

**YOUNG ECONOMISTS' SEMINAR to
15th Dubrovnik Economic Conference**



Organised by



Lana Malešević Perović and Silvia Golem

**Investigating Macroeconomic Determinants of
Happiness in Transition Countries: How
Important is Government Expenditure?**

Hotel "Grand Villa Argentina",
Dubrovnik
June 24, 2009

Draft version

Please do not quote

Investigating Macroeconomic Determinants of Happiness in Transition Countries: How Important is Government Expenditure?

Lena Malesevic Perovic, PhD

University of Split

Faculty of Economics

Tel: + 385 21 430 683; Fax: + 385 21 430 701

E-mail: lena@efst.hr

Silvia Golem, MA

University of Split

Faculty of Economics

Tel: + 385 21 430 673; Fax: + 385 21 430 701

E-mail: sgolem@efst.hr

Abstract

This paper analyses macroeconomic determinants of happiness in transition countries. We combine the data from surveys about happiness and macroeconomic data, focusing foremost on government expenditure. We find that government expenditure significantly and non-linearly influences happiness in transition countries. Unemployment and GDP per capita are found to be insignificant in their impact. Inflation is significant; however, its impact is positive, which is contrary to expectations. Our research further shows that successful women care more about government expenditures than unsuccessful men.

Key words: *happiness, transition countries, government expenditure*

1. Introduction

Economists and policy-makers usually presume that aggregate economic variables matter to people. For example, GDP growth is presumed to be the ultimate goal of economic policy. Consequently, if it is achieved, the public should appreciate it and reward the policy-makers by re-election. However, relatively little is known about how people truly feel about macroeconomic data, i.e. how it affects their happiness. As Di Tella and MacCulloch (2006: 25) note: “Economists are trained to infer preferences from observed choices; that is, economists typically watch what people do, rather than listening to what people say. Happiness research departs from this tradition”. This is the approach adopted in this paper. Namely, we use the international data on the reported happiness levels of thousands of individuals in transition countries. Besides analysing the typical socio-demographic (microeconomic) variables, we also investigate the influence of macroeconomic variables on happiness. Namely, happiness surveys do not directly ask people whether they like, say, inflation. Instead, respondents are (only) asked how happy they feel, but by analysing jointly their answers and macroeconomic variables, without the respondents knowing this, it can be shown that these answers move systematically with, for example, their national price level. It should be noted that there is no comprehensive theoretical framework that would point to particular macroeconomic variables that are important for happiness. Much of the progress in the specification of decisive determinants of people’s happiness is due to empirical advancements. The macroeconomic variables we investigate include inflation, unemployment, GDP per capita and government expenditure. Among this set of variables our research especially focuses on the latter. This is because, firstly, there are reasons to believe that the size of government directly influences happiness. However, this variable seems to be omitted from most happiness research. Secondly, those papers that do include this variable are inconclusive in terms of the direction of this influence; are focused mainly on developed economies or do not explicitly differ between countries with different levels of development (such as transition countries) and have not considered the non-linear treatment of this variable.

This paper is organised as follows. Section 2 gives an introduction to happiness functions; section 3 provides a literature review of studies that investigate either happiness in transition countries or macroeconomic determinants of happiness; section 4 explains our choice of macroeconomic variables in the happiness equation, with special emphasis on

government expenditure, while section 5 contains our own empirical investigation of the impact of macroeconomic variables on happiness in transition countries. Section 6 concludes.

2. Happiness functions

In happiness studies people are, through surveys, directly asked about their subjective well-being¹, instead of indirectly estimating utility. Traditionally, economists assume that people's choices reveal their preferences. If one chooses A over B, then, by definition, the utility of A is greater than the utility of B. From this economists derive the so-called decision utility. However, in recent years attention has been paid to alternative approach to utility; the so-called experienced utility. Experienced utility refers to the desirability of the experience of an outcome. Orthodox economics typically assumes that decision utility and experienced utility are the same. Psychologists believe that the extent to which decision utility corresponds to experience utility varies across situations and individuals. Introspection and empirical research indicate that there are cases in which people choose A over B but are 100 percent sure in retrospect that the experience of B would have been more desirable than the experience of A. The existence of regret in life and in the laboratory can be viewed as empirical evidence that contradicts the orthodox economic definition of utility. Economic theory assumes that decision utility of A higher than decision utility of B implies that the experienced utility of A is greater than experienced utility of B. However, in the real world, it is possible that the decision utility of A is greater than the decision utility of B and the experienced utility of B is higher than the experienced utility of A (Frisch, 2003). An implicit assumption underlying empirical analysis of happiness functions, hence, is that survey measures of happiness are closer to experienced utility than to the decision utility of standard economic theory (Di Tella et al., 2003).

The most commonly asked question in these types of surveys is "Taking all things together, would you say you are: 1 – very happy, 2 – quite happy, 3 – not very happy, 4 – not at all happy"². These answers are then used as the dependent variable in happiness equations. Therefore, given that the dependent variable can have more than one value, and given that the answers are ordinal rather than cardinal, these kinds of models are usually estimated through ordered probit or logit models. In terms of econometric analysis, happiness is analysed against

¹ The terms well-being, life satisfaction and happiness are often used interchangeably, as empirically they seem to measure a very similar concept (Hayo, 2004).

² In our empirical work we code these answers differently: 4 – very happy, 3 – quite happy, 2 – not very happy, 1 – not at all happy.

a set of micro and macro factors. A typical micro-econometric happiness equation has the standard form: $H_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$, where H is the reported happiness of individual i in time t , and X is a vector of socio-demographic and economic characteristics hypothesised to affect happiness. The error term captures unobserved characteristics and measurement errors (Graham, 2005). Among the macro factors, the usually included variables comprise the unemployment rate, inflation, GDP per capita and/or growth, and unemployment benefits or a measure of income inequality.

Since the main use of happiness functions in economic analyses is not to compare levels of happiness in absolute terms, but rather to investigate the determinants of happiness, Frey and Stutzer (2002) conclude that subjective data can be treated ordinally in econometric analysis. Therefore, it is not necessary in these cases to assume that reported subjective well-being is cardinally measurable. They, furthermore, argue that ordinal and cardinal treatments of life satisfaction generate quantitatively very similar results in microeconomic happiness functions. All of the above suggests that reported subjective well-being or happiness is a satisfactory approximation of individual utility.

3. Literature review

The literature on the economics of happiness has been steadily growing during the last few years. The relevance of happiness research for economists has been discussed in two summary articles, namely Di Tella and MacCulloch (2006) and Frey and Stutzer (2002). In what follows we make no attempt to survey the vast literature but rather analyse only those papers that analyse either countries in transition or macroeconomic determinants of happiness. The microeconomic variables used in much of the existing literature include: gender, marital status, income group, employment status, education and age variables. Typical findings are that happiness is higher for women, married people, more educated people, those with higher income, the young and the old (U-shaped in age) and the self-employed (Blanchflower, 2007). Macroeconomic variables are rarely included as explanatory variables and few papers focus on transition countries.

Sanfey and Teksoz (2005) analyse the impact of individual-specific and economy-wide variables on self-reported satisfaction. The macroeconomic variables they use are: GDP per capita, inflation, unemployment and the Gini coefficient that measures the impact of income inequality on satisfaction. They analyse both transition and non-transition countries in

the period 1999-2002 (the fourth wave of the World Values Survey). In the transition subsample, inflation, GDP per capita and the Gini coefficient exert a significant effect on the dependent variable. An unexpected finding is that inflation seems to influence life-satisfaction positively. GDP per capita also has a positive impact, whereas the Gini coefficient exerts a negative impact. The unemployment variable is not statistically significant.

Di Tella et al. (2003) analyse the impact of macroeconomic variables on happiness. The authors find evidence that both the level of GDP and the change in GDP affected nation's happiness in Europe in 1975-1992. The effect of GDP growth on life satisfaction is in line with the so-called adaptation theories that state that the benefits of higher income fade with time. As regards other macroeconomic variables, Di Tella et al. additionally include unemployment rate, inflation and an indicator of the generosity of the welfare state, all of which are found to be significant at conventional levels, and of expected signs.

Di Tella et al. (2001) find that, in twelve European countries over the period 1975 to 1991, people would trade-off a 1 percentage point increase in the unemployment rate for a 1.7 percentage point decrease in the inflation rate. Their finding is that, unlike the "misery index" that attaches equal weight to both inflation and unemployment, the coefficient on inflation is smaller; hence unemployment might be more important, i.e. a higher weight is put on it, given the prevailing unemployment and inflation rates. This, however, depends on the equation specification, and should, hence, not be over-interpreted.

Wolfers (2003) investigates the link between happiness and business cycle variations in unemployment and inflation. He uses the Eurobarometer survey for 16 countries in the years 1973-1998. The results suggest that the inflation-unemployment trade-off is one to five; i.e. that people would be indifferent between raising unemployment by 1 percentage point and raising inflation by 5 percentage points.

Blanchflower (2007) analyses both micro and macro determinants of happiness in twenty-five OECD countries. The macroeconomic variables used in this paper include unemployment, inflation, GDP per capita and interest rate, depending on the specification used. Blanchflower finds that inflation, unemployment and interest rates affect happiness significantly and negatively. GDP per capita is found to be important only in poorer countries. His estimates also imply that a one percentage increase in the unemployment rate diminishes happiness more than the same change in the inflation rate does. This trade-off is found to be one to 1.62.

Malesevic Perovic (2008) analyses the impact of macroeconomic determinants on subjective economic well-being in a set of eight transition countries in the period 1991-1998.

She finds that inflation, unemployment and GDP (level and growth) influence well-being significantly. Unemployment is found to be more important than inflation from public's point of view. In addition, both GDP per capita and GDP growth influence subjective economic well-being positively, indicating that improvement in national income lead to both temporary and permanent gains in national happiness in transition countries.

We next review empirical literature that especially focuses on one macroeconomic variable - government expenditure in more detail, since this is our main variable of interest. Bjornskov et al. (2007) investigate primarily the effect of government size on life satisfaction in a cross-section of 74, mainly developed countries. Their baseline empirical specification includes the level of GDP, social trust, the price of investment goods, country's openness and a dummy for post communist countries. They additionally include different measures for the size of government; namely, capital expenditures, transfers and subsidies and, as a special variable of interest, the share of government consumption in GDP. The authors find a negative relationship between life satisfaction and government consumption spending. For low, middle income males, this result is stronger when the government is leftwing, while government consumption seems to be less harmful for women when the government is perceived to be effective. Additionally, they find statistically insignificant effect of capital formation and, more surprisingly, welfare spending on life satisfaction. Regarding the results of other macroeconomic variables, national income proved to have insignificant effect on life satisfaction, while all other variables are found to exert statistically significant effect of the expected sign.

Ram (2009) replicates the analysis carried out by Bjornskov, Dreher and Fischer (2007), employing a broader cross-country sample of transition, developed, African and Latin American countries. Apart from the Penn World Table, the data on macroeconomic variables are taken from the International Comparison Program, while life satisfaction data come from different sources. Contrary to Bjornskov et al. (2007) results, Ram (2009) finds statistically significant positive relationship between government consumption and happiness. Additionally, his results indicate a positive association between national income and happiness.

Kacapyr (2008) investigates different macro and micro variables that impact life satisfaction in the cross-country sample of 63 countries in the 1990s. After testing for different specifications of the happiness function, the author finds that one of the most appropriate models includes a dummy variable for war, the inflation rate, the unemployment rate, an indication of people's health condition, spirituality and gender equality. The ratio of

government spending to GDP proved to be statistically insignificant determinant and is excluded from the happiness regression. However, the simple correlation coefficient indicates a positive, though quite negligible, association between the share of government in the economy and life satisfaction.

4. Macroeconomic variables and happiness

In this section we discuss the country-level variables that will be included in our happiness functions. There exists a broad consensus regarding the micro variables that should be included in these functions, while there is a gap in the literature with respect to the choice of macroeconomic variables. We next present the four variables that will be included in our happiness equation. These are unemployment, inflation, GDP per capita and government expenditure. They are especially interesting to study since they can be influenced by economic policy.

Unemployment

In those studies that do include macroeconomic variables when explaining happiness, the variable frequently used is the unemployment rate in the country of interest. When thinking about the way unemployment and inflation affect the economy we could start by citing the former President of the USA, Gerald Ford: “After all, unemployment affects only 8 percent of the people while inflation affects 100 percent” (from Hibbs, 1979: 708). This is an interesting claim. However, a much larger part of the labour force is affected by unemployment than the rate itself might imply. Besides households affected directly, a large number of people are aware of it, since it affects their relatives, friends and colleagues and their own job security. Moreover, higher unemployment rates increase welfare expenditures that need to be financed through increased taxes. Increased taxes directly lower the well-being of tax-payers, i.e. those employed. Additionally, the average duration of unemployment in the USA is relatively short. Therefore, more than the above-mentioned 8 percent of people experience unemployment during the year. Therefore, we can justifiably assume that unemployment impacts both on the unemployed and the employed. Frey and Stutzer (2002) note that unemployment can affect the happiness of the employed because they may feel bad about the unfortunate fate of those unemployed, may fear that they themselves would become unemployed, or may dislike the increase in their unemployment contributions and taxes. The

main fear of those unemployed is that of not becoming employed. Winkelmann and Winkelmann (1998) note that the non-pecuniary effect of unemployment is much larger than the effect that stems from the associated loss of current income. Paul (2001) observes that unemployment, besides reducing income, also degrades human skills and causes social isolation.

Inflation

Shiller (1996) conducted a survey to investigate public attitudes towards inflation. The results indicated that people have explicit opinions about the mechanisms and consequences of inflation, and that these opinions differ across countries and between generations in both the USA and Germany. The survey, furthermore, implied that the population does not perceive inflation in the same way economists do. Therefore it is crucial that we include inflation as one of the macroeconomic determinants of happiness, since it plays an important role in the public's view.

In people's perception the impact of inflation may not be the same at all inflation rates. Namely, as inflation increases and exceeds some psychological threshold, people not only start taking it into account more than before, but might even unduly exaggerate the effect of inflation because of their fear of hyperinflation. This is especially true for people in transition countries who have had previous negative experience with high inflation rates. Thus, we might argue that it is fear of hyperinflation and not aversion to stable inflation that matters for happiness. It seems likely then that inflation would play a more important role in analyses of those transition countries that experienced a period of hyperinflation. All the studies undertaken so far have analysed either developed economies (Di Tella et al., 2003, analyse 12 European countries 1975-1992 and the USA 1972-1994, Blanchflower investigates 25 OECD countries 1973-2006) or transition economies at later stages of transition (Sanfey and Teksoz, 2005, analyse the period 1999-2002). The inflation rates in both cases have been relatively low. To be more precise, 12 European countries in the period under investigation never experienced an inflation rate higher than 25 percent, and for most of the time it was lower than 15 percent. In the USA the inflation rate never exceeded 14 percent. Therefore, we could argue that there was no "opportunity" for inflation to exert its full effect on happiness in that particular period, since inflation never reached hyperinflation levels. It is this level that illustrates inflation's effect on well-being most profoundly, because of its psychological effects. Hence, an analysis of the impact of macro variables on welfare should ideally also include periods of high inflation in order to assess its effect on well-being.

Gross domestic product (GDP)

Economists usually assume that higher GDP increases happiness. Consequently, utility is presumed to be an increasing function of GDP. However, psychologists disagree. The impact of GDP on happiness is typically observed between countries, over time and between individuals within the same country. People in rich countries are generally found to be happier than people in poor countries. To be more precise, the literature has established that happiness increases with income for low-income countries. Consensus has not as yet been reached on whether there is a point beyond which additional increments in GDP per capita are associated with no change in happiness. Furthermore, the observed positive correlation between GDP and happiness across countries might not all be attributable to higher income. There are other factors such as democracy, human rights, health and distributional equity that may make happiness rise with income. Easterlin's (1974) seminal paper investigates the relationship between happiness and GDP over time. In the period 1946-1991 it was shown that, even though real per capita GDP increased in the USA, the average happiness dropped (Frey and Stutzer, 2002a). This is usually explained through changing aspirations, whereby people change their aspirations as their income rises, hence an increase in income does not result in a proportionate increase in happiness. Finally, rich people need not necessarily be happier than the poor ones within the same country. What is found to matter the most from an individual's perspective is his/her relative income position. Namely, individuals do not value absolute income, but rather compare it to the income of relevant others (their reference group) (Frey and Stutzer, 2002a).

All in all, GDP variable should be included in the happiness equation in two ways. Firstly, inclusion of the income group, that an individual pertains to, will allow us to assess the impact of one's relative income position. In addition, we should also account for a general level of income of the population, by including GDP per capita as an additional variable.

Government expenditure

Since this is our main variable of interest we analyse it in more depth. Government involvement in the economy, typically measured by the share of government expenditures in national output, might influence the subjective happiness through various channels and in different directions. Firstly, given that government expenditures are financed partly through taxes paid by the citizens, one can argue that changes in government expenditures directly influence changes in life satisfaction. Citizens prefer lower taxes in order to have higher

disposable income, which increases their happiness. This would suggest a negative relationship between government size and happiness. However, at the same time, people are prepared to tolerate higher tax burdens because they believe that certain public goods and services, provided by the government, substantially increase the quality of their lives and ultimately, their happiness. In this case, people's happiness could be increased by shifting resources from the largely competitive private consumption to items of public spending, as argued by Ng and Ng (1998).

The public choice literature depicts government as a monolithic leviathan, who will seek to maximise revenues and increase its dimensions, through excessive rates of taxation, debt or money creation (Brennan and Buchanan, 1980). Within this strand of literature, state intervention is viewed with tremendous suspicion, as prone to inefficiency, corruption, and rent-seeking. Following the work of Niskanen (1971), many authors have argued that the strength of the bureaucracy is an important force which may possibly lead to increasing government size. The basic assumption of the model is that bureaucrats will seek to increase their budgets, above the level desired by those whom they supply; namely, legislature and citizens. The extra revenue extracted this way could be used to offer higher salaries, more staff, more perquisites etc., all of which might make bureaucrat's life more pleasant (Muller, 2003). This model of monopoly bureaus is, in effect, consistent with the Leviathan model assuming 'excessive' governments.

On the other hand, the 'Pigovian' or classical view sees government as a benevolent actor striving to correct for the market failures. Up to date, within the economic literature, the most common explanation of the existence of governments refers to the incompleteness and non-existence of markets. These shortcomings are due to natural and other monopoly situations, imperfectness or asymmetry of information, or they are connected to the characteristics of the commodities produced by the public sector (Hjerpe, 2003). From this point of view, government intervention is beneficial. Governments ensure national defence, institutional framework and judicial systems that protect private property and individual rights. In this way, governments provide a framework for dynamic, efficiency-enhancing market competition. Furthermore, governments stimulate socio-economic development through productivity-enhancing public goods and capital investments. Finally, governments bring social justice and contribute to income equality via redistribution of national income.

We acknowledge that public choice literature explanations for the excessive growth of government size might contribute to subjective life dissatisfaction. However, it is unclear why this negative effect of the excess-of-government would exceed the positive effect of public

goods and services, investments and transfers provided by the government. Namely, we hypothesise that government expenditure influences happiness positively up to a certain threshold³, and negatively afterwards. To clarify the issue even more, in our opinion the negative effect of government expenditure on happiness stems only from the excess/wasteful amount of government expenditure. There is no reason to assume that the ‘useful’ amount of government expenditures also impacts happiness negatively. Because of this we believe it is reasonable to include both the level and the square of the government expenditure in the regression, in order to test whether the relationship between these expenditures and happiness is inversely U-shaped.

As a practical note, it should be stressed that within the literature there is a particular concern as how to define and properly measure the public sector size. This is where the difficulties begin, as there is no clear-cut answer as to what the public sector is. Papers on the topic typically use data on government consumption only, due to poor quality and frequent methodological changes of data on government investments, welfare spending, subsidies and transfers. The latter would reflect the size of public sector more precisely, but do to data limitations in our empirical analyses we also use just government consumption.

5. Empirical analysis of the impact of macroeconomic variables on happiness

In this section we empirically investigate the determinants of happiness in a set of 13 transition countries with special attention given to country-level - macroeconomic determinants.

Data description

The data used is from the World Values Survey, waves 3, 4 and 5 and includes the following countries: Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia and Macedonia. The main idea was to investigate macroeconomic determinants of happiness in, rarely analysed, Central and Eastern European countries. These would additionally include Bosnia and Herzegovina and Serbia and Montenegro, but, due to data limitations, we had to exclude the former two countries

³ We do not attempt to assess this threshold in more detail, but rather use this line of reasoning to justify the non-linear inclusion of the government expenditure variable in the regression.

from the analysis. Description of the data sources as well as data definitions is given in the Table 1.

Table 1 Data description and sources

Variable	Source	Description
Happiness	World Values Survey Waves 3, 4 and 5	Taking all thing together, would you say you are: 1: not at all happy, 2: not very happy; 3: quite happy and 4: very happy.
Government expenditure	World Development Indicators, World Bank (2008)	General government final consumption expenditure as a percentage of GDP (annual %)
GDP per capita	World Development Indicators, World Bank (2008)	GDP per capita, PPP (constant 2005 international \$)
Inflation rate	World Development Indicators World Bank (2008)	Inflation, consumer prices (annual %)
Unemployment rate	World Development Indicators World Bank (2008)	Unemployment rate as a percentage of total labour force (Registered).
Male	World Values Survey Waves 3, 4 and 5	Dummy variable that takes the value of 1 for males and 0 for females.
Age	World Values Survey Waves 3, 4 and 5	Age as a continuous variable
Marital status	World Values Survey Waves 3, 4 and 5	Marital status of the respondent: 1: married (or living together as married), 3: divorced, 4: separated, 5: widowed, 6: single. Reference category: married
Education	World Values Survey Waves 3, 4 and 5	Highest educational level attained: 1: no formal education, 2: incomplete primary school, 3: complete primary school, 4 and 6: incomplete secondary school, 5 and 7: complete secondary school, 8: some university-level education without degree, and 9: university-level education with degree. Reference category: no formal education
Employment status	World Values Survey Waves 3, 4 and 5	Employment status of the respondent: 1: full time, 2: part time, 3: self employed, 7: unemployed and 4, 5, 6, 8: out of the labour force (OLF). Reference category: full time employed.
Income on a scale	World Values Survey Waves 3, 4 and 5	In what group a household pertains: group 1 or 2, group 3 or 4, group 5 or 6, group 7 or 8, group 9 or 10. Reference category: group 1or 2.

In order to examine the influence of macroeconomic variables on happiness, it is crucial to understand the core (socio-demographic) determinants of happiness, as otherwise we would face a problem of omitted variables. As noted by Hayo (2004), if one finds that similar determinants that are found to be important for life satisfaction in Western countries affect happiness in transition countries, one can use these models as a control framework for testing the influence of other variables on happiness. Indeed, Hayo finds in his analysis of transition countries that even in the early stage of transition, the most turbulent one, the same determinants as in developed countries exerted a significant effect on happiness.

For macroeconomic variables we use the same data sources (the World Bank's *World Development Indicators*) for all countries for the sake of consistency. All the data on micro variables is converted into dummies (except for the age variable). Age is, in these types of models, usually entered in levels as well as in squares to take account of the U-shaped

relationship between happiness and age (Frey and Stutzer, 2002a; Oswald, 1997). Summary statistics of all (micro and macro) variables are given in Table 2.

Table 2 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Happiness	30057	2.72	0.71	1	4
Sex	30820	1.52	0.49	1	2
Age	30803	44.87	16.85	17	101
Education	30649	4.64	2.16	1	9
Marital status	30689	2.48	2.08	1	6
Employment status	30543	3.14	2.17	1	8
Income scale	26468	4.52	2.50	1	10
Gen. govt. exp.	30828	17.72	5.87	5.69	27.78
Inflation	30828	47.81	192.27	0.54	1058.37
Unemployment	30828	12.79	6.66	5.8	34.5
GDP per capita	30828	10520.81	4422.48	3631.99	23010

We additionally control for country and time fixed effects by including dummies for each country and wave under investigation (the reference country is Croatia; and the wave 3). Country dummies capture various unchanging influences on reported happiness within nations, while the wave dummies capture any global shocks that are common to all countries during each wave of surveys. We pool repeated randomly selected samples from the three waves into a single dataset. It should be noted, however, that we do not have the data for each country in each wave. Altogether 28 different combinations of countries and waves exist⁴, meaning that we have 28 values of each macroeconomic variable. The reason we do not have 13(countries)*3(waves) = 69 different combinations of countries and waves is that either education or employment variable is missing in certain years, and these are important control (micro) variables. Another reason is that in some countries the surveys were not undertaken in certain years (especially wave 5).

The model we use is given below:

Equation 1

$$HAPPY_{ijt} = Intercept + X_{ijt}\alpha + MACRO_{jt}\beta + \varepsilon_i + \lambda_t + \mu_{ijt}$$

⁴ The data is available for Albania (waves 3, 4), Bulgaria (3, 4, 5), Croatia (4), Czech Republic (3, 4), Estonia (3, 4), Hungary (3, 4), Latvia (3, 4), Lithuania (3, 4), Poland (4, 5) Romania (3, 4, 5), Slovakia (3, 4), Slovenia (3, 4, 5) and Macedonia (3, 4).

$$X = \begin{bmatrix} GENDER \\ AGE \\ MARITAL STATUS \\ EMPLOYMENT STATUS \\ EDUCATION \\ INCOME SCALE \end{bmatrix}; MACRO = \begin{bmatrix} INFLATION \\ UNEMPLOYMENT \\ GDP per capita \\ GEN GOVT EXP \end{bmatrix}$$

where $HAPPY_{ijt}$ is the happiness level reported by individual i in country j in year t , X_{ijt} is a vector of personal characteristics of the respondents, $MACRO_{jt}$ is a vector of macroeconomic variables that vary only by country j and time t , not by individuals i . α and β are matrices of coefficients on personal characteristics and macroeconomic variables, respectively. This vector includes inflation, unemployment, GDP per capita and general government expenditure. ε_i represents a country fixed effect, while λ_t stands for a wave fixed effect. Finally, μ_{ijt} is a vector of errors.

The results

Table 3 presents the results on personal characteristics of the respondents as well as on macro variables (inflation, unemployment, GDP growth and general government expenditure). As noted by Sanfey and Teksoz (2005), it is problematic when variables on the right-hand side of the equation are at a higher level of aggregation than the left-hand side variable. Moulton (1990) points out that there is a danger in merging micro unit data and public policy variables. Namely, the methods that are used in this case are usually based upon an assumption of independent disturbances. However, it is reasonable to expect that units sharing a policy observation also share unobservable characteristics, meaning that disturbances are correlated within these groups. Ignoring this leads to a downward bias of standard errors. This bias in the standard errors can result in spurious findings of statistical significance and the resulting inflation of test statistics on the effects of policy variables. This is the reason for using the clustering option. This option assumes independence across clusters, but not across observations within clusters (i.e. groupings of observations). The “clustering option” computes standard errors that are robust to this type of dependence (Sanfey and Teksoz, 2005). For this reason, we use the cluster option. In our case we have 28 independent observations on macro variables (country*wave, as explained in more detail above). The reason why we cluster around country*wave is that our policy (macro) observations are at the country*wave level. Marginal effects are given in Table 3.

Table 3 Marginal effects in ordered logit⁵

Variable	Marginal effects
Inflation	0.00079* (0.095)
Unemployment	-0.0014 (0.483)
GDP per capita	-5.49e-06 (0.202)
General government expenditure	0.0093** (0.013)
General government expenditure squared	-0.00021** (0.021)
<i>Demographic variables</i>	
Male dummy	-0.0082*** (0.002)
Age	-0.0069*** (0.000)
Age squared	0.0005*** (0.000)
<i>Marital status</i>	
Married	Reference
Divorced	-0.0540*** (0.000)
Separated	-0.0492*** (0.000)
Widowed	-0.0475*** (0.000)
Single	-0.0332*** (0.000)
<i>Education</i>	
No formal education	Reference
Incomplete primary school	-0.0046 (0.528)
Complete primary school	0.0114 (0.317)
Incomplete secondary school	0.0022** (0.050)
Complete secondary school	0.0375*** (0.004)
Some university-level education without degree	0.0635*** (0.000)
University-level education with degree	0.0855*** (0.001)
<i>Employment status</i>	
Full time	Reference
Part time	-0.0042 (0.522)
Self employed	-0.0026 (0.690)
Unemployed	-0.0399*** (0.000)
Out of the labour force (OLF)	-0.0083* (0.056)
<i>Scale of income</i>	
1 or 2	Reference
3 or 4	0.0063 (0.320)
5 or 6	0.0158 (0.127)
7 or 8	0.021 (0.109)
9 or 10	0.039** (0.033)
Country dummies	✓
Wave dummies	✓

p-values are in parenthesis, while ***, ** and * denote significance at 1, 5 and 10 percent, respectively.

Dependent variable: reported happiness.

Source: authors' calculation.

⁵ Marginal effects are calculated for ordered logit using outcome 4, i.e. the answer: *very happy*.

Table 3 reports the marginal effects, not coefficients. This is because of the non-linear form of the estimation equation (logit) (Greene, 2003: 737). In non-linear models the effect on the dependent variable of a change in an independent variable depends on the values of all variables in the model and is no longer equal to one of the parameters of the model. In our model the marginal effects are computed at the mean of the independent variables. The sign on the variables can be interpreted directly.

We will first briefly explain the results on the socio-demographic variables, and then give attention to the macroeconomic variables in more detail. Males seem to be significantly less happy than females. Age positively and significantly affects happiness, and its effect is U-shaped (since the sign on age is negative and the one on age squared is positive). As for marital status, all four groups listed (divorced, separated, widowed and single) seem to be less happy than the reference category, married people. The results are significant for all four groups. The results, furthermore, imply that those divorced are the least happy, followed by the separated, the widowed and singles. As far as education is concerned, the higher the education level the happier an individual is. People with a university degree are the happiest, followed by those with complete and incomplete secondary school. Those who have completed primary school and those who have incomplete primary school are not significantly different from those without formal education. The unemployed are, expectedly, less happy than the employed. The out of labour force are also less happy than the employed, but are happier than the unemployed. Part-time employed and self-employed are not significantly different than the reference group, although the signs indicate that they are less happy than the full-time employed. Finally, regarding the relative income position, those with higher income are happier than those with lower income. However, the results are significant only for the group with the highest income. As far as micro variables are concerned, almost all the results are significant at conventional levels and all the signs are as expected. In terms of precise interpretation of the marginal effects, the marginal effect on, say, singles, of -0.033 means that the probability that a single person reports himself/herself to be “very happy” is 3.3 percentage points lower than that for a married person.

Now let's turn to interpretation of macroeconomic variables. The results indicate that only inflation and general government expenditure (level and square) influence individual happiness significantly. The sign on inflation is, however, positive, i.e. the opposite of expectations. The same was found by Sanfey and Teksoz (2005). The signs on government expenditure are in line with expectations, implying an inversely U-shaped relationship between this variable and happiness. This is to say that government expenditure influences

happiness positively up to a certain point, and negatively afterwards. The impact of unemployment and GDP per capita is insignificant. Since government expenditure is our main variable of interest, we next test the robustness of our results by including it in the regression with only one of the remaining macroeconomic variables in turn. The results are given in Table 4. We present only the results on macro variables, since the ones on micro variables do not change in terms of signs and significances with different specifications of macro variables.

Table 4 Marginal effect on macroeconomic variables in different combinations

Variable	1	2	3
Inflation	0.00048 (0.279)		
Unemployment		-0.00036 (0.852)	
GDP per capita			-1.45e-07 (0.971)
General government expenditure	0.0105*** (0.007)	0.01044** (0.027)	0.01051** (0.027)
General government expenditure squared	-0.00023** (0.018)	-0.00022* (0.063)	-0.00022* (0.058)
Socio-demographic variables	✓	✓	✓
Country dummies	✓	✓	✓
Wave dummies	✓	✓	✓

p-values are in parenthesis, while ***, ** and * denote significance at 1, 5 and 10 percent, respectively.

Dependent variable: reported happiness.

Source: authors' calculation.

Table 4 presents the results when government expenditure is combined with inflation (model labelled 1), unemployment (model labelled 2) and GDP per capita (model labelled 3). Our finding that the relationship between government expenditure and happiness is inversely U-shaped seems to be robust. Namely, the signs and significances do not change notably when government expenditure is combined with different variables. Neither of the other variables is statistically significant in this setting.

As mentioned before, the presented marginal effects are calculated at the averages of the variables in the model. To be more precise, the so far presented macroeconomic results are calculated for average inflation of 47.81 percent, unemployment of 12.79 percent, GDP per capita of \$10520.81 and general government expenditure of 17.72 percent (see Table 2). However, in our opinion it would make more sense to calculate the marginal effects at some other levels. This is because the above presented figures refer to a very heterogeneous pool of years and countries. We, therefore, decide to calculate the marginal effects using current values of the macroeconomic variables. The latest year for which we have data on all the

macro variables for all the countries is 2007. In this case the average inflation in the countries in the sample is 4.97, average unemployment 9.57, average GDP per capita \$15691.64 and average government expenditure 15.288⁶ percent. These marginal effects are given in Table 5 in column 3. For comparison purposes the original results (from Table 3) are repeated in column 2. Now that we have specified the levels of macro variables, our strategy is to go one step further and calculate marginal effects for specific types of respondents. Namely, we compare a 30-year old⁷ married female with university degree, who is full-time employed and belongs to the highest income group, on the one side (since, as noted above, this is the description of a person who is usually found to be the most happy and whom we shall in further text call “successful woman”), and a 45-year old⁸ divorced male, with no formal education, who is unemployed and pertains to the lowest income group (who, by this description, should be the least happy and whom we shall in further text call “unsuccessful man”). In both cases we keep the macro variables at their average 2007 level. The results are given in Table 5.

Table 5 Marginal effects for different values of macro and micro variables

Variable	Macro variables at sample mean	Macro variables at 2007 averages	Successful woman + 2007 averages	Unsuccessful man + 2007 averages
Inflation	0.00079* (0.095)	0.00041* (0.090)	0.00232* (0.075)	0.00006* (0.088)
Unemployment	-0.0014 (0.483)	-0.00071 (0.500)	-0.0041 (0.487)	-0.00010 (0.495)
GDP per capita	-5.49e-06 (0.202)	-2.84e-06 (0.149)	-0.000016 (0.171)	-4.19e-07 (0.136)
General government expenditure	0.0093** (0.013)	0.0048*** (0.005)	0.0274** (0.011)	0.00071*** (0.008)
General government expenditure squared	-0.00021** (0.021)	-0.00011** (0.009)	-0.00062** (0.016)	-0.00001** (0.015)
Socio-demographic variables	✓	✓	✓	✓
Country dummies	✓	✓	✓	✓
Wave dummies	✓	✓	✓	✓

p-values are in parenthesis, while ***, ** and * denote significance at 1, 5 and 10 percent, respectively.

Dependent variable: reported happiness.

Source: authors' calculation.

The comparison between columns two and three indicates that the same conclusions we drew before still hold, in terms of signs and significances. The sizes of marginal effects are different, though. To be more precise, all marginal effects are lower when we use averages of

⁶ We do not have the data for this variable for Czech Republic, Estonia and Latvia in 2007, so the average is calculated for the remaining ten countries.

⁷ Age is found to be U-shaped, and Blanchflower (2007) finds that for females in Europe the minimum happiness occurs at an age of 42.6, so presumably at 30 they should be happy.

⁸ Blanchflower (2007) finds that for males in Europe the minimum happiness occurs at an age of 44.1.

macro variables from 2007, than when we use sample means. This was to be expected since the 2007 levels are in general more satisfactory (lower inflation and unemployment and higher GDP per capita). To be more precise, it seems that at late transition phase (sample mean) general economic conditions played a more important role, while with the advancement of transition and accession to the EU, when more economic stability was achieved, the importance of macroeconomic variables fell.

When we look at the last two columns, an interesting finding appears. All of the macroeconomic variables seem to have increased in size for a successful woman. This means that, not only are successful women the happiest, their happiness is also the most influenced by macroeconomic variables. This might be due to the fact that they have all the socio-demographic characteristics that are considered to be “good”, “successful” and “desirable” by the society and so can now care more about their economic surroundings. Unsuccessful men, on the other hand, care a lot less about the country-level variables. In other words, we might conclude that the successful women are more sociotropic, while unsuccessful men are more egotropic.

Government expenditure is in all specifications constantly significant and of the expected non-linear form. Its marginal effect is significantly larger for successful women than for unsuccessful men. This is in line with our expectations because, arguably, successful women appreciate additional increases in quality of life that can be achieved only through publicly provided goods and services. If our government expenditure measure had included welfare spending, subsidies and transfers, the results might have been different. We would expect these additional components to influence unsuccessful man’s happiness more, because this type of government expenditures is particularly aimed at socially disadvantaged people.

6. Conclusion

This paper shows that government expenditure significantly and non-linearly influences happiness in transition countries. Our premise is that government expenditure influences happiness positively up to a certain threshold, and negatively afterwards. More precisely, we hypothesise that there is a ‘useful’ amount of government expenditures that positively influences happiness, and an excess/wasteful amount which affects happiness negatively. For this reason, we include this variable in both levels and squares in the happiness regression. This non-linear specification has not been used in other papers on the

topic. Our finding that government expenditure initially influences happiness positively is comparable to results in Ram (2009), who also finds the positive relationship for a large cross-country sample. Bjornskov et al. (2007), on the contrary, find a negative relationship between life satisfaction and government consumption spending in a set of 74 countries.

Another specificity of our paper is that we go one step further. Instead of restricting our analysis to a vague concept – average respondent, we present our results for current macroeconomic values and specific individual to give the marginal effects more realistic meaning.

As a final note, it should be stressed that, while this paper, due to data availability problem, focuses on the effects of government consumption on happiness, further research should focus on the analysis of the effects of the structure of total government expenditures in the economy. It could be argued that different types of government expenditures influence happiness in different directions and with different strengths.

The question of whether or not the government involvement in the economy increases happiness is particularly timely in the view of the ongoing financial crisis. Recent times, characterised by the slowdown of economic growth and increase in unemployment, have somewhat altered popular view against public expenditures among economists. On the contrary, we have witnessed renaissances of government intervention in many developed and developing countries. The size of government, and its structures and activities, should be a by-product of the social and environmental outcomes we want to see. Between the extremes of virtually no government and a pure communist state, how much government is necessary and desirable is rather difficult to speculate. This research sheds some light on this debate from a distinctive point of view.

References

- Bjornskov, C., Dreher, A. and Fischer, J. A. (2007): “The Bigger the Better? Evidence of the Effect of Government Size on Life Satisfaction around the World”, *Public Choice*, 130, pp. 267-292.
- Blanchflower, D. (2007): “Is Unemployment more Costly than Inflation?”, *NBER Working Paper* No. 13505
- Brennan, G. and Buchanan, J. M. (1980), *The Power to Tax: Analytical Foundations of a Fiscal Constitution*, CPU
- Di Tella, R. and MacCulloch, R. (2006): “Some Uses of Happiness Data in Economics”, *Journal of Economic Perspectives*, Vol. 20, No. 1, pp. 25-46
- Di Tella, R., MacCulloch, R. and Oswald, A. (2001): “Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness”, *ZEI Working Paper* B03
- Di Tella, R., MacCulloch, R. and Oswald, A. (2003): “The Macroeconomics of Happiness”, *Review of Economics and Statistics*, Vol. 85, pp. 809-827
- Easterlin, R. (1974): “Does Economic Growth Improve the Human Lot? Some Empirical Evidence”, in David, P. and Reder, M. (eds.) *Nations and Households in Economic Growth: Essays in Honour of Moses Abramovitz*, Academic Press: New York and London, pp. 89-125
- European and World Values Surveys four-wave integrated data file, 1981-2004*, v.20060423, 2006. Surveys designed and executed by the European Values Study Group and World Values Survey Association. File Producers: ASEP/JDS, Madrid, Spain and Tilburg University, Tilburg, the Netherlands. File Distributors: ASEP/JDS and GESIS, Cologne, Germany.
- Frey, B. and Stutzer, A. (2002): “What can Economists Learn from Happiness Research?”, *Journal of Economic Literature*, Vol. 40, No. 2, pp. 520-578
- Frey, B. and Stutzer, A. (2002a): *Happiness and Economics. How the Economy and Institutions Affect Human Well-being*, Princeton University Press, Princeton and Oxford
- Frisch, D. (2003): Jdm-society. Utility in Economics and Psychology, available at <http://www.sjdm.org/mail-archive/jdm-society/2003-July/001512.html> [Accessed 5 November 2005]
- Graham, C. (2005): “The Economics of Happiness”, in Steven Durlauf and Larry Blume (eds.) *The New Palgrave Dictionary of Economics*, available from

- http://www.brookings.edu/views/papers/graham/2005graham_dict.pdf [Accessed 13 October 2005]
- Greene, W. (2003): *Econometric Analysis*, 5th edition, Prentice Hall
- Hayo, B. (2004): "Happiness in Eastern Europe" *Marburg Economic Working Paper* No. 12
- Hibbs, D. (1979): "The Mass Public and Macroeconomic Performance: The Dynamics of Public Opinion toward Unemployment and Inflation", *American Journal of Political Science*, Vol. 23, No. 4, pp. 705-731
- Hjerpe, R. (2003), 'Uncovering the Dimensions of the Common Good – Problems of Measurement of the Public Sector', Government Institute for Economic Research, Helsinki, 322, 24th CEIS Seminar, The Size of the Government Sector – How to Measure
- Kacapyr, E. (2008): "Cross-country Determinants of Life Satisfaction with Life", *International Journal of Social Economics*, Vol. 35, No. 6, pp. 400-416
- Malesevic Perovic, L. (2008): "Subjective Economic Well-being in Transition Countries: Investigating the Relative Importance of Macroeconomic Variables", *Financial Theory and Practice*, No. 32, Vol. 4, pp. 519-537
- Moulton, B. (1990): "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units", *The Review of Economics and Statistics*, Vol. 72, No. 2, pp. 334-338
- Muller, D. C. (2003), *Public Choice III*, Cambridge University Press, New York
- Ng, S. and Ng. Y.K. (1998): 'Why Do Governments Increase with Growth but Happiness Remains Unchanged?', *SSRN Working Paper Series*, Available at SSRN: <http://ssrn.com/abstract=126209>
- Niskanen, W. A. (1971), *Bureaucracy and Representative Government*, Aldine-Atherton, Inc., Chicago, USA
- Oswald, A. (1997): "Happiness and Economic Performance", *Economic Journal*, Vol. 107, Issue 445, pp. 1815-1831
- Paul, S. (2001): "A Welfare Loss Measure of Unemployment with an Empirical Illustration", *The Manchester School*, Vol. 69, No. 2, pp. 148-163
- Ram, R. (2008): "Government Spending and Happiness of the Population: Additional Evidence from Large Cross-Country Samples", *Public Choice*, 138, pp. 483-490
- Sanfey, P. and Teksoz, U. (2005): "Does Transition Make You Happy?", *EBRD Working Paper*, No. 91
- Shiller, R. (1996): "Why Do People Dislike Inflation?" *NBER Working Paper* No. 5539

- Winkelmann, L. and Winkelmann, R. (1998): “Why Are the Unemployed So Unhappy? Evidence from Panel Data”, *Economica*, Vol. 65, pp. 1-15
- Wolfers (2003): “Is Business Cycle Volatility Costly? Evidence from Surveys of Subjective Wellbeing”, *NBER Working Paper* No. 9619
- World Bank (WB) (2005), *World Development Indicators (WDI)*, ESDS International, (MIMAS) University of Manchester
- WORLD VALUES SURVEY 2005 OFFICIAL DATA FILE v.20081015, 2008. World Values Survey Association (www.worldvaluessurvey.org)*