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Matthias Opfinger

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Matthias Opfinger *

University Trier

Abstract

The European Union emphasizes the advantages arising from diversity. However, economic studies prove that diversity can lead to detrimental outcomes, ultimately resulting in lower well-being. This paper assesses the direct link between well-being and diversity within a society, in terms of ethnicity, language, and religion. I find that ethnic diversity is linearly and positively related to happiness and life satisfaction. The other dimensions of social diversity and well-being are related in a U-shape. At low levels of diversity an increase reduces well-being. The relationship becomes positive only if diversity is sufficiently high. I argue that a threat to the dominant position of one group prevents the formation of a common identity. If diversity is sufficiently high, the groups have to establish contact which reduces prejudices and helps to form a common identity.

JEL-classification: I3, Z1

Keywords: Social Diversity, Common Identity, Group Threat, Tolerant Societies

*University Trier, Department of Economics. Universitaetsring 15, 54286 Trier, Germany. Phone: +49-(0)651-201 2714. Fax: +49-(0)651-201 3968. E-Mail: opfinger@uni-trier.de.
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1 Introduction

"United in Diversity." This is the official motto of the European Union (EU). According to the EU's web page, the motto "signifies how Europeans have come together, in the form of the EU, to work for peace and prosperity, while at the same time being enriched by the continent's many different cultures, traditions and languages." It appears to be a given fact that European citizens should highly value social diversity. Unfortunately, the economic literature is not as confident about the consequences of diversity as the European Union. Several studies have established a negative relationship between diversity, especially ethno-linguistic diversity, and economic outcomes such as investment, income growth, or the quality of government (compare Easterly and Levine (1997), La Porta et al. (1999), Mauro (1995), or Montalvo and Reynal-Querol (2005)). Ethnic and religious fractionalization also appear to be predictors for the occurrence of civil conflict, as is shown by Montalvo and Reynal-Querol (2005a). Unfavorable economic outcomes have negative effects on people's subjective well-being, which gives rise to serious doubts about the EU's optimistic view.

It follows that EU citizens may not attribute a high value to living in diverse societies. Rather, they might be more confident when living in groups which share the same values and norms. Okulicz-Kozaryn (2010, 2011) argues that religion, as one possible source of diversity within a society, serves a special function. It is not religiosity per se that raises people's satisfaction, but it fulfills the desire to belong to a specific group of like-minded persons which appears to be one of the fundamental human needs (Baumeister and Leary, 1995). If this happens to be the case, diversity can have detrimental effects on the well-being of a population as it deters the population from forming groups of people that share a common pattern of values and norms.

Only few studies exist which evaluate directly the link between diversity within a society and the consequences for people's well-being. Mookerjee and Beron (2005) find a negative relationship between religious fractionalization and the level of happiness for a sample of 60 countries. In a study focused on South Africa, Hinks (2012) finds that income inequality, as a measure for social fractionalization, and religious fractionalization negatively affect well-being. However, ethno-linguistic fractionalization does not affect the well-being of South Africans. Okulicz-Kozaryn (2011) finds that religious fractionalization causes lower levels of happiness. He argues that religious polarization also has a negative impact on happiness[1]. Following the findings of Okulicz-Kozaryn (2011), it appears that the relationship between diversity within

[1]This is a striking finding because the measures of diversity and polarization differ in an important aspect. Diversity measures the probability that two randomly drawn persons belong to different groups. In contrast, polarization reaches its maximum if there is a majority group which faces an almost equally sized minority. However, this constellation would result in an index value of diversity of 0.5. For very high and very low levels of diversity, the index of polarization tends towards zero.

a society and well-being is not necessarily linear. Rather, the relationship might depend on the prevailing level of diversity.

This suspicion is enforced if we take another finding into account. Several authors find that religiosity has a positive effect on subjective well-being (Elliott and Hayward (2009), Ellison (1991), Ferriss (2002), Grenne and Yoon (2004), Hayo (2007)). However, Okulicz-Kozaryn (2010) and Gundlach and Opfinger (2013) establish a bimodal relationship between religiosity and well-being. But even if we took the linear relationship between religiosity and well-being as given, religious diversity might well have a more complex impact on subjective well-being. In Opfinger (2013), I show that the relationship between religious diversity and religiosity changes when countries develop economically. High levels of religious diversity appear to lead to low levels of religiosity in less developed countries[2]. However, this relation becomes less pronounced as countries develop economically. The results imply that the relationship might even turn to positive in the richest societies[3]. Taken together, previous studies suggest that high religious diversity could either lead to high or low levels of religiosity and therefore, to high or low levels of subjective well-being. If this is true for religious diversity, there is reason to assume that the same argument is applicable to ethnic and linguistic diversity.

The aim of this study is to validate the suspicion of non-linearities in the direct relationship between diversity within a society and subjective well-being. I contribute to the literature by explicitly including a quadratic term on diversity and by capturing the multi-dimensional phenomenon of social diversity from more than just one angle. As indicated before, I will rely on data on ethnic, linguistic, and religious diversity to estimate cross-country regressions of well-being on diversity and further control variables.

The empirical estimations establish a U-shaped relationship between subjective well-being and religious and linguistic diversity. Increasing diversity is correlated to a reduction of well-being in originally homogeneous societies. Well-being reaches its minimum at levels of linguistic and religious diversity that are close to their respective mean values. At higher levels of diversity, further increases raise subjective well-being. Remarkably, I find a linear and positive relationship between well-being and ethnic diversity.

My main argument for the U-shape is that the majority may feel a threat to their prevailing value system if diversity starts to increase from originally very low levels. People cannot, or are not willing to, form a common identity with those that speak another language or engage in other religious rituals. This is because they are not able to detect a common pattern of values and norms. However, a common identity appears to be essential for the functioning of a society (Tajfel, 1970). Therefore, a lack of a common

[2]This finding supports the demand side model based on the Secularization Hypothesis, which is endorsed by e.g. Blau et al. (1993), Breault(1989), Olson (1999), or Sherkat (1991).

[3]This, in turn, supports the supply side model of the Religious Market Theory, Iannaccone (1991), whose adherents claim that higher levels of religious diversity should increase the demand for religion. See e.g. Barro and McCleary (2002), Finke and Stark (1988), Franck and Iannaccone (2009), Gruber (2005).

identity reduces average well-being in a society. At some level of diversity, the distinct groups are forced to interact. The establishment of contact helps to reduce prejudices. If the population figures out that they can live together without conflict, further increases of diversity may be attributed to tolerance and openness within the society. People will start to identify due to a broader set of common values that is independent of differences in language and religion. This results in higher levels of subjective well-being.

The remainder of the paper is organized as follows: In the next Section, I will briefly describe the data and spell out the empirical model that is to be estimated. Section 3 will present the empirical results. These are discussed in Section 4. Section 5 briefly concludes.

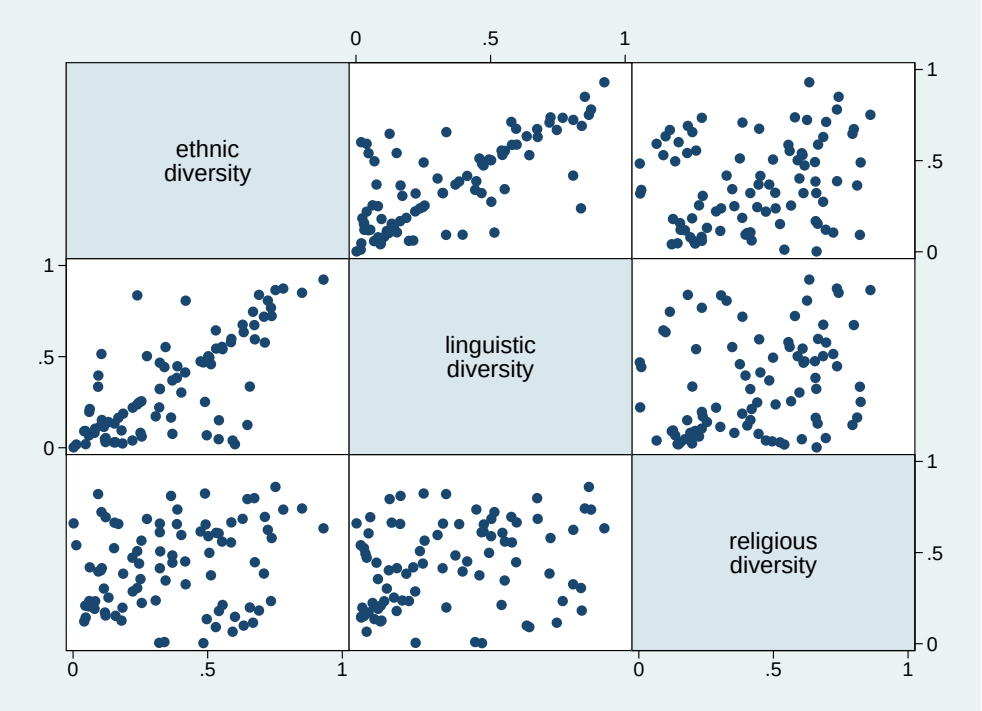
2 Data and Specification

In the literature on the economics of happiness both, happiness and life satisfaction, are often used interchangeably as proxy variables for subjective well-being. However, there is reason to assume that these variables do not measure exactly the same, especially when questions concerning each are asked in a different way. Therefore, I will use happiness as well as life satisfaction as dependent variable in separate estimations to guarantee that the results are not driven by the choice of the dependent variable. The data are taken from the World Values Survey (WVS), a household survey conducted in many countries, developed and developing, across the world. The WVS asks:"Taking all things together, would you say you are: very happy; quite happy; not very happy; not at all happy?", and concerning life satisfaction:"All things considered, how satisfied are you with your life as a whole these days", where answers from 0 to 10 are possible. Stevenson and Wolfers (2008) compute indexes of average national happiness and average national life satisfaction for the countries that participate in the WVS. They run ordered probit regressions of happiness and life satisfaction on country fixed effects. Their indexes are available for first four waves of the WVS (1982, 1990, 1995, 2000), and in Gundlach and Opfinger (2013) we are able to reproduce the index for the 2005 wave. These measures of happiness and life satisfaction will be the dependent variables in the empirical estimations.

Information on ethnic, linguistic and religious diversity is taken from Alesina et al. (2003). The authors calculate diversity according to the formula $Div = 1 - \sum_{i=1}^{n} s_i^2$, where s is the share of the population that belongs to each group i, and n is the number of different groups. The indexes are distributed between 0 and 1, where 1 means that every person belongs to a different group and, likewise, 0 that all persons belong to the same group, that is the country is totally homogeneous. The methodology is equivalent for ethnic, linguistic and religious diversity. The calculation of the index of ethnic diversity is based on different sources, whose observations range from the year 1983 to 2001, with the most of them in the 1990's. The

authors explain how they checked for the consistency of the results when bringing together the different data sets. In total, they manage to identify 650 distinct ethnic groups in 190 countries. Information on linguistic and religious diversity is provided for the year 2001 and is taken from the *Encyclopedia Britannica* (2001). It is possible to distinguish 1,055 linguistic groups and 294 religious groups for more than 200 countries.

Since religious and linguistic diversity are reported for the year 2001, it is desirable to observe happiness and life satisfaction for a later point in time. This is possible when we rely on the 2005 wave of the WVS. However, in order to substantially increase the number of observations, I decided to include those countries in the data set for which happiness and life satisfaction are reported for the year 2000, but not for 2005. As happiness in 2000 should not affect diversity one year later, reverse causality does not appear to be a major concern. I pool the observations from the year 2000 and 2005 into one data set in order to run cross-country OLS regressions.



Source: Alesina et al. (2003); calculations by the author

Figure 1: Correlation matrix of the diversity variables

It might appear exaggerated to include three different measures of social diversity as explanatory variables in separate estimations as one might object that these variables measure similar things. However, Figure 1 reveals that the correlation between religious diversity and the remaining forms of social diversity is fairly low ($0.22 \leq \rho \leq 0.28$). Ethnic and linguistic diversity are more closely related, but the correlation

is far from perfect ($\rho = 0.73$).

Based on findings in previous studies on the economics of happiness, I include the log of GDP per capita, population size, the Polity IV score as a measure for democracy, life expectancy as a proxy for national health, the unemployment rate, and the inflation rate as further control variables. The Polity IV score is taken from the Polity IV Project web page (Marshall et al., 2013). All remaining data are taken from the World Bank's World Development Indicators.

Information on all variables is available for 79 countries, Table 1 provides summary statistics. The highest level of happiness is reported for Mexico, the lowest for Iraq. Italy comes closest to the mean value. The highest value of life satisfaction is reported in Colombia, the lowest in Zimbabwe. The Philippines come closest to the mean value. Zambia is ethnically and linguistically the most diverse country, whereas South Korea is the most homogeneous country in both respects. Concerning religious diversity, Morocco is the most homogeneous and South Africa the most diverse country in the data set.

Table 1: Summary Statistics

	Observations	Mean	Std. Dev.	Minimum	Maximum
Happiness	79	0.052	0.414	-0.917	0.803
Life Satisfaction	79	-0.010	0.470	-1.201	0.841
Ethnic Diversity	79	0.371	0.224	0.002	0.781
Linguistic Diversity	79	0.338	0.261	0.002	0.873
Religious Diversity	79	0.422	0.234	0.004	0.860
Log of GDP p.c.	79	8.885	1.200	5.960	10.845
Population in thou.	79	61,734	171,995	410	1,216,379
Life Expectancy	79	72.132	7.900	43.922	81.925
Unemployment	79	8.901	5.990	1.300	32.200
Inflation	79	8.481	20.077	-1.125	168.620
Polity IV Score	79	5.228	5.966	-10	10

Source: data on happiness and life satisfaction from World Values Survey, diversity from Alesina et al. (2003), Polity IV Score from Polity IV web page, all remaining data from World Bank's World Development Indicators; calculations by the author.

I run cross-country OLS regressions of the two well-being variables, on the variables associated with social diversity and the control variables. The model is of the form:

$$wb_i = \alpha + \beta_1 * diversity_i + \beta_2 * diversity_i^2 + \gamma * X_i + \varepsilon_i,$$

where wb_i is either happiness or life satisfaction, $diversity_i$ is ethnic, linguistic, or religious diversity, X_i is the matrix of control variables, and ε_i is the error term. The term $diversity_i^2$ is included to account for the possible non-linear relationship between diversity and subjective well-being. All regressions will be run using robust standard errors. The coefficients of main interest are β_1 and β_2. If we found that $\beta_2 = 0$,

while $\beta_1 \neq 0$, diversity would have a linear relationship with subjective well-being. In this case, $\beta_1 > 0$ implies that higher levels of diversity within a society are related to higher levels of well-being, and vice versa for $\beta_1 < 0$. If β_1 and β_2 were both significantly different from zero, we would be able to conclude that there is a non-linear relationship between diversity and well-being. According to the arguments laid out in the Introduction, I hypothesize to find that $\beta_1, \beta_2 \neq 0$.

3 Empirical Results

The regression results of happiness on the different diversity variables and the remaining control variables are presented in Table 2. In the first six columns, one dimension of diversity enters in each regression. These estimations serve as a benchmark in order to evaluate if, and which dimensions of, social diversity affects happiness. In a following step, the variables are entered jointly in columns 7 through 9. Due to possible collinearity between ethnic and linguistic diversity, only one dimension is included together with religious diversity in columns 7 and 8, respectively. In column 9, all dimensions of social diversity are included in the regression.

The findings of main interest are observable in the upper panel of Table 2. It shows the relationships between different forms of social diversity and the measure of average national happiness. Ethnic diversity is the relevant explanatory variable in columns 1 and 2. Ethnic diversity displays a linear and positive correlation with happiness. When the quadratic term of ethnic diversity is included in column 2, the negative linear term is not significant and the quadratic term itself enters significantly only at the ten percent level. In contrast, the positive linear relationship in column 1 is significant at the five percent level. A 0.1-index point increase of ethnic diversity correlates to happiness that is higher by 0.043 index points. The ethnically most diverse country displays an index value that is by 0.779 points higher compared to the most homogeneous country in this sample. This value implies that happiness is by 0.337 index points higher in the most compared to the least diverse country, if all other control variables were held constant. A one standard deviation higher ethnic diversity is related to 0.097-index points higher happiness, or 23% of a standard deviation.

The results change markedly when we look at the remaining measures of social diversity. When only the linear terms of linguistic and religious diversity are included in columns 3 and 5, we do not find significant coefficients. The linear relationship between religious diversity and happiness is even negative in column 5. Including the respective quadratic terms in columns 4 and 6 points to a U-shaped relationship between diversity and happiness[4]. An increase of diversity relates to lower happiness when the original

[4]These findings are robust to the inclusion of a quadratic term on any of the other covariates so that the quadratic terms

level of diversity is low. At some point the function reaches its minimum and after that the quadratic term dominates so that further increases in diversity lead to higher levels of average national happiness.

Table 2: OLS regression results, dependent variable: happiness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ethnic Diversity	0.433**	-0.832					0.373**		0.392*
	0.171	0.677					0.169		0.232
Sq. Ethnic Div.		1.700*							
		0.868							
Linguistic Diversity			0.124	-1.326**				-1.180**	-1.376***
			0.176	0.580				0.531	0.519
Sq. Linguistic Div.				1.995***				1.835***	1.842***
				0.712				0.664	0.694
Religious Diversity					-0.278	-2.517***	-2.342***	-2.472***	-2.258***
					0.169	0.550	0.526	0.480	0.466
Sq. Religious Div.						2.662***	2.415***	2.708***	2.441***
						0.601	0.577	0.516	0.511
Log of GDP p.c.	0.198***	0.189***	0.195***	0.181***	0.207***	0.128**	0.140**	0.111**	0.122**
	0.058	0.054	0.056	0.050	0.059	0.056	0.058	0.049	0.052
Population	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Life Expectancy	-0.004	0.000	-0.008	0.003	-0.014	-0.002	0.002	0.012	0.013
	0.008	0.008	0.009	0.008	0.008	0.008	0.008	0.008	0.008
Polity Score	-0.003	-0.004	-0.004	-0.008	-0.002	0.003	0.003	-0.002	-0.001
	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Unemployment	-0.025***	-0.022***	-0.024***	-0.024***	-0.025***	-0.026***	-0.026***	-0.025***	-0.026***
	0.006	0.006	0.006	0.007	0.007	0.006	0.006	0.006	0.006
Inflation	-0.005***	-0.004***	-0.005***	-0.004***	-0.004***	-0.004***	-0.004***	-0.003***	-0.003***
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
cons	-1.282***	-1.423***	-0.852*	-1.383***	-0.426	-0.231	-0.781*	-1.046**	-1.312***
	0.413	0.437	0.429	0.451	0.345	0.341	0.404	0.457	0.453
Obs.	79	79	79	79	79	79	79	79	79
adj. R^2	0.367	0.386	0.330	0.387	0.350	0.438	0.460	0.485	0.500

Source: Compare Table 1 for data source; calculations by the author.
Note: estimation method: OLS; dependent variable: happiness; robust standard errors in parentheses;
***,**,* denote statistical significance at the 1,5, and 10 percent level.

In column 4, I include the linear and quadratic terms of linguistic diversity. The lowest value of linguistic diversity that is observed in this sample is 0.002. A 0.1-index point increase of linguistic diversity reduces average national happiness by 0.112 index points. The same 0.1-index point increase raises happiness by approximately 0.196 index points if linguistic diversity rises from 0.773 to its highest observed value of 0.873. In column 6, a 0.1-index point increase of religious diversity is correlated to a 0.223-index point lower level of happiness when religious diversity rises from its lowest observed value of 0.004 to 0.104. Increasing religious diversity from 0.760 to its highest value in this sample of 0.860 leads to a 0.179 index points higher happiness.

Up to this point, it could be objected that all variables capture the same phenomenon and that it is therefore redundant to use different measures of social diversity. I include more than one dimension in each of the regressions in columns 7 through 9 of Table 2. If these were indeed all proxy variables for the same underlying phenomenon, not more than one should enter significantly in these regressions. The

on social diversity do not capture other coincidental nonlinearities.

data section revealed that ethnic and linguistic diversity are fairly highly correlated. Therefore, including more than one of these variables causes collinearity which would lead to insignificant results. Thus, religious diversity is included in all remaining regressions. In column 7, ethnic diversity enters together with religious diversity and in column 8, linguistic diversity is included together with religious diversity. Despite the probable multicollinearity issues discussed before, all variables of social diversity are included jointly in the regression of column 9.

I use only the linear term of ethnic diversity in column 7 because the results of column 1 indicate a linear relationship between ethnic diversity and happiness. This finding is supported in column 7. The relationship between religious diversity and average national happiness remains U-shaped. The magnitude of the coefficients resembles those gained in columns 1 and 6 where each dimension was entered separately. When I include the linear and quadratic terms of linguistic diversity in column 8 to check the validity of the results from column 4, the interpretation of the results on linguistic diversity and religious diversity remains the same. Again, the magnitude of the coefficients is very similar in column 8 compared to columns 4 and 6.

In the final column, the three proxy variables for social diversity enter jointly. The results on religious and linguistic diversity resemble closely the results gained in columns 4, 6, and 8. There appear to be a U-shaped relationships between these two measures of social diversity and average national happiness. For both variables, this finding is highly significant. Ethnic diversity enters significantly only at the ten percent level. This might be attributed to collinearity with linguistic diversity. However, the magnitude of the coefficient on ethnic diversity is very similar to those gained in columns 1 and 7. A RESET-test does not reject the null hypothesis that the regression in column 9 is correctly specified (p-value: 0.12). Including the squared term of ethnic diversity leads to insignificant results on the linear and squared terms. The linear term is even positive, which proposes that the chosen specification is correct. A test for joint significance of ethnic and linguistic diversity manages to reject the null hypothesis of no joint significance (p-value: 0.00). Also, a test for joint significance of the two quadratic terms rejects the null (p-value: 0.00) which is further support for the U-shaped relationship.

The results from columns 7 through 9 confirm the results gained from the benchmark regressions in columns 1 through 6. There appears to be a linear and positive relationship between ethnic diversity and average national happiness and a U shaped relationship between happiness and the other dimensions of social diversity, linguistic and religious diversity. Based on the estimated values in column 9 it is possible to calculate the values of linguistic and religious diversity that minimize happiness. The relationship between linguistic diversity and happiness reaches its minimum when linguistic diversity takes on the value 0.373.

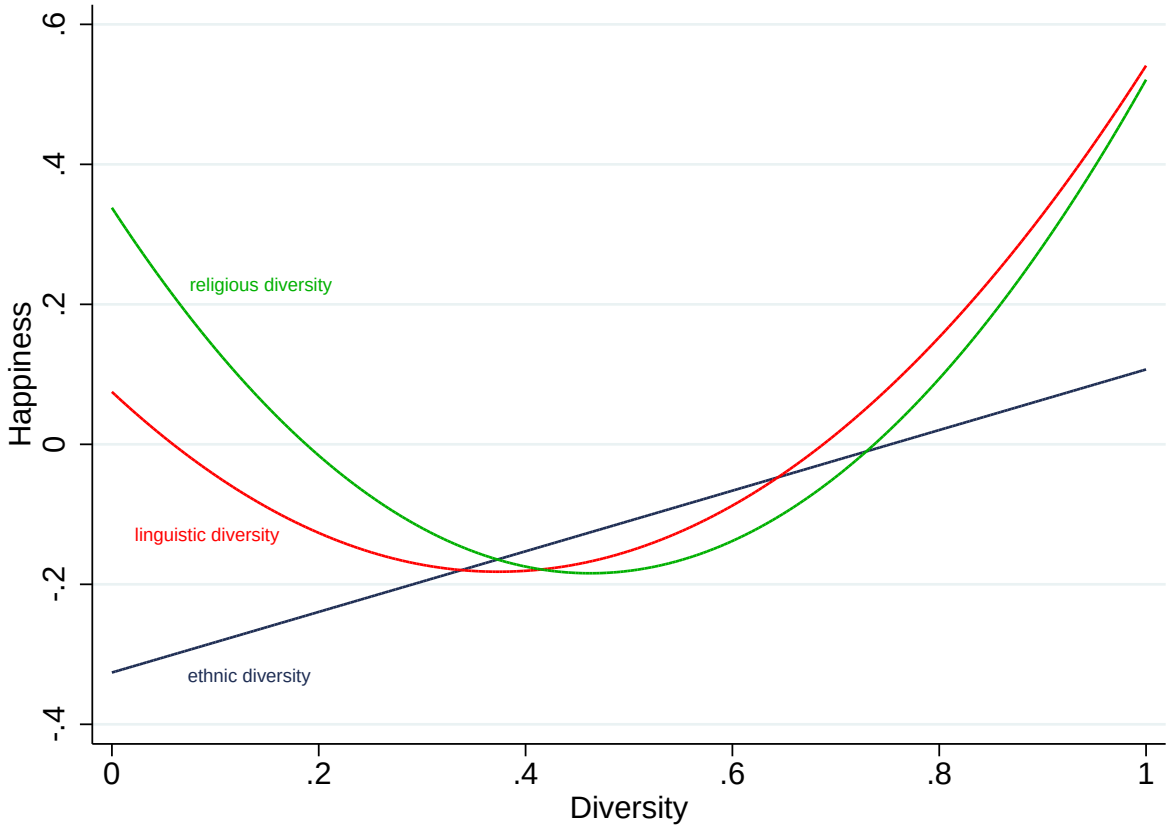


Figure 2: Summary of the main findings in column 9

This is not far from the mean value observed in this sample (0.338), so that the U-shaped relationship is not only of theoretical but of practical relevance. Similarly, the relationship between religious diversity and happiness is minimized when religious diversity takes on the value 0.463. Once again, this value is close to the mean value of religious diversity (0.422). Holding all other covariates constant, happiness would be higher by 0.205 index points in the linguistically most diverse country compared to the most homogeneous country. In contrast, happiness is lower in the religiously most diverse country compared to the most homogeneous country, by 0.128 index points. Figure 2 summarizes the findings from column 9.

Figure 2 illustrates the relationships between the different dimensions of social diversity and happiness. The intercept is calculated at the mean values of the covariates, the slopes are extracted from the results in column 9. The findings from the regressions are easily traceable in this picture. We find the linear and positive relationship between ethnic diversity and happiness and the U-shaped relationships between happiness and linguistic and religious diversity. The value that minimizes happiness is slightly larger for religious diversity than for linguistic diversity. Happiness is higher in the linguistically most diverse country

compared to the most homogeneous country. In contrast, at the highest value of religious diversity (0.86) happiness is lower than in the most homogeneous country.

For linguistic diversity, we can observe that the rising part of the U appears to be steeper than the decreasing part. To draw conclusions whether the increase in happiness is faster after the minimum has been reached than the decrease before, I calculate the derivations at the $10^{th}, 25^{th}, 75^{th}$ and 90^{th} percentile of the distributions of linguistic and religious diversity. Concerning linguistic diversity, the decrease at the 25^{th} percentile is faster that the increase at the 75^{th} percentile (-1.026 compared to 0.628), whereas the increase is faster than the decrease at the tails of the distribution. The derivation equals 1.373 at the 90^{th} percentile compared to -1.26 at the 10^{th} percentile. The falling part of the U-shaped relationship between religious diversity and happiness is steeper than the rising part (-1.238 at the 25^{th} percentile compared to 0.748 at the 75^{th}, and -1.638 at the 10^{th} percentile compared to 1.335 at the 90^{th}). It appears that the increase in happiness at high levels of linguistic diversity more than offsets the decrease at low diversity. However, concerning religious diversity, the increase in happiness at high levels of diversity is not sufficient to make up for the loss in happiness that occurs when diversity begins to increase from originally low levels. Only at very high levels of religious diversity that we do not observe in the data, happiness would finally be higher than in the most homogeneous country.

The results in the lower panels largely confirm earlier findings from happiness research. Concerning the Easterlin (1973, 1974, 1995) paradox, I find that higher levels of income tend to increase happiness[5]. Income, which is higher by one logarithmic point, correlates to higher levels of average national happiness by 0.11 to 0.21 points. This finding is statistically significant at the one percent level in columns 1 through 5 and at the five percent level in columns 6 through 9. Income which is higher by one standard deviation increases happiness by 0.133 to 0.248 index points, or by 32% to slightly more than half a standard deviation. The findings on unemployment and inflation also confirm earlier findings (compare e.g. di Tella et al., 2001). Both variables have a significant detrimental effect on average happiness. An increase in unemployment by one standard deviation is correlated with a reduction of happiness by approximately one third of a standard deviation, an increase in the inflation rate by one standard deviation decreases happiness by one fourth of a standard deviation. Population size, life expectancy as a proxy variable for average national health, and the Polity Score as a proxy variable for democratic institutions do not appear to be significantly related to happiness.

I repeat the regressions from Table 2 with life satisfaction as dependent variable instead of happiness. The results are presented in Table A1 in the appendix. Since the main insights are very similar and to

[5]This finding is in line with e.g. Deaton (2008), Sacks et al. (2010), and Stevenson and Wolfers (2008).

save space I do not discuss them in their entirety but only highlight the differences. Linguistic diversity enters negatively if the quadratic term is excluded from the regressions (column 3). However, this finding is again not statistically significant. The well-known U-shaped pattern emerges in column 4 when the quadratic term is included, and as before happiness is higher in the most diverse country compared to the most homogeneous country, if all else is held constant.

Column 5 reveals the most important difference between Tables 2 and A1. The linear coefficient on religious diversity enters significantly at the one percent level. Religious diversity, which is higher by 0.1 index points, is now correlated with a reduction in life satisfaction of 0.042 index points. This implies that life satisfaction would be lower, ceteris paribus, by 0.360 index points in the most diverse country compared to the most homogeneous country. Including the quadratic term delivers a similar result. The difference amounts to 0.330 points in column 6.

The regressions from columns 7 through 9 largely support the results from Table 2. Concerning religious diversity, it is not entirely resolvable if the relationship with life satisfaction is better described by the U-shaped pattern or by a linear negative relationship. In column 9, the linear term is only significant at the ten percent level and the squared term is not significant at all. Excluding the squared term delivers a negative coefficient on religious diversity that is significant at the five percent level. The magnitude of this coefficient is similar to the one estimated in column 5. The adjusted R^2 is very similar in both estimations. However, a RESET test of column 9 when the squared term of religious diversity is excluded does not reject the null that the model is correctly specified (p-value: 0.87). This hints in the direction that the relationship between religious diversity and life satisfaction might be linear and negative rather than U-shaped. A final remarkable finding is that the coefficient on ethnic diversity is somewhat larger in column 9 compared to columns 1 and 7 and also compared to Table 2, and it is significant at the one percent level.

In a short summary, the results display the following. Ethnic diversity has a positive linear relationship with happiness and life satisfaction. The relationships between the remaining variables of social diversity and happiness follow a U-shape, even when more than one dimension of social diversity is included. The relationship between religious diversity and life satisfaction as dependent variable is less clear. The rising part of the U appears to be missing in this case. The remaining results are in line with earlier research. The log of income is positively related to happiness and life satisfaction, unemployment and inflation have detrimental effects on well-being. Population size, life expectancy and the Polity Score do not enter significantly.

4 Discussion

Linguistic and religious diversity reveal U-shaped relationships with happiness. People appear to be happy in either a very homogeneous or a very diverse society. A possible explanation for this remarkable finding is the formation of a common identity. The psychological literature, starting with Tajfel (1970), proposes that a common identity is essential for the smooth functioning of a society. If people share the same values and norms, there is a lower probability for social tensions[6]. It is easier for the population to compromise on values and norms in homogeneous societies because there are no obvious differences within the group. If more or less everyone speaks the same language and adheres to the same faith, people feel close to each other and form a common identity. This results in the so-called smooth working society. There is reason to assume that this will lead to high levels of subjective well-being within the population.

When diversity starts to rise from originally low levels, something formerly alien has to join the homogeneous population. This could be the result of immigration of people with different linguistic and religious backgrounds or due to the fact that different churches start to offer their services and attract parts of the population to switch to their belief. People that speak a different language or adhere to another religion may be eyed suspiciously by the society. On the one hand, this will probably lead to lower levels of well-being in the minority group. This effect will become stronger, if minority groups are discriminated against by the ruling majority.

On the other hand, people of the majority group may feel a form of insecurity because they do not know the rituals and norms of those that speak another language or practice another religious faith. This phenomenon is known as 'group threat' in the social science literature[7]. The majority feels a threat to their dominant economic and political position within the society. This threat causes insecurity which will reduce subjective well-being, especially in the threatened majority group. Bisin et al. (2010) point out that people prefer to separate themselves from groups that have another culture. Hence, it is impossible to form a common identity based on values and norms and following the argumentation above, a reduction of subjective well-being is the consequence. Furthermore, the separation into distinct groups may even cause distrust or rivalry, especially if one or more of these groups feel oppressed by the majority. Civil tensions might follow which are very probably another source of reductions of subjective well-being.

I find a positive relationship between diversity and happiness if diversity within the society is originally sufficiently high. I propose the following interpretation for this result. Diversity above an index value of 0.5 implies a reduction of polarization. The population is constituted of a large number of different

[6] Montalvo and Reynal-Querol (2005a) show that the probability for civil conflict rises with diversity and polarization.
[7] Compare, e.g. Coenders (2001), McLaren (2003), Quillian (1995), Schneider (2008).

groups. This may connote that the group threat decreases, either because there is no obvious majority that may feel threatened, or because there is no powerful enough minority that can be the cause of the group threat. In addition, at some point, people from the majority will have to establish contact with those from the minority. This will decrease prejudices and intergroup rivalry[8]. If people realize that they can live together in harmony with others that speak a different language or perform different religious rituals, further increases of diversity may be attributed to an open and tolerant society. The population does not weigh cultural differences as high as they do if only small minority groups represent deviant norms. Once contact between the different groups is established, people understand each other and do not feel threatened by differing religious beliefs or languages. Rather, people may identify with each other on a broader base which reduces the importance of linguistic and religious differences. Thus, a common identity in a tolerant society leads to higher levels of average well-being across the whole population.

It is important to note that happiness reaches its minimum at levels of diversity that are close to their respective mean values. Hence, the results do not just impose a theoretical relationship but are of practical relevance for policy makers. Governments that propagate the desirability of diversity, such as the EU, will have to take into account that the population might feel uneasy about rising diversity, if the original level of diversity is low. The confrontation with the formerly unknown may lead to lower levels of well-being in the transition period. From some point onwards, people will feel comfortable in diverse societies and their levels of well-being will increase again. It appears that both the group threat and the contact theory are in force at the same time, but that one effect dominates the other. At low levels of diversity, an increase thereof will establish a threat to the majority's position. This reduces subjective well-being in the society. At some point, the different groups get into contact which reduces prejudices. Once people realize that there is no obvious threat, the group threat effect diminishes and the positive effect of the contact theory outweighs the negative consequences of group threat insecurity. This results in the U-shaped relationship between social diversity and subjective well-being which is the main finding of this study.

A noticeable deviation from this interpretation appears in Table A1. Although happiness and life satisfaction are often used interchangeably in the literature, the results on religious diversity display differences. Life satisfaction and religious diversity appear to be linearly and negatively related rather than U-shaped. At the very least, the increase of life satisfaction is less pronounced than that of happiness at high levels of religious diversity. There is reason to assume that life satisfaction is a more long-term phenomenon of well-being, whereas happiness might reflect more short-term feelings. Religious diversity appears to have a stronger negative effect on life satisfaction than other forms of social diversity. Concerning the argu-

[8] Pettigrew (1986) suggests that interethnic contact reduces prejudices against minorities. Weins (2011) compares the group threat and contact theories with regards to prejudices against foreigners in Germany and finds that contact is important to reduce prejudices.

mentation regarding diversity enhancing policies, it may be objected that high levels of religious diversity appear to have detrimental effects on the longer term factor of subjective well-being. We cannot entirely resolve the question on the relationship between religious diversity and life satisfaction with the available data. However, the finding stands that life satisfaction is lower in the religiously most diverse country compared to the most homogeneous country if all else is held constant.

Interestingly, ethnic diversity does not reveal the U-shaped relationship with well-being. Independent of the choice of the dependent variable, higher levels of ethnic diversity increase average well-being. Ethnic differences appear to be no similar source of insecurity as linguistic or religious diversity. Rather, a cohabitation of people of different ethnicities might be attributed to the tolerance within the society. The difference between ethnic diversity and other forms of social diversity could be an outlet for further research.

It shall not remain undiscussed that the findings on the additional covariates support earlier findings from happiness research. High levels of unemployment and high inflation rates decrease subjective well-being, the results are stable throughout all estimations. It is not the aim of this paper to contribute to the discussion on the relationship between income and subjective well-being. Easterlin (1973, 1974, 1995) argues that after a satiation point has been reached, further increases in income do not lead to higher levels of happiness. Other studies find a positive effect of the log of income on subjective well-being. The results of the present study are in line with these findings, as there appears to be a robust positive relationship between the log of income and well-being.

5 Conclusion

The European Union propagates the benefits of diversity for the population within the Union. However, economic studies have proven that high levels of diversity within a society can lead to less favorable outcomes in terms of income, public good provision, or civil stability, which will result in lower levels of well-being within the population. The present study evaluates empirically the direct relationship between diversity and subjective well-being. Diversity is observed from different angles, using information on ethnic, linguistic, and religious diversity. Data on happiness and life satisfaction are taken from the World Values Survey and serve as the dependent variables. The analysis takes into account that there might be a non-linear relationship between diversity and well-being.

I find that ethnic diversity has a linear and positive relationship with subjective well-being. However, the relationships between linguistic and religious diversity and happiness follow a U-shape. Higher levels of diversity correlate with low happiness and life satisfaction when diversity is originally low. The relationship

becomes positive only when diversity within a society is already sufficiently high. Values of diversity that are close to their respective means, minimize happiness. Remarkably, the relationship between religious diversity and life satisfaction may also be linear and negative, rather than U-shaped. At least, life satisfaction is significantly lower in the religiously most diverse country compared to the most homogeneous country, if all other covariates were held constant.

The formation of a common identity is essential for the smooth functioning of a society. People have little problems in forming a common identity in very homogeneous societies where everyone follows the same values and norms. At intermediate levels of diversity, people may feel threatened due to the existence of groups that speak other languages or adhere to different faiths. They form distinct groups and cannot form a common identity which results in lower well-being. Once the population realizes that it can live together in harmony with people from different backgrounds, further increases of diversity may be attributed to an open and tolerant society. People identify with each other on a broader base than linguistic or religious differences which in turn leads to higher levels of well-being. It appears that 'group threat' and contact effects are in force at the same time, but that one effect always dominates the other.

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Appendix

Table A1: OLS regression results, dependent variable: life satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ethnic Diversity	0.397**	-0.396					0.403**		0.686***
	0.183	0.736					0.178		0.232
Sq. Ethnic Div.		1.065							
		0.940							
Linguistic Diversity			-0.133	-1.466**				-1.187**	-1.530***
			0.182	0.634				0.639	0.566
Sq. Linguistic Div.				1.833**				1.512*	1.523**
				0.749				0.765	0.724
Religious Diversity					-0.421***	-1.687**	-1.498**	-1.617**	-1.242*
					0.156	0.740	0.724	0.676	0.648
Sq. Religious Div.						1.506*	1.239	1.535**	1.068
						0.817	0.810	0.743	0.744
Log of GDP p.c.	0.230***	0.224***	0.227***	0.214***	0.245***	0.201***	0.213***	0.185***	0.204***
	0.063	0.060	0.062	0.055	0.065	0.065	0.066	0.059	0.061
Population	0.000	0.000	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Life Expectancy	0.004	0.007	-0.004	0.006	-0.006	0.001	0.005	0.008	0.010
	0.009	0.008	0.010	0.008	0.010	0.010	0.010	0.009	0.009
Polity Score	0.000	-0.000	-0.000	-0.004	0.002	0.005	0.005	0.002	0.004
	0.007	0.006	0.007	0.006	0.007	0.006	0.006	0.006	0.006
Unemployment	-0.021***	-0.019***	-0.020***	-0.020***	-0.021***	-0.022***	-0.022***	-0.022***	-0.023***
	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005
Inflation	-0.005***	-0.004***	-0.005***	-0.004***	-0.004***	-0.004***	-0.004***	-0.003***	-0.003***
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
cons	-2.288***	-2.376***	-1.464***	-1.952***	-1.378***	-1.267***	-1.862***	-1.585***	-2.049***
	0.394	0.370	0.477	0.381	0.352	0.348	0.355	0.419	0.318
Obs.	79	79	79	79	79	79	79	79	79
adj. R^2	0.502	0.504	0.479	0.516	0.519	0.536	0.557	0.553	0.601

Note: estimation method: OLS; dependent variable: life satisfaction; robust standard errors in parentheses; ***,**,* denote statistical significance at the 1, 5, 10 percent level.