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**GOVERNMENT EXPENDITURE SIZE AND HAPPINESS:
EMPIRICAL EVIDENCE**

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Abstract

This paper tests whether there is linear relationship between happiness and the size of government expenditure, and estimates how such a relationship is likely affected by the structure of government budget (including the percentage of expenditure allocated on certain types or functions of public sector activities and the revenue shares of taxes) and the quality of governance. The results show that the effect of government expenditure size is never in itself significant, and instead conditional on the way it is structured and governed.

Keywords: Government expenditure; Happiness

JEL classification: E62; H11; D60; I31

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GOVERNMENT EXPENDITURE SIZE AND HAPPINESS: EMPIRICAL EVIDENCE

The large economic literature now exists on happiness has stimulated debate on whether government should play a greater role to help improve the happiness level of the society. On the one hand, some argue that more government involvement is needed (e.g. Frank, 1999, 2005; Layard, 2005a, 2005b; Ng, 1987, 2005). Since happiness depends on relative comparison and the way people adapt to the on going situations, the pursuit of happiness in society can be self-defeating. Instead of making them happier, the extra-effort made by individuals will result in a socially inefficient competition, where they work too hard (Layard, 2005a, b), spend too much on conspicuous expenditure (Frank, 1999, 2005) and overweight the present relative to future consumption (Loewenstein, Donoghue and Rabin, 2003). Thus, a shift of resources from the private to the public sectors may be desirable and more welfare enhancing.

On the other hand, there is dubiety that government involvement can actually function to improve wellbeing (e.g. Coyne and Boettke, 2006; Wilkinson, 2007; Johns and Ormerod, 2007). Government policies tend to suffer not only from fundamental knowledge problems and variable time lag, but also from incentive issues and special-interest group manipulation (e.g. Coyne and Boettke, 2006). Moreover, these policies are perhaps subject to adaptation, implying that government involvement does not have lasting effect in the long term.

This debate is just beginning, and the current paper seeks to fill this void in the literature. It tests whether there is linear relationship between happiness and the size of government expenditure, and then estimates how such a relationship is affected by the structure of government budget, including the percentage of expenditure allocated on certain types or functions of public sector activities (i.e. wages and salaries, subsidies and other transfers, health, and military) and the revenue shares of taxes. The effects of the quality of governance (i.e. government effectiveness and control of corruption) are also examined, as these variables may also affect the extent to which government expenditure improves or deteriorates happiness.

The results show that government expenditure size does not in itself matter for happiness. The effect on happiness of government expenditure share in GDP is never significant, and instead conditional on its interactions with the proportion of expenditure devoted to wages and salaries, the revenue share of taxes on goods and services, the level of government effectiveness and control of corruption. There is thus suggestion that, if in any case greater government role is desirable to improve happiness, it is not simply in the form of increasing government expenditure.

The remaining of this chapter proceeds as follows. Section two summarizes earlier works related to current study. Section three describes empirical strategy and data used in the analyses, whilst section four discusses the results. Finally, in section five, conclusions are provided.

1. Related Literatures

The swell of happiness research in economics is grounded fairly by the belief that global self-evaluated happiness data obtained from surveys are both valid and comparable between individuals (see e.g. Frey and Stutzer, 2002a, b; Kahneman and Krueger, 2006 for summary). In other words, data derived from answers given by respondents to questions like, “Taken all together, how would you say things are these days?” or, “All things considered, how satisfied are you with your life these days?” are approximately correct to represent their true wellbeing and, as parts of a large number of sample, can be compared to the answers of others (Ng, 1997; Di Tella and MacCulloch, 2006).

Happiness is estimated mostly as a dependent variable. This provides evidence on the factors that are statistically related to happiness and helps finding possible ways to improve welfare (see Frey and Stutzer (2002a) for more relevance of economics on happiness).

For example, it has been shown that happiness can not simply be approximated using economic attainments. Though in a country at a particular moment, those with more income are, on average, happier than those with less, but increasing the income of all members of these groups over time does not necessarily increase their happiness (e.g. Easterlin, 1974, 1995; Oswald, 1997; Blanchflower and Oswald, 2004).

Likewise, despite the severe effect on happiness of joblessness (e.g. Clark and Oswald, 1994; Di Tella, MacCulloch and Oswald, 2001), unemployed persons

suffer less when they realize that many other people are also out of work in the same area (Clark, 2003). In addition, the negative effect on happiness of (current) unemployment is also weaker for those with more past job-loss history than those with less experience in it (Clark, Georgellis and Sanfey, 2001).

The first explanation attached to these findings is that happiness depends much on relative comparison rather than just absolute conditions (e.g. Easterlin, 1974; Frey and Stutzer, 2002b; Clark, Frijster and Shield, 2007). When judging their wellbeing, people evaluate themselves based on the situations of others. Consequently, positive attainments reached by other individuals can be negative externalities for one's happiness (e.g. Clark and Oswald, 1996; McBride, 2001; Luttmer 2005), whereas massive negative situations give rise to moderate sadness (e.g. Clark and Oswald, 1994; Clark, 2003).

The other explanation is that happiness depends on the way people adapt to the on going achievements (e.g. Brickman, Coates and Janoff-Bulman, 1978; Stutzer, 2004; Oswald and Powdthavee, 2006). Further evidences prove that people adapt differently with respect to different domains of human life (e.g. Easterlin, 2005), namely proportional with regard to material improvements and less than complete regarding to health and marriage (e.g. Wu, 2001; Lucas et al., 2003). Yet, in any cases, the effect of adaptation tends to be underestimated and people fail to predict the extent to which their aspiration will change (e.g. Loewenstein and Adler, 1995; Loewenstein and Schkade, 1999; Loewenstein, Donoghue and Rabin, 2003).

Considering such inimitable natures of happiness, some economists and other social scientists (e.g. Layard, 1980, 2005a, 2005b; Frank, 1999, 2005; Ng, 2005) argue that happiness pursuit in society can be self-defeating. Concerns on relative comparison and the underestimation of the effect of adaptation bring individuals to a socially inefficient competition, where they work too hard (Layard, 2005a), spend too much on conspicuous expenditure (Frank, 1999, 2005) and overweight the present relative to future consumption (Loewenstein, Donoghue and Rabin, 2003). Hence, if the goal is to increase wellbeing, there is a big room for government to bring about the desired end.

To improve happiness, the government can, for instance, foster redistribution and help closing the relative gap between various income groups (Layard, 2005b; Radcliff, 2001). The additional happiness of the very wealthy individuals derived from conspicuous consumption does not compensate the extra happiness loss of the poor persons suffering from relative comparison and absolute material shortage. Heavier taxation for the very wealthy in combination with a more generous welfare spending may help improving aggregate happiness.

Likewise, government can impose certain taxes and help altering the ways income are allocated (Frank, 1999, 2005). For Frank, happiness does not improve in spite of economic growth because people spend their income mostly on positional-conspicuous consumption to which they adapt quickly, whereas some other forms of consumption have been neglected.

Moreover, as the additional works done by an individual do not only raise her consumption units, but also affect the average level of consumption faced by other

members of the society, government can therefore help to encourage people to choose their hours of work solely on the basis of absolute value of consumption (Layard, 1980, 2005a). Thus, taking account of inefficiencies stemming from the mutually offsetting effects of relative competition and the environmental disruption effects of much production and consumption activities, the diversion of spending from the private to the public sectors may be more welfare enhancing (Ng, 2005).

Nonetheless, it is doubted whether government involvement can actually function to improve wellbeing (e.g. Coyne and Boettke, 2006; Wilkinson, 2007; Johns and Ormerod, 2007). First, as emphasized by public choice school of thought, government policy suffers not only from fundamental knowledge problems and variable time lag, but also from incentive issues and special-interest group manipulation (e.g. Coyne and Boettke, 2006). Instead of maximizing social welfare, government regulators and bureaucrats always seek to reinforce their own power through greater public budgets and at the expense of voters' income (e.g. Williamson, 1964; Niskanen, 1971; Brennan and Buchanan, 1980). Likewise, politicians exploit their re-elected chance by catering public resources to the well-organized lobbyists at the detriment of rationally ignorant, unorganized populace.

Second, while public policies and public goods seem to be independent of relative comparison, it is perhaps subject to adaptation. For example, people are initially happier when a new intercity road is operated, but after some time, they become accustomed and expect a wider lane. Yet, instead of being satisfied by the latter, they now expect a freeway service.

2. Empirical Strategy and Data

This paper investigates the effects of public expenditure size on happiness. Due to the lack of data and in consonant with previous findings that happiness tends to be invariable over time (e.g. Easterlin, 1974, 1995; Oswald, 1997), investigation is based on country level cross-section analysis.

Using standard Ordinary Least Square (OLS) method, the dependent variable refers to the answers given by respondents to one of the questions in the World Values Surveys conducted between 1998 and 2002, that is, “All things considered, how satisfied are you with your life these days?” The individual data, which range from one (unsatisfied) to 10 (satisfied), are then aggregated to country level by taking the percentage of the sample or sub-samples answering in the three most satisfied categories (8–10). Sub-samples include several categories of respondents in each country based on sex, relative positions in income and education, and self reported political ideology.¹

The share of government expenditure in GDP is used as a major explanatory variable. It takes from World Development Indicators published annually by the World Bank and covers all non-repayable current and capital expenditures. Data were originally counted in local currency and compiled according to the

¹ Self-reported political ideology refers to the answers given to a question in the World Values Surveys, i.e. the place where respondents would place themselves on a ten-point left-to-right scale of political ideology. Left-wingers are those who answer in the three most left positions (1-3), whereas right-wingers are those who answer in the three most right places (8-10).

International Monetary Fund (IMF)'s system of common definitions and classifications (1986, 2001).

Besides, two other variables are used as baseline controls. These comprise a dummy for World Bank's income country classifications (i.e. zero for low and lower-middle income countries and unity for upper-middle and high income countries) and a dummy for post-communist countries. By the later a country is given value unity if it is one of the former Soviet Union members, or one of the former communist countries in Eastern and Central Europe, or China and Vietnam.²

To further estimate whether the relationship between happiness and government expenditure is affected by the structure of government budget and other relevant factors, some interaction variables are added to the regression. First, the interaction between government expenditure size and the percentages of it allocated on certain types or functions, namely public employees' wages and salaries, subsidies and other transfers, health, and military spending. Second, the interaction between government expenditure and the share of its revenue obtained from certain categories of taxes, i.e. taxes on income, profit and capital gains and taxes on goods and services. In addition, the effects of government effectiveness and control of corruption are also examined, as these measures of governance quality may also affect the way public expenditure improves or deteriorates happiness.

² Cuba and South Korea are not included in the sample list.

Data for the percentages of expenditure devoted to wages and salaries, expenditure devoted to subsidies and other transfers, and expenditure devoted to military spending are all taken from the World Development Indicators. Wages and salaries refer to payments in cash made to government employees in return for service rendered. Subsidies and other transfers include unrequited, non-repayable transfers on current account to private and public enterprises, and the cost to the government of covering the cash operating deficits on sales by departmental enterprises. Lastly, military spending consists of all current and capital expenses on the armed forces, defense ministries and other government agencies engaged in defense projects.

Data for the revenue share of taxes on income, profit and capital gains and the revenue share of taxes on goods and services are taken as well from World Development Indicators. Taxes on income, profits and capital gains cover all levies on the net income of individuals, the profits of enterprises and capital gains realized on all assets, whereas taxes on goods and services comprise all kinds of levies on general sales and value-added, the use of goods or property, and profits of fiscal monopoly.

Data for the percentage of government expenditure allocated on health sector are obtained from the World Health Organization (WHO)'s National Health Accounts. These constitute general government expenditure on health as a percentage of total government expenditure. Thus, these data capture the outlays earmarked for the enhancement of the health status of population and/or the

distribution of medical care goods and services by all levels of government, social security institutions, autonomous bodies, and other extra-budgetary funds.

The measures of government effectiveness and control of corruption are taken from governance quality indicators collected by Kaufmann, Kraay and Mastruzzi (2006). Government effectiveness estimates the competence of the bureaucracy and the quality of public service delivery, whereas control of corruption estimates the extent to which public power is exercised for private gain including state capture and bureaucratic deception. The scores for these variables range from -2.5 to 2.5 ; with higher or positive values indicate greater government effectiveness or control of corruption.

To avoid random fluctuations and incidental shocks, all non-dummy independent variables are averaged over the last three-year period.³ Since government effectiveness and control of corruption are measured bi-annually during 1996 to 2002, the values for 1997, 1999 and 2001 are determined first by calculating the mean values of prior and subsequent years. Finally, to reduce the potential threat of multicollinearity, government expenditure size and each of the interaction variables are centered around the mean value of relevant sample.

³ Exception is the percentage of expenditure devoted to military spending. Instead of three years, average over the last two-year period is used for this variable, as enforcing the “general” rule will reduce the number of observation to less than 30.

3. Results

Table 1 reports descriptive statistics of the variables. On average, there are 41.48 percent of the respondents in each sample country who evaluate themselves as satisfied or happy with their life. The percentages of respondents who answer happy are, in general, higher for female than male, for individuals in relatively upper income group than those in the middle or lower income groups, for highly educated persons than those with only medium or lower education, and for right-wingers than those who identify themselves as left-wingers in politics.

Table 1
Descriptive statistics

	N	Min.	Max.	Mean	St. Dev.
Life satisfaction or happiness (HAPP)					
- Full sample	51	9.55	76.75	41.48	18.21
- Male	51	10.30	76.80	41.05	18.91
- Female	51	8.50	76.70	42.46	18.24
- Upper income	51	14.30	87.60	50.33	18.64
- Middle income	51	5.10	81.00	40.13	19.82
- Lower income	51	2.10	67.30	34.08	18.06
- Higher education	51	9.40	81.40	47.71	18.91
- Medium education	51	6.90	80.70	42.37	19.04
- Lower education	51	2.00	73.70	38.99	19.06
- Leftwing	49	2.28	73.20	38.78	19.57
- Rightwing	49	4.80	81.90	45.84	20.07
Dm upper-middle & high income (INCG)	51	.00	1.00	.69	.47
Dm post-communist (POSC)	51	.00	1.00	.27	.45
Government expenditure size (GXSZ)	51	10.90	47.00	30.27	9.96
Exp. wages and salaries (EXWG)	47	4.00	51.00	16.29	10.11
Exp. subsidies and other transfers (EXSU)	48	7.67	74.00	46.20	18.03
Exp. health (EXHE)	51	2.20	17.10	10.72	3.25
Exp. Military (EXML)	35	2.00	32.00	9.54	8.08
Tax. income, profits, capital gains (TXIN)	51	3.00	72.67	26.86	15.03
Tax. goods and services (TXGS)	51	3.33	75.00	34.40	13.09
Government effectiveness (GOEF)	50	-.94	2.42	.61	1.06
Control of corruption (CCOR)	51	-1.07	2.49	.51	1.20

Table 2 summarizes the results of the multivariate analyses under different scenarios. In column 1, only baseline variables are included in the regression. In columns 2-9, a certain budget characteristic or a measure of governance quality is consecutively added, together with its interaction with the share of government in the economy.

Baseline control variables, i.e. dummy for upper-middle and high income country and dummy for post communist country, both have significant effects on happiness. The coefficient of the former is positive, implying a parallel association between income and happiness. This is in line with previous evidences that, at a point in time, people living in richer economies are on average happier than their counterparts living in poorer areas (e.g. Inglehart 1990; Veenhoven, 1991; Diener, Diener and Diener, 1995). By contrast, the coefficient of the latter variable is negative, connoting the opposition between post-communist feature and the share of satisfied individuals. This confirms the earlier findings (Bjornskov, Dreher, Fischer, 2007a, b) that people living in post-communist transition countries are in general less happy than their equivalent residing in other areas.

Despite variations in coefficient sign, the effect of government expenditure share in GDP is not significant under all scenarios. This is different from the result reported in Bjornskov, Dreher and Fischer (2007a), where the size of general government consumption always has significant negative effect on happiness. One possible explanation for the difference is perhaps that government expenditure data utilized in this research covers a broader measure than government

consumption they have used; with transfers payment and capital expenditure are included alongside consumption.⁴

The percentage of expenditure devoted to public employees' wages and salaries has no significant effect on happiness. However, the coefficient of its interaction with government expenditure size is significant negative, implying that the bigger government share in GDP, the worse is the sinking effect of wages and salaries expense on happiness. Put differently, it can also be interpreted that, although the share of government expenditure itself does not significantly affect happiness, but in countries with greater portion of expense allocated on wages and salaries, an increase in government expenditure size may lead to the decline of happiness.

The effects of the proportions of expenditure allocated on subsidies and other transfers and on health sector are positive and significant. It thus lends a support to preceding suggestions that decrease in inequality associates positively with happiness (Alesina, Di Tella and MacCulloch, 2004) and advancing financial support for health sector is necessarily desirable for satisfied life (Layard, 2005b). By contrast, the effect of the percentage of government expenditure allocated on military spending is negative significant, implying its detrimental nature for happiness. The interactions between these variables and government expenditure do, after all, not have significant effects on happiness. It can therefore be projected that the association between government expenditure size and happiness is independent from the proportions of the expenditure allocated on subsidies and

⁴ In fact, in their paper, Bjornskov, Dreher and Fischer (2007a) also report that transfer payments and capital expenditure are not significantly associated with life satisfaction.

other transfers, health sector, and military spending. From different perspective, it can also be expected that the effects on happiness of such proportions are not subject to the size of government expenditure.

On the whole, the above results might indicate that, when thinking of government employees' wages and salaries, people are more concerned about the absolute amount of the expense than its percentage to total expenditure. Hence, if the size of government expenditure grows too "big", people will consider that the amount of wages and salaries expense becomes too much. Consequently, the effect on happiness of this interaction happens to be worse. By contrast, when thinking of subsidies and other transfers, health sector, and military spending, people are more concerned about the percentage of expenditure allocated than about the absolute values of expense. Thus, whether the size of government expenditure is small or big, the effects on happiness of the percentage allocated on these expenses remain fixed.

Table 2
Results without and with interaction variables, OLS

	Full sample		
	1	2	3
INCG	21.492*** (4.696)	21.863*** (4.538)	18.372*** (5.204)
POSC	-19.882*** (4.122)	-24.805*** (3.949)	-25.055*** (3.905)
GXSZ	-.054 (.221)	.052 (.197)	-.058 (.200)
EXWG		-.293 (.188)	
GXSZ × EXWG		-.072*** (.024)	
EXSU			.335*** (.117)
GXSZ × EXSU			.015 (.012)
N	51	47	48
Adj. R ²	.482	.625	.635
F stat.	16.530	16.328	17.371
	Full sample		
	4	5	6
INCG	13.837** (5.424)	24.179*** (6.748)	21.261*** (4.905)
POSC	-18.881*** (4.025)	-22.473*** (6.229)	-18.748*** (4.898)
GXSZ	-.054 (.218)	-.056 (.272)	-.054 (.226)
EXHE	1.837** (.797)		
GXSZ × EXHE	.011 (.073)		
EXML		-.635* (.355)	
GXSZ × EXML		.002 (.037)	
TXIN			.068 (.152)
GXSZ × TXIN			.002 (.016)
N	51	35	51
Adj. R ²	.528	.590	.462
F stat.	12.203	10.778	9.580
	Full sample		
	7	8	9
INCG	23.043*** (4.487)	14.163*** (5.028)	15.114*** (4.831)
POSC	-19.528*** (4.174)	-9.011** (4.339)	-9.246** (4.200)
GXSZ	-.054 (.217)	-.317 (.200)	-.317 (.195)
TXGS	-.179 (.189)		
GXSZ × TXGS	-.039** (.015)		
GOEF		8.615*** (2.307)	
GXSZ × GOEF		.458** (.204)	
CCOR			7.403*** (1.983)
GXSZ × CCOR			.469*** (.166)
N	51	51	51
Adj. R ²	.536	.620	.632
F stat.	12.548	17.288	18.198

Note: All regressions include a constant term; parentheses contain standard errors; ***(**)[*] denotes significance at p<.01(p<.05)[p<.10]

The shares of government revenue obtained from taxes on income, profits and capital gains and taxes on goods and services are not shown to have significant effects on happiness. The interactive effect of the former variable is also insignificant, necessitating its unimportance as a predictor for happiness. The interaction of the latter with government expenditure share in GDP is, however, significant and negative. It can therefore be expected that, in economies with greater revenue share of taxes on goods and services, the negative effect of government expenditure size is worse on happiness.

The effects of government effectiveness and control of corruption are both significant at 1 percent level. This is consistent with other findings (Helliwell and Huang, 2006) that quality of governance is important for happiness. The coefficients of the interactions between these variables and public expenditure share in GDP are also significant, connoting that in countries with high government effectiveness and low level of corruption, the relationship between government expenditure size and happiness might be bettered. Put differently, it also implies that the greater government share in GDP, the more important are government effectiveness and control of corruption as happiness predictors.

3.1 Robustness Tests

To test whether the above results are sensitive to extreme values, the same analyses have been conducted, but with sample that is exclusive of outliers. Here, only observations with residual less than or equal to ± 1.75 are included in the regressions.

Table 3 provides summaries of the results. The effect on happiness of dummy for upper-middle and high income country is still significant positive under all scenarios, whereas dummy for post communist country has incessantly significant negative effect. The coefficient of government expenditure share in GDP is persistently insignificant, connoting its weak association with the percentage of happy individuals in each sample country.

The effect of the percentage of expenditure devoted to public employees' wages and salaries is again not significant. By contrast, the negative effect of its interaction with GDP share of government expenditure is continually significant at 1 percent level.

The proportions of expenditure allocated on subsidies and other transfers and expenditure allocated on health sector both remain have significant and positive effects on happiness. Likewise, the effect of the expenditure allocated on military spending is persistently significant, but in negative direction. The coefficients of the interaction between each of these variables and government share in GDP do, after all, continue to be insignificant.

The effect of the share of government revenue obtained from taxes on income, profits and capital gains is again not significant. The interactive effect between this variable and government expenditure is also insignificant, affirming that the revenue share of income, profits and capital gains taxes is not an important determinant of happiness.

Table 3
Results when outliers are excluded, OLS

	Full sample		
	1	2	3
INCG	20.381*** (3.819)	22.945*** (4.354)	16.539*** (4.739)
POSC	-24.301*** (3.417)	-25.609*** (3.783)	-26.564*** (3.487)
GXSZ	.019 (.182)	.025 (.189)	-.141 (.179)
EXWG		-.296 (.180)	
GXSZ × EXWG		-.071*** (.023)	
EXSU			.382*** (.105)
GXSZ × EXSU			.012 (.010)
N	45	46	46
Adj. R ²	.641	.663	.702
F stat.	27.201	18.714	22.238
	Full sample		
	4	5	6
INCG	12.016** (5.095)	26.335*** (5.840)	22.403*** (4.254)
POSC	-17.123*** (3.793)	-24.867*** (5.403)	-22.411*** (4.425)
GXSZ	-.100 (.204)	-.044 (.239)	.107 (.203)
EXHE	2.105*** (.751)		
GXSZ × EXHE	.027 (.069)		
EXML		-.536* (.311)	
GXSZ × EXML		.023 (.033)	
TXIN			.133 (.135)
GXSZ × TXIN			-.010 (.016)
N	49	33	48
Adj. R ²	.544	.705	.615
F stat.	12.465	16.281	16.021
	Full sample		
	7	8	9
INCG	23.201*** (3.928)	9.652* (4.838)	9.771** (4.733)
POSC	-16.891*** (3.754)	-8.299** (3.981)	-8.368** (3.842)
GXSZ	-.176 (.190)	-.245 (.191)	-.248 (.184)
TXGS	-.384** (.175)		
GXSZ × TXGS	-.051*** (.041)		
GOEF		9.508*** (2.127)	
GXSZ × GOEF		.436** (.186)	
CCOR			8.568*** (1.848)
GXSZ × CCOR			.411** (.153)
N	48	49	49
Adj. R ²	.616	.658	.674
F stat.	16.069	19.495	20.817

Note: All regressions include a constant term; parentheses contain standard errors; ***(**)[*] denotes significance at p<.01(p<.05)[p<.10]

In column 7, it can be seen that the effect of government revenue share obtained from taxes on goods and services is now significant at 5 percent level. This raises the possibility that association between the revenue share of these taxes and the percentage of happy individuals in a country is sensitive to outlier exclusions. By contrast, the interaction between taxes on goods and services revenue share and the size of government expenditure is shown to be stable. The coefficient of this interaction continues to be significant negative.

Lastly, the effects of government effectiveness and control of corruption are robust; with their coefficients remain significant positive at 1 percent level. The interactive effects between these variables and government expenditure share in GDP are also persistently significant, implying the importance of such governance quality measures as happiness predictors.

3.2 Sub-sample Cases

To further test whether different groups in society are affected differently by government expenditure, the overall sample is divided into sub-samples based on sex, relative income, relative education, and self reported political ideology. Tables 4a and 4b report summaries of the results. For the reason of brevity, only variables of interest are put into sight, though dummy control variables were always included in the regression.

The effect of government expenditure share in GDP is continually insignificant regardless of different sub-sample groups. This is persistent even when the same

analyses are repeated without outliers. It thus substantiates the fact that government expenditure size does not in itself matter for happiness.

Different from the other sub-samples, the effect of the percentage of expenditure allocated on wages and salaries is significant negative for male and middle income groups. Together with the evenly distributed effect of the interaction between this variable and government expenditure size, the result might imply that male and middle income groups concern both the absolute amount and the percentage of wages and salaries expense in government expenditure.

The effects on happiness of the proportion of expenditure allocated on subsidies and other transfers are comparable between sub-samples and to that of the overall sample. The effect of this variable is, in all cases, always significant positive, whereas its interactive effect with government expenditure share in GDP is never significant.

The effect of the percentage of expenditure allocated on health is significant positive for most sub-samples. Exception is the case of upper income group, to which the effect happens to be insignificant. Perhaps, it indicates that

Table 4a
Results for different sub-samples, OLS

	Sex Male	Female	Income Upper	Middle	Lower
GXSZ	-.039 (.202)	.053 (.215)	.102 (.217)	-.049 (.221)	-.091 (.222)
EXWG	-.385 [^] (.193)	-.196 (.205)	-.280 (.207)	-.427* (.211)	-.289 [^] (.212)
GXSZ × EXWG	-.069*** (.024)	-.065** (.026)	-.067** (.026)	-.067** (.027)	-.075*** (.027)
N	47	47	47	47	47
Adj. R ²	.629	.563	.564	.603	.519
GXSZ	-.177 (.198)	-.025 (.217)	-.004 (.216)	-.183 (.211)	-.199 (.229)
EXSU	.389*** (.116)	.317** (.127)	.348** (.126)	.458*** (.124)	.314** (.134)
GXSZ × EXSU	.016 (.012)	.008 (.013)	.012 (.013)	.010 (.012)	.015 (.013)
N	48	48	48	48	48
Adj. R ²	.663	.576	.588	.654	.519
GXSZ	-.148 (.222)	-.018 (.223)	.040 (.242)	-.169 (.231)	-.157 (.230)
EXHE	1.972** (.809)	1.832** (.812)	1.220 (.883)	2.302*** (.842)	1.840** (.841)
GXSZ × EXHE	.020 (.074)	-.040 (.075)	-.022 (.081)	-.012 (.077)	-.029 (.077)
N	51	51	51	51	51
Adj. R ²	.550	.512	.448	.556	.467
GXSZ	-.120 (.274)	-.012 (.294)	.003 (.281)	-.103 (.289)	-.138 (.311)
EXML	-.776** (.358)	-.518 [^] (.384)	-.544 (.367)	-.812** (.377)	-.573 [^] (.406)
GXSZ × EXML	-.009 (.038)	.008 (.040)	-.007 (.039)	.004 (.040)	-.006 (.043)
N	35	35	35	35	35
Adj. R ²	.610	.515	.558	.586	.444
GXSZ	-.147 (.229)	-.062 (.234)	.006 (.238)	-.194 (.246)	-.193 (.240)
TXIN	.102 (.154)	.077 (.158)	.145 (.160)	.104 (.166)	.069 (.162)
GXSZ × TXIN	-.003 (.016)	-.003 (.017)	-.010 [^] (.017)	-.004 [^] (.018)	-.004 (.017)
N	51	51	51	51	51
Adj. R ²	.485	.422	.429	.459	.381
GXSZ	-.169 (.223)	-.072 (.230)	-.026 (.243)	-.205 (.238)	-.198 (.234)
TXGS	-.255 (.195)	-.206 [^] (.201)	-.250 [^] (.212)	-.243 [^] (.208)	-.202 (.205)
GXSZ × TXGS	.039** (.015)	-.036** (.016)	-.028 (.017)	-.042** (.016)	-.038** (.016)
N	51	51	51	51	51
Adj. R ²	.543	.480	.445	.526	.449

Note: All regressions include a constant term and baseline dummy variables; parentheses contain standard errors; ***(**)[*] denotes significance at p<.01(p<.05)[p<.10]; [^] denotes sensitivity to outliers exclusions

Table 4b
Results for different sub-samples, OLS

	Education Higher	Medium	Lower	Politics Left	Right
GXSZ	.041 (.225)	.118 (.215)	-.102 (.219)	-.040 (.225)	-.042 (.224)
EXWG	-.137 (.215)	-.297 (.205)	-.248 (.209)	-.322 [^] (.211)	-.315 [^] (.210)
GXSZ × EXWG	-.049 [^] (.027)	-.066 ^{***} (.026)	-.077 ^{***} (.026)	-.075 ^{***} (.027)	-.083 ^{***} (.026)
N	47	47	47	46	46
Adj. R ²	.546	.592	.581	.577	.614
GXSZ	-.024 (.219)	-.003 (.210)	-.204 (.225)	-.108 (.222)	-.128 (.229)
EXSU	.340 ^{**} (.128)	.386 ^{***} (.123)	.328 ^{**} (.132)	.431 ^{***} (.133)	.396 ^{***} (.137)
GXSZ × EXSU	.003 (.013)	.013 (.012)	.015 (.013)	.010 (.013)	.016 (.014)
N	48	48	48	47	47
Adj. R ²	.588	.632	.583	.611	.626
GXSZ	.015 (.221)	-.006 (.233)	-.179 (.231)	.015 (.233)	-.013 (.225)
EXHE	1.639 ^{**} (.808)	2.073 ^{**} (.850)	2.037 ^{**} (.842)	1.809 ^{**^} (.851)	2.837 ^{***} (.821)
GXSZ × EXHE	-.015 (.074)	.020 (.078)	-.028 (.077)	-.007 (.074)	.023 (.072)
N	51	51	51	49	49
Adj. R ²	.551	.509	.519	.581	.629
GXSZ	-.096 (.284)	-.031 (.279)	-.165 (.296)	.016 (.324)	.121 (.317)
EXML	-.604 (.371)	-.835 ^{**} (.365)	-.662 [*] (.386)	-.982 ^{**} (.446)	-.983 ^{**} (.437)
GXSZ × EXML	.011 (.039)	-.012 (.038)	-.002 (.041)	.019 (.046)	.006 (.045)
N	35	35	35	34	34
Adj. R ²	.591	.601	.550	.541	.582
GXSZ	-.020 (.225)	.001 (.242)	-.218 (.244)	-.002 (.235)	-.014 (.244)
TXIN	.043 (.151)	.106 (.162)	.050 (.164)	.056 (.151)	.062 (.157)
GXSZ × TXIN	-.016 (.016)	.004 (.017)	-.007 [^] (.017)	-.019 (.018)	-.022 (.019)
N	51	51	51	49	49
Adj. R ²	.506	.437	.427	.541	.532
GXSZ	-.020 (.231)	-.020 (.235)	-.207 (.237)	-.118 (.243)	-.111 (.255)
TXGS	-.140 (.202)	-.242 [^] (.205)	-.169 (.207)	-.298 (.204)	-.233 (.214)
GXSZ × TXGS	-.021 (.016)	-.040 ^{**} (.016)	-.038 ^{**} (.016)	-.027 (.021)	-.026 (.022)
N	51	51	51	49	49
Adj. R ²	.511	.501	.492	.550	.529

Note: All regressions include a constant term and baseline dummy variables; parentheses contain standard errors; ^{***}(^{**})[^{*}] denotes significance at p<.01(p<.05)[p<.10]; [^] denotes sensitivity to the exclusion of outliers

The percentage of expenditure devoted to military spending affects different sub-samples differently. The effect on happiness of this variable is significant negative for male and middle income groups, but not for female and the rest income groups. Likewise, it is significant negative for medium and lower education groups, but not for the upper.

The effects of government revenue shares obtained from taxes on income, profits and capital gains and taxes on goods and services are equivalently not significant regardless of sub-sample groups. The effect of the interaction between the former and government expenditure size is also insignificant irrespective of sex, relative income, relative education and self-reported political ideology. By contrast, the interactive effect of the latter with GDP share of government expenditure is varying between different income and education. Individuals belonging to upper income and higher education groups are not significantly affected by the interaction, whereas those included in the middle and lower groups of income and education are significant and negatively affected.

4. Conclusions

From the above results, it can be concluded that the size of government expenditure does not in itself matter for happiness. The effect on happiness of government expenditure share in GDP is never significant, and instead conditional on its interactions with the proportion of expenditure devoted to wages and

salaries, the revenue share of taxes on goods and services, or the level of government effectiveness or control of corruption.

Besides, the way government expenditure is allocated matters in itself for happiness. Different expense types or functions affect happiness differently. The effect of the proportion of expenditure devoted to wages and salaries is not significant. By contrast, the effects of the percentages of expenditure allocated on subsidies and other transfers, on health sector, and on military spending are all significant; with coefficient of the last variable happens to be negative.

The shares of taxes from which government expenditure is financed do not have important effect on happiness. The share of government revenue obtained from taxes on income, profits and capital gains does not significantly associate with happiness. Likewise, the effect of taxes on goods and services is not significant, though this latter result is subject to outlier exclusion.

Lastly, the importance of government effectiveness and control of corruption is in itself clear. The effects on happiness of these governance quality measures are significant positive, irrespective of extreme value elimination.

In brief, these results suggest that the overall size of government expenditure is less central for happiness than the way it is structured and governed. However, instead of incautiously supporting or rejecting the previous calls for more government involvement, it seems wise to think that if in any case greater government role is desirable to improve happiness, it is not simply in the form of increasing government expenditure.

Bibliography

- Alesina, A., Di Tella, R., and MacCulloch, R.,(2004), Inequality and happiness: are Europeans and Americans different? *Journal of Public Economics*, 88(9-10), p. 2009-42.
- Bjornskov, C., Dreher, A. and Fischer, JAV. (2007a), The bigger the better: Evidence of the effects of government size on life satisfaction around the world. *Public Choice*, 130, p. 267-92.
- Bjornskov, C., Dreher, A. and Fischer, JAV. (2007b), Cross-country determinants of life satisfaction: Exploring different determinants across groups in society. *Social Choice and Welfare*, 30(1), p. 119-73.
- Blanchflower, D.G. and Oswald, A.J. (2004), Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7-8), p. 1359-86.
- Brennan, G., and Buchanan, J. M. (1980), *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge: Cambridge University Press.
- Brickman, P., Coates, D. and Janoff-Bulman, R. (1971), Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, 36(8), p. 917-27.
- Clark, A.E. and Oswald, A.J. (1994), Unhappiness and unemployment. *Economic Journal*, 104 (424), p. 648-59.
- Clark, A.E. and Oswald, A.J. (1996), Satisfaction and comparison income. *Journal of Public Economics*, 61 (3), p. 359-81.
- Clark, A.E. (2003), Unemployment as a social norm: Psychological evidence from panel data. *Journal of Labor Economics*, 21(2), p. 289-322.

- Clark, A.E., Frijters, P, and Shield, M. (2007), Relative income, happiness and utility: An explanation for the Easterlin Paradox and other puzzles. *IZA Discussion Paper No. 2840*, Berlin.
- Clark, A.E., Georgellis, Y. and Sanfey, P. (2001), Scarring: The psychological impact of past unemployment. *Economica*, 68(270), p. 221-41.
- Coyne, C.J. and Boettke, P.J. (2006), Happiness and economics research: Insights from Austrian and Public Choice Economics. In Y.K. Ng and L.S. Ho (eds.), *Happiness and Public Policy: Theory, Case Studies, and Implications*. New York: Palgrave Macmillan, p. 89-105.
- Di Tella, R. and MacCulloch, R. (2006), Some uses of happiness data in economics. *Journal of Economic Perspectives*, 20(1), p. 25-46.
- Di Tella, R., MacCulloch, R.J, and Oswald, A.J. (2001), Preferences over inflation and unemployment: Evidence from surveys of happiness. *American Economic Review*, 91(1), p. 335-41.
- Diener, E., Diener, M. and Diener, C. (1995), Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology*, 69(5), p. 851-64.
- Easterlin, R.A. (1974), Does economic growth improve the human lot? Some empirical evidence. In P. David and M. Reder (eds.), *Nations and Households in Economic Growth*, New York: Academic Press, p. 89–126.
- Easterlin, R.A. (1995), Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior and Organization*, 27, p. 35–47.
- Easterlin, R.A. (2005), A puzzle for adaptive theory. *Journal of Economic Behavior and Organization*, 56(4), p. 513-21.

- Frank, R.H. (1999), *Luxury Fever: Why Money Fails to Satisfy in an Era of Excess*. New York: Free Press.
- Frank, R.H. (2005), Positional externalities cause large and preventable welfare losses. *American Economic Review*, 95(2), p. 137-41.
- Frey, B.S. and Stutzer, A. (2002a), What can economists learn from happiness research? *Journal of Economic Literature*, 40, p. 402-35.
- Frey, B.S. and Stutzer, A. (2002b), *Happiness and Economics: How the Economy and Institutions Affect Human Wellbeing*. Princeton University Press, Princeton.
- Helliwell, J.F. and Huang, H. (2006), How's your government: International evidence linking good government and well-Being. NBER Working Papers no. 11988, Cambridge.
- Inglehart, R.F. (1990), *Culture Shift in Advanced Industrial Society*. Princeton University Press, Princeton.
- John, H., and Ormerod, P. (2007), *Happiness, Economics and Public Policy*. The Institute of Economic Affairs, London.
- Kahneman, D. and Krueger, A.B. (2006), Developments in the measurement of subjective well-being. *Journal of Economic Perspective*, 20(1), p. 3-24.
- Kaufmann, D, Kraay, A. and Mastruzzi, M. (2006), *Governance Matters V: Governance Indicators for 1996–2005*. Washington: The World Bank.
- Layard, R. (1980), Human satisfactions and public policy. *Economic Journal*, 90, p. 737-50.

- Layard, R. (2005a), Rethinking public economics: The implications of rivalry and habit. In L. Bruni and P.L. Porta (eds.), *Economics and Happiness: Framing the Analysis*. Oxford: Oxford University Press, p. 147-69.
- Layard, R. (2005b), *Happiness: Lessons from a New Science*. New York: The Penguin Press.
- Loewenstein, G. and Adler, D. (1995), A bias in the prediction of tastes. *Economic Journal*, 105(431), p. 929-37.
- Loewenstein, G. and Schkade, D. (1999), Wouldn't it be nice: Predicting future feelings. In D. Kahneman, E. Diener, and N. Schwarz (eds.), *Well-Being: Foundations of Hedonic Psychology*. New York: Russell Sage Foundation Press, p. 85-108.
- Loewenstein, G., O'Donoghue, T. and Rabin, M. (2003), Projection bias in predicting future utility. *Quarterly Journal of Economics*, 118(4), p. 1209-48.
- Lucas, R.E., Clark, A.E., Georgellis, Y. and Diener, E. (2003), Reexamining adaptation and the set-point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84(3), p. 527-39.
- Luttmer, EFP. (2005), Neighbors as negatives: Relative earnings and wellbeing. *Quarterly Journal of Economics*, 120(3), p. 963-1002.
- McBride, M. (2001), Relative-income effects on subjective well-being in the cross-section. *Journal of Economic Behavior and Organization*, 45, p. 251-78.

- Ng, Y.K. (1987), Relative-income effects and the appropriate level of public expenditure. *Oxford Economic Papers*, 39(2), p. 293-300.
- Ng, Y.K. (1997), A case for happiness, cardinalism, and interpersonal comparability. *Economic Journal*, 107(445), p. 1848-58.
- Ng, Y.K. (2005), Public policy implications of behavioural economics and happiness studies. In Y.K. Ng and L.S. Ho (eds.), *Happiness and Public Policy: Theory, Case Studies, and Implications*. New York: Palgrave Macmillan, p. 237-52.
- Niskanen, W. A. (1971), *Bureaucracy and Representative Government*, Chicago: Aldine Atherton.
- Oswald, A.J. and Powdthavee, N. (2006), Does happiness adapt? A longitudinal study of disability with implications for economists and judges. *IZA Discussion Papers 2208*, Berlin.
- Oswald, A.J. (1997), Happiness and economic performance. *Economic Journal*, 107, p. 1815–31.
- Radcliff, B. (2001), Politics, markets, and life satisfaction: The political economy of human happiness. *American Political Science Review*, 95(4), p. 939-52.
- Stutzer, A. (2004), The role of income aspirations in individual happiness. *Journal of Economic Behavior and Organization*, 54, p. 89-109.
- Veenhoven, R. (1991), Is happiness relative? *Social Indicators Research*, 24(1), p. 1-34.
- Wilkinson, W. (2007), In pursuit of happiness research: Is it reliable? What does it imply for policy? *Policy Analysis*, 590, p. 1-41.

Williamson, O. E. (1964), *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of the Firm*. New Jersey: Prentice-Hall.

Wu, S. (2001), Adapting to heart conditions: A test of the hedonic treadmill. *Journal of Health Economics*, 20, p. 495-508.