Subjective Well-Being Approach to Valuing Unemployment: Direct and Indirect Cost

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Abstract

The study presents a subjective well-being approach to estimating the direct and indirect cost of unemployment. Using a combined dataset from the World Values Survey and the World Development Indicators, the study finds that the indirect cost of unemployment is about twice the size of the direct cost of unemployment. The overall estimate for the cost of unemployment turns out to be 1.5 income quintiles change in income. The finding of the study not only confirms a high price to pay for not working out the unemployment problem but also highlights the importance of public policy that seeks to guarantee employment and provide social protection for the unemployed.

Keywords: Subjective well-being; unemployment; valuation

JEL Codes: C10; I30; J60

1. INTRODUCTION

Earlier studies establish that unemployment reduces subjective well-being in a significant way (Winkelmann and Winkelmann 1998; Kassenboehmer and Haisken-DeNew 2009; c.f., De Neve and Ward 2017; De Neve et al. 2018); and that this effect is large even in areas with high levels of unemployment (Clark et al. 2010; Helliwell and Wang 2014). There are scarring and scaring effects of unemployment, too, such that the insecurity from being unemployed in the past or the threat of being unemployed again in the future is large enough to affect subjective well-being (Clark et al. 2001, 2018; Knabe and Rätzel 2011).

Unemployment undermines subjective well-being because the loss of a job entails a direct cost, which the impact of a reduced income represents. Obviously, there is erosion in the capacity to meet the basic needs of oneself and family when one gets unemployed; and, in turn, there is the consequent reduction in general welfare. The scenario can be worse in areas where there is no safety net at all for the unemployed.

There is another reason: unemployment also imposes an indirect cost. Being unemployed means a disruption, if not a loss, in the structure or direction to everyday life that work provides. In fact, the things which help define identity, promote self-esteem, establish life goals, create meaning, and build social relationships, among others, vanish when one gets unemployed (Jaroda 1981; Darity and Goldsmith 1996).

Empirically, the "best" procedure to estimate the direct and indirect cost of unemployment is to put controls for disposable income and work status. There are nonetheless challenges

for doing so. First, data on disposable income are not available in the standard datasets. Second, when data are available, the information is only for a small set of countries. The absence or the limited option to control for disposable income in the analysis puts the burden on work status to capture the "full" cost of unemployment.

In this paper, I propose a "next best" procedure that is applicable when data on disposable income are not available. In particular, I use income rank as proxy measure for disposable income in estimating the cost of unemployment.

I show in the next section that the "next best" procedure is a sensible approach because it approximates the "best" procedure. The innovation is that the "next best" procedure gets an estimate of the cost of unemployment that relates to a valuation of the loss of subjective well-being due to unemployment. I then argue that the estimates I get are in line with those of Winkelmann and Winkelmann (1998), Blanchflower and Oswald (2004), Kassenboehmer and Haisken-DeNew (2009), Young (2012), and Helliwell and Huang (2014), among others.

The rest of the paper is in four parts. Part 2 discusses the methodology. Part 3 deals with the findings. The last part contains the conclusion and implications.

2. METHOD

2.1. Conceptual framework

This paper takes subjective well-being as its entry point for analysis (Kahneman et al.

1997). Studies find that subjective well-being exhibits very good validity characteristics. In fact, subjective well-being correlates well with manifestations like smiling (Ekman et al. 1990; Pavot et al. 1991), with ratings of partners, relatives, and friends (Costa and McRae 1988; Sandvik et al. 1993), and with agreeable life outcomes (Lyubomirsky et al. 2005).

Studies also find that subjective well-being exhibits very good reliability characteristics—that is, all things the same, a person who is "happy" in one period is likely to remain "happy" in another period (Larsen and Frederickson 1999; Kahneman and Krueger 2006; Krueger and Schkade 2008). Indeed, the subjective well-being of an individual is stable and consistent across time (Andrews and Withey 1976; Ehrhardt et al. 2000) as long as no extraordinary life event happens between two periods (Diener and Larsen 1984; Costa and McCrae 1988). Yet, improvements in social or in personal circumstances (Frey and Stutzer 2000; Inglehart et al. 2008) and activities like exercise and leisure (Lyubomirsky et al. 2005; Dolan et al. 2014) enhance subjective well-being.

The aforementioned characteristics imply that analyzing data on subjective well-being does not obtain spurious results. Thus, following earlier work like Beja (2012, 2013, 2014, 2015), I take subjective well-being (H) as a positive monotonic transformation of the internal or unobserved state of well-being (H*). The discrepancy between H and H* is attributed to human error.

If I allow for the law of large numbers and assume randomness in human error, then I claim $H \equiv H^*$. Next, I define a function like $H = F(Z, Y)$, where Z is a variable of interest

and Y is a numeraire for a valuation exercise. Applying total differentiation, I get $dH = h_Y dY + h_Z dZ$. Rearranging the terms leads to the following expression:

$$\frac{dH}{dZ} \Big/ \frac{dH}{dY} = \frac{h_Z}{h_Y} \tag{1}$$

Equation (1) shows the trade-off between Z and Y given H. In effect, the expression is an implicit willingness to pay to avoid Z in terms of Y, or simply the valuation Z. The same expression shows the implicit compensation in terms of Y if it is not possible to avoid Z.

The denominator of Equation (1) is a positive value by definition. Its numerator can be positive or negative value but not zero. If $h_Z > 0$, then Z is a "good"; but if $h_Z < 0$, then Z is a "bad."

I emphasize that Equation (1) is different from the conventional approach because it does not anchor the valuation on actions like buying or selling and on the presence or creation of a market. Arguably, this approach encounters less bias because there is in fact no direct valuation of the variable of interest. More important, Equation (1) obtains a valuation that is directly associated with an outcome that is important to a person.

2.2. Empirical Framework

I define the following structural equation given the above conceptual setup:

$$H_{ij} = \beta_0 + \beta_1 Z1_{ij} + \beta_2 Z2_{ij} + \beta_3 Z1Z2_{ij} + \gamma Y_{ij} + \delta_1 X_{ij} + \delta_2 W_j + e_{ij} \tag{2}$$

where Z1 is the job status of the individual (unemployed or not); Z2 is the income role of the individual (chief wage earner or not); Z1Z2 is an interaction term; Y is a numeraire (stated income rank); X is socioeconomic profile of the individual; W is economic profile of the country of the individual; and e is a residual term. The subscripts i and j represent the individual and the country, respectively. The residual term is a composite to account for the individual-level and the country-level deviations arising from the nested nature of the data. I estimate Equation (2) using multilevel regression.

From Equation (2), the expression $(\beta_1 + \beta_2 + \beta_3)/\gamma$ obtains the total cost of unemployment. It shows the fall in the income due to being unemployed. And it is the compensation necessary to raise subjective well-being back to its level prior to unemployment if finding employment was not possible. The direct cost of unemployment is just $(\beta_2 + \beta_3)/\gamma$, which shows the effect of the unemployed chief wage earner on subjective well-being net of the effect of the unemployed status per se on subjective well-being. The indirect cost of unemployment is β_1/γ, which is the effect of the unemployed status per se on subjective well-being.

I obtain results using the full dataset. I also get results for different income groupings of countries to see the variation across groups and to illustrate robustness of results.

2.3 Description of the Data

Subjective Well-Being

I use a proxy measure for subjective well-being, namely life satisfaction. The data are responses to the question: *"All things considered, how satisfied are you with your life as a whole these days?"* The responses take the numerical representation from 1 (completely dissatisfied) to 10 (completely satisfied).

Job Status

In the dataset, an individual is either employed or unemployed. Employed means there is work regardless of the type of employment. I exclude those who fall in the category of "not in the labour force" to get a straightforward classification of the job status. I define a dummy variable whose value is 1 for the unemployed and 0 otherwise.

Chief wage earner

The individual assumes an income role in the household. That is, in the dataset, a person is either a chief wage earner or not. I define a dummy variable whose value is 1 for being the chief wage earner and 0 otherwise.

Income

I use the responses to the query on the income rank of individuals. In particular, the data range between 1 (lowest income decile) and 10 (highest income decile). For the analysis, I form income quintiles.

Individual socioeconomic profile

The socioeconomic profile of an individual includes the following: gender, age, marital status, and education attainment. Gender is a dummy variable whose value is 1 for male and 0 for female. Age is in years. I also include the square of age.

Marital status and educational attainment are category variables. For marital status, the reference category is single or unmarried status. Correspondingly, 1 is married or living as married and 2 is ex-married (i.e., divorced, separated, or widowed/er). For educational attainment, the reference category is completion of tertiary education. In this case, 1 means no education or less than elementary education; 2 means completed elementary education; and 3 means completed secondary education.

Country economic profile

I control for the standard of living in a country using the 5-year average of gross domestic product (GDP) per capita as a proxy measure. This measure also controls for the effect of business cycles on subjective well-being. In addition, GDP per capita also serves as an implicit control for the country-level idiosyncrasies like institutions and infrastructure that affect the quality of life in a group of countries. For example, there are mechanisms in place to support the unemployed in the rich countries but only limited, if available at all, means to support the unemployed in the poor countries.

I further control for the income groupings of countries using the definition of the World

Bank. In particular, I use a category variable with the group for upper-income countries as reference. And so, 1 is for low-income countries; 2 is for low middle-income countries; and 3 is for upper middle-income countries.

Lastly, I also control for the social context using the unemployment rate in a country to control for country-level idiosyncrasies specifically with regard to the job market. The high unemployment rate in the upper-income countries, for instance, could be the result of institutions that discourage people from looking for work. In contrast, non-upper-income countries could experience low unemployment rate because people cannot afford to be out of work—that is, for instance, poor people take any type of job available and end up reported in the statistics as employed. The unemployment rate also serves as an implicit control for a possible bias that arises from differences in social context—that is, possibly, more unemployed respondents could come from areas where unemployment is high than in areas where unemployment is low.

2.4 Selection of Countries

Only countries with complete data as defined earlier are included in the dataset. There are 88 countries in the dataset after data iteration.

2.5 Sources of the Data

The data for the individual-level variables are from Waves 2 to 6 of the World Values Survey. The World Development Indicators is the source for the country-level variables.

3. FINDINGS

3.1 Descriptive Findings

Table 1 presents the means of individual- and country-level variables used in the analysis. The following are the key observations. First, on job status: the proportion of individuals who stated that they were unemployed is higher in the non-upper-income countries than in the upper-income countries. The unemployment rate is also higher in the former than in the latter. I note that the unemployment rate in the low-income countries is lower than the overall average for all countries in the sample. For the non-upper-income countries, the disparity between the proportion of those who said that they were unemployed and the unemployment rate is possibly because of a difference in the way the people and the government define employment.

From Table 1, there is indication that people still see themselves as unemployed even though they are working—that is, in effect, people did not see their employment as real jobs or felt that they did not have gainful employment, perhaps, because the pay was too low and/or the hours of work were too short. The creation of jobs appears to be a serious problem given the configuration across the income groupings of countries.

Next, on chief wage earner: the proportion of those who said that they were the main providers of their household is comparable across the income groupings of countries. The figures in Table 1 show a typical setup in terms of how many individuals are responsible for the provisioning of a household. There is, in short, at least one person in a household

who assumes the role of chief wage earner.

Lastly, consider the income variables (individual- and country-level) and subjective well-being. The trend between these variables across the income groupings of countries is in line with the view that higher standards of living is correlated with higher subjective well-being, at least in the short-run or in cross-section data (c.f., Easterlin 1974 and 2015 viz., Deaton 2008; Stevenson and Wolfers 2008). Looking at Table 1 more closely, though, I find a "diminishing impact" of income on subjective well-being—that is, there is on average a smaller increase in average subjective well-being as the income grouping goes up from low-income to upper-income countries (c.f., Layard et al. 2008).

3.2 Regression Findings

Table 2 shows the correlates of subjective well-being, and they are all consistent with literature. But, in this section, I discuss only the results that relate to the topic of the paper: jobs status, chief wage earner, and an interaction term of the two. Estimates on the cost of unemployment then follow.

On job status: Table 2 shows the expected result of a negative effect of unemployment on subjective well-being. The finding is consistent with Winkelmann and Winkelmann (1998) and Kassenboehmer and Haisken-DeNew (2009). The figures indicate that the impact of unemployment on subjective well-being is larger in the upper-income countries than in other income grouping of countries because unemployment there tends to be more costly given that standards of living are also higher. Alternatively, the impact of unemployment

in the upper-income countries is associated with the value of work itself. In a way, there is more disapproval on being unemployed in the upper-income countries because people there see the unemployed as not contributing to their society, thereby leading to welfare support, increasing social burden, etc.

On chief wage earner: Table 2 shows a positive effect of being a chief wage earner on subjective well-being. This finding is robust only for the upper-income and the upper middle-income countries. The size of the estimate is small but it is consistent across the country income groupings. In general, the results provide an indication that the role of chief wage earner is a position that people welcome since it brings purpose and meaning to life. Being a chief wage earner then fulfills the role as provider of the family; yet, at the same time, the responsibility that comes with it also tempers the impact of losing work.

On the interaction term: There is a negative effect of the interaction term (job status and income role) on subjective well-being. Recall that the interaction term refers to the direct cost of unemployment. The results in Table 2 are robust except those for the low-income countries. But the result still agrees with Winkelmann and Winkelmann (1998)—that is, the direct cost of unemployment is smaller than the indirect cost of unemployment.

Lastly, I present the results on the valuation of unemployment. Recall that the total cost of unemployment is $(\beta_1 + \beta_2 + \beta_3)/\gamma$, which shows the extent of fall in the income position of an individual due to being unemployed or, equivalently, the amount of compensation in terms of income position necessary for an individual when employment was not at all possible. Its components are $(\beta_2 + \beta_3)/\gamma$, which is the direct cost of unemployment, and

β_1/γ , which is the indirect cost of unemployment.

As shown in Table 2, I estimate the average direct cost of unemployment to be 0.5 income quintile (0.7 for the upper-income countries and 0.2-0.5 for the other country income groups) and the average indirect cost of unemployment to be 1 income quintile (2.7 for the upper-income countries and 0.5-1.8 for the other country income groups). In effect, the indirect cost of unemployment is about twice the direct cost of unemployment. The overall cost of unemployment is thus equivalent to about 1.5 income quintiles.

The estimates do vary by country income groupings (Table 2). As expected, the figures suggest that the income rank of a person falls by a significant extent when one loses work. Put another way, a large increase in income is necessary to offset the negative effects of being unemployed. The significant reduction in subjective well-being obviously goes beyond the loss in income, and so public policy is imperative.

4. CONCLUSION

The paper used an alternative procedure to estimate the cost of unemployment. Its analysis made use of income rank as numeraire in the valuation exercise because the information on disposable income was not available.

The use of an alternative procedure itself can be a limitation of the study. In addition, the procedure did not include controls for the local community of the unemployed. I maintain, however, that the procedure obtained an estimate of the impact of unemployment in terms

of income rank and the resulting valuation agreed with the estimates in the literature. The estimates can be read as lower-limit figures given the absence of controls for the local community.

The analysis found that the indirect cost of unemployment was twice larger than the direct cost. The results showed that the cost of unemployed was equivalent to a reduction of about 1.5 income quintiles. Or, equivalently, about 1.5 income quintiles were necessary to compensate an individual for the loss in subjective well-being due to being unemployed.

The findings of the paper have implications for public policy. Consider first the direct cost of unemployment in terms of foregone income and, in turn, in terms of the reduction in subjective well-being. In this regard, the implication for public policy might relate to seeking ways that strengthen the value of work so that there is greater appreciation not only for the provision but also for the security of employment. Public policy, in this case, would need to be less of a political intervention that leads to shallow solutions but more of an economic commitment to create and to secure employment for everyone who needs work.

Consider next the indirect cost of unemployment. Other impacts of being unemployed—like social stigma and family strain, etc.—distort and upset subjective well-being. Public policy, in this case, would take the form of not just programs that facilitate networking for job search or initiatives that encourage retooling but also programs that support the unemployed as they seek or transition to the next job or programs that encourage schemes like flexible hours and other forms of innovative work arrangements, etc. In this regard,

public policy would not just help reduce the cost that comes with unemployment and the following stigma but also help enhance the value of other forms of work.

Yet, there is also the implication that concerns the impact of unemployment on the local community. The magnitude of the indirect cost of unemployment already suggests a large burden on the local community. Indeed, unemployment tends to push people away from social life in general and from engagement with the local community in particular. The reduction in social and local community participation tends to go along with a decrease in self and family commitment and then to an increase in personal and social violence. That is, social disengagements—withdrawal from society, local community, family, and self—lead to broader social problems, local community decay, and family disintegration. There are other effects, too, like a decrease in local business activities, which enhances the initial impact of unemployment, and greater stress on public services, which enhances the succeeding impact of unemployment. Public policy, in this case, would need to go beyond the economic commitment mentioned earlier because it would require everyone in the local community to provide, say, support for the unemployment and to help secure the social fabric as the local community deals with the unemployed and the unemployment problem.

Jobs creation and security as well as local community and family support do not mean much in terms of subjective well-being if people would not get to experience the benefits in real terms. Put another way, it would not be meaningful to declare that, for example, many jobs were created or many people found jobs in the past year or that local community interventions were in place to help those who lost their jobs or that alternative

employment schemes were created, etc., and yet people were still finding it difficult to get a job that gave meaning to them and decent wages to support themselves or their families.

Naturally, the suitability, the amount, and the timing of public policy vary across societies given that there are differences in circumstances and resources to back up the programs. But the rationale for applying public policy at the national and local community levels remains the same: intervention is a valuable initiative because it helps the unemployed cope with the family demands and deal with the local community and social expectations; and, in turn, intervention empowers the unemployed to respond to their needs and of their families and communities in appropriate and effective ways. In the end, broad-based public policy in the provision of support and services allows people to remain active participants in nation building.

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REFERENCES

Andrews, F. and Withey, S. (1976). *Social indicators of well-being*, New York: Plenum Press

Beja, E. (2012). "Subjective well-being approach to environmental valuation: Evidence for greenhouse gas emissions," *Social Indicators Research*, 109(2): 243-266

Beja, E. (2013), "Subjective well-being approach to the valuation of international development: Evidence for the Millennium Development Goals," *Social Indicators Research*, 111(1): 141-159

Beja, E. (2014). "Subjective well-being analysis of income inequality: Evidence for the industrialized and emerging Economies," *Applied Research in Quality of Life,* 9(2): 139-156

Beja, E. (2015). "Direct and indirect impacts of children on happiness," *International Review of Economics*, 62(4): 307-318

Blanchflower, D. and Oswald, A. (2004). "Well-being over time in Britain and the USA," *Journal of Public Economics*, 88 (7-8): 1359-1386.

Clark, A., Georgellis, Y., and Sanfey, P. (2001). "Scarring: The psychological impact of past unemployment," *Economica*, 68(270): 221-241

Clark, A., Knabe, A., and Rätzel, S. (2010). "Boon or bane? Others' unemployment, well-being and job insecurity," *Labour Economics*, 17(1): 52-61

Clark, A., Fleche, S., Layard, A., Powdthavee, N., and Ward, G., (2018). *The origins of happiness*, New Jersey: Princeton University Press

Costa, P. and McCrae, R. (1988). "Personality in adulthood: A six-year longitudinal study of self-reports and spouse ratings on the NEO personality inventory," *Journal of Personality and Social Psychology*, 54(4): 853-863

Darity, W. and Goldsmith, A. (1996). "Social psychology, unemployment, and macroeconomics," *Journal of Economic Perspectives*, 10(1): 121-140

De Neve, J.-E. and Ward, G. (2017). "Happiness at work," in J. Helliwell, R. Layard, and J. Sachs (eds.), *World happiness report 2017* (pp. 144-177), New York: Earth Institute Columbia University

De Neve, J.-E., Kregel, C., and Ward, G., (2018). "Work and well-being: A global perspective," in J. Sachs (eds.), *Global Happiness Policy Report 2018* (pp. 74-127), New York: Sustainable Development Solutions Network

Deaton, A. (2008). "Income, health, and well-being around the world: Evidence from the Gallup World Poll," *Journal of Economic Perspectives*, 22(2): 53-72

Diener, E. and Larsen, R. (1984). "Temporal stability and cross-situational consistency of affective, behavioral, and cognitive responses," *Journal of Personal and Social Psychology*, 47(4): 580-592

Dolan, P., Kavetsos, G., and Vlaev, I. (2014). "Happiness workout," *Social Indicators Research*, 119(3): 1363-1377

Easterlin, R. (1974). "Does economic growth improve the human lot? Some empirical evidence," in P. David and M. Reder (ed.), *Nations and households in economic growth: Essays in honor of Moses Abramovitz* (pp. 89-125), New York: Academic Press

Easterlin, R. (2015). "Happiness and economic growth: The evidence," in W. Glatzer, L. Camfield, V. Møller, and M. Rojas (eds.), *Global handbook of quality of life* (pp. 283-299), New York: Springer

Ehrhardt, J., Saris W., and Veenhoven, R. (2000). "Stability of life satisfaction over time: Analysis of change in ranks in a national population," *Journal of Happiness Studies*, 1(2): 177-205

Ekman, P., Davidson, R., and Friesen, W. (1990). "The Duchenne Smile: Emotional expression and brain physiology II," *Journal of Personality and Social Psychology*, 58(2): 342-353

Frey, B. and Stutzer, A. (2000). "Happiness, economy, and institutions," *Economic Journal*, 110(466): 918-938

Helliwell, J. and Huang, H. (2014). "New measures of the costs of unemployment: Evidence from the subjective well-being of 3.3. million Americans," *Economic Inquiry*, 52(4): 1485-1502

Inglehart, R., Foa, R., Peterson, C., and Welzel, C. (2008). "Development, freedom, and rising happiness," *Perspectives on Psychological Science*, 3(4): 264-285

Jaroda, M. (1981). "Work, employment, and unemployment," *American Psychologist*, 36(2): 184-191

Kahneman, D. and Krueger, A. (2006). "Developments in the measurement of subjective well-being," *Journal of Economic Perspectives*, 20(1): 3-24

Kahneman, D., Wakker, P., and Sarin R. (1997). "Back to Bentham? Explorations on experienced utility," *Quarterly Journal of Economics*, 112(2): 375-405

Kassenboehmer, S. and Haisken-DeNew, J. (2009). "You're fired! The causal negative effect of entry unemployment on life satisfaction," *Economic Journal*, 119(536): 448-462

Knabe, A. and Rätzel, S. (2011). "Scarring or scaring? The psychological impact of past unemployment and future unemployment risk," *Economica*, 78(310): 283-293

Krueger, A. and Schkade, D. (2008). "The reliability of subjective well-being measures," *Journal of Public Economics*, 92(8-9): 1833-145

Larsen, R. and Fredrickson, B. (1999). "Measurement issues in emotion research," in D. Kahneman, E. Diener and N. Schwarz (ed.), *Well-being: The foundations of hedonic psychology* (pp. 40-60), New York: Russell Sage Foundation

Layard, R., Mayraz, G., and Nickell, S. (2008). "The marginal utility of income," *Journal of Public Economics*, 92(8-9): 1846-1857

Lyubomirsky, S., King, L., and Diener, E. (2005). "The benefits of frequent positive affect: Does happiness lead to success," *Psychological Bulletin*, 131(6): 803-855

Lyubomirsky, S., Sheldon, K., and Schkade, D. (2005). "Pursuing happiness: The architecture of sustainable change," *Review of General Psychology*, 9(2): 111-131

Pavot, W., Diener, E., Colvin, C. R., and Sandvik, E. (1991). "Further validation of the satisfaction with life scale: Evidence for the cross-method convergence of well-being measures," *Journal of Personality Assessment*, 57(1): 149-161

Sandvik, E., Diener, E., and Seidlitz, L. (1993). "Subjective well-being: The convergence and stability of self-report and non-self-report measures," *Journal of Personality*, 61(3): 317-342

Stevenson, B. and Wolfers, J. (2008). "Economic growth and happiness: Reassessing the Easterlin Paradox," *Brookings Papers on Economic Activity*, 39(1): 1-87

Winkelmann, L. and Winkelmann, R. (1998). "Why are the unemployed so unhappy? Evidence from panel data," *Economica*, 65(257): 1-15

Young, C. (2012). "Losing a job: The nonpecuniary cost of unemployment in the United States," *Social Forces*, 91(2): 609-634

Table 1: Description of variables

	All data	Low	Mid-low	Mid-upper	Upper
Individual-level, proportions:					
Unemployed status	13.72	18.75	16.95	14.59	8.02
Chief wage earner	55.88	54.46	53.30	56.24	58.34
Individual-level, means:					
Income quintile	2.71	2.54	2.60	2.65	2.95
Happiness	6.62	5.94	5.87	6.82	7.29
Country-level, means:					
Unemployment rate	8.90	4.43	9.87	11.22	6.49
GDP per capita, USD (2010 = 100)	14,179.95	630.88	2,161.20	7,371.11	38,162.06

Sources of raw data: World Values Survey; World Development Indicators

Notes: "Low" means low-income countries; "mid-low" means low middle-income countries; "mid-upper" means upper middle-income countries; and "upper" means upper-income countries.

Table 2: Results of multilevel regression

	All data	Low	Low	Mid-low	Mid-upper	Upper
Intercept	1.310	-4.032	-3.939	1.876	0.387	1.041
	4.303	-2.709	-2.631	3.106	0.527	1.930
Male	-0.090	-0.141	-0.140	-0.078	-0.044	-0.132
	-7.152	-3.094	-3.078	-2.873	-2.043	-6.684
Age	-0.064	-0.035	-0.036	-0.060	-0.061	-0.070
	-22.234	-3.255	-3.303	-9.694	-12.476	-15.429
Age-squared	0.001	< 0.000	< 0.000	0.001	0.001	0.001
	21.194	2.949	2.996	8.846	11.592	15.453
Marital: Married	0.301	0.128	0.124	0.218	0.305	0.463
	19.299	2.311	2.239	6.247	11.704	18.926
Marital: Ex-Married	-0.229	-0.384	-0.387	-0.385	-0.192	-0.134
	-9.296	-4.143	-4.181	-6.655	-4.638	-3.751
Education: None	-0.401	-0.398	-0.399	-0.420	-0.391	-0.201
	-14.121	-4.657	-4.668	-7.478	-8.181	-3.239
Education: Primary	-0.204	-0.147	-0.149	-0.359	-0.154	-0.126
	-11.418	-2.361	-2.391	-9.207	-4.883	-4.617
Education: Secondary	-0.133	-0.112	-0.113	-0.200	-0.109	-0.118
	-8.682	-1.867	-1.879	-6.054	-3.931	-5.287
Quintile	0.377	0.529	0.530	0.479	0.375	0.262
	71.057	24.790	24.822	41.943	41.256	30.924
Unemployed	-0.363	-0.099	-0.137	-0.251	-0.502	-0.513
	-17.606	-1.531	-2.373	-6.380	-14.472	-11.981
Chief wage earner	0.033	0.047	0.028	-0.023	0.060	0.048
	2.373	0.967	0.595	-0.773	2.492	2.208
Unemployed*Chief	-0.234	-0.175		-0.165	-0.228	-0.244
	-5.908	-1.303		-2.050	-3.285	-3.620
Country-level controls:						
GDP per capita (ln)	Yes	Yes	Yes	Yes	Yes	Yes
Mean life satisfaction	Yes	Yes	Yes	Yes	Yes	Yes
Unemployment rate	Yes	Yes	Yes	Yes	Yes	Yes
Geographic region	Yes	Yes	Yes	Yes	Yes	Yes
Income grouping	Yes					
Survey wave (period)	Yes	Yes	Yes	Yes	Yes	Yes
Random component:						
Intercept	0.020	0.016	0.017	0.025	0.022	0.005
	5.151	1.522	1.535	2.892	3.073	2.134
Residual	4.453	4.705	4.705	5.397	4.612	3.203
	268.621	79.353	79.353	140.954	159.023	143.847
Valuation (income quintile):						
Direct cost of unemployment	-0.53	-0.24		-0.39	-0.45	-0.75
Indirect cost of unemployment	-0.96	-0.19		-0.52	-1.34	-1.96
Total cost of unemployment	-1.49	-0.43	-0.26	-0.92	-1.78	-2.71

Notes: 1. Numbers under the parameter estimates are t-statistics. Numbers under the random component estimates are Wald z-statistics. **2.** "Low" means low-income countries; "mid-low" means low middle-income countries; "mid-upper" means upper middle-income countries; and "upper" means upper-income countries. **3.** N = 144,444 for all data; n = 12,610 for low-income countries; n = 39,770 for low middle-income countries (mid-low); n = 50,610 for upper middle-income countries (mid-upper); and n = 41,424 for upper-income countries.