.

The average age of the respondents is 37 with around 11 years of education, 4,700 KGS of personal income and "good" health as the visits to the doctors in the past 12 months averaged around 0.6 (meaningless, however, less than one) in all three years.

#### Table 1 Summary Statistics

# Summary statistics: 2011

2011					
	Ν	mean	sd	min	max
life satisfaction	6288	6.7	2.2	0	10
age	6288	37	12.4	18	60
doctor visits	6288	.6	1.5	0	38
education	6288	11.6	2.4	0	17
personal income (in thousands)	6288	4.7	14.3	0	689
2012					
life satisfaction	6223	6.9	2.2	0	10
age	6223	36.9	12.5	18	60
doctor visits	6222	.7	1.7	0	30
education	6223	11.5	2.4	0	19
personal income (in thousands)	6223	5	6.5	0	88
2013					
life satisfaction	6359	6.9	1.8	0	10
age	6359	36.3	12.6	18	60
doctor visits	6346	.6	1.4	0	12
education	6147	11.3	2.3	0	19
personal income (in thousands)	6330	4.2	7.3	0	195
Total					
life satisfaction	18870	6.8	2.1	0	10
age	18870	36.7	12.5	18	60
doctor visits	18856	.6	1.5	0	38
education	18658	11.5	2.4	0	19
personal income (in thousands)	18841	4.7	10	0	689

The gender composition of the data is roughly symmetric as the pooled share of the female population is 52% vs 48% for male. The largest ethnic group is Kyrgyz comprising about 67% of all observations in the data set followed by Uzbek (14%), Russian (8%) and Dungan (3%). 69% of all observations are married while 20% are single (17%), 6% are divorced while 4% are widowed. Residents of urban area constitute 40% leaving 60% for villagers. Regions so called oblasts are divided into 7 groups, however, the dataset includes the two largest cities (Bishkek and Osh) as separate regions. Majority of people live in Chui, Jalal-Abad and Osh oblasts 17%, 16% and 21% respectively, largely in line with Bishkek which has

18% of residents. As of note, these figures represent the whole sample i.e. they are pooled. The more detailed tables are given in the Appendices.

Looking into how the happiness changes across the labor groups the data shows that unemployed individuals show high levels of mental distress. Using the scale from 0 to 10, the average levels of the happiness are the following. Which simply means that 570 jobless people in the dataset roughly 1 point less happy than employed ones.

Table 2 Life satisfaction among different labour groups

Unemployment Status	Ν	Average life satisfaction
unemployed	570	6.1
employed	10,197	6.9
other	8,103	6.7
Total	18,870	6.8

The data also shows that the happiness is lower among unemployed women at 6.1 vs 6.2 for men. Unemployed Kyrgyz population have 6.3 of happiness compared to 5.7 for Uzbek, 5.3 for Russian and 7.6 for Dungan. Unemployed Russians have the highest emotional distress. As expected, marriage has a positive effect on happiness showing the highest level at 6.9, however, being single does not fall far behind with 6.8. Losing the job hits the most married people as the value decreases to 6.2 vs 6.4 for single people. This can be driven by the fact that married people have to take care of their families, and losing a job means having more mental distress because it is not only about them.

#### Chapter 4: Results

The results of the regression with life satisfaction as a dependent variable and unemployment status as an explanatory variable is given in the Table 3 below. The reference group here is heterogenous, as it includes all other groups like employed and people that are not part of the labour force. The results show that the people who are looking for a job are 0.69 points less happy than the people who are not looking for a job. The average life satisfaction level of the reference group is 6.8.

The 95% CI of slope coefficient of [-0.8 -0.6] doesn't contain zero indicating that in the general pattern there is a 95% confidence the slope coefficient will fall into this interval and will have a negative relationship with the dependent variable. The t-statistics also proves that the coefficient is different from zero. It is equal to -6.8 which is smaller than -2, showing there is a negative relationship. These results are significant at 1% level.

	(1)	(2)	
VARIABLES	OLS 1	OLS 2	
unemployed	-0.69***	-0.57***	
	(0.101)	(0.102)	
employed		0.22***	
		(0.030)	
Constant	6.83***	6.71***	
	(0.015)	(0.023)	
Observations	18,870	18,870	
R-squared	0.003	0.006	
Robust standard errors in parentheses			

Table 3 A linear regression of life satisfaction on unemployment

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

As was mentioned above the reference group is a heterogeneous group of people which includes employed and those who are not part of the labour force such as students, retired, housewives etc. Therefore, the next step is to separate employed individuals from the heterogenous group and include it as an explanatory variable to see the welfare level of all the groups. Column 2 of the Table 3 shows the results of the regression.

The average life satisfaction level of individuals who are not part of the labour force is 6.7. If the person is employed the level will be 0.2 points higher (6.9) while the unemployed person i.e. one who is looking for a job has 0.6 points lower happiness (6.1). All the coefficients are statistically significant at 1% level.

To have a closer causal effect of unemployment on life satisfaction I used control variables which indicate socio-economic status. The omission of such factors may bias the coefficients of interest; therefore, they are necessary for the analysis. The controls are good enough as they are correlated both with unemployment and life satisfaction. This method will not give me the exact casual effect; however, it will give a better estimation. The results are shown in the Table 13 of the Appendices.

The first 2 columns of the table repeat the results of the regression of life satisfaction on the job status without control variables, where the second and third column includes the controls. Looking at the individuals with different employment status but the same age, gender, health, income, residence and education the ones that are unemployed are 0.5 points less happy overall. The slope coefficient is statistically significant at 1% level. The difference in the happiness level is somehow smaller when we include the control variables in comparison when we do not, -0.69 vs -0.53. The results of column 3 and 4 are almost identical.

The general overview of the coefficients on the control variables are explained in short as following. As was proven by many scholar's income has a positive effect on the happiness. As shown in the table 1,000 KGS increase in monthly income will make a person 0.03 points more satisfied. When looking at the data for only employed people, 1% increase in income makes a person 0.4 point happier (Table 14 in the Appendices). Although the relationship between the age and life satisfaction has a quadratic functional form, it shows that the coefficient of the agesq is very small vs age with +0.1, meaning people are happier with age. Surprisingly ethnicity plays an important role for Uzbek, Dungan and Tajik. On average Kyrgyz people are 1 less happy than Tajik, 0.7 less happy than Dungan and 0.6 more happy than Uzbek. Being married makes a person the happiest of all the categories, while being separated makes them unhappiest. People who live in the villages are 0.3 points happier than those in urban areas. The happiest people live in Issyk-Kul region.

Table 4 below shows the results of the three models we used. Based on the Hausman test in the Appendices the Random Effects method (Column 3) is not a good fit for this analysis, thus, we are left with OLS and Fixed Effects. The coefficient on the unemployment status in the FE is smaller, meaning that the effect of unemployment is smaller.

Table 4 OLS vs FE vs RE

	(1)	(2)	(3)
VARIABLES	OLS	FE	RE
unemployed	-0.53***	-0.32***	-0.48***
	(0.097)	(0.122)	(0.095)
age	-0.10***	-0.07	
	(0.010)	(0.057)	
age sq	$0.00^{***}$	0.00**	-0.00***
	(0.000)	(0.001)	(0.000)
female	0.18***		0.18***
	(0.032)		(0.037)
doctor visits	-0.08***	-0.07***	-0.07***
	(0.012)	(0.014)	(0.012)
educ	0.09***	0.02	0.08***
	(0.007)	(0.025)	(0.008)
personal income (in thousands)	0.03***	0.02***	0.03***
	(0.003)	(0.004)	(0.003)
ethnicity = 2, Uzbek	-0.57***	-0.52	-0.55***
	(0.045)	(0.606)	(0.051)
ethnicity = 3, Russian	0.01	-0.61	0.01
	(0.063)	(1.095)	(0.079)
ethnicity = 4, Dungan	0.70***		0.73***
	(0.093)		(0.116)
ethnicity = 5, Uigur	-0.13		-0.08
	(0.096)		(0.121)
ethnicity = 6, Tajik	0.98***		1.03***
	(0.133)		(0.150)
ethnicity = 7, Kazakh	0.17	-0.87***	0.18
	(0.216)	(0.132)	(0.271)

ethnicity = 8, Other	0.10	-0.06	0.10
-	(0.091)	(1.209)	(0.113)
marital status = $2$ , Divorced	-0.81***	-0.17	-0.77***
	(0.073)	(0.172)	(0.081)
marital status = 3, Living Togehter	-1.29***	-1.49***	-1.32***
	(0.141)	(0.180)	(0.147)
marital status $= 4$ , Seperated	-1.35***	-1.21***	-1.35***
-	(0.181)	(0.340)	(0.194)
marital status $= 5$ , Widowed	-0.56***	-0.58***	-0.53***
	(0.085)	(0.213)	(0.091)
marital status = $6$ , Single	-0.21***	-0.04	0.01
	(0.050)	(0.130)	(0.049)
urban	-0.30***	1.77***	-0.26***
	(0.046)	(0.547)	(0.052)
oblast code = 3, Jalal-Abad	-0.23***	1.80**	-0.22***
	(0.070)	(0.850)	(0.076)
oblast code = 4, Naryn	-0.46***		-0.44***
	(0.086)		(0.089)
oblast code = 5, Batken	0.50***		0.55***
	(0.082)		(0.086)
oblast code = 6, Osh	-0.15**	0.67	-0.15**
	(0.067)	(1.235)	(0.074)
oblast code = 7, Talas	-0.59***		-0.57***
	(0.091)		(0.109)
oblast code = 8, Chui	-0.72***	2.61***	-0.68***
	(0.073)	(0.903)	(0.084)
oblast code = 11, Bishkek	-0.18**	-0.13	-0.18**
	(0.080)	(0.855)	(0.092)
oblast code = 21, Osh-city	-0.82***		-0.80***
	(0.098)		(0.109)
Constant	8.03***	5.67***	6.31***
	(0.215)	(1.302)	(0.123)
Observations	18,605	18,605	18,605
R-squared	0.097	0.015	
Number of idpp		8,249	8,249
Robust standard errors in r	oarentheses		
*** p<0.01, ** p<0.05,	* p<0.1		

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Comparing AIC between the OLS and FE (Table 5), the best model is the FE model.

It has the smallest AIC.

Table 5 Akaike Information Criterion of the models

Model

OLS

FE

77,896

61,924

Further I run the regressions dividing by the age groups to see what's the effect of age on the relationship between unemployment and happiness is. The results (Table 16 in the Appendices) showed that being unemployed is more important for younger generation (18-30). It showed a statistically significant coefficient at -0.38 which indicates that young people who is not able to find a job are 0.38 more mentally distressed than employed. It is contradictory with the hypothesis that middle-aged people should be affected more, since they have families to take care. I have also divided the sample into three groups by the level of education (Table 17 in the Appendices). As was assumed at the beginning people who have higher level of education are unhappier when they cannot find a job. Surprisingly, when looking at the gender groups separately (Table 18 in the Appendices) the joblessness for women is statistically significant. Women who have a job are considered to have 0.4 higher level of life satisfaction.

## Conclusion

The concept of happiness has been discussed by philosophers and social scientists throughout the ages. In economics, the subject of happiness is relatively new, however, growing with a rapid speed. Many researches have been conducted on different factors effecting happiness, primarily leading by the income factor. However, the topic of unemployment and subjective life satisfaction is not lagging. The increasing interest in these topics have a positive side effect as these studies can be used as a tool for establishment of government policies.

This paper has investigated the relationship between unemployment and happiness in Kyrgyzstan using the panel data from Life in Kyrgyzstan Study. Additionally, it has examined the general patterns related to age, gender and education. Since majority of scholars did their researches based on the developed countries, there is a lack of studies on the developing countries, which implies this work will make a good contribution. To measure the coefficients, I used several models including simple OLS, Fixed Effects and Random Effects. The analysis showed that the Fixed Effects is the most suitable model for this paper. The regression results showed that unemployment has negative effects on life satisfaction. Dividing the sample into three age groups, I have found that people who are in between 18 and 30 years old are affected the most when they are not able to find a job. Similarly, women have higher level of mental distressed when they are unemployed. These two findings contradict the stated hypotheses which say middle aged people and men are expected to be more effected. This gives a great opportunity to continue the study and examine the drivers of these results. As expected, more educated unemployed people have lower life satisfaction.

Based on the results, we can conclude that government needs to create special policies such as training programs to shift people's job status from unemployed to employed. These trainings should be more focused on the females and younger population.

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# Appendices

Table 6 Panel data description

Freq.	Percent	Cum.	Pattern
4039	47.70	47.70	111
1184	13.98	61.68	11.
1180	13.93	75.61	1
697	8.23	83.85	.11
622	7.35	91.19	1
443	5.23	96.42	1.1
303	3.58	100.00	.1.
8468	100.00		XXX

#### Table 7 Ethnicity composition

ethnicity	Freq.	Percent	Cum.
Kyrgyz	12,660	67.09	67.09
Uzbek	2,677	14.19	81.28
Russian	1,549	8.21	89.49
Dungan	643	3.41	92.89
Uigur	421	2.23	95.12
Tajik	171	0.91	96.03
Kazakh	105	0.56	96.59
Other	644	3.41	100.00
Total	18,870	100.00	

#### Table 8 Composition by marital status

marital status	Freq.	Percent	Cum.
Married	13,029	69.05	69.05
Divorced	1,037	5.50	74.54
Living Togehter	223	1.18	75.72
Seperated	115	0.61	76.33
Widowed	728	3.86	80.19
Single	3,738	19.81	100.00
Total	18,870	100.00	

#### Table 9 Urban/rural compostition

urban	Freq.	Percent	Cum.
no	11,389	60.36	60.36
yes	7,481	39.64	100.00
Total	18,870	100.00	

#### Table 10 Regional composition

oblast code	Freq.	Percent	Cum.
Issyk-Kul	1,409	7.47	7.47
Jalal-Abad	2,977	15.78	23.25
Naryn	840	4.45	27.70
Batken	1,386	7.35	35.05
Osh	3,944	20.91	55.96
Talas	646	3.42	59.38
Chui	3,221	17.07	76.45
Bishkek	3,382	17.93	94.38
Osh-city	1,060	5.62	100.00
Total	18,865	100.00	

Table 11 Life Satisfaction by job status and ethnicity

Unemployme		e	thnicity			
nt Status	Kyrgyz	Uzbek	Russian	Dungan	Uigur	Total
unempl	6.3091787	5.6964286	5.2833333	7.6153846	5.5714286	6.1403509
	414	56	60	13	7	570
empl	7.0539449	6.2180451	6.8551136	7.0350318	6.9466019	6.9284103
	6933	1197	1056	314	206	10197
other	6.8206286	6.1657303	6.408776	7.4208861	6.7403846	6.7068987
	5313	1424	433	316	208	8103
Total	6.9316746	6.1793052	6.6694642	7.2363919	6.8218527	6.809486
	12660	2677	1549	643	421	18870

Table	12	Regi	ression	with	contro	ls

	(1)	(2)	(3)	(4)
VADIABLES	OIS1	(2)	OIS3	
VARIADELS	OLS I	OLS 2	OLS 5	OL5 4
unomployed				
unemployed	- 0 69***	- 0 57***	- 0 53***	-
	(0.101)	(0.102)	(0.099)	(0.097)
employed	(*****)	0.22***	0.02	(0.05.7)
		(0.030)	(0.042)	
90e		(0102.0)	(01012)	_
ugo			0.10***	0.10***
			(0.010)	(0.010)
age sq			0.00***	0.00***
			(0.000)	(0.000)
female			0.19***	0.18***
			(0.033)	(0.032)
doctor visits			-	-
			0.08***	0.08***
			(0.012)	(0.012)
educ			0.09***	0.09***
			(0.007)	(0.007)
personal income (in thousands)			0.03***	0.03***
r i i i i i i i i i i i i i i i i i i i			(0.003)	(0.003)
ethnicity = 2 Uzbek			-	-
edimenty – 2, 020ek			0.57***	0.57***
			(0.045)	(0.045)
ethnicity = 3, Russian			0.01	0.01
5			(0.063)	(0.063)
ethnicity = 4. Dungan			0.70***	0.70***
			(0.093)	(0.093)
ethnicity = 5. Uigur			-0.12	-0.13
enimony e, eigen			(0.096)	(0.096)
ethnicity = 6 Taiik			0 99***	0.98***
cumerty = 0, Tajik			(0.133)	(0.133)
athnicity – 7 Kazakh			0.17	0.17
cumenty = 7, Kazakii			(0.215)	(0.216)
athricity = 9 Other			(0.213)	(0.210)
etimicity = 8, $Other$			0.10	0.10
			(0.091)	(0.091)
marital status = $2$ , Divorced			- 0 91***	- 0 91***
			(0.073)	(0.0173)
marital status – 3 Living Togehter			(0.073)	(0.073)
maritar status – 5, Erving Togener			1.29***	1.29***
			(0.141)	(0.141)
marital status = 4. Separated			-	-
, <u>r</u>			1.35***	1.35***
			(0.182)	(0.181)
marital status $=$ 5, Widowed			-	-
			0.56***	0.56***
			(0.085)	(0.085)
marital status = $6$ , Single			-	-
			0.21***	0.21***
			(0.050)	(0.050)

urban			-	-
			0.29***	0.30***
			(0.046)	(0.046)
oblast code = 3, Jalal-Abad			-	-
			0.23***	0.23***
			(0.071)	(0.070)
oblast code = 4, Naryn			-	-
			0.46***	0.46***
			(0.086)	(0.086)
oblast code = 5, Batken			0.50***	0.50***
			(0.083)	(0.082)
oblast code = 6, Osh			-0.15**	-0.15**
			(0.068)	(0.067)
oblast code – 7 Talas			-	-
oblast code = 7, 1 dias			0 59***	0 59***
			(0.091)	(0.091)
oblast code = 8 Chui			-	-
oblast code o, chui			0.71***	0.72***
			(0.073)	(0.073)
oblast code = 11 Bishkek			-0 18**	-0 18**
oblast code = 11, Disliker			(0.080)	(0.080)
			(0.080)	(0.080)
oblast code = $21$ , Osn-city			- 0 02***	- 0 00***
			$(0.02^{+++})$	$(0.02^{+++})$
Constant	( 07***	(71***	(0.090)	0.090
Constant	0.83****	0./1****	8.04****	8.03****
	(0.015)	(0.023)	(0.216)	(0.215)
Observations	18,832	18,832	18,605	18,605
R-squared	0.003	0.006	0.097	0.097
Dobust standard ar		nthagag		

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 13 Regression to see the effect of income (only employed people)

\_

	(1)
VARIABLES	OLS
age	-0.05***
	(0.015)
age sq	0.00***
	(0.000)
female	0.10**
	(0.044)
doctor visits	-0.08***
	(0.017)
educ	0.09***
	(0.009)
log of income	0.36***
	(0.030)
ethnicity = 2, Uzbek	-0.69***
	(0.068)
ethnicity $=$ 3, Russian	0.12
	(0.076)
ethnicity = 4, Dungan	0.31**
	(0.126)

ethnicity = 5, Uigur	-0.15
	(0.134)
ethnicity = 6, Tajik	0.87***
	(0.199)
ethnicity = 7, Kazakh	0.63**
	(0.284)
ethnicity = 8, Other	0.12
	(0.115)
marital status = $2$ , Divorced	-0.68***
	(0.087)
marital status = 3, Living Togehter	-0.80***
	(0.183)
marital status = 4, Seperated	-1.14***
	(0.210)
marital status = $5$ , Widowed	-0.51***
	(0.124)
marital status = $6$ , Single	-0.15**
	(0.072)
urban	-0.40***
	(0.063)
oblast code = 3, Jalal-Abad	-0.22**
	(0.091)
oblast code = 4, Naryn	-0.57***
	(0.108)
oblast code = 5, Batken	0.16
	(0.102)
oblast code = 6, Osh	-0.14*
	(0.084)
oblast code = 7, Talas	-0.83***
	(0.101)
oblast code = 8, Chui	-0.94***
	(0.091)
oblast code = 11, Bishkek	-0.41***
	(0.100)
oblast code = 21, Osh-city	-1.11***
	(0.131)
Constant	4.27***
	(0.382)
	10.007
Observations Descreament	10,087
K-squared	0.097
Robust standard errors in parent	ineses

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

Table 14 Hausman Test

	(1)	(2)	(3)
VARIABLES	FE 18-30	FE 30-45	FE 45-60
unemployed	-0.38**	-0.36	-0.08
	(0.170)	(0.235)	(0.265)
age	-0.05	-0.24	0.35
	(0.233)	(0.281)	(0.392)
age sq	0.00	0.00	-0.00
	(0.005)	(0.004)	(0.004)
female = 0,	-	-	-
doctor visits	-0.07***	-0.06**	-0.07***
	(0.023)	(0.029)	(0.020)
educ	0.05	-0.01	-0.02
	(0.037)	(0.048)	(0.050)
personal income (in thousands)	0.03***	0.01**	0.02**
	(0.007)	(0.006)	(0.007)
ethnicity = 2, Uzbek	0.09		-0.89***
	(1.399)		(0.072)
ethnicity = 3, Russian	-0.42	2.55***	-3.39***
	(1.387)	(0.207)	(0.152)
ethnicity = 4, omitted	-	-	-
ethnicity = 5 omitted	_	_	_
cumerty = 5, omitted	-	-	-
ethnicity = 6, omitted	-	-	-
ethnicity $=$ 7, omitted	-		-
athniaity = 9 Other	0.24	7 66***	0 05***
etimicity = 8, Other	(1.416)	(0.905)	$-2.23^{+++}$
marital status $-2$ Divorced	-0.40	-0.42	0.103)
martar status – 2, Divorced	(0.310)	(0.315)	(0.25)
marital status = 3 Living Togehter	-1 86***	-1 33***	-1 02***
	(0.235)	(0.312)	(0.376)
marital status = 4. Seperated	-1.78***	-1.12***	0.13
,	(0.543)	(0.427)	(1.033)
marital status $= 5$ , Widowed	-1.44***	-0.64	-0.39*
	(0.394)	(0.504)	(0.234)
marital status = $6$ , Single	-0.03	-0.82**	0.22
	(0.141)	(0.404)	(0.501)
urban	2.02**	2.09***	
	(0.805)	(0.155)	
oblast code = 3, Jalal-Abad	1.87**		
	(0.833)		
oblast code = 4, omitted	-	-	-
ablast as da 6 augustus d			
oblast code = 5, omitted	-	-	-
oblast code = 6. Osh	0.21	4 39***	
001031 0000 - 0, 0311	(1.362)		
oblast code = 7, omitted	-	-	-
series code 7, onition			
oblast code = 8, Chui	2.84***		
	(0.917)		
oblast code = $11$ , Bishkek	-0.39		
·	(0.845)		
oblast code = $21$ , omitted	-	-	-

ethnicity = 2, omitted		-	
ethnicity = 7, Kazakh		-1.02***	
oblast code = $3$ , omitted		(0.270) -	-
oblast code = 8, omitted		-	-
oblast code = $11$ , omitted		-	-
urban = o,			-
oblast code = $6$ , omitted			-
Constant	5.39* (2.928)	8.50 (5.287)	-3.61 (10.237)
Observations	7,227	6,174	6,023
R-squared	0.025	0.016	0.011
Number of idpp	3,694	2,825	2,561

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 16 FE regression by education level (in years)

\_

	(1)	(2)	(3)
VARIABLES	FE 11	FE 12-	FE 15-
		15	19
unemployed	-0.18	-0.23	-
			0.93***
	(0.150)	(0.324)	(0.347)
age	-0.09	0.40**	-0.19
	(0.067)	(0.201)	(0.426)
age sq	0.00**	-0.00*	0.00
	(0.001)	(0.002)	(0.007)
female = o,	-	-	-
doctor visits	-	-0.05*	-
	0.07***		0.11***
	(0.017)	(0.029)	(0.040)
educ	0.10*	-	
		1.54***	
	(0.059)	(0.505)	
personal income (in thousands)	0.01***	0.03***	0.02
	(0.005)	(0.009)	(0.013)
ethnicity = 2, Uzbek	-0.25	-	
		0.84***	
	(1.763)	(0.096)	
ethnicity = 3, Russian	-0.56		
	(1.756)		
ethnicity = 4, omitted	-	-	-
ethnicity = 5, omitted	-	-	-
ethnicity $= 6$ , omitted	-	-	-
ethnicity = $7$ , omitted	-	-	-

ethnicity = 8, Other	0.43		
	(1.793)	0.21	0.40
marital status = $2$ , Divorced	$-0.48^{**}$	0.31	0.48
marital status = 3. Living Togetter	(0.212)	-0.46	-1.87*
	1.61***	0110	1107
	(0.208)	(0.391)	(0.960)
marital status $= 4$ , Seperated	-	-	-0.46
	1.33***	2.82***	
5 W/1 1	(0.375)	(1.070)	(0.727)
marital status = 5, widowed	- 0 72***	-0.20	-0.15
	(0.260)	(0.423)	(0.390)
marital status $= 6$ , Single	0.02	-0.57	-0.21
	(0.155)	(0.413)	(0.390)
urban	1.45*		1.99***
	(0.742)		(0.251)
oblast code = 3, Jalal-Abad	2.88***		1.38**
oblast code = 4 omitted	(0.156)		(0.652)
oblast code = 4, offitted	-	-	-
oblast code $= 5$ , omitted	-	-	-
oblast code = 6, Osh	1.02		-
	(1.400)		2.37***
oblast code = 7 omitted	(1.420)		(0.431)
oblast code = 7, offitted	-	-	-
oblast code $= 8$ , omitted	-	-	-
oblast code = 11, Bishkek	1.32*		
ablast as de 21 auxittad	(0.759)		
obtast code = 21, onlined	-	-	-
ethnicity = 3, omitted		-	-
<b>3</b>			
ethnicity $= 8$ , omitted		-	-
urban = 0,		-	
oblast code = 3 omitted		_	
oblust code = 5, officied			
oblast code = $6$ , omitted		-	
oblast code = $11$ , omitted		-	-
adua – a			
cuuc – 0,			-
ethnicity = 2, omitted			-
Constant	4.81***	19.00**	10.45*
	(1.570)	*	(6 205)
	(1.579)	(7.090)	(0.305)
Observations	12,992	3.915	1.698
R-squared	0.015	0.021	0.043
Number of idpp	6,103	1,816	792

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

	(1)	(2)
VARIABLES	FE women	FE men
	women	
unemployed	-0.39**	-0.26
	(0.180)	(0.164)
age	-0.10	-0.03
000 50	(0.077)	(0.086)
age sq	$(0.00^{+})$	(0.001)
female = o,	-	-
doctor visits	- 0.04***	- 0.07***
	$(0.00^{***})$	$(0.07^{***})$
educ	0.03	0.01
	(0.041)	(0.031)
personal income (in thousands)	0.01	0.02***
	(0.008)	(0.004)
ethnicity = 2, Uzbek	-0.74	
ethnicity = 3. Russian	-1.08	1.03
,	(1.352)	(1.223)
ethnicity = 4, omitted	-	-
ethnicity = 5, omitted	-	-
ethnicity = 6, omitted	-	-
ethnicity = 7. Kazakh	_	
, , , , , , , , , , , , , , , , , , ,	0.92***	
	(0.197)	
ethnicity = 8, Other	-0.09	-0.70
marital status $-2$ Divorced	-0.03	-0.35
martar sutus – 2, Divorcea	(0.238)	(0.259)
marital status = 3, Living Togehter	-	-
	1.56***	1.40***
marital status $-4$ Separated	(0.238)	(0.269)
maritai status – 4, Seperated	1.43***	0.15
	(0.366)	(0.901)
marital status $= 5$ , Widowed	-0.56**	-0.36
	(0.243)	(0.582)
marital status = 6, Single	(0.12)	-0.13
urban	1.79***	-0.51
	(0.529)	(0.333)
oblast code = 3, Jalal-Abad	1.72**	-0.27
oblast code = 4. omitted	(0.842)	(0.337)
ablast as da <b>5</b> avr <sup>2</sup> /// 1		
obtast code = 5, omitted	-	-
oblast code = 6, Osh	-0.21	
oblast code = 7 omitted	(1.523)	
001ast couc = 7, 011111cu	-	-

oblast code = 8, Chui	2.69*** (0.636)	
oblast code = $11$ , omitted	-	-
oblast code = $21$ , omitted	-	-
ethnicity = 2, omitted		-
ethnicity = 7, omitted		-
oblast code $= 6$ , omitted		-
oblast code $= 8$ , omitted		-
Constant	6.27*** (1.703)	6.53*** (1.739)
Observations	9,669	8,936
R-squared Number of idpp	0.017 4.358	0.016 3.891
Robust standard errors in par	entheses	- , - ,

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1