Happiness, Taxes and Social Provision: a Note

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Abstract

This paper has analysed the effects of the ratio between taxes and social provision on population well-being for ten european countries. The linkages between what citizens would expect in return of the taxes paid and their well-being have clearly become stronger after the crisis and it should be taken into account in the debate on public policies and how these translates in population well-being.

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1 Introduction

There is emerging consensus that happiness surveys can provide an important complementary tool for public policy. The appetite to enhance well-being is being used ever more often in driving policy makers decisions. The World Happiness Report (Helliwell et al. 2012) suggests that the transition from the GDP to the well-being era has well started.

In the literature on the use of aggregate happiness as a guideline for economic policy, two general perspectives prevail. The first one incorporates the insights of the economics of happiness directly into public policy, using the cost-benefit analysis traditional framework (Layard, 2006). This perspective, as Stutzer and Frey (2014) underline, enables one to derive optimal policies in a numerical way; it gives a measure of social welfare based on happiness data. In sharp contrast to postulating a purely theoretical social welfare function at aggregate level based on a wide range of different micro/macro variables, the well-being figures provided by population feedbacks on happiness do look at informations based on individual's judgments. The second perspective by Frey and Stutzer (2012) is based on the insights of the public choice theory. Their vision is focused on the fundamental hypothesis that the quality of the political process is the key to people's happiness. In their perspective the results gained from happiness research should be taken as inputs into the democratic political process.

Di Tella et al. (2001), among others, investigated empirically the role of business cycles as a key determinant of happiness, and to what extent a welfare state can help to mitigate the costs of these business cycle fluctuations. Pacek and Radcliff (2008) and Haller and Hadler (2006) argue that the welfare state contributes, clearly and unequivocally, to human well-being.

The link dynamic between taxes and social provision on one side, and national happiness on the other, has not been fully established. Yet, it is argued that the direction and strength of this relationship depend mainly on economic performances. In this paper, we move one step forward in that direction. We examine whether happiness is influenced by the percentage of taxes returned to population in the form of social provision. We use a variable to proxy the "value for money", or share of welfare, offered to tax payers in return of taxes paid. Furthermore, the second novel contribution is to analyze whether the sensitiveness of happiness to the social expenditure-tax ratio is strengthen, or not, by the 2008 financial crisis. We take a completely agnostic approach, and we are mainly interested in measuring the ability of our "value for money" indicator to translate into happiness. Within a panel data framework, the paper focuses on ten European countries. The layout of the paper is as follows. Section 2 outlines the econometric model, describes the data and presents the empirical findings. Section 3 summarizes the main findings and offers some concluding remarks.

2 The model and Empirical Results

The dependent variable used in the empirical analysis is the Happiness Index collected yearly from Veenhoven (1993). The index is based on a survey question such as "How satisfied are you with the life you live?' with answers ranked from 1 (no satisfied) to 4 (very satisfied),

transformed by Veenhoven in a range from 0 to 10[1]. Furthermore, we use as explicative variable the percentage of taxes returned back to citizens in the form of social benefits, defined as 'Value for Money' (henceforth VfM). The positive relationship between welfare state and human well-being, stated by literature (Pacek and Radcliff (2008) and Haller and Hadler (2006)), motivates the choice of VfM variable. Since it is a money's worth measure, we believe it can provide further guidance to policy makers about redistribution policies and their effects on the aggregate level of happiness. Specifically, VfM is the ratio between public social expenditure and total tax revenue per capita. Public social expenditure[2] is the provision by public institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer. Such benefits can be either in the form of cash transfers, or by direct ("in-kind") provision of goods and services. Total tax revenue, instead, is defined as compulsory, unrequited payments to general government. They are unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payments. The data on total tax revenue shown here refer to the revenues collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. Data and definition were sourced by the OECD database. The rate of unemployment, usually considered to be one of the main determinants of happiness, is also included and sourced by the International Monetary Fund, World Economic Outlook Database. Furthermore, in order to account for the possible effects of the recent sovereign debt crisis, we include a dummy variable with a switch on 2008, i.e. on the year in which Lehman Brothers declared bankruptcy. Therefore, dummy variables are associated to the constant (to measure possible shift in the Happiness Index) and to the Value for Money and Unemployment variables in order to investigate and test the effects of the crisis on the dynamics linking the social spending/tax ratios and unemployment rates on the determinant of happiness. We use yearly data for the following countries: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, and Spain over the period 1980-2011 for a total of 300 observations. The empirical investigation consists of a panel cointegration analysis, aimed to disentangle the long vs short run relationship among the Happiness Index and its determinants.

Preliminary analysis, using Breusch-Pagan LM test and modified Wald test for group-wise heteroskedasticity and cross-section independence, reject the null hypothesis (Table 1, Panel A). Therefore, we apply the second-generation tests of panel unit root (CADF by Pesaran, 2007) and cointegration (Westerlund, 2007). The former test concerns the existence of cross-sectional dependencies, depending on whether unit root tests allow for potential correlations across residuals of panel units, while the latter test have good small-sample properties and high power compared to other popular tests like Pedroni (2004). Moreover, bootstrap p-values

[1] If questions were essentially equivalent, a standardization process run by experts was allowed. Hence, these indices, by countries, are homogenized through the expert-transformation methodology (see Veenhoven, 1993, chapter 7).

[2] Devoted to health, old age, survivors, incapacity related, active and passive labour policies, family and housing.

are computed under very general forms of cross-sectional dependence[3]. The null hypothesis of no cointegration has been tested by means of group-mean tests (G_a, G_t) and panel tests (P_a, P_t). The null hypotheses of no cointegration are rejected by all four tests (Table 1, Panel C).

Please Insert Table 1 About Here

After having highlighted the presence of cointegration, we proceed with the estimation of our panel model. The use of the Pooled Mean Group estimation (PMG) allows for the identification of the long-run equilibrium relationship (cointegration) amongst the variables of interest, taking into account for country specific effects. The PMG estimates a common long-run relationship across countries but still allowing for unrestricted country heterogeneity in the adjustment dynamics and fixed effects.

Following Blackburne and Frank (2007), we assume an autoregressive distributive lag (ARDL) (p, q) dynamic panel specification of the form:

$$H_{i,t} = \alpha_i + D\alpha_i + \sum_{j=1}^{p} \lambda_{i,,j} H_{i,t-j} + \sum_{j=0}^{q} \beta_{i,,j} X_{i,t-j} + \varepsilon_{i,t} \tag{1}$$

where $H_{i,t}$ is the aggregate level of happiness in country i at time t, α_i is the country specific effect, $D\alpha_i$ is dummy variable associated to the constant and $X_{i,t}$ is the vector of four explanatory variables namely, i) $VfM_{i,t}$ is the 'Value for Money'; ii) $U_{i,t}$ is unemployment; iii) $DVfM_{i,t}$ and iv) $DU_{i,t}$ are two additional explanatory dummy variables (corresponding to the 2008 global financial crisis) associated to value for money and unemployment, respectively. The need of using last two variables is testing for a difference in slope between value for money and unemployment after the outbreak of financial crisis.

Then we are interested in knowing whether there exist long-run and short-run effects among $X_{i,t}$ and $H_{i,t}$ and whether the short-run dynamics of the variables in the model are influenced by the deviation from equilibrium. The estimation of the short-run coefficients, speed of adjustment, country-specific intercepts, and country-specific error variances are performed on a country-by-country basis. Hence it is common to reparameterize (eq.1) into the following error correction representation:

$$\Delta H_{i,t} = \omega_i(\varepsilon_{i,t-1}) + \sum_{j=1}^{p-1} \lambda_{i,j} \Delta H_{i,t-1} + \sum_{j=0}^{q-1} \beta_{i,,j} \Delta X_{i,t-j} + \alpha_i + D\alpha_i + \mu_{it} \tag{2}$$

where Δ is the difference operator, ω_i is the country-specific error correcting speed of adjustment term, $\lambda_{i,j}$ and $\beta_{i,,j}$ are the coefficients of the lagged variables, α_i is the country specific effect, $D\alpha_i$ is dummy variable associated to the constant and μ_{it} is the disturbances

[3]Since in small sample, as in this study, Westerlund (2007) warns that the results of the tests could be sensitive to the choice of the lag and lead lengths, we keep them equal to one. The p-values are for a one-sided test based on 800 bootstrap replications.

term. The existence of a meaningful long-run effect with a stable adjustment dynamics requires $\omega_i < 0$. The results are presented in Table 1 (Panel D). The economic suggests that level of happiness should be positive related to changes in the portion of tax returned to citizens in the form of social spending. Consistent with the recent literature, we also control for unemployment that should have a negative impact.

Our results can be summarized as follows. There is a long-run equilibrium between happiness and 'Value for Money' and unemployment with associated weights being statistically significant and with a positive (0.171) and a negative (-0.022) sign, respectively. There is no evidence of changes in the long run relationship following the recent financial crisis.

The error correction term (eq.2) is negative and highly significant ($\omega = -0.453$) suggesting cointegration among the variables and showing a rather fast speed of adjustment towards the equilibrium. Looking at the short run relationship we observe that while the VfM variable is not significant before the crisis, it becomes significant after the crisis (3.773). As for unemployment, the opposite pattern emerges with a negative and significant effect (-0.034) on happiness before the crisis only.

The appeal of the panel cointegration analysis applied in this paper is that it provided a formal framework for estimating and testing long-run economic relationships between happiness and the "VfM" variable; it has also incorporated the short-run adjustments behaviour where these adjustments become highly responsive to happiness during the financial crisis.

3 Conclusions

This paper has analyzed the effects of the ratio between taxes and social provision on the Happiness Index for ten European countries using yearly data for the period 1980-2011. It uses, unlike previous studies, the ratio between taxes and social provision as a proxy for population share of welfare. The results can be summarized as follows. We found strong evidences of a relationship between social-tax ratio and happiness. Moreover, our findings suggest the important informations captured by the social -tax ratio variable in determining the Happiness Index. Of particular interest is the finding that the latter has become highly responsive to the former during the recent crisis. The linkages between what citizens would expect in return of the taxes paid and their well-being have clearly become stronger after the crisis and it should be taken into account in the debate on public policies and how these are perceived by tax-payers.

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Table 1

Panel A. Cross-section Independence

Test	Test Statistics (χ^2)	P-value
Breusch-Pagan LM test	88.588	0.000
Modified Wald test	68.22	0.000

Panel B. Panel Unit Root Tests -CADF

Variables	Test Statistics (Z[t-bar])	P-value
$H_{i,t}$	-0.242	0.404
$VfM_{i,t}$	-0.699	0.242
$U_{i,t}$	-0.626	0.734
$\Delta H_{i,t}$	-10.253***	0.000
$\Delta VfM_{i,t}$	-3.246***	0.001
$\Delta U_{i,t}$	-3.233***	0.001

Panel C. Westerlund ECM Panel Cointegration Test

	Test Statistics	P-value
Gt	-1.964**	0.021
Ga	-1.424***	0.000
Pt	-2.946**	0.015
Pa	-4.096***	0.000

Panel D. Panel Cointegration Results

Parameters	Long-run coefficients	Parameters	Short-run coefficients
α_i	3.240*** (0.628)	α_i	3.763*** (0.335)
$D\alpha_i$	0.340*** (0.095)	$\Delta VfM_{i,t-1}$	0.057 (0.055)
$VfM_{i,t-1}$	0.171*** (0.054)	$\Delta DVfM_{i,t-1}$	3.773** (1.579)
$U_{i,t-1}$	−0.022*** (0.006)	$\Delta U_{i,t-1}$	−0.034*** (0.0109)
$DU_{i,t}$	−0.139* (0.079)	$\Delta DU_{i,t-1}$	−0.114 (0.153)
		ω_i	−0.453*** (0.076)
Observations	290		290
Number of countries	10		10

Note: ***, **, and * reject the null at 1%, 5% and 10% respectively. The Westerlund (2007) test assume no cointegration as the null hypothesis. Robust p-values are for a one-sided test based on 800 bootstrap replications.