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Family Background Shapes Individual Economic Success

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Low Level of Equal Opportunities in Germany: Family Background Shapes Individual Economic Success

by Daniel D. Schnitzlein

For many years, securing equal life opportunities has been a normative goal shared by all democratic societies in the western world. Although, in principle, all citizens enjoy the same rights, in reality, individual life opportunities still vary according to family background which, in turn, shapes the prevailing pattern of social inequality. This is not a specifically German phenomenon.

Based on a new methodology, the present findings demonstrate that, in Germany, family background has a significant impact on individual earnings, family income, hourly wages, and also educational success: 40 percent of individual earnings inequality can be explained by family background. In the case of educational achievement, this figure even exceeds 50 percent.

By international standards, this places equality of opportunity in Germany at a similarly low level as in the US and significantly lower than in Denmark.

»We should not tolerate children being unable to develop their talents because of a lack of equal opportunities. We should not tolerate people having the impression that performance is no longer worthwhile for them, and that they will never advance even if they make every effort to do so,« said Joachim Gauck[1] concisely in his speech in front of the German Bundestag after being sworn in as Federal President of Germany, about achieving a goal which can be found in almost all westernized societies—the goal of equal opportunities.

The term »equal opportunities« does not mean advancement for all. Rather, it denotes a situation in which everybody has a fair opportunity for advancement—in terms of their abilities—during the course of their lives. Labor market success, educational achievement, or just the social status of a person should depend primarily on factors that can be attributed to individual talents and abilities and which are, therefore, under the control of the individuals. »Environmental factors,« that is, all the factors that an individual cannot influence should have no effect on their own success or failure. The economist and political scientist John E. Roemer calls this society preparing a level playing field.[2] However, the game should be played by each individual person.

According to this definition, equal opportunity is closely related to the degree of social mobility in a society: thus, the family background, for example, the social position of the family from which one originates is a factor that individuals cannot influence. If an individual's own

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1 Joachim Gauck, March 23, 2012: Speech after the swearing-in ceremony of the Federal President of Germany. Deutscher Bundestag, Berlin, www.bundespraesident.de/SharedDocs/Reden/DE/Joachim-Gauck/Reden/2012/03/120323-Vereidigung-des-Bundespraesidenten.html.

2 J.E. Roemer, Equality of Opportunity (Cambridge/London: 1998). For an empirical application, see J.E. Roemer, R. Aaberge, U. Colombino, J. Fritzell, S.P. Jenkins, A. Lefranc, I. Marx, M. Page, E. Pommer, J. Ruiz-Castillo, M.J. San Segundo, T. Tranaes, A. Trannoy, G.G. Wagner, and I. Zubiri, »To what extent do fiscal regimes equalize opportunities for income acquisition among citizens?,« Journal of Public Economics 87 (3-4) (2003) 539-565.

success depends largely on this factor, the consequence for society is low social mobility, and the goal of equality of opportunity is inadequately achieved.

The present study examines the extent to which education and labor market success in Germany depend on the individual's family background.[3] In order to put the results more in context, the situation in Germany has been compared with the situations in Denmark and the US. These two countries were chosen because, compared internationally, they represent the extreme points on the scale of social mobility. Denmark is a typical representative of the Scandinavian countries, which have a high level of social mobility and, as a result, also of equal opportunities. The USA has—contrary to the popular »rags to riches« myth—in fact had a very low level of social mobility for decades.[4]

The present analysis uses the German Socio-Economic Panel Study (SOEP) as the data basis for Germany. As part of this longitudinal study, DIW Berlin, in cooperation with the fieldwork organization TNS Infratest Sozialforschung, has surveyed a representative sample of households in Germany every year since 1984. More than 20,000 people in more than 11,000 households currently participate in the survey. The data for the US comes from a study comparable in structure and content to SOEP,[5] the Panel Study of Income Dynamics (PSID).[6] The information for Denmark comes from a random sample of official Danish registry data (IDA), which is made available for scientific purposes.[7]

Sibling Correlations as a Measure of Equal Opportunities in a Society

The decisive factor in determining equal opportunities is estimating the extent to which family background influences the economic success of the individual. The majority of studies to date have attempted to estimate the effect of parental income or parental education (in most cases, the father's income or education) on the income or education of the children.[8]

In the conventional direct analysis of family backgrounds, only factors that can be incorporated in the models can be taken into account. As a result, the effect of the father's income on the income of the son or the correlation between the level of education of the mother and the daughter can be calculated. The influence of family background, however, encompasses much more than just easily measurable factors such as parental income or education.[9] A complete description of the entire family situation would require very extensive data on both the parents' and the child's generation that are not available in such detail anywhere in the world. In measuring equal opportunity, therefore, the direct analysis falls short.

In the present study, an alternative approach was chosen. Instead of comparing parents with their children, the study analyzes how similar the siblings are. The idea is that if a substantial intergenerational relationship is present, two siblings should be significantly more similar than two randomly selected individuals.[10] So the effect of family background is measured indirectly, thereby also taking into account the influence of the genetic dispositions of talents and abilities within a family (see box).

In modeling the similarity of siblings, all factors that are shared by the observed siblings during their joint socialization are taken into account statistically.[11] Besides the classical factors such as parents' education, parenting styles and parents' values passed on to their children as part of their upbringing are also included in the study. Consequently, the sibling correlation is a much broader measure of the statistical influence of family background on an individual's economic success than the

3   The full study is published as D.D. Schnitzlein, »How important is the family? Evidence from sibling correlations in permanent earnings in the United States, Germany, and Denmark,« Journal of Population Economics (2013, online first), DOI: 10.1007/s00148-013-0468-6.

4   An overview can be found in M. Corak, »Do poor children become poor adults? Lessons from a cross-country comparison of generational earnings mobility,« Research on Economic Inequality 13(1) (2006): 143-188.

5   See G.G. Wagner, J.R. Frick, and J. Schupp, »The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements,« Schmollers Jahrbuch 127(1) (2007): 161–191.

6   M.S. Hill, The panel study of income dynamics: a user's guide (Newbury Park, CA, 1992).

7   An overview of the IDA data can be found in B. Timmermans, »The Danish integrated database for labor market research: towards demystification for the English speaking audience,« DRUID Working Paper 10-16 (Danish Research Unit for Industrial Dynamics, 2010).

8   An overview can be found in S.E. Black and P. Devereux, »Recent developments in intergenerational mobility,« in: O. Ashenfelter, D. Card, (eds.), Handbook of labor economics, vol. 4B, (Amsterdam: 2010): 1487–1542.

9   Studies from the US and Sweden have shown that, for example, parental income accounts for less than 50 percent of the influence of family background. See B. Mazumder, »Sibling similarities and economic inequality in the U.S.,« Journal of Population Economics 21 (2008): 685-701 and A. Björklund, L. Lindahl, and M.J. Lindquist, »What more than parental income, education and occupation? An exploration of what Swedish siblings get from their parents,« The B.E. Journal of Economic Analysis & Policy 10(1), Article 102 (2010).

10   G. Solon, M. Corcoran, R. Gordon, and D. Laren, »A Longitudinal Analysis of Sibling Correlations in Economic Status,« The Journal of Human Resources 26 (3) (1991): 509–534.

11   The influence of divorce on siblings and of siblings being separated is not examined in detail in the following study. But when the divorce of the parents is a factor that all the siblings share in their socialization, the effect on the influence of family background is taken into account.

Sibling Correlations As a Measure of Social Mobility

Sibling correlations are used to statistically estimate the influence of family background on an individual's educational and labor market success. The starting point is a simple statistical model.[1] y_{ij} is a long-term income observation, adjusted for temporary fluctuations, for person j, belonging to family i. It is assumed that this income observation consists of two components—component a is determined by family background, or all factors the siblings share, and component b represents the single influence of the individual. This results in the following formula for the income observation:

$$y_{ij} = a_i + b_{ij} \qquad (1)$$

The individual components can be understood as an individual deviation from a family-specific mean. The correlation of the income of the two siblings, the sibling correlation, is as follows:

$$r = \frac{Var(a_i)}{Var(a_i) + Var(b_{ij})} = \frac{Var(a_i)}{Var(y_{ij})} \qquad (2)$$

A sibling correlation therefore indicates the proportion of variance in income that is attributable to the influence of family background. Since the variance in income is a measure of income inequality, the sibling correlation can also be interpreted as the proportion of inequality due to the influence of family background.

The variances required for calculating the sibling correlation are estimated using a multilevel model. Since there are no data on long-term income observations, annual observations y_{ijt} were used and the model was specified so as to adjust for short-term fluctuations. The estimation model chosen was:

$$y_{ijt} = x_{ijt}\beta + a_i + b_{ij} + v_{ijt} \qquad (3)$$

x_{ijt} are control variables which include age, age squared, and annual indicators to reflect age and year effects. a_i and b_{ij}, as defined above, are the family-specific and individual components. The last term in the model v_{ijt} models transitory fluctuations. As a result, short-term fluctuations are eliminated from the annual income observation.[2] The variances a_i und b_{ij} required to calculate sibling correlation were estimated on the basis of this model and then used to calculate sibling correlation.[3]

This model, shown here using income observation as an example, was also applied to the further measures listed in the report. In the case of sibling correlation of educational years and siblings correlation of height, only one—the most recent—observation per person was used since it was not necessary to adjust for short-term fluctuations here. For this reason, only a reduced model without the term v_{ijt} was statistically estimated in these cases.

This method identifies the influence of family background based on observations on the siblings. In order to make reliable statements, a sufficient share of children must have siblings in the countries being studied. This is not a problem here. In 2007, 72.3 percent of children under the age of 14 living in Germany had at least one sibling. In the US, it was 79.7 percent in the same year.[4] Statistics Denmark reported a proportion of 78 percent in Denmark. As the people surveyed in this report belong to older birth cohorts, the rates for these age groups may be even higher.

The component a_i in the above model is determined by all factors shared by the siblings observed.[5] Therefore, only factors that are identical or similar for both siblings are taken into account.[6] This means that sibling-specific factors of family background were not considered. In a recent review article on the method, economists Björklund and Jäntti argue that a sibling correlation still is a lower bound of the influence of family background despite its very broad definition.[7]

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1   More details can be found in G. Solon, »Intergenerational mobility in the labor market,« in: O. Ashenfelter and D. Card (eds.), Handbook of Labor Economics, vol. 3A, (Amsterdam, 1999), 1761-1800.

2   A detailed discussion can be found, among others, in B. Mazumder, »Sibling similarities and economic inequality in the U.S.,« Journal of Population Economics 21, (2008): 685-701.

3   In detail, the model was estimated according to Restricted Maximum Likelihood and the standard errors of the sibling correlations were then calculated using the bivariate Delta method.

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4   OECD Family database Table SF1.2.C.

5   See also the discussion in footnote 12 in the main text.

6   In addition to characteristics of family background, this may be the interaction of two siblings.

7   A. Björklund and M. Jäntti, »How important is family background for labour economic outcomes?« Labour Economics 19 (4), (2012): 465-474.

Table 1

Sibling Correlations[1] in Individual Earnings, Family Income, and Hourly Wages[2] in Germany

	Individual earnings	Family income	Hourly wages
Brothers			
Sibling correlation	**0.432**	**0.473**	**0.455**
Standard error	(0.078)	(0.067)	(0.074)
Number of observations	4,874	5,051	4,690
Number of individuals	1,014	1,036	983
Number of families	858	873	831
Sisters			
Sibling correlation	**0.391**	**0.323**	**0.463**
Standard error	(0.107)	(0.106)	(0.117)
Number of observations	2,945	3,693	2,902
Number of Individuals	704	792	692
Number of families	642	710	630

1 Sibling correlations are based on variance components and were estimated using multilevel models. The effects of age and years were taken into account in the models.
2 Only observed income from persons aged between 31 and 49 was included in the sample. Observed income of less than EUR 1,200 per year was excluded, as were hourly wages of less than two euros.
Source: SOEPv25 (2002-2008).

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For men, about 43 percent of the variation (inequality) in an individual's earned income can be explained by family background.

common models used previously that directly model the intergenerational relationship.[12]

Family Background Explains Almost Half of the Inequality in Individual Earnings in Germany

Table 1 lists the estimated sibling correlations for different types of income in Germany. The first column shows the results for yearly individual earnings. The estimated sibling correlation for men is 0.43 meaning that family background explains 43 percent of the variation—the inequality—of individual earnings of men.[13] For women, this figure was slightly lower at 39 percent, but the difference to the figure for men is not statistically significant.

12 In addition to the factors that are attributable to family background, other factors that are not strictly related to the family are also taken into account for sibling correlations, for example, the effects of the neighborhood where it affects both siblings. These factors may be related to their parents' economic situation. Consequently, parents with low incomes often live in neighborhoods where the income level is low. However, this distinction is not relevant in interpreting it as an indicator of equal opportunities. The neighborhood where a child grows up is one of the factors that he or she cannot influence, and should therefore have no influence on their success.

13 It should be noted that adjustments to the respective measurement have already been made to account for short-term fluctuations.

This strong influence of family background can not only be found in yearly individual earnings, but also in hourly wages. Again, the results are very similar for men and women. The sibling correlations are both 0.46, meaning that 46 percent of the inequality in hourly wages can be explained by factors that are shared by the siblings. A rather more nuanced picture emerges when one examines the income situation of the current family of the individual in question instead of his or her individual income. This shows an increase in sibling correlation for men to 0.47, while the influence of family background in women is lower (0.32) than in the case of individual income.

Family Background Is More Important for Success in Education Than for Height—Which Is Largely Genetic

The strong influence of family background is not only reflected in the level of income, but also in other important economic factors. Table 2 first shows the sibling correlation in years of education.[14] For both men and women, the estimate here is significantly higher than 0.5 (0.66 for men and 0.55 for women), that is, about half of the variation in formal educational success can be explained by family background. To classify and evaluate these figures, the sibling correlation in height is shown in the second column. This is significantly lower than the corresponding value for education at 0.5 for brothers and 0.47 for sisters. Educational success in Germany depends more strongly on family background than mainly genetically determined characteristics such as height.[15]

The third column of Table 2 shows the sibling correlation of a measure of willingness to take risks.[16] The willingness to take risks is an important explanatory figure for economic decision-making.[17] Again, family background has a clear influence. This explains the varia-

14 For Germany, school and vocational qualifications were converted into years and added together—as is usual in economic literature.

15 A similar result for the US can be found in B. Mazumder, »Sibling similarities and economic inequality in the US,« Journal of Population Economics 21 (2008): 685-701.

16 For the present study, the following question in the SOEP was asked about willingness to take risks in which respondents were asked to classify themselves on a scale of 0 to 10 (11 boxes): »How do you see yourself: Are you generally willing to take risks (risk-prone) or do you try to avoid risks (risk-averse)? Please answer on a scale from 0 to 10, where 0 means risk-averse and 10 means risk-prone. You can make your assessment using the values in between.«

17 T. Dohmen, A. Falk, D. Huffman, U. Sunde, J. Schupp, and G.G. Wagner, »Individual Risk Attitudes: Measurement, Determinants and Behavioral Consequences,« Journal of the European Economic Association 9 (3) (2011): 522-550.

tion in risk-taking in men of about 40 percent and in women of about 36 percent.

The level of Equal Opportunities in Germany and the US is Significantly lower Than in Denmark

The results to date have shown that the normative idea that individual economic success should only be determined by factors that can be influenced by individuals themselves, is not a reality in Germany. In order to better assess these results, in the following, Germany is compared internationally whereby Denmark and the US are each used as a comparison of extremes. Denmark and the US were chosen due to the positions of those countries on a scale of social mobility.[18] Many analyzes have shown that Denmark is a very socially mobile society. The influence of family background on the labor market and educational success of individuals shows that Denmark is characterized by a high degree of equal opportunities. Conversely, numerous studies show that the US is a very socially immobile country. The American dream of advancing from dishwasher to millionaire, or in the context of this study, the child of a dishwasher to millionaire is not excluded in spectacular individual cases. But the reality is rather different. In the majority of studies on intergenerational social mobility, the US is in or near last place.[19] The influence of family background on the success of individuals is, accordingly, very high. The US is a long way off the ideal of equal opportunity.

In an analysis of several countries, there is always the issue of comparability of data. This is, for example, of great importance in relation to education because these three countries have very different educational systems, making it difficult to compare results. Consequently, in this study, individual earnings are used as a comparative figure, since this can largely be measured consistently with the data sources at hand in all three countries.

For Denmark, the country with comparatively very high equal opportunities, there are sibling correlations of 0.20 for brothers and 0.19 for sisters. The difference between Germany and Denmark is significant (see Table 3) on the five-percent level for men and the ten-percent level for women. Hence, the degree of equal opportunities for men and women is significantly lower in Germany than in Denmark.

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18 Corak, »Do poor children become poor adults?«.

19 See A. Björklund, T. Eriksson, M. Jäntti, O. Raaum, and E. Österbacka, »Brother correlations in earnings in Denmark, Finland, Norway and Sweden Compared to the United States,« Journal of Population Economics 15 (4) (2002): 757-772 and Corak, »Do poor children become poor adults?«.

Table 2

Sibling Correlations[1] in Years of Education, Height, and Willingness to Take Risks[2] in Germany

	Years of education	Height	Willingness to take risks
Brothers			
Sibling correlation	**0.656**	**0.498**	**0.398**
Standard error	(0.035)	(0.061)	(0.089)
Number of observations	1,480	1,106	3,303
Number of individuals	1,480	1,106	1,437
Number of families	1,253	954	1,213
Sisters			
Sibling correlation	**0.551**	**0.466**	**0.357**
Standard error	(0.050)	(0.067)	(0.119)
Number of observations	1,245	981	2,785
Number of individuals	1,245	981	1,202
Number of families	1,086	870	1,045

1 Sibling correlations are based on variance components and were estimated using multilevel models. The effects of age and years were taken into account in the models.
2 The random sample included all persons of at least 25 years of age. Only the most recent information was used for years of education and body size. For this reason, the number of observations and the number of individuals are identical.
Source: SOEPv25 (2002-2008).

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For men, about 50 percent of the variation (inequality) in body size can be explained by family background.

A comparison with the US shows almost identical results for men, with an estimated value of 0.43 for Germany and a value of 0.45 for the US. A difference is found among women. Here, the estimate for Germany is 0.39 and the value for the US women is 0.29. This difference between Germany and the US is not statistically significant neither for men or women.

In summary, there is a significant difference between Germany and the US, on the one hand, with very low social mobility and Denmark, on the other, with a high degree of mobility.

Do the Reasons for the Differences Lie in the Respective Countries' Education Systems?

A clear causal statement of the reasons for these differences is not possible using the method of analysis applied here. However, existing literature provides evidence.

One important question is whether the observed differences are due to cultural factors or whether the insti-

Table 3

Sibling Correlations[1] in Individual Earnings in Denmark, Germany, and the US[2]

	Denmark	Germany	US
Brothers			
Sibling correlation	0.202	0.432	0.450
Standard error	(0.008)	(0.078)	(0.043)
Number of observations	331,806	4,874	4,644
Number of individuals	73,554	1,014	1,435
Number of families	55,190	858	996
Sisters			
Sibling correlation	0.187	0.391	0.285
Standard error	(0.009)	(0.107)	(0.045)
Number of observations	311,897	2,945	4,906
Number of individuals	68,062	704	1,538
Number of families	52,222	642	1,067

1 Sibling correlations are based on variance components and were estimated using multilevel models. The effects of age and years were taken into account in the models.
2 The income observations come from Denmark for the years 2002-2007, 2002-2008 for Germany and from 1999 to 2007 for the US. Only income data about persons aged between 31 and 49 were included in the sample. Earnings of less than DKK 9,000 / EUR 1,200 / USD 1,200 per year were excluded.
Source: IDA (2002-2007); SOEPv25 (2002-2008); PSID (1999-2007).

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For men in Denmark, about 20 percent of the variation (inequality) in an individual's earnings can be explained by family background.

tutional framework is the main determinant. A recently published study,[20] based on Danish data also used in this report, addresses the question of equal opportunities among different groups of second-generation immigrants in Denmark. The results show very low sibling correlations for all groups, regardless of their cultural background, which are very similar to those for Danes with no immigrant background. This can be interpreted as evidence that social mobility and, therefore, equal opportunities are less determined by cultural background, and are primarily due to the institutional framework.

The results of a study from Sweden[21] confirm this result. The authors studied the change in influence of family background on the earned income of Swedish men during the expansion of the Swedish welfare state. The authors come to the conclusion that changes to the institutional framework, in particular to the education system, have led to a significant decrease in the influence of family background.

Conclusion

The results presented show that the objective of equal opportunities, that is, the independence of an individual's economic success from factors not in that individual's own sphere of influence, is not being achieved in Germany. Compared internationally, it is also clear that Germany's level of equal opportunities is as low as it is in the US and is significantly worse than Denmark.

Current results from the literature indicates that the education system can play an important role in helping to reduce the influence of family background on an individual's economic success. These findings suggest increasing the permeability of the education system and compensating for the lack of support for children in underprivileged families with early government services in order to achieve the goal of equal opportunities, or as Joachim Gauck put it recently and John F. Kennedy 50 years ago, »All of us do not have equal talent, but all of us should have an equal opportunity to develop those talents.«[22]

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20 D.D. Schnitzlein, »How important is cultural background for the level of intergenerational mobility,« Economics Letters 114 (3) (2012): 335-337.

21 A. Björklund, M. Jäntti, and M.J. Lindquist, »Family background and income during the rise of the welfare state: Brother correlations in income for Swedish men born 1932-1968,« Journal of Public Economics 93, (2009): 671-680.

22 John F. Kennedy, San Diego, June 6, 1963, www.presidency.ucsb.edu/ws/index.php?pid=9259.

NINE QUESTIONS TO DANIEL SCHNITZLEIN

»In Germany, Equal Opportunities Are Almost as Bad as in the US and Much Worse Than in Denmark«

Dr. Daniel Schnitzlein, Research Associate at the German Socio-Economic Panel Study (SOEP) at DIW Berlin

1. Dr. Schnitzlein, you have studied how important family backgrounds are for an individual's economic success. Do people in Germany enjoy equal career opportunities, regardless of their origin? We have found that in Germany economic success, for example, measured as family income or hourly wage, is heavily dependent on family background. That is to say, the level of equality of opportunity in Germany is very low.

2. Is there any data? Yes. In our study, we used sibling correlations. This is an indirect measure of the importance of family background; we do not model the influence of the parents directly but consider how similar the siblings are. Based on these figures, we can calculate that 40 to 50 percent of inequality in Germany is due to family background.

3. How do your results differ from previous studies? Is the level of equal opportunities in Germany worse than previously suspected? It is worse than previously thought. By simply comparing, for example, the income of fathers and sons, we may assume that parental income has less of an impact in Germany. But if we move away from this one-dimensional view and extend it to the entire family background, we see that the influence of family background is much stronger.

4. You compared the situation in Germany to that of Denmark and the US. Why did you choose to compare these countries? First, we chose Denmark as a typical representative of the Scandinavian countries where equal opportunities are very good and, therefore, we find a very low correlation between economic success and family background, and, second, we chose the US because it has very poor equal opportunities and an individual's

success depends very much on family background. These are the two endpoints of the scale.

5. How big are the differences, and where is Germany on that scale? The level of equal opportunities in Germany is as low as it is in the US. In contrast, if you look at Denmark, it has a very high level of equal opportunity. So we see a clear difference between Denmark and the US, and Germany is on a par with the US.

6. So the American dream of rags to riches is a legend? Yes. Both in the US and in Germany.

7. How do you explain this? What are the reasons for these differences? This question is very difficult to answer with our data. One major factor is certainly the institutional setting in these countries. It is difficult to identify individual factors here, but the literature suggests there is evidence that the education system is a driving force.

8. How do you intend to develop your methodology? The next step is to actually identify what exactly defines the level of equal opportunity. We want to determine more precisely what the international differences—and also changes in other countries we see over time—depend on. That will be the next step we'll take using this method.

9. What might those factors be? First, the parents' resources or household income, but also the parents' networks, that is, people who know the parents and, of course, how the education system is structured. But it may also be that different parenting styles have a strong influence.

Interview by Erich Wittenberg.

Measuring Well-Being: W3 Indicators to Complement GDP

by Marco Giesselmann, Richard Hilmer, Nico A. Siegel, and Gert G. Wagner

Plenty of people in Germany, including politicians and researchers, believe that gross domestic product (GDP) is an outdated indicator of a society's prosperity. Therefore, at the end of 2010, the German Bundestag, the federal parliament, established a study commission (Enquete Kommission) tasked with developing an alternative to GDP for measuring growth, wealth, and quality of life. This commission has now submitted a proposal: to complement GDP with nine additional indicators, covering a wide range of areas such as the distribution of income, biodiversity, and life expectancy.[1]

Replacing gross domestic product with a single alternative index was rejected by the commission, however, since it is not possible to reduce citizens' very different wishes and expectations to »a common denominator.« The ten indicators cover three dimensions of well-being—economy, ecology, and social wealth—and hence are called W3 indicators.[2] This name, which emphasizes the equal importance of the three dimensions, is concise and memorable enough to position itself alongside GDP.

A representative survey of registered voters conducted by DIW Berlin and TNS Infratest shows that citizens generally consider all the new indicators proposed by the commission to be important. Respondents ranked preserving »democracy and freedom« as the most relevant indicator and »further increasing life expectancy« as the least relevant. Average per capita income—as an indicator of gross domestic product—is rated as the second least relevant factor. Moreover, the study also shows that opinions on the importance of different indicators vary considerably across socio-economic groups.

The key aim of the study commission (Enquete Kommission) »Growth, Prosperity, and Quality of Life« established by the German Bundestag was to look for an alternative to gross domestic product (GDP) as an indicator of prosperity.[3] The catalog of indicators[4] now proposed for measuring wealth and life quality may well have disappointed all those who not only called for the abolition of GDP, but a fundamental re-evaluation of growth policy at the same time.[5] No single alternative to GDP has been proposed but, instead, GDP would be complemented by nine further leading indicators, also taking into account the areas »social inclusion« and »ecology« in addition to »material wealth.«

There was a consensus in the Enquete Commission that one single alternative indicator, in other words, any type of »anti-GDP« is inappropriate for methodological reasons and not consistent with democratic ideals (see Box 1):[6] if various aspects of growth, wealth, and quality of life were »condensed« into a single number, the individual values would have to be weighted. But how important is environmental protection, for instance, compared to material wealth? There is no consensus about this either among the general population or the research community, which comes as no surprise since people pursue different objectives (and the research commu-

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1   See (in German only) http://www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/123_EKWWL_Gesamtbericht_Teil1.pdf and http://www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/123_EKWWL_Gesamtbericht_Teil2.pdf.

2   See (in German only) http://www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/140_Kapitel_A_2_1_W3_Indikatoren_V4.pdf.

3   One of the authors of the present study, Gert G. Wagner, is an expert member of the Enquete Commission.

4   See the final report of the Project Group 2, Entwicklung eines ganzheitlichen Wohlstands- bzw. Fortschrittsindikators, the commission's printed paper 17(26)87 (www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/87_Abschlussbericht_PG_2.pdf), 11 and 14.

5   See a proposed amendment by Alliance 90/the Green Party, commission's printed paper 17(26)89 (www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/89_Abschlussbericht_PG_2_B90DieGr__nen___nderungsAntrag.pdf) and a proposed amendment by the Left Party, the commission's printed paper 17(26)88 (www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/88_Abschlussbericht_PG_2_DIE_LINKE_Sondervotum.pdf).

6   The frequently cited »French Fitoussi et al. Commission«, including, among other members, Nobel Prize winners in economics Sen and Stiglitz, also does not propose an »anti-GDP« but a differentiated statistical description of prosperity and quality of life.

Box 1

Final Report by the Majority of the Enquete Commission

In the final report,[1] the majority of the members of the Enquete Commission »Growth, Wealth, and Quality of Life« outline the reasons why the catalog of indicators comprising a total of ten different individual indicators is preferable to one single alternative measurement to GDP:

»Against the background of a changed and unstable correlation between growth, wealth, and quality of life, the objective of the set of indicators is to provide an empirical, i.e., statistical, inventory of the fundamental dimensions of prosperity in a modern pluralistic society and to give citizens a clear and comprehensible overall perspective on the various aspects of prosperity today and its development. [...] Not only does each aggregate indicator ultimately require an arbitrary weighting of the individual sub-indicators, but it is also extremely difficult to interpret this type of »super indicator«: when looking at an aggregate indicator of this kind, it is generally not at all clear to

which area of life an improvement or deterioration of the overall level may be attributed. This is because an aggregate indicator is always accompanied by a considerable loss of information. Therefore, instead of a single-number index, the majority of Enquete Commission members propose a transparent set of indicators.

According to the majority opinion, several indicators represent various different aspects of prosperity. They are all of equal importance; whether or not a »plus« in one area can offset a »minus« in another area is something each observer has to decide for him or herself.

[...] By a majority decision, the Enquete Commission considers competing aggregations of individual indicators to be extremely useful for the political discourse. Then every social group can enter into the debate with its own aggregation of the individual indicators. Then it will also be possible to establish where and to what extent different political thinking leads to different systems of weighting indicators and policy dimensions. All of this is useful. On the other hand, it would not be very useful if the German Federal Statistical Office (or Eurostat) provided an official aggregation.«

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1   See (in German only) the final report by Project Group 2 »Entwicklung eines ganzheitlichen Wohlstands- bzw. Fortschrittsindikators,« the commission's printed paper 17(26)87, 11 and 14. (www.bundestag.de/bundestag/gremien/enquete/wachstum/Kommissionsdrucksachen/87_Abschlussbericht_PG_2.pdf).

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nity should not make any value judgments here). Different assessments lead to political controversies which are addressed on a daily basis and are ultimately decided at elections for a certain legislative period. In a democratic society, this is not the end of political debate, however; moreover, the minority will not necessarily accept the weighting and prioritizations of the majority.

Specifically, the study commission's catalog of indicators for measuring growth, wealth, and life quality comprises ten leading indicators (GDP, income distribution, public debt ratio, employment, education, life expectancy, freedom, greenhouse gas emissions, nitrogen surplus,[7] and

biodiversity), which are classified according to three dimensions (material wealth, social inclusion, and ecology), as well as nine »warning lights« (see Figure 1).[8] In addition, there is an »indicator light« which will in, say, five-year periods shed light on the areas of »non-marketable production« and »household production«. The »indicator light« is proposed, because no regular statistical surveys on non-marketable production are conducted in Germany yet.

Critics of measuring prosperity with ten leading indicators and nine »warning lights« argue that it would not be feasible to convey this high number of indicators in the media. In light of this, only three leading indicators have been proposed as alternatives by the parliamentary

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7   Nitrogen surpluses arise as a result of agricultural production, during which nitrogen is used as a plant nutrient. According to information provided by the German Federal Environment Agency, nitrogen surpluses cause »extensive environmental problems« such as pollution of the ground water, the production of greenhouse gases, and the reduction of biodiversity. The annual nitrogen surplus has decreased by 27 percent since 1991, but is still much higher than the envisaged target. See www.umweltbundesamt-daten-zur-umwelt.de/umweltdaten/public/theme.do?nodeIdent=2879.

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8   Warning lights show if there are changes in the following indicators that go beyond certain limits: net rate of investment, wealth distribution, financial sustainability of the private sector, underemployment rate, further training rate, healthy life years, global values of greenhouse gas emissions, nitrogen surplus, and biodiversity.

Box 2

Survey of the Electorate

In a representative telephone survey conducted by TNS Infratest on January 28 and 29, 2013, for each of the ten indicators selected by the majority of the Enquete Commission, 1,012 respondents ranked the importance on a scale ranging from zero (»not at all important«) to ten (»very important«). The ten indicators in the survey were comprehensibly presented and introduced as follows:

»Policy address many areas which directly affect both individuals' personal situation and the general development of the economy and society. I will name ten areas. Please tell me for each one whether, in your opinion, it should play an important or not so important role in politics in Germany. Please use a scale of zero to ten. »0« means the policy area is »not at all important« to you and should not play a significant role. »10« means the policy area is »very important« and should play a major role. You can use the values in between to give your opinion on the various policy areas.

How important is it to you that German policy-makers address the following issues?[1]

- average per capita income[2] in Germany

- inequality of income and assets
- public debt
- that as many people as possible have enough work
- that the life expectancy of people continues to increase
- that more students obtain a further school or educational qualification[3]
- that democracy and freedom are maintained in Germany
- that the emission of harmful greenhouse gases we produce is reduced
- that the harmful nitrogen surplus we produce is reduced
- that a stop is put to the extinction of endangered species and biodiversity preserved.«

For the first three indicators, no direction of change was stipulated, since obviously both more and less income could be endorsed; the same applies to inequality and public debt. For the other seven areas, however, it is clear what is desirable and therefore—in order to make it easier for respondents to answer the questions—a direction was stipulated.[4]

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1 Here, the interviewer also could give further instructions: »For this question, your personal point of view of a topic is not relevant here. We would just like to know how important it is to you that policy-makers address this issue.«

2 Instead of the concept of GDP, which is more difficult to understand, respondents were asked about the closely associated per capita income.

3 Here, too, the interviewer also could give further instructions: »For this question, a further qualification means that more young people obtain higher school qualifications, for example, the Abitur. Either directly at school or through further training.«

4 In order to minimize the influence of the sequence of individual questions on the responses, the questions were randomized in blocks: 1 to 3, 4 to 7, and 8 to 10. Any possible influence of the position of the question on differences in mean values between the indicators is thus avoided, but at the same time the spread within the individual indicators is increased.

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group Die Linke (the Left Party), four indicators by the parliamentary group Bündnis 90/Die Grünen (Alliance 90/the Green Party), and five indicators by expert Meinhard Miegel.[9] Here, it is striking that, similar to the concept of warning lights favored by the majority of the Enquete Commission, the Left Party has proposed another 28 »additional aspects«[10] to complement their three leading indicators.

The present article does not intend to discuss the meaningfulness of the selected W3 indicators compared to

alternative concepts. Instead, the aim is to empirically study whether a) the ten indicators selected by the commission are considered important by citizens, b) how broadly the citizens' ratings on the importance are spread and c) to what extent individual differences in ratings are linked to socio-economic characteristics and political preferences. For this purpose, together with the field-work organization TNS Infratest, DIW Berlin conducted a representative telephone survey amongst Germany's registered voters in January 2013 (see Box 2) immediately after the W3 concept was approved by the relevant working group of the Enquete Commission.

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9 See www.denkwerkzukunft.de/index.php/aktivitaeten/index/ Wohlstandsquintett. Professor Miegel was appointed by the Christian Democratic Union (CDU) and Christian Social Union (CSU) German political parties.

10 See the proposed amendment by the Left Party, 6.

Maintaining Democracy and Freedom of Greatest Importance

The most important result of the representative survey is that the statement that democracy and freedom should be maintained was seen as being of greatest relevance, with an average value of 9.4 on a scale from zero *(= not at all relevant)* to 10 *(of highest relevance)* (see Figure 2).[11] This is a statistically significantly higher average value than seen for any other indicator, observed across all age groups and party political leanings. Only the importance of the statement that as many people as possible should have work achieves a similarly high average value of 9.2. In the eyes of the German population, these two aspects of prosperity are therefore the most important ones by far.

Generally, ratings of the degree of importance of the ten indicators (i.e., survey responses) differ considerably across the population. Although in all dimensions only a few people rate the lowest values between zero and five (see Figure 3), the responses mainly show a broad range between six and ten. Surprisingly, with an average of 6.6, a further increase in the *life expectancy* is considered to be by far the least important area (the median[12] value is seven). This may indicate that nowadays people often associate additional years of life with illness and suffering.[13]

Average income—as an indicator of GDP—is almost at the end of the scale of importance with an average value of 7.4. The mean value for inequality of income distribution is an average eight, and public debt is close to the average for all indicators (8.2) at 8.3 points on the scale. The demand that more students obtain a further school or educational qualification (8.5) is only slightly above-average.

As in other studies on the political preferences of the population, not much importance is attached to the ecological indicators which have average of about eight. Al-

Figure 1

Prosperity Dimensions and W3 Indicators
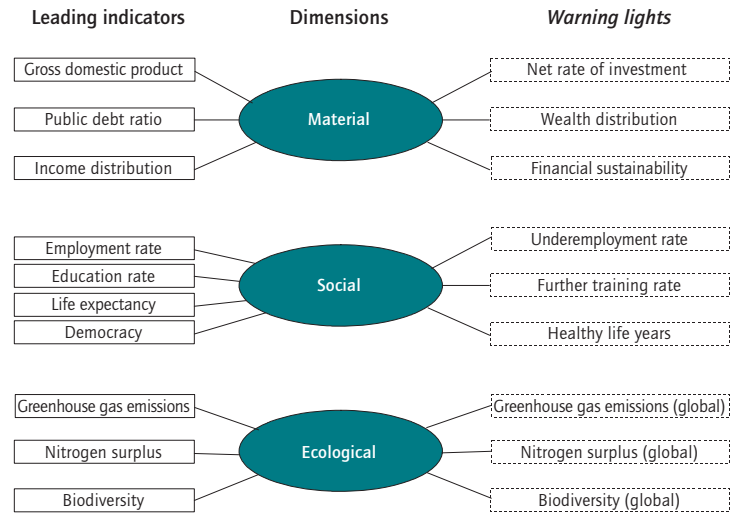
Sources: Enquete Kommission "Growth, Wealth, and Quality of Life,"
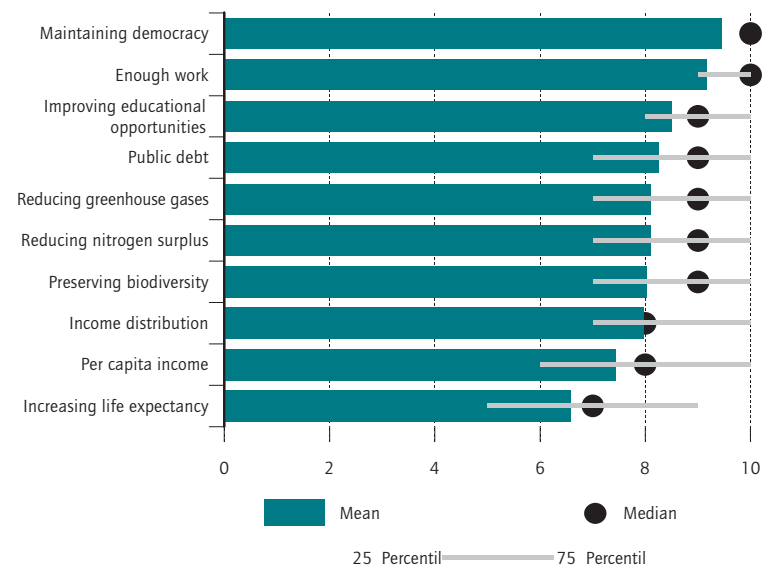Graphic by DIW Berlin.

© DIW Berlin 2013

The Enquete Kommission's proposal can be divided into three dimensions with a total of ten leading indicators and nine warning lights.

Figure 2

Relevance of Areas of Life[1]

Survey results (0 = not at all important; 10 = very important)

1 Responses to the question: "How important is it to you for German policy-makers to address the following issues?"
Source: TNS Infratest telephone survey (January 2013), 1,012 respondents; calculations by DIW Berlin.

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Maintaining democracy and freedom is far more important to respondents than the level of per capita income.

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11 In order to even out imbalances between the sample and the population, a weighting scheme provided by TNS was used in all the analyses.

12 The median divides the respondents into two equal groups: the proportions of evaluations above and below the median are both exactly identical.

13 This result also shows that the wording of a question about a field of relevance is of utmost importance. When we compare the results of TNS Infratest's survey with the results of the online survey run by the OECD (http://www.oecdbetterlifeindex.org/), we see that respondents to the OECD's survey rate the dimension »health« high and the dimension »civic engagement« low. This is in stark contrast to the low ratings of »longer life« and high rating of »democracy« in the survey by TNS. However, the differences are easy to interpret: better health (= good health condition) is something very different from »just living longer« (maybe in poor health). And ranking democracy very high as a prerequisite for a good life (as a kind of »free lunch«) is very different from active civic engagement.

Figure 3

Relevance of Areas of Life¹

Survey results in percent
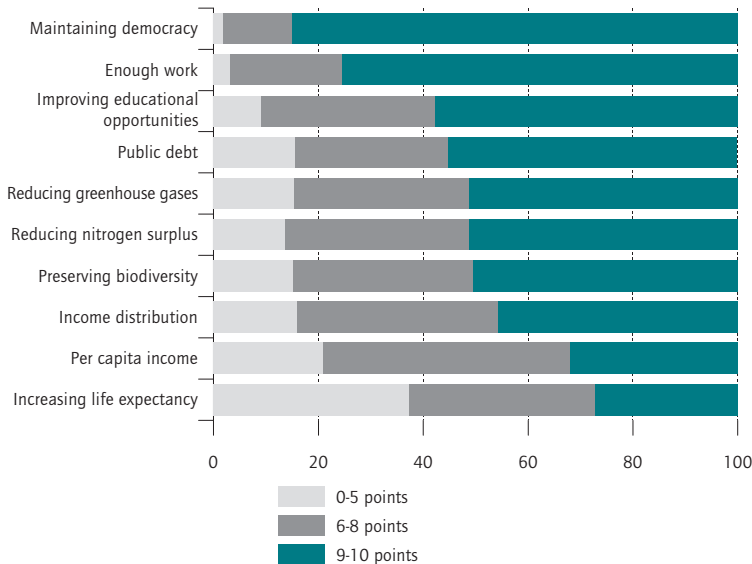
| | 0-5 points | 6-8 points | 9-10 points |

1 Responses to the question: "How important is it to you for German policy-makers to address the following issues?"
Source: TNS Infratest telephone survey (January 2013), 1,012 respondents; calculations by DIW Berlin.

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In any case, respondents who consider one of the ten indicators not to be very important were in the minority.

though the human race cannot survive if emissions of greenhouse gases and a serious nitrogen surplus are allowed to continue increasing, many people do not consider this to be an extremely pressing problem today. Indeed, we cannot feel the impact of the problem today because it will only become acute some time in the distant future. But it already exists.

East Germans Give Higher Weighting to GDP Than West Germans

In addition to the differences in the average levels of ratings, systematic differences can also be identified across population groups. The descriptive distinction between East and West shows that respondents in eastern Germany attribute considerably higher significance to virtually all indicators (see Figure 4). This applies particularly to life expectancy (which was lower in the GDR than in West Germany before reunification), per capita income and inequality of income distribution.

Gender differences are minor; women prove to be more sensitive when it comes to the environment, however

(see Figure 5). When age is taken into account, it can be observed that more importance is attached to almost all areas of life by older people (see Figure 6). However, the indicators per capita income *and* inequality of income distribution are less frequently considered to be particularly important by people of retirement age. This is probably because the relevant policies mainly affect the core group of the working population (30 to 59 years).

The analysis by political affiliation shows distinct differences, the extent of which is, however, relatively small compared with socio-structural characteristics for some areas of relevance (see Figure 7).

Citizens' Concerns in Line with Their Assessment of Areas of Well-Being Indicators

More information about assessments of the importance of various policy objectives is provided by data collected by TNS Infratest Sozialforschung on behalf of DIW Berlin for the German Socio-Economic Panel Study (SOEP).[14] Although respondents are not asked directly about the subjective relevance of various policy areas, concerns about the different aspects of economic, environmental and social affairs are measured. The SOEP measurements therefore not only incorporate an assessment of the significance of individual areas but also the subjectively perceived threat to the relevant objectives. The analyses of items measuring concerns in the SOEP (see Figure 8) nevertheless show strong analogies to prioritizations of indicators selected by the Enquete Commission.

Not only is the greatest relevance attached to maintaining democracy, but also large sections of the population are concerned about being able to safeguard the federal German model of society (measured by concerns about securing of peace). Also with regard to levels of concern, sustainability aspects only occupy a middle position, while economic aspects in both surveys are evaluated as low: just as a relatively low level of relevance is currently attributed to per capita income, few people expressed major concerns about the general econo-

14 Wagner, Gert G., Joachim R. Frick und Juergen Schupp, The German Socio-Economic Panel Study (SOEP) Scope, Evolution and Enhancements, in: Schmollers Jahrbuch, Vol. 127, No. 1, 2007, 139-169

mic situation.[15] One finding of the SOEP timeline with regard to concerns is, however, also—which is hardly surprising— that in times of falling unemployment and economic growth, there is a decrease in economic concerns: between 2008 and 2011, the SOEP recorded by far the highest proportion of people with major concerns about the economic situation, namely 44 percent, in 2009—as a consequence of the global financial crisis.[16] which was characterized by a significant economic slump in Germany.

Personal Characteristics and Attitudes Influence Survey Responses

Using multiple regression analyses, it is possible to establish more accurately (than through simple comparisons of means) whether and to what extent the values the respondents attribute to the different W3 indicators vary systematically according to various socio-economic characteristics (*eastern/western Germany, gender, age, education, household income, employment status,* and *political affiliation*). Again, the findings are based on the data collected by TNS Infratest on the importance of different prosperity indicators. For the respective dependent variables (*attribution of relevance*), the coefficients show the average deviation of certain groups compared with members of a reference group. For example, in the analysis of »per capita income,« the coefficient of 0.59 for the variable *eastern Germany* means that, on a scale of zero to ten, respondents in eastern Germany indicated an average value just under 0.6 points higher than respondents in western Germany (who form—within the methodology of linear regression—the »reference group«).

The regression method has two clear advantages over simply presenting the differences between group-specific mean values. First, the regression method tests group-specific differences directly for *statistical significance*. Moreover, the coefficients measure differences adjusted for structural characteristics and can therefore be interpreted as a »real« effect of the relevant characteristic. If, for instance, people with a low household income more frequently live in eastern Germany and household income has an effect on the attribution of relevance, the impact of the place of residence is overestimated
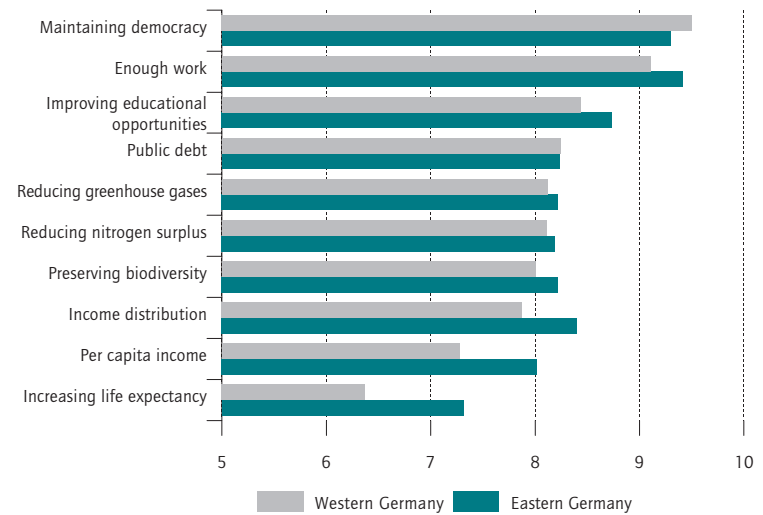
Figure 4

Relevance of Areas of Life[1] by Region

Survey results (0 = not at all important; 10 = very important)

1 Responses to the question: "How important is it to you for German policy-makers to address the following issues?"
Source: TNS Infratest telephone survey (January 2013), 1,012 respondents; calculations by DIW Berlin.

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East Germans attribute a higher relevance to virtually all indicators than West Germans.

Figure 5

Relevance of Areas of Life[1] by Gender

Survey results (0 = not at all important; 10 = very important)

1 Responses to the question: "How important is it to you for German policy-makers to address the following issues?"
Source: TNS Infratest telephone survey (January 2013), 1,012 respondents; calculations by DIW Berlin.
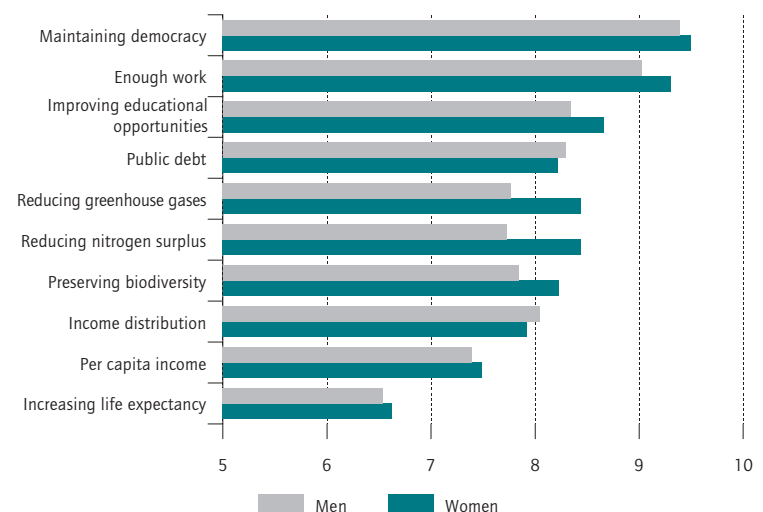
© DIW Berlin 2013

Apart from public debt and income distribution, all indicators are more important to women than to men.

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15 Further analyses of the indicators about concerns refer to other important areas of prosperity which were not taken into account in the commission's concept of indicators. For instance, in 2011, both the proportion of people who are *very concerned about global terrorism* (34 percent) or *about crime in Germany* (33 percent) are higher than the values shown (in Figure 8) for *impacts of climate change* and for *general economic development* (calculations by DIW Berlin based on SOEP data for 2011).

16 Calculations by DIW Berlin based on SOEP data for 2008–2011.

Figure 6

Relevance of Areas of Life¹ by Age

Survey results (0 = not at all important; 10 = very important)

1 Responses to the question: "How important is it to you for German policy-makers to address the following issues?"
Source: TNS Infratest telephone survey (January 2013), 1,012 respondents; calculations by DIW Berlin.
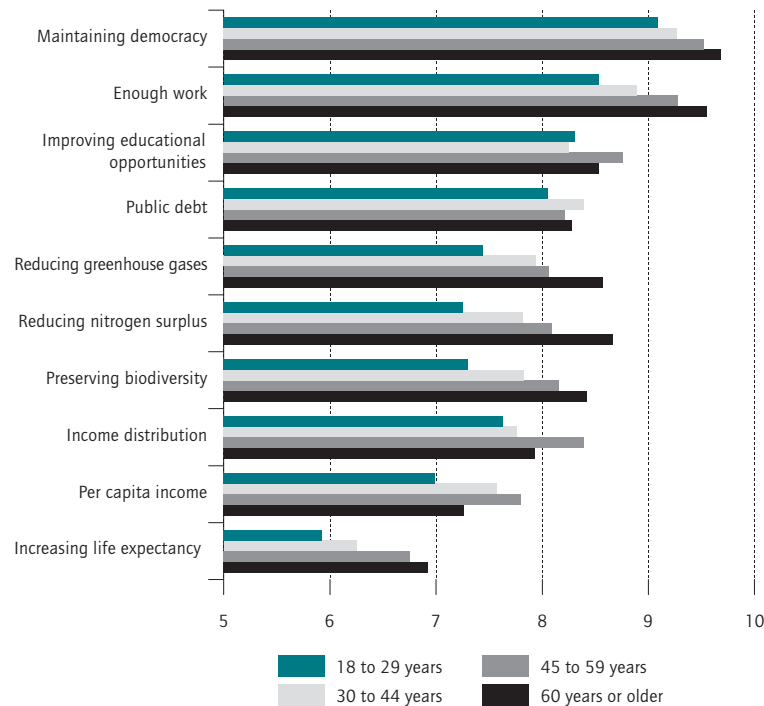
© DIW Berlin 2013

As a rule, the older the respondents, the higher they evaluate the relevance of the indicators.

on the basis of descriptive statistics, while the regression analysis shows adjusted net coefficients.

A regression model was calculated for each of the ten indicators (see table). The number of cases used in each analysis is slightly lower than the number of cases in the sample, since not all respondents provided assessments for every indicator. The findings show that people in eastern Germany evaluate all aspects of prosperity (except maintaining democracy) higher than West Germans. There are particularly strong (and statistically significant) region-specific mean differences in the assessment of the relevance of life expectancy (0.7 scale points), per capita income (0.6 scale points), and inequality of income distribution (0.5 scale points). Since the region-specific disparities in income were subtracted out, there is probably a context effect related to the aspect of income: the perception of a lack of economic prosperity in one's environment may be accompanied by attaching more value to the relevant political objectives, even if one's own income is relatively high. The fact that

attributing more relevance to economic aspects in the east of Germany is directly associated with stronger *concerns* about the general economic situation is measured in the SOEP. The proportion of people in eastern Germany who are extremely concerned is 20 percent higher on average across all income groups (and statistically significant) than in western Germany.[17]

Women tend to attribute above-average relevance, particularly with regard to environmental issues: compared to men, they rate a reduction of the nitrogen surplus and greenhouse gases as over half a scale point more important on average. Furthermore, the evaluations of the sustainability indicators are strongly correlated to age. The generation of today's over-60-year-olds see the reduction of environmentally harmful substances as more important by 0.7 scale points (greenhouse gases) or 0.8 scale points (nitrogen surplus) than 18 to 29-year-olds on average. It is surprising that environmental protection is only classified as a high-priority political objective by older people, since it is those who belong to the younger generations today who will be more directly affected by the impacts of climate change. Concerns about the environment are also influenced by age: the SOEP data show that the proportion of people who are extremely *concerned* about environmental protection is 13 percent higher in the over-40 age group than among 18 to 39-year-olds.[18]

If demographic and economic characteristics remain constant, people with an Abitur (school-leaving certificate that serves as a qualification for German university entrance) attribute below-average significance to all prosperity indicators. Those with an Abitur are therefore—if their above-average economic status is taken into account statistically—somewhat more relaxed than people without an Abitur.

It is striking that those with a mean household income evaluate general income and equality objectives statistically significantly higher than those in lower and high-income groups (by around half a scale point in both cases). On the other hand, demands for improvements in *educational opportunities* and *life expectancy* are particularly strong in lower income groups, while the evaluations of *debt reduction* and *maintaining democracy* as political objectives are clearly and statistically significantly below average for this group.

A person's labor market participation has only relatively little influence on how much relevance they ascribe to

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17 Calculations by DIW Berlin on the basis of SOEP data for 2011.

18 SOEP 2011, calculations by DIW Berlin.

Table

Determinants of the Importance of Various Areas of Life
OLS regression results

	Democracy	Work	Education	Debt	Greenhouse gases	Nitrogen surplus	Biodiversity	Income distribution	Per capita income	Life expectancy
Place of residence (reference group: western Germany)										
Eastern Germany	–0.07	0.20*	0.37**	0.08	0.06	0.05	0.14	0.51**	0.59**	0.70**
Gender (reference group: male)										
Female	0.14	0.26**	0.22*	0.06	0.64**	0.61**	0.31**	–0.15	0.10	0.19
Age group (reference group: 18 to 29 years)										
30 to 44 years	–0.04	0.14	–0.18	–0.06	0.54**	0.47*	0.27	–0.15	0.63**	0.21
45 to 59 years	0.23	0.38**	0.22	–0.26	0.53**	0.62**	0.31	0.44*	0.51**	0.64**
60 years or older	0.31	0.72**	–0.03	–0.38	0.70**	0.79**	0.48	–0.23	–0.20	0.83*
Education (reference group: no Abitur or school-leaving certificate)										
Abitur	–0.16	–0.35**	–0.70**	0.00	–0.49**	–0.85**	–1.12**	–0.63**	–0.80**	–1.01**
Household income[1] (reference group: 0 to 1,500 euros)										
1,500 to 3,000 euros	0.23**	0.15	–0.38**	0.70**	–0.26	–0.11	0.13	0.48**	0.39**	–0.40*
3,000 euros or more	0.40**	0.02	–0.41**	0.99**	–0.21	–0.32	0.09	0.10	–0.41*	–1.33**
Employment status (reference group: in gainful employment)										
Training/education	–0.23	–0.48**	–0.48	–0.27	–0.05	–0.24	–0.53	–0.43	0.06	–1.03**
Unemployed	–0.29	0.38*	0.11	–0.05	–0.38	–0.43	–0.05	–0.08	0.46	–0.47
Pensioners/semi-retired	0.00	–0.09	–0.17	0.35	0.32	0.31	0.05	0.19	0.12	–0.79**
Inactive/other	–0.14	–0.07	0.40	–0.98**	–0.40	–0.03	0.36	–0.27	–0.01	–0.55
Voting intention (reference group: CDU)										
SPD	0.14	0.10	0.22	0.01	0.21	–0.04	–0.02	0.74**	0.33*	0.04
Alliance 90/the Green Party	0.08	–0.15	0.12	0.12	0.67**	0.48*	0.41*	0.85**	0.32	–1.04**
FDP	–0.08	–0.15	–1.77**	0.33	–1.44**	–2.01**	–1.57**	–1.02**	–0.41	–1.89**
The Left Party	–0.23	0.07	–0.05	0.06	0.32	0.06	0.06	1.45**	1.06**	–0.06
The Pirate Party	–0.20	0.12	–0.31	–0.60	0.26	–0.10	–0.25	0.40	0.14	–1.48**
Non-voters	–0.41**	–0.44**	–0.52*	–0.53	–0.69**	–0.60*	0.36	0.00	0.00	–0.97**
Other	–0.14	0.09	–0.16	0.16	–0.25	–0.31	–0.09	–0.01	0.13	–0.69**
Constants	9.14**	8.67**	8.85**	7.78**	7.51**	7.65**	7.76**	7.52**	6.93**	7.32**
Number of cases	932	931	934	931	932	927	933	930	924	930
R²	0.066	0.093	0.094	0.048	0.101	0.129	0.098	0.099	0.099	0.143

Probability of error: * < 10 percent, ** < 5 percent.
1 Monthly net income of the entire household after tax.
Sources: TNS Infratest telephone survey (January 2012), 1,012 respondents; calculations by DIW Berlin.

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There was a particularly high number of statistically significant results (**) for education: those who have an Abitur consider most indicators to be less relevant.

the various areas. Only the ratings of labor and health policy objectives can be clearly differentiated statistically by employment status. Here, it is not surprising that the unemployed generally see an increase in the employment rate as more important by about 0.4 scale points than those in gainful employment. However, what is surprising is that the positive effect of age on the desire to increase life expectancy is almost completely compensated by the negative effect of retirement status. Hence, an older person only gives an above-average assess-

Figure 7

Relevance of Areas of Life[1] According to Voting Intentions
Survey results (0 = not at all important; 10 = very important)
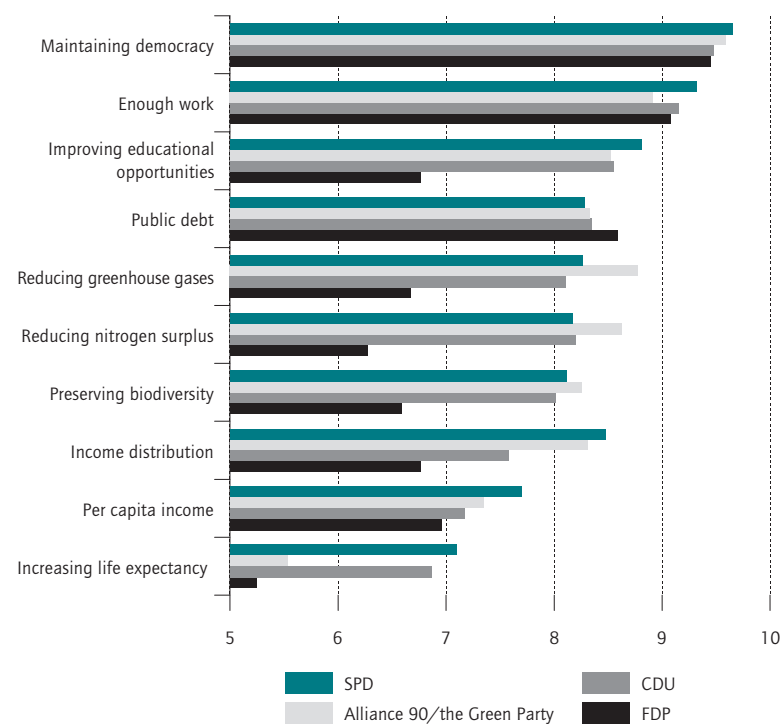
1 Responses to the question: "How important is it to you for German policy-makers to address the following issues?"
Source: TNS Infratest telephone survey (January 2013), 1,012 respondents; calculations by DIW Berlin.

© DIW Berlin 2013

For FDP voters, most indicators are of only below-average relevance.

Figure 8

Concerns about Prosperity[1]
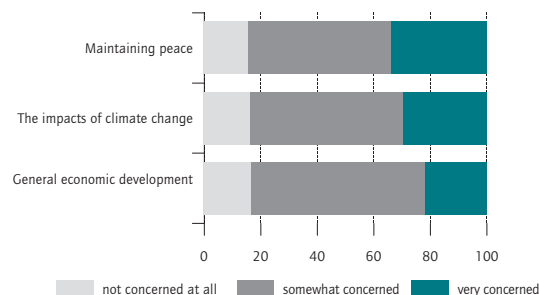
1 Responses to the question: "What is your attitude towards the following areas—are you concerned about them?"
Source: SOEP v28 (2011), 20,531 respondents; calculations by DIW Berlin.

© DIW Berlin 2013

Also with regard to concerns expressed, general economic development plays a minor role.

ment of the indicator for *life expectancy* if he or she is still in gainful employment. This seems to indicate an interest in working longer.

Some differences, important in terms of content and statistical significance, are revealed by the analysis on voters of different parties. For instance, the relevance of *per capita income* is rated particularly highly by Social Democratic Party (SPD) and Left Party voters. Even when place of residence and income are statistically controlled in the regression model, the latter evaluate this political objective as over one scale point more important than a CDU (Christian Democratic Union) voter on average.

The party-political coordinate system is most clearly reflected in the relevance attributed to the equality objective. Voters of SPD and the Green Party rate this almost one scale point higher than CDU voters on average. Supporters of the Left Party even rate this political objective 1.5 scale points more on average than CDU voters, while significantly below-average relevance is attached to it by liberal voters (FDP: Free Democratic Party).

It is surprising that despite the low number of cases of FDP voters in the sample (n = 27), clearly negative and statistically significant coefficients are estimated for aspects of sustainability and education and health policy objectives: the ratings are, on average, one to two scale points lower for FDP voters than for CDU, SPD, and Green Party voters. This only applies to *concerns about environmental protection* measured in the SOEP to a limited extent: although—if income and age remain constant—voters of FDP have significantly less probability than SPD (or Green Party) voters of being very concerned about the environment; however, the difference between FDP and CDU supporters in the SOEP data is negligible and not statistically robust.[19]

In the regression model, around ten percent of the observed variance in ratings can be explained for the indicators examined. This is a respectable value for analyses of population surveys, pointing to the relevance of the personal characteristics included. It also becomes clear, however, that most of the variation in the evaluations cannot be explained by the characteristics studied. In particular, individual psycho-emotional dispositions, leisure patterns, and media consumption might all play an important role here.[20]

At the same time, the analysis also reveals the relatively large consensus in the evaluation of political objectives

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19 SOEP 2011, calculations by DIW Berlin.

20 And specific features of the survey, especially the random variation of the sequence of questions.

between various socio-economic groups. None of the socio-economic characteristics studied show differences in the evaluations exceeding one full scale point. Even with party affiliation, this can only be observed between FDP and Left Party voters—which is hardly surprising. Accordingly, ranking of the objectives is also similar in all social subgroups. However, within the groups, the spread of the attribution of significance is considerable. This is accompanied by periodical variability of the ratings as variations in specific concerns with changing economic developement reveal, such as changes in the unemployment rate. Generally, the variation across individuals and time in the assessment of relevance underlines how inappropriate it would be to use an aggregate fixed overall indicator (»anti-GDP«) as an alternative to GDP.

Conclusion

At present, *per capita income* and hence gross domestic product (GDP) have no overriding importance in the eyes of Germany's registered voters. The majority of respondents do not see growth in GDP as an area that policy-makers should address as a high priority. On the contrary, GDP is a considerably lower priority than *maintaining democracy* and *enough work. (In)equality of income distribution* is also considered to be somewhat more important. Since realizing these political objectives is ultimately closely related to a high level of GDP and its growth, however, relevant public debates on growth are also inevitable in the future.

With the W3 indicators which are proposed by the German Bundestag's Enquete Kommission (study commission) »Growth, Wealth, and Quality of Life,« it is possible to cover a wide range of societal goals and challenges. But to ensure political effectiveness, it is not enough to simply compute and publish the W3 indicators. Rather, a culture of public discussion must be cultivated to enable the indicators to take on political relevance. The study commission has proposed that the federal government take a consistent (which implies a »cross-departmental«) position on the W3 indicators at regular intervals (for instance, annually). This could, for example, take the form of an »Annual Report on Well-Being.«

Consistently discussing the different and sometimes conflicting aspects of economics, quality of life, and environmental sustainability could—as also seen to some extent in the study commission »Growth, Wealth, and Quality of Life«—be achieved successfully with a German »Council of Experts on Sustainable Quality of Life,« which should serve as a counterpart to the German Council of Economic Experts in particular. These would

also be supplemented by the German Advisory Council on the Environment in the future.

The three councils would certainly set different priorities for analysis and policy recommendations, meaning that both the general population and policy-makers would be more informed about the development of growth, environmental sustainability, and quality of life than at present.

As a general rule, statistical indicators cannot and should not replace the political discussion process; they should facilitate it by providing scientifically grounded and well-documented information. Those who believed that an anti-GDP indicator would change the world instantly had unrealistic expectations. Looking at the outcomes realistically, the study commission »Growth, Wealth, and Quality of Life« has achieved its goal of going »beyond GDP.«

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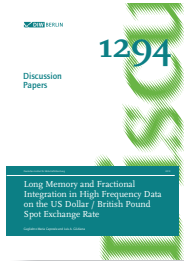
Long Memory and Fractional Integration in High Frequency Data on the US Dollar / British Pound Spot Exchange Rate

This paper analyses the long-memory properties of a high-frequency financial time series dataset. It focuses on temporal aggregation and other features of the data, and how they might affect the degree of dependence of the series. Fractional integration or I(d) models are estimated with a variety of specifications for the error term. In brief, we find evidence that a lower degree of integration is associated with lower data frequencies. In particular, when the data are collected every 10 minutes there are several cases with values of d strictly smaller than 1, implying mean-reverting behaviour; however, for higher data frequencies the unit root null cannot be rejected. This holds for all four series examined, namely Open, High, Low and Last observations for the US dollar / British pound spot exchange rate and for different sample periods.
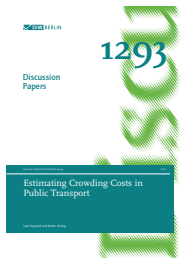
Estimating Crowding Costs in Public Transport

Preferences for transport activities are often considered only in terms of time and money. Whilst congestion in automobile traffic increases costs by raising trip durations, the same is less obvious in public transport (PT), especially rail-based. This has lead many economic analyses to conclude that there exists a free lunch by reducing the attractiveness of automobile transport at no (or little) cost for PT users. This article argues that congestion in PT - crowding - is also costly. Using survey data from the Paris metro we estimate the degree to which users value comfort in terms of less crowding. Using a contingent valuation method (CVM) we describe marginal willingness to pay over different parts of the distribution of in-vehicle crowding and consider moderating factors. We conclude that the total welfare cost for a trip rises from e2.42 for a seated passenger to e3.69 under the most congested conditions. We apply our results to the cost-benefit analysis of a recent investment in PT in Paris and consider broader implications for transport policy. In particular, we highlight that PT congestion is a first-order urban externality.