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Income, Change in Income and Life-Satisfaction: A Study Over Time in West Germany and the Russian Federation*

By Peggy Schyns**

Summary

Data from a German and Russian panel study have been used to test whether there is an absolute effect, a relative effect, or a combination of both effects of income on life-satisfaction. Implications of need and comparison theory were combined into one empirical model. Need as well as comparison effects were found in both countries. In Russia the need effect was stronger than in Germany, that is, in Russia absolute income had a larger effect on life-satisfaction. In Germany, the effect of relative change in income was largest over a two-year period, whereas in Russia, the effect was the same over a one- and two-year period and became nonsignificant over three years. Substitution of normal income with the logarithm of income resulted overall in stronger effects. Still, effects were rather small; hence, implications of the results are discussed and some thoughts for future research are presented.

1. Introduction

Although popular belief says that money buys happiness, empirical evidence for this wisdom is not really overwhelming. Research aimed at the relationship between an individual's income and his or her life-satisfaction finds in general rather low-although statistically significant-correlations (see for example Andrews and Withey 1976; Headey and Wearing 1992; Saris and Andreenkova 1996; Ahuvia forthcoming). Nevertheless, since this (small) covariation has been found in many studies, the discussion has become centered on the question how income and income changes affect life-satisfaction.

According to Diener, the theoretical question in within-country studies is whether income is absolutely or relatively related to happiness. The absolute theory holds that income provides people with an instrument to fulfill their needs and that it can be seen as a cause of happiness (this theory is also labeled need theory), whereas the relativity argument holds that the impact of income depends on changeable standards which are derived from aspirations, habituation levels or social comparisons (Diener 1984; Veenhoven 1991; Diener, Sandvik, Seidlitz, and Diener 1993). This is also called comparison theory.

In this paper the relationship between (changes in) income and life-satisfaction was addressed. More specifically: is there an absolute effect, a relative effect, or a combination of both effects of (changes in) income on life-satisfaction? Data from a West German and Russian panel

study were used to shed light on the 'relativity-absoluteness' debate. Furthermore, it is interesting to see whether these two economically different countries exhibit the same relation between income changes and life-satisfaction. Hence, they were selected for comparison purposes. West Germany can be described as a wealthy, relatively stable country, whereas the Russian federation is far less prosperous and rapidly changing.

Before confronting the empirical question, a brief literature review will be outlined in section 2. Here also hypotheses and an empirical model will be formulated. Section 3 will describe the German and Russian data sets. In the fourth section, the empirical results will be presented. Finally, this paper will end with some concluding remarks and thoughts for future research.

2. Theory, Hypotheses and Model¹

Need Theory and Hypothesis

Need theory is mainly based on the conception of needs by Maslow and further elaborated by Veenhoven in the Quality-of-Life field (Maslow 1970; Veenhoven 1991). Veenhoven argued that income helps people meet universal needs. Those with higher income are better able to fulfill these needs. Moreover, he argued that above a certain level of wealth, it is likely that a diminishing influence of income on happiness takes place, because basic needs would no longer be an issue (cf. Diener et al. 1993, p. 197). This results in a curvilinear relationship between economic prosperity and happiness (Veenhoven 1991, p. 11).

The hypothesis, then, is that a higher income is positively correlated with life-satisfaction. An additional hypothesis is that this relation only holds up to the point where needs are met, and that after this point income does not add to extra life-satisfaction.

Comparison Theory and Hypothesis

Comparison theory is generally seen as counterpart of need theory. It asserts that human happiness depends on comparisons between standards of quality-of-life and perceived life-circumstances. Standards of quality-of-life can be either based on experiences within the social environment (comparison with, for example, peers, colleagues, or fellow country-'people'), experiences in the individual's past, or the individual's expectations about the future. Only one variant will be discussed here.

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¹ For a full discussion of the literature, see the original paper, which is available on request from the author.

Adaptation level theory concerns experiences in the individual's past. Elsewhere I have dealt with adaptation level theory in more detail (Schyns 1998). Here can be mentioned shortly that adaptation level theory states that even though events can produce (dis)satisfaction in the short run, in the long run people adapt to situations (habituation), because "the events lose their power to evoke effect" (Diener 1984, p. 567). Events can be both positive and negative experiences, and they will lead to the same happiness level of an individual in the long run.

The adaptation level hypothesis holds that a rise (or decline) in income produces an increase (or decrease) in happiness beyond the effects of income level per se in the short run, and no effect in the long run. A distinction must be made between short term and long term effects. In the short run, life-satisfaction reacts to changes in income because people either translate a rise in income in more life-satisfaction (or in the opposite case a drop in income in less life-satisfaction). However, over time people get used to a higher or lower income and adapt to their situation. Consequently life-satisfaction will shift back to the original level.

In most research, need and comparison theory have been treated as mutually incompatible. Some have completely rejected need theory (e.g., Easterlin 1974), while others (partly) rejected comparison theory (e.g., Veenhoven 1991, Diener 1984). However, there is no compelling theoretical reason to see these as mutually exclusive mechanisms.

Therefore the model that was tested in this paper,² is a combination of both theories: it takes into account both absolute levels of income and changes in income. In a formula, the model can be stated as follows:³

$$(1) \quad LS_t = \alpha + \beta_1 LS_{t-n} + \beta_2 IncSat_t + \beta_3 IncSat_{t-n} + \beta_4 Inc_t + \beta_5 \Delta(Inc_t - Inc_{t-n}) + \epsilon$$

Where LS_t is life-satisfaction at time t , LS_{t-n} is life-satisfaction n year before, $IncSat$ is income-satisfaction at time t , $IncSat_{t-n}$ is income-satisfaction n year before, Inc_t is income at time t , and Inc_{t-n} is income n year before. Life-satisfaction n year before is included to see whether life-satisfaction scores are relatively stable or volatile over a period of time. Income-satisfaction was inserted as a link between household income and life-satisfaction, since according to Headey et al., "...changes in objective conditions are much more likely to be significantly related to changes in the relevant domain satisfaction than directly to changes in well-being. One should not be too surprised to find that, if crucial steps are missing, one's model accounts for little variance" (Headey, Hampel and Meyer 1990, p. 5). For the need effect, I distinguished between a linear effects model and a curvilinear effects model (respectively using the normal income and the log of income). Change in income was defined as the relative difference in incomes (using respectively percentage change and log change).

If the coefficient β_5 is zero, then people respond only to absolute levels of income, which would support need theory. If on the other hand β_4 is zero, then people only respond to changes in income, which would support comparison theory. It is also possible that both coefficients are significantly different from zero; in that case both absolute and relative standards are used.

3. Data

Study 1:

The German Socio-Economic Panel Study (GSOEP), 1984-1994

Sample, Method and Measurement. The data set used in this paper is based on the PSID-GSOEP Equivalent file, which covers the period 1984-1994. I merged additional variables from the original GSOEP-data files (person files and household files) to the longitudinal German file. In this paper a further selection within the sample was made. Only respondents were selected that satisfied the following criteria:

- The respondent gave an interview in each wave of the GSOEP (a balanced panel-design);⁴
- The respondent is either head of the household or partner of the head (excluding children, relatives and nonrelatives in the household);
- The respondent belongs to Sample A of the GSOEP (covers persons in private households in the Federal Republic of Germany, with a household head who does not belong to the main foreigner groups of "guest-workers"-Turkish, Greek, Yugoslavian, Spanish, or Italian). This reduced the sample size to 3,618 respondents.

The data were collected in face-to-face interviews with all members of a given survey household aged 16 and over.

To measure how people evaluate their lives as a whole, a general life-satisfaction question was included in the GSOEP: "How satisfied are you with your life as a whole these days?" ranging from '0' "Very dissatisfied" to '10' "Very satisfied." The Income-satisfaction question was formulated in a similar way.

To measure income, the current post-government monthly household income was used. It consists of all regular types of income from employment, pensions and social

² Only the second model, with income-satisfaction as intermediary variable, is presented here.

³ Only the first path model is written out fully. Models with income-satisfaction, and life-satisfaction_{t-n}, respectively, as dependent variables, are not shown.

⁴ This probably affects the sample distribution, since it is known from earlier research that people with low incomes tend to drop out faster, especially over a longer period of time. When interpreting the results from Germany, one has to bear this in mind.

transfers across all household members. The head of the household is asked to answer a household related questionnaire covering information on housing, housing costs and different sources of income (GSOEP 1996, p. 4).⁵ The income indicator has been corrected for inflation. In the PSID-GSOEP Equivalent File, a Consumer Price Index for each year was included. Demographic questions covered the sex of the respondent, age, education, marital status and employment status.

Study 2: The Russian Study, 1993-1996⁶

Sample, Method and Measurement. The Russian panel study started in 1993 and has been carried out on a yearly basis by the Russian research organisation CESSI in cooperation with Dutch researchers in Amsterdam. Main core questions concern the family, employment, housing, finances, social contacts, politics and satisfaction (Saris, Andreenkov, Smirnov, and Voeyekov 1996).

The sample is a multi-stage (5 stages) cluster sample with regions as primary sampling units. In the last stage, a respondent aged 18 and over in the household was selected according to the Kish procedures.

The method of data collection was face-to-face interviews in the respondent's house. In contrast with the German data, here only one respondent per household was interviewed. Since no distinction was made between head of the household, partner, child, relative or non-relative, it was impossible to filter out heads and partners only (e.g., many children live at home even when they are older than age 18; children also work). Therefore the Russian data are more heterogeneous than the German data used in this paper.

Life-satisfaction was measured by the question: "How satisfied are you with your life as a whole?" Income-satisfaction was measured by asking how satisfied people were with their financial situation in the current year. The answers had to be given on a ten-point scale that ranges from 1, "completely dissatisfied," to 10, "completely satisfied."

Household income was also measured by a direct question. Respondents had to specify the amount of total household income in rubles before taxes. Demographic questions covered the respondent's sex, age, education, marital status, and employment status.

In order to study changes in income in Russia, one has to face the problem of inflation. To give a general idea: over the period 1993-1996 the inflation rate reached nearly 1,100 percent over the total period. In general, income also rises to compensate for the inflation, but this change probably does not make people any more satisfied with their lives (Saris and Andreenkova 1996, p. 264).

To deal with this problem, a correction for inflation was constructed, based on the information people gave in the survey on the prices of food products. In this way the

average costs of the commodity basket at the four different time points could be determined. If the price of the commodity basket increased by a factor of 3, then income is presumed to have increased by a factor of 3. A correction for inflation can be achieved by dividing the income in 1994 by the ratio of the cost of living in 1994 and the cost of living in 1993.

$$(2) \quad I_{tadj} = I_t / (CF_t / CF_{t-n})$$

where I_t is income in year t , CF is cost of food in a given year and I_{tadj} is income in year t adjusted for the increase in prices. Although this measure is not perfect, it is certainly better than no correction at all.

4. Results⁷

Here, the model as described in section 2 was tested in a path analysis, using OLS regression. Since barely any theory could be found on the length of the lagged effects (which exist according to comparison theory), analogous to Hagerty's research at the national level, the model was rerun for different time periods (one year, two years, three years-up to ten years in Germany) to find an appropriate time interval for a possible comparison effect.

Figure 1 shows results for the period 1993-1994 in Germany and 1995-1996 in Russia (normal income shown; log income not shown).^{8,9} In Germany, no direct need effect of current income on life-satisfaction could be witnessed. Instead income had an indirect effect via income-satisfaction on life-satisfaction. In addition, the comparison effect of change in income on income-satisfaction is small-but significant. It means that while controlling for other variables, the higher the relative change in income compared to the past income, the more satisfied the person with the current income. The model was rerun for longer time periods, and a period of two years showed the highest comparison effect, namely 0.14.

The curvilinear model showed nearly the same effects for absolute income level on income- and life-satisfaction, but presented a stronger comparison effect: 0.08 over the period 1993-1994. Here, too, the strongest effect was found over a two-year period: 0.17 (period 1992-1994).

⁵ Also the equivalent household income was computed, but since no such measure was available for the Russian Federation, it was not used in the analyses.

⁶ The data from the 1996 wave were collected in January 1997.

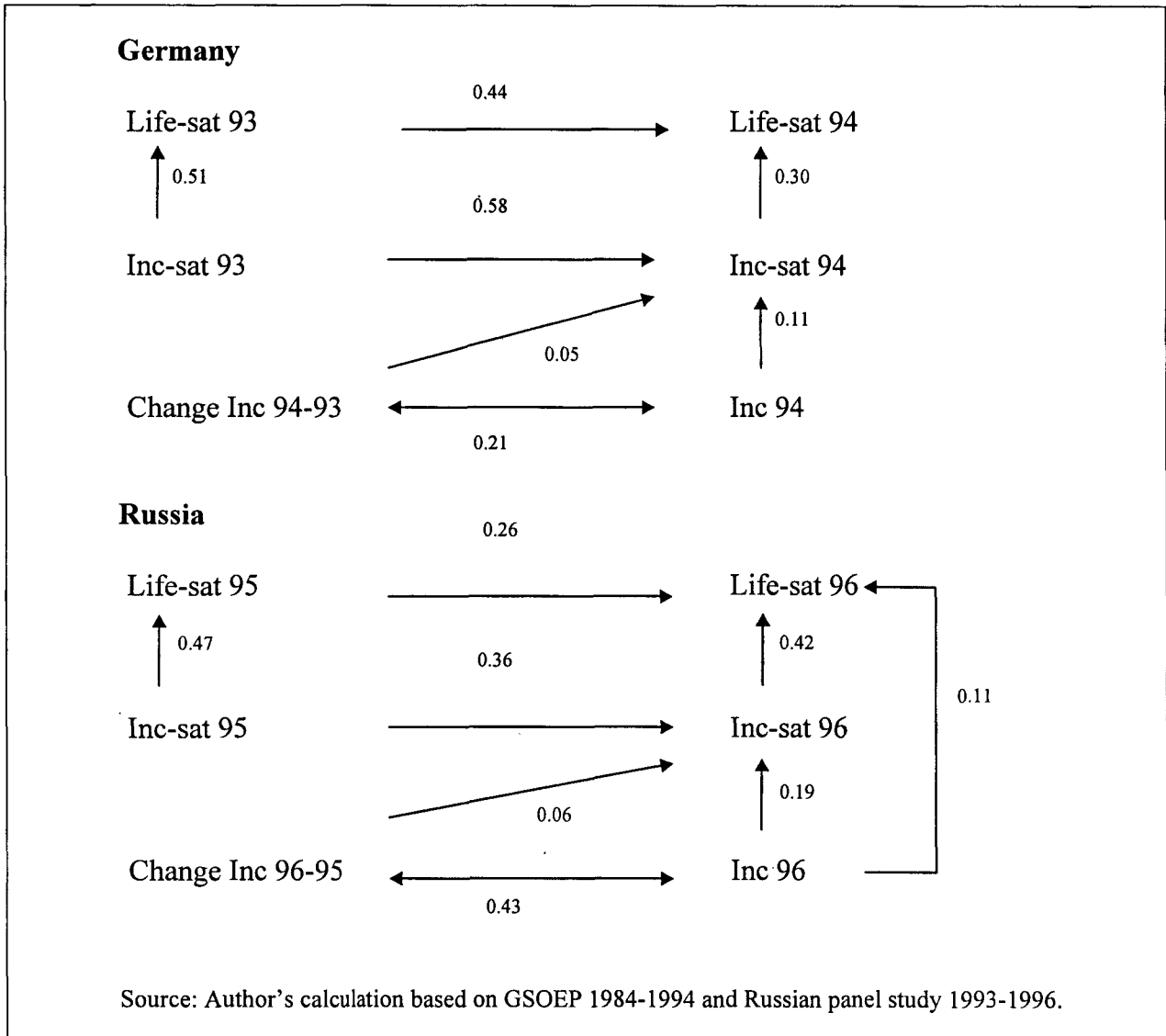
⁷ In this section only results based on the path analysis are presented. For descriptive data see the original paper.

⁸ Also, in both countries analyses were run with the inclusion of the set of background variables. Since most significant effects were small and they did not alter the outcomes of the overall model in meaningful ways, they were not included in Figure 1.

⁹ Coefficients shown are standard coefficients (β). Only significant effects are presented. Results are based on unweighted data.

Figure

Path-model life-satisfaction, income-satisfaction and normal income (β 's)



In Russia a somewhat different model appeared for the period 1995-1996. First, there was a direct need effect of current income on current life-satisfaction of 0.11. Also an indirect effect via income-satisfaction appeared, which proved to be stronger than in Germany. A beta-coefficient of 0.19 between income in 1996 and income-satisfaction in 1996 could be seen, and of 0.42 between income-satisfaction and life-satisfaction. Income-satisfaction and life-satisfaction appear to be more strongly connected in Russia than in Germany.

Second, comparison effects of change in income on income-satisfaction were small and significant; the higher the relative positive income change, controlling for present income, the more satisfied Russians were with their current income. Rerunning the model for the period 1994-1996 did not change the outcome. Over the period 1993-1996, the effect turned nonsignificant.

The curvilinear model was also tested in Russia. Outcomes concerning the absolute level of income changed for the direct need-effect, which got stronger (0.20). This means that independent of an indirect effect of the log income on income-satisfaction, a direct effect remained significant. Comparison effects also grew in magnitude compared to the normal income model: 0.15 in the period 1995-1996, 0.13 in the period 1994-1996, and 0.10 in the period 1993-1996.

5. Conclusion

Two panel studies were used to test first, whether the relationship between income (changes) and life-satisfaction is absolute, relative, or a combination of both effects. In the empirical model a need effect as well as an adaptation effect was simultaneously incorporated.

In both countries the hypothesized need effect was found. In Russia it was decomposed into a direct effect of income on life-satisfaction and an indirect effect of income via income-satisfaction on life-satisfaction, whereas in Germany only an indirect need effect was found. Introducing the log income instead of the normal income nearly doubled the direct need effect in Russia.

In both countries small comparison effects of change in income on current income-satisfaction were found. In other words, those people whose income improved relatively, tended to be more satisfied with their current income. In Germany, the comparison effect was largest over a period of two years (which is in line with Hagerty's finding at the national level: a period of 2-2.5 years), whereas in Russia comparison effects were about the same in a one- and two-year time period but turned nonsignificant over a three-year period. Thus, a comparison effect of past income on the intermediary variable was observed, but not on the dependent variable life-satisfaction. The introduction of change in log incomes increased the strength of the comparison effects.

The second purpose of this study was to see whether the same relationship between income (changes) and life-satisfaction could be found in two countries that are in several ways each other's opposites: West Germany is a rich, stable country and the Russian Federation is a poor, rapidly changing country. Empirical results showed that the relationship is not exactly the same in both countries: although comparison effects seem to operate approximately in the same way, the need effect was more profound in Russia than in Germany. For a discussion of the implications of need theory and adaptation theory in the light of different economic contexts, I refer to the original paper.

In conclusion, first, the combination of two hypotheses in one model was a fruitful approach, since both effects were found at work simultaneously. Second, West Germany and the Russian Federation showed different processes, which stresses the need to differentiate between countries, and not to treat them merely as interchangeable numbers in

cross-national analyses. Finally, the substitution of the normal income with the log income (and changes in income) in the model resulted in stronger effects and is also from a theoretical viewpoint more compelling.

6. Discussion and Future Research

Although different processes could be observed in Germany and Russia, the magnitude of the effects was still rather small. This could mean, of course, that income has only a modest impact on income- and life-satisfaction, and that other domains such as social life, work, and family are more important factors in shaping one's well-being. Another reason for the low overall effects could be that looking at the whole sample at once, hides several strong internal processes. For example, there might be interesting differences in income- and life-satisfaction scores between people who just had a major drop in their income versus people who witnessed a major rise.

Some more methodological reasons could be, first of all, that the income indicators do not adequately tap the concept of personal economic wealth. Including measures of savings, stocks, and real estate could strengthen the effect. Second, no correction for measurement error was carried out in this study. This means that effects are underestimated, even more so in the case of attitude variables. For a discussion see Saris and Scherpenzeel (1996).

Furthermore, in this paper only a bottom-up model was tested (income-satisfaction affects life-satisfaction). Future research could focus on a reciprocal 'bottom-up top-down' model, into which the effect of life-satisfaction on income-satisfaction is also incorporated.

Finally, more comparison effects could be included in the model, since people not only compare their past income with their current one, but also compare between themselves and proximal others, as they compare their expected income with their current income. However, these indicators first need to be refined in order to test them in panel data.

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