Income and outcomes: Social desirability bias distorts measurements of the relationship between income and political behavior[#]

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Abstract

Much empirical work in the social sciences relies on the accuracy of survey responses. Of all the questions answered by survey respondents, few are as common as those concerning income: Income is a crucial determinant of an individual's attitudes and behaviors and a standard correlate in political science survey research. This paper uses Danish administrative records to identify systematic error in survey respondents' self-reported income. We show that income overreporting is most pronounced among individuals who share the characteristics of high-income individuals, in ways that suggest the presence of social desirability bias. We show, further, that this leads to biased estimates and distorted conclusions in a number of common applications in political science. In our data, a simple logarithmic transformation eliminates the bias. More broadly, our results indicate that to understand the income-attitudes nexus in a given context, survey researchers should take into account social desirability bias and the pattern of income misreporting in that context.

Keywords: income measurement, surveys, public opinion, political attitudes, measurement error, social desirability bias

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I. Introduction

Of all the questions answered by survey respondents, few are as common as those concerning income: Income is a crucial determinant of an individual's attitudes and behaviors in many models of political economy (e.g., Meltzer and Richard 1981) and a standard correlate in political survey research (e.g., Brady et al. 1995). Yet questions about income are sensitive to respondents (e.g., Juster and Smith 1997), and sensitive questions often elicit inaccurate answers. It is pertinent, therefore, to understand not only the extent and source of measurement error in survey-reported income, but also how such error affects survey research in political and social science.

In this note, we combine personal income information from Danish administrative tax registers, used by tax authorities to determine tax liability, with data from a standard telephone survey. The Danish tax records provide highly accurate measures of personal income; for salary earners they rely exclusively on third party information (from, e.g., employers and government agencies), and recent experimental evidence documents that tax evasion out of such income is almost non-existent in Denmark (Kleven et al. 2011). The survey data include responses to questions about annual income as well as standard measures of political attitudes and preferences. Together, these data sources provide a unique opportunity to examine the extent to which survey income is measured with error; why this is so; and, crucially, how this affects conclusions from survey research in political science.

There can be many sources of measurement error in survey responses, including forgetfulness, ambiguous question wording, recoding mistakes, cognitive abilities, and issue sensitivity, including social desirability bias (Moore et al. 2000). In our sample of more than 5,000 respondents, we find systematic measurement error in the form of income overreporting suggesting the existence of social desirability bias in self-reported income in surveys: respondents who are in many respects similar to high-income individuals and are under the most pressure to earn high

incomes, are also more likely to overreport income.[1] We show, in turn, that this has serious consequences for substantive conclusions across a number of outcomes of interest to social scientists.

II. Matching Administrative Records With Survey Data

The dataset combines data from administrative government registers made available for research purposes with data from a telephone survey, including 6,004 completed interviews. The tax register contains records for more than 99.9% of the individuals between the ages 15 and 70 in the Danish population. It holds detailed information on earnings and wealth, and the tax registers are collected directly from third parties, which limits the potential for tax payers to evade taxes by underreporting their income to the tax authorities.[2] The modest rate of tax evasion for third-party reported income means that tax register numbers are very close to true income.

Survey responses were collected in telephone interviews that were conducted in January 2010. The sample was drawn randomly from the set of individuals in employment at some point between 1998-2003, totaling 2.6 million persons or about 70% of the Danish population aged 25 or above.[3] As part of the survey, respondents were asked a one-shot recall question about their gross annual income in 2009 (for details on question wording, see the online appendix, OA.II). 5,394 respondents answered the question (given as INC^S below). The survey data were subsequently merged with the administrative records for 2009. The survey question asked respondents to report their gross income including earnings, employers' pension contributions, transfer income, and capital income. From the tax registers we construct an equivalent "true"

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[1] These results are analogous to the result that people who wrongly claim to have voted at elections share the characteristics of validated voters (e.g., well-educated, partisan, interested in politics).

[2] Detailed references to studies on tax evasion and black market work, which both could affect reported income, is provided in the Online Appendix (OA.I). We exclude self-employed at no cost to generality (see Table 1, column (8)).

[3] The response rate (AAPOR RR1, calculated as completed interviews/gross sample) is 44%. Non-participation resulted from a mixture of a lack of willingness to participate and a lack of success in reaching the sampled individuals. We address income item non-response separately below.

measure of gross individual income (given as INC^R). Income tax liability is determined at the individual – and not the household – level in Denmark, implying that we can directly compare survey responses and register information; see Kreiner et al. (2015) and OA.III for details and robustness.

From the administrative records we also obtain information on a broad set of individual-level characteristics used as controls in the analyses, including age, occupational category, educational attainment, home ownership, unemployment, marital status, etc. The data are de-identified, kept on servers at Statistics Denmark, and can be accessed only under comprehensive security precautions.

III. Who Misreports Income?

Sensitive survey questions may elicit incorrect responses; this has been identified in "in every […] area that relies on self-report measures" (Fisher and Katz 2000, 106). In political science, it is well known that (some) respondents claim to have voted at elections when, in fact, they did not (e.g., Bernstein et al. 2001; Ansolabehere and Hersh 2012). Questions about income, earnings, and financial assets are often considered highly sensitive (Juster and Smith 1997, 1268; Tourangeau and Yan 2007, 871-3), perhaps best illustrated by the notoriously high nonresponse rates on income questions in surveys.[4] Sensitive questions not only tend to have higher nonresponse rates than questions on less sensitive topics, they also tend to have larger measurement error (e.g., Tourangeau and Yan 2007, 860; Gonzalez-Ocantos et al. 2012).

Figure 1 shows a scatterplot of register and survey incomes measures, aggregated to 200 bins for confidentiality reasons, for respondents with register income under one million kroner

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[4] To illustrate, Tourangeau and Yan (2007, Table 1) showed that the item nonresponse rate was highest for the question on total household income (a nonresponse rate of 8.2 percent) in the National Survey of Family Growth. In the same survey, the second largest nonresponse rate was 3.1 percent on a question about the number of lifetime sexual partners.

(see OA.III for full population). This clearly shows one key result, confirmed below: Respondents at the top of the income distribution exaggerate their income.

[Figure1]

We investigate misreporting behavior in a linear regression model:

$$\ln\left(INC_i^S\right) - \ln\left(INC_i^R\right) = \alpha + X_i'\beta + \varepsilon_i.$$

$\ln\left(INC_i^S\right)$ is the log of the self-reported survey income of respondent i, and $\ln\left(INC_i^R\right)$ is the log of the "true" income of the same respondent as measured by the administrative tax registers. The 'difference in logs'-specification avoids assigning disproportional weight to high-income individuals (if overreporting is proportional to actual income). X_i is a vector of factors that are plausibly correlated with income overreporting. Table 1 reports results.

[Table1]

Column 1 shows that income-overreporting is disproportionately found in the top of the income distribution for respondents with annual income at or above 1 million Danish Kroner. Further, men and respondents right of center tend to overstate their income. Interestingly, (only) male respondents tend to increase their reported levels of income the higher is their spouse's income, consistent with the norm that – within households – men typically earn more than women (see Bertrand et al. 2015).

The remainder of the Table introduces additional explanatory variables and robustness checks; details are in OA.IV, but nothing affects the substantive conclusions. In sum, measurement

error in self-reported income in surveys is non-random, which suggests that analyses that rely on survey-reported income are likely to be biased.

IV. The Consequences of Survey Income Misreporting

As a first step in exploring the consequences of non-random measurement error, note first that the risk of respondent misreporting, and the risk that misreporting biases subsequent analyses, depends in part on the way surveys record respondents' income. Some surveys ask respondents about the exact level of their income, while others ask respondents to place themselves in the appropriate interval and a third alternative is top-coding with censoring from above to protect the confidentiality of respondents. [5] While the exact approach potentially gives a more precise measure of the respondent's income, it generally also leads to higher non-response rates: Respondents may not know their exact income, particularly if it requires adding income from several different sources, or may refuse to disclose it if they regard it as personal information.

To examine the accuracy and validity of analyses that rely on survey income, we compare coefficients from models that differ only in their use of administrative and survey income as explanatory variables, using as dependent variables six common and salient survey questions in political science research. The dependent variables in the analyses that follow are attitudes towards: (i) whether individual well-being is considered a public or private responsibility; (ii) unemployment benefits; and (iii) financial support for immigrants and refugees. In addition, we elicit (iv) beliefs over whether success is believed to be determined by hard work or luck; (v) self-reported turnout;

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[5] The Survey of Income and Program Participation (SIPP) and the American Community Survey, both annual surveys from the U.S. Census Bureau, are examples of the first approach. The American National Election Survey (ANES) and the General Social Survey (GSS) are examples of the second approach, while the Current Population Survey (CPS) is an example of the third.

and (vi) electoral party support. Each of these dependent variables has been a subject of extensive research in which income is a standard explanatory variable.[6]

We report coefficients from OLS and probit models in the tables that follow; identical tables using ordered logit models can be found in the OA. Our estimating equations are:

$$y_i = \alpha^R + \delta^R INC_i^R + X_i' \beta^R + \epsilon_i^R$$

$$y_i = \alpha^S + \delta^S INC_i^S + X_i' \beta^S + \epsilon_i^S.$$

y_i is respondent i's response to the six questions just listed (see OA.II for details). As mentioned above, surveys often record the respondents' income as continuous, in intervals or top-coded. We consider all three alternatives below (represented by INC_i^S). X_i contains standard controls in analyses of individual attitudes and political behaviors. Some specifications also include municipality and/or party fixed effects.[7]

IV.A Results

When respondents are asked to report their exact level of income, the income variable is continuous and unbounded. In this case, the pattern of non-random measurement error found above is likely to (1) attenuate coefficients on the income variable and (2) reduce the level of significance of the income variable. Figure 2 provides a graphical illustration based on synthetic data, with the vertical axis being some measure of political attitudes or behavior and the horizontal axis showing respondents' income. The vertical dashed line illustrates that income overreporting is found only in the right tail of the income distribution: Above, but not below, the threshold, there is systematic overreporting, leading to attenuation bias in the estimated slope coefficient. This is exactly what we

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[6] Recent examples include: Alesina et al. (2003) on beliefs, Alesina and Giuliano (2009) on redistribution; Smets and van Ham (2013) on turnout, and Bartels (2006) on party choice; see OA.V for additional references.
[7] Social desirability bias has been linked to the characteristics of the interviewer (e.g., Krosnick 1999, 47). Including a full set of interviewer fixed effects leave results unchanged.

find when we compare the coefficients on our unbounded and continuous survey income to coefficients on register-based income.

[Figure2]

Table 2 is structured in pairs of columns, with the results from identical models using register-based income (odd columns) and survey-reported income (even columns) in each column-pair. To conserve on space, only Panel A reports the coefficients on all controls, the number of observations, R^2, and the use of fixed effects. The lower panels report only the coefficients on INC^R and INC^S, but in all cases the specifications are identical to those reported in Panel A.

[Table2]

Table 2 is easily summarized: Across all specifications and for every dependent variable, the coefficient on survey-reported income is both smaller and statistically significant less often than the coefficient on register-based income – a conclusion entirely consistent with Figure 1. In many instances, the discrepancy between the two measures of income leads to very different substantive conclusions. Focusing on the fuller specifications in columns (5)-(8), research based exclusively on survey data would conclude that an individual's income is unrelated to her attitude toward the relative merit of luck or hard work (Panel D), turnout (Panel E) and her vote (Panel F). Research based on register-based income would yield the opposite conclusion. Similarly, using survey-reported income would lead researchers to grossly underestimate the association between an individual's income and her attitude towards redistribution (Panels A-C).

As noted above, many surveys censor recorded incomes or ask respondents to place themselves in the appropriate income interval. Interestingly, in our case such top-coding and ordinal

income intervals effectively limit the potential of social desirability bias to influence estimates. Thus, top-coding reduces the consequences of overreporting among individuals who share the characteristics of high-income individuals, and ordinal income intervals reduce the ability to overreport in the first place. Since we traced the difference between the coefficients on INC^R and INC^S to overreporting among high-income respondents, surveys with top-coded income data or income measured in ordinal intervals are less likely to suffer from attenuation. OA.VII illustrates this point with synthetic data, and Tables A.3-A.6 document that these considerations hold empirically: When survey income is top-coded or measured in intervals, the coefficients are generally indistinguishable from those on register-based income.

V. Discussion and Conclusion

Income is a standard correlate and a key explanatory factor in social science survey research, yet it is plagued by non-random measurement error. We have shown that analyses that rely on self-reported income as a right-hand side variable when respondents are asked to report the exact level of their income can lead to distorted conclusions. In our sample, examples include survey data showing no relationship between income and the vote, while register-based income was strongly and significantly associated with party choice.[8]

Our results suggest social desirability bias as a key reason for misreporting, a conclusion supported by the pattern of income misreporting being very similar to the well-known pattern of vote misreporting, suggesting an underlying social-psychological mechanism. Social desirability bias is usually considered to reflect either *self-deception* or *impression management*

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[8] One concern could be that our results are affected by differences in the propensity to report income when surveyed. However, we examine the characteristics of income item non-respondents and find a pattern very similar to that identified in the literature (Lillard et al. 1986; Yan et al. 2010), with item non-respondents being poorer, but, based on register income, having an income-attitude relationship similar to item respondents. OA.XII shows that survey nonparticipants' incomes are in between item non-respondents and respondents. There are no differences in response behavior at the top of the income distribution, and no difference in results (OA.XIII).

(Paulhus 1984, 2002). If the systematic overreporting documented above reflects self-deception and if political attitudes reflect what people think their income is, not what it actually is, δ^S could be more reflective of the income-attitudes nexus than δ^R. While we cannot identify the personality traits that motivate income overreporting in our survey, we did document income misreporting that was systematically consistent with social convention (e.g., that the husband should earn more than his wife). This suggests impression management. Moreover, self-deception is likely associated with personality characteristics such as optimism or self-esteem (e.g., Fisher and Katz 2000, 107), but we found no association between overreporting and a proxy for optimism (see OA.XIV). Finally, if attitudes did reflect reported (and sincerely exaggerated) income rather than true income, one would expect attitudes to be more strongly associated with the former than the latter. Across all specifications and estimation methods, however, register-based income was more strongly associated with political behaviors and attitudes than survey income.

In our case, a simple logarithmic transformation reduces the weight attached to respondents in the right tail of the (self-reported) income distribution, which seems to eliminate the attenuation bias altogether across models (OA.XV-XVI). We do not know, however, whether the conclusions reached in our sample might obtain in other samples, countries, and contexts: for example, using data from the U.S., Bollinger (1998) and Kim and Tamborini (2014) find income overreporting in the *left* tail of the income distribution. This could reflect that in liberal market economies such as the U.S., the stigma associated with low income is stronger than in a Nordic welfare state such as Denmark. This, in turn, has consequences for comparisons of patterns of income and political behavior across countries. Future studies should look for patterns of systematic measurement error in survey income and, importantly, examine how this affects the conclusions that follow from survey research across the social sciences.

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Table 1: The Correlates of Income Overreporting

	Total income								Alternative income	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Millionary dummy	0.25**	0.25**	0.25**	0.26**	0.22*	0.23*	0.23*	0.23*	0.24**	0.38***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.15)
Male dummy	0.13***	0.13***	0.13***	0.13***	0.12***	0.12***	0.12***	0.16***	0.11***	0.16***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Spouse difference	0.03	0.03	0.04	0.04	0.03	0.04	0.05	0.03	0.04	-0.01
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.06)
Spouse difference- male interaction	0.28**	0.27**	0.26**	0.26**	0.23**	0.22**	0.27**	0.34***	0.31***	0.52***
	(0.12)	(0.11)	(0.12)	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.14)
Right leaning	0.04***	0.04***	0.05***	0.05***			0.04***	0.06***	0.04***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)			(0.01)	(0.02)	(0.01)	(0.02)
Average income (1998-2008)							0.05			
							(0.034)			
Age	0.01**	0.01**	0.02***	0.02***	0.02***	0.02***	0.01*	0.02***	0.02***	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age^2	-0.00**	-0.00**	-0.00***	-0.00***	-0.00***	-0.00***	-0.00*	-0.00***	-0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)		0.00	0.01	0.01	0.01	0.01	0.01	-0.01	-0.00	0.05*
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Education (medium)		0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.05*
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Education (long)		-0.03	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02	-0.03	0.05
		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Home owner			-0.09***	-0.10***	-0.08***	-0.08***	-0.11***	-0.09***	-0.10***	-0.06***
			(0.02)	(0.02)	(0.02	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Unemployment			-0.00*	-0.00*	-0.00	-0.00	-0.00*	-0.00**	-0.00*	-0.00***
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Immigrant			-0.02	-0.02	0.02	0.01	-0.01	-0.00	0.00	-0.10
			(0.06)	(0.06)	(0.04)	(0.04)	(0.06)	(0.06)	(0.05)	(0.08)
No budget				0.01	0.01	0.01				
				(0.02)	(0.02)	(0.02)				
Party choice FE	No	No	No	No	Yes	Yes	No	No	No	No
Municipality FE	No	No	No	No	No	Yes	No	No	No	No
Observations	3,467	3,467	3,467	3,467	3,731	3,731	3,466	3,644	3,650	2,608
R-squared	0.03	0.03	0.04	0.04	0.04	0.06	0.04	0.05	0.05	0.06

Notes. The table reports the coefficients from OLS regressions of income overreporting in proportion to true income on the set of correlates shown. Columns (1)-(9) define income as total income, including pension, cash benefits, transfer income (see description in the text). Column (9) subtracts child and housing support. Column (10) subtracts employers' pension payments. All models include a constant term (not reported). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Figure 1: Incomes: Register and Survey
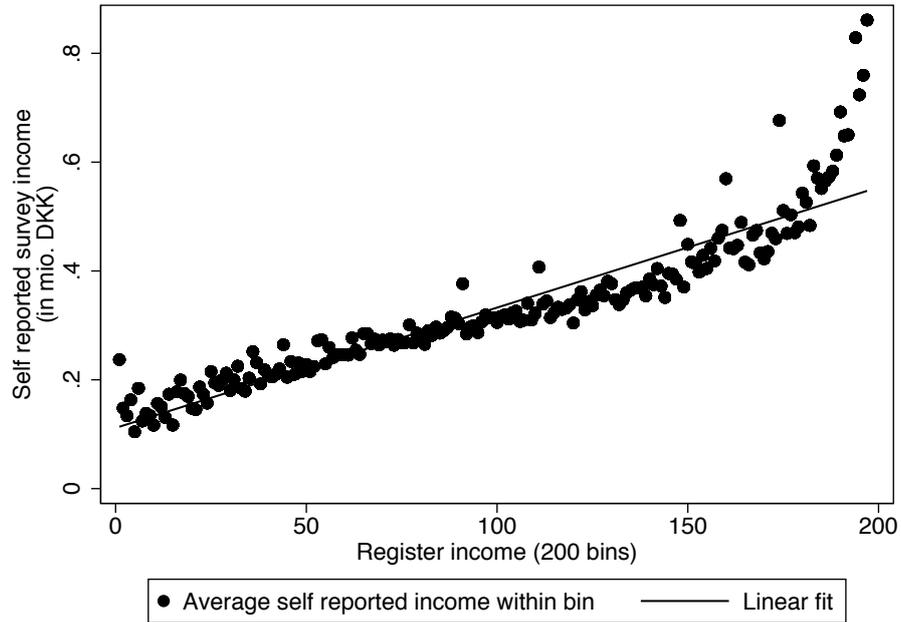
Notes. The horisontal axis shows register based income in 200 equal-sized bins ranked from lowest income to highest income. The first bin is defined as the N/200=25 lowest ranked individuals and the figure plots the average register income for this group against their average survey reported income – and continues to do so for the 199 other income bins. The vertical axis has been censored at self reported survey income above 1 mio. DKK. Figure A.1 in the online appendix shows the full sample.

Figure 2: Attenuation from Overreporting Among the Rich
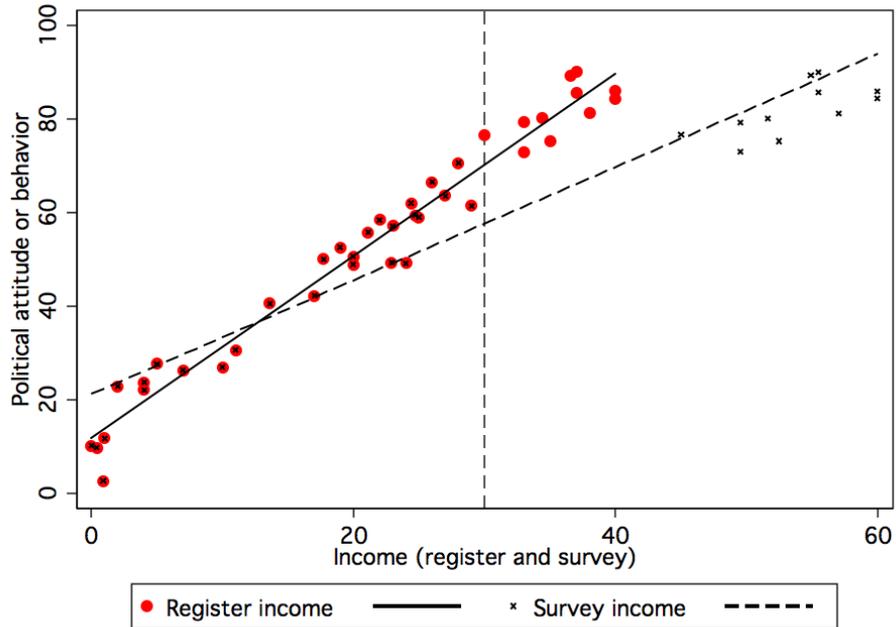
Notes. The vertical axis illustrates a measure of respondents' political attitudes or behaviors. The horizontal axis shows respondent income; the dots represent register income, the x's represent survey income. To the left of the vertical dashed line, all the x's are on top of the dots; to the right of the vertical dashed line, all x's are located to the right of the dots. This illustrates that overreporting is most pronounced among high-income respondents. The full fitted line shows a regression of political behavior on true income. The dashed fitted line shows a regression of political behavior on survey income. The slope of the dashed regression line is smaller than the slope on the full line. This reflects the attenuated coefficient on self-reported income described in the text.

Table 2: Comparing Register and Survey Income

	Full sample							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A	*Dependent variable: Well-being is public or private responsibility (1-5, 1 is pro-government)*							
Income register	0.34***		0.35***		0.34***		0.14*	
	(0.07)		(0.08)		(0.08)		(0.08)	
Income survey		0.08**		0.07**		0.07**		0.02
		(0.03)		(0.03)		(0.03)		(0.02)
Male dummy			0.19***	0.21***	0.19***	0.21***	0.11***	0.12***
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age			-0.03***	-0.02**	-0.04***	-0.03**	-0.02**	-0.02**
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age^2			0.00**	0.00*	0.00***	0.00**	0.00**	0.00*
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.06	0.07	0.07*	0.08*	0.02	0.02
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (medium)			-0.11**	-0.09**	-0.09**	-0.07	-0.08	-0.00
			(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)
Education (long)			-0.08	-0.05	-0.05	-0.02	-0.02	-0.05
			(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)
Foreign background			-0.02	-0.03	0.00	-0.01	0.01	0.00
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Homeowner			0.05	0.08**	0.02	0.05	-0.05	-0.04
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Single			-0.05	-0.05	-0.03	-0.04	-0.02	-0.02
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Fraction of year unemployed			0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,174	5,173	5,173	5,173	5,173	5,173	5,173
R-squared	0.004	0.002	0.019	0.017	0.046	0.045	0.174	0.174
Panel B	*Dependent variable: Unemployment benefits up or down (1-3, 1 is pro-welfare)*							
Income register	0.24***		0.13***		0.12***		0.04	
	(0.04)		(0.03)		(0.04)		(0.03)	
Income survey		0.05***		0.04***		0.03***		0.02**
		(0.02)		(0.01)		(0.01)		(0.01)
Panel C	*Dependent variable: Immigrant assistance up or down (1-3, 1 is 'down')*							
Income register	-0.11**		-0.09*		-0.07		-0.12**	
	(0.04)		(0.05)		(0.05)		(0.05)	
Income survey		-0.01		-0.01		-0.01		-0.02
		(0.01)		(0.01)		(0.01)		(0.01)
Panel D	*Dependent variable: Succes determined by hard work or luck (1-3, 3 is luck)*							
Income register	-0.23***		-0.22***		-0.23***		-0.18***	
	(0.04)		(0.04)		(0.05)		(0.04)	
Income survey		-0.04		-0.03		-0.03		-0.02
		(0.02)		(0.02)		(0.02)		(0.02)
Panel E	*Dependent variable: Turnout*							
Income register	0.13***		0.08***		0.07***			
	(0.03)		(0.03)		(0.02)			
Income survey		0.08**		0.05*		0.04		
		(0.03)		(0.03)		(0.03)		
Panel F	*Dependent variable: Right wing vote*							
Income register	0.28***		0.25***		0.26***			
	(0.04)		(0.05)		(0.05)			
Income survey		0.11*		0.08		0.07		
		(0.07)		(0.05)		(0.05)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. Panels A-D are estimated using OLS. Panels E-F are estimated using probit (marginal effects are reported in the table). The models in panels B-F are identical to those Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Income and outcomes:

Social desirability bias distorts measurements of the relationship between income and political behavior

Supplemental information
(For Online-Appendix)

Part I (p. 2): Evidence on tax evasion and black market work

The tax registers are collected directly from the relevant third party: Information on earnings is reported by employers; information on transfer income is reported by government agencies; information about the value of assets and liabilities is reported directly by banks and other financial institutions; and so on. Third-party reporting naturally limits the potential for tax payers to evade taxes by underreporting their income to the tax authorities. Indeed, a recent and large scale randomized tax auditing experiment of more than 42,000 individuals (Kleven et al. 2011) documented that the tax evasion rate is extremely small for third-party reported income in Denmark: 0.23% for total positive income and, across all different third-party reported income categories, the tax evasion rate was consistently well below 1%. The modest rate of tax evasion for third-party reported income means that tax register numbers are very close to true income. By contrast, in the tax auditing experiment conducted by Kleven et al. (2011), the evasion rate was 17.1% for self-employment income. In the analyses that follow, we exclude self-employed persons to minimize the risk that individual differences between register-based and self-reported income come from such underreporting. It should be stressed, however, that all conclusions obtain when this group of respondents is included in the analyses (see Table 1, column (8)).

A separate issue is (purely cash-based) income from black market activities, which is harder for tax authorities to discover. Based on years of survey estimates of black market work, the Danish Economic Councils (2011) and Boserup and Pinje (2013) report that self-employed and very low-income earners are the most frequent suppliers of black market labor, with black market labor much higher for the former. This strengthens the case for omitting the self-employed. Black market income is substantial only in the lowest income decile and unimportant for middle and high incomes. Such income is, therefore, unlikely to account for the differences between register and survey income that we obtain.

Part II (p. 2): Question wording from telephone survey

Table A.1 – Question Wording and Response Categories

	Question Wording	**Response Categories**
Survey income	"We are also interested in knowing about the development in your income before taxes. We are thinking about income such as earnings (including employer's pension contribution), pension payments, payments from unemployment insurances, cash benefits or other forms of transfer income. What was your income approximately before taxes in 2009?"	Numerical answer
Redistribution/ Welfare state	"Some people think that the government should do all it can to raise living standards for poor Danes; they score 1 on the scale. Others think that this is not the responsibility of the government and that individuals should support themselves; they score 5 on the scale. Where would you place yourself?"	$1 - 5$
Unemployment benefits	"Following the economic crisis, many people have lost their jobs. In your opinion, should the government support those that become unemployed (1) more than today; (2) less than today; (3) similar to today; (4) don't know"	$1 - 3$
Immigrant assistance	"Immigrants and refugees that have come to Denmark after July 1, 2002 are entitled to "Start help" in situations where Danes are entitled to social security benefits. "Start help" constitutes a lower amount than the social security benefits that Danes are entitled to. In your opinion, should the "Start help" (1) be increased; (2) be reduced; (3) remain unchanged; (4) don't know."	$1 - 3$
Success: Work/ luck	"Some people think that success requires hard work; they score 1 on the scale. Others think that it is mostly a question of luck or connections; they score 3 on the scale. Where would you place yourself?"	$1 - 3$
Party choice	"Which party did you vote for in the latest parliamentary election?"	Indicator variables for each party
Voting	"Which party did you vote for in the latest parliamentary election?"	Indicator equals 1 if respondents voted, zero otherwise.

Part III (p. 3): Uncensored scatterplot of register and survey income

Figure A.1 – Incomes: Register and Survey
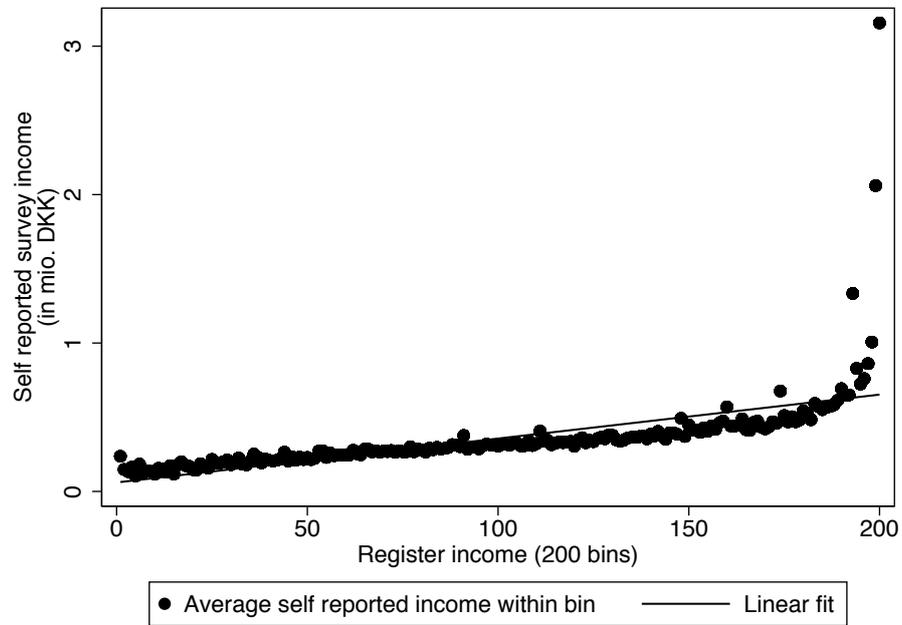
Notes. The horisontal axis shows register based income in 200 equal-sized bins ranked from lowest income to highest income. Each bin contains 25 individuals. The vertical axis shows the average self reported survey income within each bin.

Part IV (p. 4): Details on robustness checks from Table 1

The model in column (2) includes dummies for educational attainment (the omitted category is high-school or less). The ability of the respondents to report true income correctly might vary with educational attainment. Since education is correlated with other characteristics of income-overreporting (including, of course, income itself), omitting education could bias our findings. As column (2) shows, however, nothing changes when education is controlled for. The model in column (3) controls for home ownership, unemployment, and immigrant status.[1] Adding these controls also do not change anything. The model in column (4) includes an indicator variable that equals 1 if the respondent reported keeping a budget. Presumably, keeping a budget should improve respondents' understanding of their financial situation, reducing the degree of misreporting. Budget-keeping, however, is unrelated to respondent over-reporting and including it as a control leaves all coefficients unchanged.

In the fifth column, the indicator for right-leaning parties is replaced with a full set of party vote fixed effects (the omitted category is the Social Democratic Party). This shows that the tendency to overreport income among right of center-voters is primarily driven by conservatives voters. Column (6) includes a full set of municipal fixed effects to remove any unobserved geographical variation that might affect the results.[2] The model in column (7) controls for respondents' average (register-based) income in the ten years from 1998-2008. Since incomes are measured during the financial crisis (2009), if high-income individuals have relatively volatile incomes, one possible explanation for our findings is that high-income individuals overreport by (deliberately or not) reporting their "usual income" (1998-2008) rather than their lower "crisis income" (2009). The results reported in column (7) show, however, that all results obtain even after controlling for "usual income". In column (8), we added self-employed to the sample, which also did not

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[1]This category includes immigrants, defined as persons born outside Denmark whose parents are both non-Danish citizens or were both born abroad. It also includes descendants of immigrants, defined as persons born in Denmark whose parents are immigrants.

[2]If misreporting is driven in part by a desire to conform with social norms, one could imagine income overreporting to be more prevalent in richer municipalities.

change anything. Columns (9) and (10), finally, change the composition of the (true) gross income to which respondents' self-reported income is compared. The model in column (9) deducted child - and housing support from our measure of the respondents' true income. This did not change anything. Neither did removing employers' pension contributions as shown in column (10).

Part V (p. 6): References to additional literature on left-hand side variables

For research on individual preferences for redistribution or social policy preferences, see, e.g., Alesina and La Ferrara 2005; Iversen and Soskice 2001; Meltzer and Richard 1981; Rehm et al. 2012; for preferences toward social spending targeted at immigrants (an example of out-group solidarity), see, e.g., Citrin et al. 1997; Fong and Luttmer 2011; and Luttmer 2001; for whether success is determined mostly by effort or by luck, see, e.g., Alesina and Angeletos 2005; for income and turnout, see, e.g., Filer et al. 1993; Uhlaner 1989; and for income and party choice, see, e.g., Brooks and Brady 1999; Gelman et al. 2007.

# Part VI (p. 8): Table 2 estimated using ordered logit

Table A.2 – Comparing Register and Survey Income (Ordered Logit)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
					Full sample			
Panel A			*Dependent variable: Well-being is a private responsibility*					
Income register	0.62***		0.60***		0.60***		0.25	
	(0.12)		(0.14)		(0.14)		(0.16)	
Income survey		0.14*		0.11*		0.11**		0.04
		(0.08)		(0.06)		(0.05)		(0.04)
Male dummy			0.32***	0.35***	0.32***	0.36***	0.21***	0.23***
			(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Age			-0.05***	-0.04**	-0.06***	-0.05**	-0.05**	-0.04**
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age^2			0.00**	0.00*	0.00***	0.00**	0.00**	0.00*
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.12*	0.13*	0.14*	0.15**	0.04	0.05
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Education (medium)			-0.15*	-0.12	-0.12	-0.09	0.02	0.04
			(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Education (long)			-0.10	-0.05	-0.06	-0.01	-0.01	0.01
			(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Immigrant			-0.04	-0.06	0.00	-0.02	-0.02	-0.02
			(0.13)	(0.13)	(0.13)	(0.13)	(0.14)	(0.14)
Homeowner			0.12*	0.17**	0.08	0.13*	-0.06	-0.04
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Single			-0.08	-0.08	-0.07	-0.07	-0.04	-0.04
			(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Fraction of year unemployed			0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,174	5,173	5,173	5,173	5,173	5,173	5,173
Panel B			*Dependent variable: Unemployment benefits should be reduced*					
Income register	1.04***		0.58***		0.55***		0.25	
	(0.16)		(0.16)		(0.17)		(0.17)	
Income survey		0.26***		0.18**		0.16**		0.11**
		(0.10)		(0.07)		(0.07)		(0.05)
Panel C			*Dependent variable: Immigrant assistance should be increased*					
Income register	-0.32**		-0.30		-0.25		-0.48**	
	(0.15)		(0.19)		(0.20)		(0.21)	
Income survey		-0.03		-0.02		-0.02		-0.06
		(0.04)		(0.05)		(0.05)		(0.07)
Panel D			*Dependent variable: Succes is determined by luck rather than hard work*					
Income register	-0.79***		-0.78***		-0.84***		-0.69***	
	(0.15)		(0.17)		(0.18)		(0.18)	
Income survey		-0.19		-0.13		-0.12		-0.08
		(0.22)		(0.16)		(0.14)		(0.11)
Panel E			*Dependent variable: Turnout*					
Income register	2.11***		1.16***		1.06**			
	(0.42)		(0.44)		(0.44)			
Income survey		1.68***		0.85*		0.82		
		(0.49)		(0.51)		(0.53)		
Panel F			*Dependent variable: Right wing vote*					
Income register	1.15***		0.98***		1.03***			
	(0.16)		(0.192)		(0.205)			
Income survey		0.899**		0.609		0.591		
		(0.397)		(0.456)		(0.492)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. All panels are estimated using ordered logit models. The models in panels B-F are identical to those in Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part VII (p. 8): Graphical illustration that top-coding alleviates the attenuation bias caused by systematic income misreporting

Figure A.2 – Topcoded Survey Income
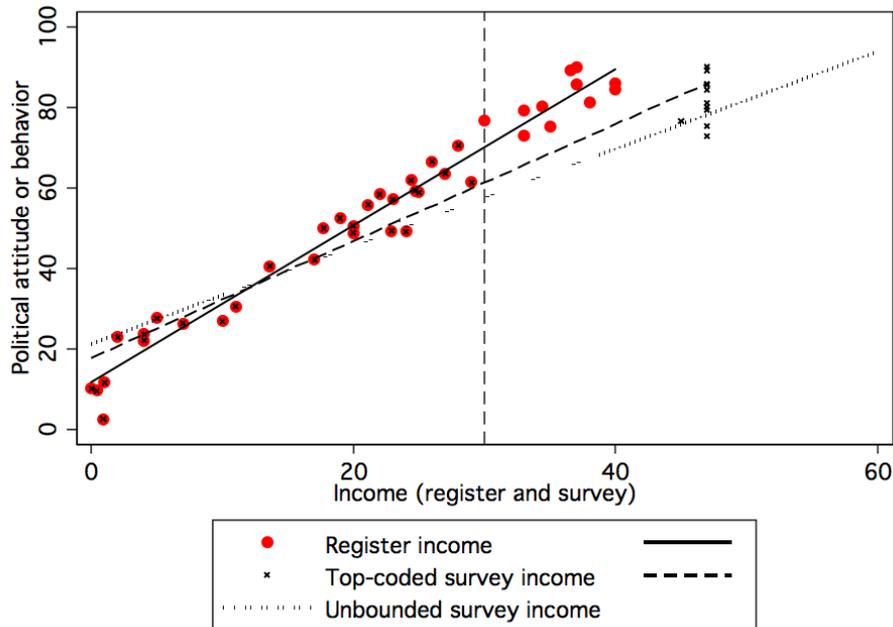
Notes. The vertical axis illustrates a measure of respondents' political attitudes or behaviors. The horizontal axis shows respondent income; the dots represent register income, the x's represent survey income. To the right of the vertical dashed line, all x's are located to the right of the dots. This illustrates that overreporting is most pronounced among high-income respondents. The full fitted line shows a regression of political behavior on true income. The dashed fitted line shows a regression of political behavior on survey income. The figure is identical to Figure 1 in the text except that survey income (the x's) above 45 on the horizontal axis are censored at 45. This rotates the dashed regression line away from the original survey line (represented by the dotted line) and towards the "true" regression line, thereby reducing the attenuation bias associated with self-reported survey income.

Part VIII (p. 8): Top-coding alleviates the attenuation bias caused by systematic income misreporting

Table A.3 – Measurement Error When the Income Variable is Top Coded

	Full sample							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A	*Dependent variable: Well-being is public or private responsibility (1-5, 1 is pro-government)*							
Income register (top coded)	0.34***		0.35***		0.34***		0.15*	
	(0.07)		(0.08)		(0.08)		(0.08)	
Income survey (top coded)		0.58***		0.61***		0.61***		0.32***
		(0.08)		(0.09)		(0.10)		(0.09)
Male dummy			0.19***	0.21***	0.19***	0.21***	0.11***	0.12***
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age			-0.03***	-0.04***	-0.04***	-0.04***	-0.02**	-0.03***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age^2			0.00**	0.00***	0.00***	0.00***	0.00**	0.00**
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.06	0.05	0.07*	0.06	0.06	0.00
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (medium)			-0.11**	-0.13***	-0.09**	-0.11**	-0.03	-0.03
			(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)
Education (long)			-0.08	-0.11**	-0.05	-0.08	-0.02	-0.04
			(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)
Foreign background			-0.02	-0.01	0.00	0.01	0.02	0.02
			(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)
Home owner			0.05	0.04	0.02	0.02	-0.06	-0.06
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Single			-0.05	-0.04	-0.03	-0.03	-0.01	-0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Fraction of year unemployed			0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,174	5,173	5,173	5,173	5,173	5,173	5,173
R^2	0.004	0.009	0.019	0.023	0.046	0.050	0.165	0.167
Panel B	*Dependent variable: Unemployment benefits up or down (1-3, 1 is pro-welfare)*							
Income register (top coded)	0.24***		0.13***		0.12***		0.05	
	(0.04)		(0.04)		(0.04)		(0.04)	
Income survey (top coded)		0.40***		0.29***		0.28***		0.18***
		(0.04)		(0.04)		(0.05)		(0.05)
Panel C	*Dependent variable: Immigrant assistance up or down (1-3, 1 is 'down')*							
Income register (top coded)	-0.106**		-0.091*		-0.07		-0.10**	
	(0.04)		(0.05)		(0.05)		(0.048)	
Income survey (top coded)		-0.107**		-0.115**		-0.096*		-0.16***
		(0.05)		(0.06)		(0.06)		(0.05)
Panel D	*Dependent variable: Succes determined by hard work or luck (1-3, 3 is luck)*							
Income register (top coded)	-0.23***		-0.22***		-0.23***		-0.19***	
	(0.04)		(0.04)		(0.04)		(0.04)	
Income survey (top coded)		-0.32***		-0.31***		-0.32***		-0.26***
		(0.05)		(0.05)		(0.05)		(0.05)
Panel E	*Dependent variable: Turnout*							
Income register (top coded)	0.10***		0.06***		0.06***			
	(0.02)		(0.02)		(0.02)			
Income survey (top coded)		0.11***		0.07***		0.07***		
		(0.02)		(0.02)		(0.02)		
Panel F	*Dependent variable: Right wing vote*							
Income register (top coded)	0.26***		0.21***		0.21***			
	(0.04)		(0.04)		(0.04)			
Income survey (top coded)		0.39***		0.35***		0.35***		
		(0.04)		(0.05)		(0.05)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. Panels A-D are estimated using OLS. Panels E-F are estimated using probit (marginal effects are reported in the table). The models in panels B-F are identical to those Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part IX (p. 8): Top-coding alleviates the attenuation bias caused by systematic income misreporting (estimated using ordered logit)

Table A.4 –Measurement Error When the Income Variable is Top-Coded (Ordered Logit)

				Full sample				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A			*Dependent variable: Well-being is public or private responsibility*					
Income register	0.62***		0.60***		0.60***		0.28*	
	(0.12)		(0.14)		(0.14)		(0.15)	
Income survey		1.01***		1.03***		1.05***		0.59***
(top-coded)		(0.14)		(0.16)		(0.17)		(0.17)
Male dummy			0.32***	0.27***	0.32***	0.27***	0.19***	0.16***
			(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)
Age			-0.05***	-0.06***	-0.06***	-0.07***	-0.04**	-0.05***
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age^2			0.00**	0.00***	0.00***	0.00***	0.00**	0.00**
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.12*	0.11	0.14*	0.13*	0.02	0.01
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Education (medium)			-0.15*	-0.18**	-0.12	-0.14*	-0.00	-0.02
			(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Education (long)			-0.11	-0.15	-0.06	-0.10	-0.03	-0.06
			(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Immigrant			-0.04	-0.03	0.00	0.01	-0.02	-0.01
			(0.13)	(0.13)	(0.13)	(0.13)	(0.15)	(0.15)
Homeowner			0.12*	0.11	0.08	0.07	-0.08	-0.09
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Single			-0.08	-0.07	-0.07	-0.06	-0.02	-0.02
			(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Fraction of year			0.00	0.00	0.00	0.00	0.00	0.00
unemployed			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,174	5,173	5,173	5,173	5,173	5,173	5,173
Panel B			*Dependent variable: Unemployment benefits up or down*					
Income register	1.04***		0.58***		0.55***		0.26	
	(0.16)		(0.16)		(0.17)		(0.17)	
Income survey		1.74***		1.30***		1.29***		0.90***
(top-coded)		(0.18)		(0.20)		(0.21)		(0.22)
Panel C			*Dependent variable: Immigrant assistance up or down*					
Income register	-0.32**		-0.30		-0.25		-0.39*	
	(0.15)		(0.19)		(0.20)		(0.20)	
Income survey		-0.33**		-0.41**		-0.37*		-0.64***
(top-coded)		(0.16)		(0.19)		(0.20)		(0.22)
Panel D			*Dependent variable: Succes determined by hard work or luck*					
Income register	-0.79***		-0.78***		-0.84***		-0.70***	
	(0.15)		(0.17)		(0.18)		(0.18)	
Income survey		-1.02***		-1.01***		-1.06***		-0.88***
(top-coded)		(0.16)		(0.18)		(0.19)		(0.19)
Panel E			*Dependent variable: Turnout*					
Income register	2.12***		1.16***		1.06**			
	(0.42)		(0.44)		(0.44)			
Income survey		1.96***		1.17**		1.14**		
(top-coded)		(0.43)		(0.48)		(0.49)		
Panel F			*Dependent variable: Right wing vote*					
Income register	1.15***		0.98***		1.03***			
	(0.16)		(0.19)		(0.21)			
Income survey		1.60***		1.49***		1.55***		
(top-coded)		(0.17)		(0.21)		(0.22)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. All panels are estimated using ordered logit models. The models in panels B-F are identical to those in Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part X (p. 8): Reporting income in intervals alleviates the attenuation bias caused by systematic income misreporting

Table A.5 –Measurement Error When the Income Variable is Interval-Scaled

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Full sample				
Panel A	*Dependent variable: Well-being is public or private responsibility (1-5, 1 is pro-welfare)*							
Income register (categorical)	0.016***		0.016***		0.016***		0.008	
	(0.005)		(0.006)		(0.006)		(0.005)	
Income survey (categorical)		0.02***		0.02***		0.02***		0.015***
		(0.004)		(0.005)		(0.005)		(0.004)
Male dummy			0.20***	0.18***	0.20***	0.19***	0.11***	0.10***
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age			-0.03***	-0.04***	-0.03***	-0.04***	-0.02**	-0.03***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age^2			0.00**	0.00***	0.00***	0.00***	0.00**	0.00**
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.06	0.05	0.07*	0.06	0.01	0.00
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (medium)			-0.10**	-0.12**	-0.09*	-0.10**	-0.02	-0.034
			(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)
Education (long)			-0.06	-0.08	-0.04	-0.05	-0.02	-0.03
			(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)
Immigrant			-0.02	-0.01	-0.001	0.013	0.02	0.02
			(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)
Home owner			0.05	0.05	0.03	0.03	-0.06	-0.06
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Single			-0.05	-0.04	-0.03	-0.02	-0.013	-0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Fraction of year unemployed			0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,174	5,173	5,173	5,173	5,173	5,173	5,173
R^2	0.002	0.006	0.017	0.021	0.045	0.048	0.165	0.167
Panel B	*Dependent variable: Unemployment benefits up or down (1-3, 1 is pro-welfare)*							
Income register (categorical)	0.013***		0.006**		0.005*		0.002	
	(0.002)		(0.003)		(0.003)		(0.003)	
Income survey (categorical)		0.01***		0.009***		0.008***		0.005**
		(0.002)		(0.002)		(0.002)		(0.002)
Panel C	*Dependent variable: Immigrant assistance up or down (1-3, 1 is 'down')*							
Income register (categorical)	-0.01***		-0.011***		-0.010***		-0.008**	
	(0.003)		(0.003)		(0.003)		(0.003)	
Income survey (categorical)		-0.01***		-0.01***		-0.01***		-0.009***
		(0.002)		(0.003)		(0.003)		(0.003)
Panel D	*Dependent variable: Succes determined by hard work or luck (1-3, 3 is luck)*							
Income register (categorical)	-0.012***		-0.011***		-0.010***		-0.008**	
	(0.003)		(0.003)		(0.003)		(0.003)	
Income survey (categorical)		-0.012***		-0.012***		-0.012***		-0.009**
		(0.002)		(0.003)		(0.003)		(0.003)
Panel E	*Dependent variable: Turnout*							
Income register (categorical)	0.0***		0.004**		0.004**			
	(0.001)		(0.002)		(0.002)			
Income survey (categorical)		0.006***		0.003**		0.003**		
		(0.001)		(0.001)		(0.001)		
Panel F	*Dependent variable: Right wing vote*							
Income register (categorical)	0.014***		0.009***		0.009***			
	(0.003)		(0.003)		(0.003)			
Income survey (categorical)		0.014***		0.011***		0.010***		
		(0.002)		(0.002)		(0.002)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. Panels A-D are estimated using OLS. Panels E-F are estimated using probit (marginal effects are reported in the table). The models in panels B-F are identical to those Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part XI (p. 8): Reporting income in intervals alleviates the bias from systematic income misreporting (ordered logit)

Table A.6 –Measurement Error When the Income Variable is Interval-Scaled (Ordered Logit)

	Full sample							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A	*Dependent variable: Well-being is public or private responsibility*							
Income register (interval)	0.03*** (0.01)		0.03*** (0.01)		0.03** (0.01)		0.01 (0.01)	
Income survey (interval)		0.04*** (0.01)		0.04*** (0.01)		0.04*** (0.01)		0.03*** (0.01)
Male dummy			0.34*** (0.05)	0.31*** (0.05)	0.35*** (0.05)	0.32*** (0.05)	0.20*** (0.05)	0.18*** (0.05)
Age			-0.05** (0.02)	-0.06*** (0.02)	-0.06*** (0.02)	-0.07*** (0.02)	-0.04** (0.02)	-0.05*** (0.02)
Age^2			0.00** (0.00)	0.00*** (0.00)	0.00** (0.00)	0.00*** (0.00)	0.00* (0.00)	0.00** (0.00)
Education (basic)			0.12* (0.07)	0.11 (0.07)	0.14* (0.07)	0.13* (0.07)	0.02 (0.07)	0.01 (0.07)
Education (medium)			-0.14* (0.08)	-0.16** (0.08)	-0.10 (0.08)	-0.13 (0.08)	0.00 (0.08)	-0.02 (0.08)
Education (long)			-0.07 (0.09)	-0.10 (0.09)	-0.03 (0.011)	-0.06 (0.01)	-0.02 (0.01)	-0.04 (0.01)
Immigrant			-0.05 (0.13)	-0.02 (0.13)	-0.01 (0.13)	0.02 (0.13)	-0.02 (0.15)	-0.01 (0.15)
Homeowner			0.13* (0.07)	0.13* (0.07)	0.09 (0.07)	0.08 (0.07)	-0.07 (0.07)	-0.09 (0.07)
Single			-0.08 (0.07)	-0.07 (0.07)	-0.07 (0.07)	-0.06 (0.07)	-0.02 (0.07)	-0.02 (0.07)
Fraction of year unemployed			0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,174	5,173	5,173	5,173	5,173	5,173	5,173
Panel B	*Dependent variable: Unemployment benefits up or down*							
Income register	0.05*** (0.01)		0.03** (0.01)		0.02** (0.01)		0.01 (0.01)	
Income survey		0.06*** (0.01)		0.04*** (0.01)		0.04*** (0.01)		0.02** (0.01)
Panel C	*Dependent variable: Immigrant assistance up or down*							
Income register	-0.001 (0.01)		0.002 (0.01)		0.001 (0.01)		-0.004 (0.01)	
Income survey		0.004 (0.01)		0.003 (0.01)		0.004 (0.01)		-0.004 (0.01)
Panel D	*Dependent variable: Succes determined by hard work or luck*							
Income register	-0.04*** (0.01)		-0.03*** (0.01)		-0.03*** (0.01)		-0.03** (0.01)	
Income survey		-0.04*** (0.01)		-0.04*** (0.01)		-0.04*** (0.01)		-0.03*** (0.01)
Panel E	*Dependent variable: Turnout*							
Income register	0.10*** (0.01)		0.05*** (0.02)		0.05** (0.02)			
Income survey		0.08*** (0.01)		0.05*** (0.02)		0.04** (0.02)		
Panel F	*Dependent variable: Right wing vote*							
Income register	0.06*** (0.01)		0.04*** (0.01)		0.04*** (0.01)			
Income survey		0.06*** (0.01)		0.05*** (0.01)		0.05*** (0.01)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. All panels are estimated using ordered logit models. The models in panels B-F are identical to those in Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part XII (p. 8): Characteristics of sample, income item-nonresponses, and non-participants

Figure A.3 – Comparing Distribution of Register Income for Three Groups
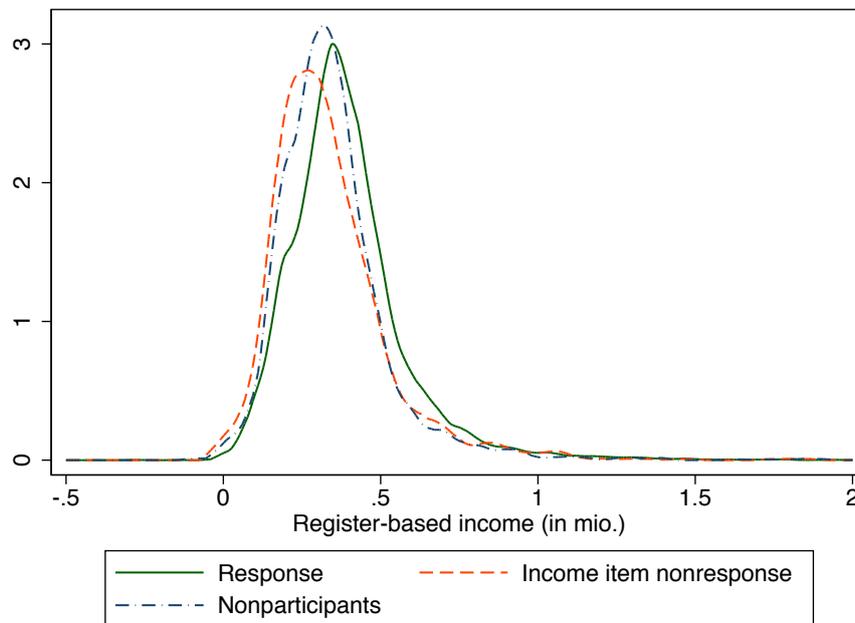
Notes. The full curve shows the kernel density plot of the register-based income of the sample of 5,174 used in the main analyses in the text. The dashed curve shows the density plot of register-based income for those survey interview participants who did not answer the income question in the survey (479 income item nonrespondents). The dash-dot curve shows the density plot of register-based income for those eligible for interview who refused (hard and soft) to participate (2,344 nonparticipants).

Part XIII (p. 8): Including income item-nonresponses leaves results intact

Table A.7 – Robustness to Including Income-Item Nonresponses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A			*Dependent variable: Well-being is a private responsibility*					
Income register	0.34***	0.32***	0.35***	0.33***	0.34***	0.34***	0.15*	0.16**
	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Male dummy			0.19***	0.18***	0.19***	0.18***	0.11***	0.10***
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age			-0.03***	-0.03***	-0.04***	-0.03***	-0.02**	-0.02**
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age^2			0.0003**	0.0003***	0.0004***	0.0003***	0.0002**	0.0002**
			(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Education (basic)			0.06	0.03	0.06*	0.05	0.005	-0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (medium)			-0.11**	-0.13***	-0.09**	-0.11**	-0.03	-0.04
			(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)
Education (long)			-0.08	-0.09*	-0.05	-0.05	-0.02	-0.02
			(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Home owner			0.05	0.05	0.02	0.02	-0.06	-0.05
			(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)
Single			-0.05	-0.07*	-0.03	-0.06	-0.01	-0.04
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Fraction of year unemployed			0.000	0.0002	0.0002	0.0002	0.0001	0.0001
			(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.000145)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,174	5,647	5,173	5,646	5,173	5,646	5,173	5,646
R-squared	0.004	0.003	0.019	0.017	0.046	0.041	0.165	0.158
Panel B			*Dependent variable: Unemployment benefits should be reduced*					
Income register	0.24***	0.23***	0.13***	0.12***	0.12***	0.12***	0.05	0.05
	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)
Panel C			*Dependent variable: Immigrant assistance should be increased*					
Income register	-0.11**	-0.12***	-0.09*	-0.10**	-0.07	-0.08	-0.10**	-0.11**
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Panel D			*Dependent variable: Succes is determined by luck rather than hard work*					
Income register	-0.23***	-0.24***	-0.22***	-0.22***	-0.23***	-0.23***	-0.19***	-0.19***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)
Panel E			*Dependent variable: Turnout*					
Income register	0.256***	0.25***	0.21***	0.21***	0.21***	0.21***	0	0***
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0)	(0)
Panel F			*Dependent variable: Right wing vote*					
Income register	0.010***	0.10***	0.06***	0.07***	0.06***	0.07***	0***	-0***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0)	(0)

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income. The odd columns show results from analyses that exclude survey income item non-respondents (similar to analyses in the text). The even columns include the register income of survey income non-respondents. The models in panels B-F are identical to those in Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part XIV (p. 9): Optimism is not associated with income misreporting

Table A.8 – The correlates of income overreporting

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Optimism proxy	0.027	0.002	0.003	0.004	0.004	0.002	0.001
	(0.017)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Millionary dummy		0.247**	0.254**	0.254**	0.254**	0.219*	0.225*
		(0.124)	(0.124)	(0.124)	(0.124)	(0.119)	(0.121)
Male dummy		0.129***	0.127***	0.131***	0.131***	0.123***	0.123***
		(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Spouse difference		0.026	0.032	0.037	0.038	0.033	0.042
		(0.045)	(0.045)	(0.044)	(0.044)	(0.042)	(0.044)
Source difference-		0.275**	0.273**	0.260**	0.259**	0.234**	0.222**
male interaction		(0.115)	(0.114)	(0.115)	(0.116)	(0.113)	(0.113)
Right leaning		0.042***	0.041***	0.047***	0.047***		
		(0.014)	(0.014)	(0.014)	(0.014)		
Age		0.014**	0.014**	0.020***	0.020***	0.017***	0.020***
		(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Age^2		-0.000**	-0.000**	-0.000***	-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (basic)			0.003	0.011	0.011	0.009	0.007
			(0.020)	(0.019)	(0.019)	(0.019)	(0.019)
Education (medium))			0.008	0.019	0.019	0.016	0.018
			(0.023)	(0.022)	(0.022)	(0.023)	(0.023)
Education (long)			-0.027	-0.018	-0.018	-0.019	-0.021
			(0.031)	(0.030)	(0.030)	(0.030)	(0.031)
Home owner				-0.098***	-0.097***	-0.083***	-0.080***
				(0.019)	(0.019)	(0.019)	(0.020)
Fraction of year				-0.000*	-0.000*	-0.000	-0.000
unemployed				(0.000)	(0.000)	(0.000)	(0.000)
Immigrant				-0.023	-0.023	0.015	0.013
				(0.057)	(0.057)	(0.044)	(0.044)
No budget					0.008	0.012	0.010
					(0.016)	(0.015)	(0.016)
Party choice FE	No	No	No	No	No	No	Yes
Municipality FE	No	No	No	No	No	Yes	Yes
Observations	5,141	3,467	3,467	3,467	3,467	3,731	3,731
R-squared	0.001	0.031	0.032	0.040	0.040	0.035	0.059

Notes. The table reports the coefficients from OLS regressions of income overreporting in proportion to total income. The optimism proxy is an indicator variable that takes the value 1 if respondents report that they prefer a risky job with variable (but potentially higher) income to a secure job with a steady income. Question wording available on request. Robust standard errors in parentheses. ***, ** , and * indicate significance at the 1, 5, and 10% levels.

Part XV (p. 9): A logarithmic transformation of the income variable eliminates the bias

Table A.9 – Log Transformed Register and Survey Income (Least Squares)

	Full sample							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A	*Dependent variable: Well-being is public or private responsibility (1-5, 1 is pro-government)*							
Income register (ln)	0.10***		0.11***		0.11***		0.04	
	(0.03)		(0.04)		(0.04)		(0.03)	
Income survey (ln)		0.13***		0.14***		0.14***		0.08***
		(0.02)		(0.03)		(0.03)		(0.02)
Male dummy			0.19***	0.21***	0.19***	0.21***	0.11***	0.12***
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age			-0.03***	-0.04***	-0.04***	-0.04***	-0.023**	-0.029***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age^2			0.00**	0.00***	0.00***	0.00***	0.00**	0.00**
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.05	0.04	0.06	0.05	0.01	0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.0391)	(0.0390)
Education (medium)			-0.11**	-0.12***	-0.091**	-0.10**	-0.0091	-0.020
			(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Education (long)			-0.08	-0.10*	-0.06	-0.07	-0.02	-0.03
			(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)
Foreign background			-0.01	-0.00	0.01	0.02	0.01	0.02
			(0.07)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)
Homeowner			0.04	0.04	0.02	0.02	-0.06	-0.06
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Single			-0.05	-0.04	-0.04	-0.03	-0.02	-0.02
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Fraction of year unemployed			0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,141	5,141	5,140	5,140	5,140	5,140	5,140	5,140
R^2	0.002	0.007	0.017	0.021	0.045	0.049	0.174	0.175
Panel B	*Dependent variable: Unemployment benefits up or down (1-3, 1 is pro-welfare)*							
Income register (ln)	0.083***		0.037**		0.032*		0.007	
	(0.01)		(0.02)		(0.02)		(0.02)	
Income survey (ln)		0.089***		0.064***		0.062***		0.041***
		(0.01)		(0.01)		(0.01)		(0.01)
Panel C	*Dependent variable: Immigrant assistance up or down (1-3, 1 is 'down')*							
Income register (ln)	-0.018		-0.010		-0.01		-0.025	
	(0.017)		(0.02-)		(0.021)		(0.020)	
Income survey (ln)		-0.004		-0.002		-0.000		-0.015
		(0.013)		(0.014)		(0.014)		(0.014)
Panel D	*Dependent variable: Succes determined by hard work or luck (1-3, 3 is luck)*							
Income register (ln)	-0.083***		-0.086***		-0.088***		-0.071***	
	(0.016)		(0.020)		(0.020)		(0.020)	
Income survey (ln)		-0.069***		-0.066***		-0.067***		-0.052***
		(0.013)		(0.015)		(0.015)		(0.014)
Panel E	*Dependent variable: Turnout*							
Income register (ln)	0.047***		0.022**		0.020**			
	(0.008)		(0.009)		(0.010)			
Income survey (ln)		0.032***		0.017**		0.015*		
		(0.006)		(0.008)		(0.008)		
Panel F	*Dependent variable: Right wing vote*							
Income register (ln)	0.095***		0.073***		0.069***			
	(0.015)		(0.018)		(0.018)			
Income survey (ln)		0.090***		0.073***		0.071***		
		(0.011)		(0.012)		(0.012)		

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. Panels A-D are estimated using OLS. Panels E-F are estimated using probit (marginal effects are reported in the table). The models in panels B-F are identical to those Panel A. All models include a constant term (not reported to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Part XVI (p. 9): A logarithmic transformation of the income variable eliminates the bias (estimated using ordered logit)

Table A.10 – Log Transformed Register and Survey Income (Ordered Logit)

				Full sample				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A				*Dependent variable: Well-being is public or private responsibility*				
Income register (ln)	0.19***		0.19***		0.18***		0.07	
	(0.05)		(0.06)		(0.06)		(0.06)	
Income survey (ln)		0.23***		0.24***		0.24***		0.14***
		(0.04)		(0.05)		(0.05)		(0.05)
Male dummy			0.33***	0.31***	0.34***	0.31***	0.23***	0.20***
			(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Age			-0.05***	-0.06***	-0.06***	-0.07***	-0.05**	-0.06***
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age^2			0.00**	0.00***	0.00***	0.00***	0.00**	0.00**
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (basic)			0.11	0.09	0.13*	0.11	0.04	0.02
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Education (medium)			-0.15*	-0.18**	-0.12	-0.14*	0.02	-0.00
			(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Education (long)			-0.10	-0.13	-0.06	-0.09	-0.02	-0.04
			(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Foreign background			-0.03	-0.02	0.01	0.02	-0.01	0.00
			(0.13)	(0.13)	(0.13)	(0.14)	(0.14)	(0.14)
Homeowner			0.11	0.11	0.07	0.07	-0.07	-0.09
			(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Single			-0.08	-0.07	-0.07	-0.06	-0.04	-0.03
			(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Fraction of year unemployed			0.00	0.00	0.00	0.00	0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Municipality FE	No	No	No	No	Yes	Yes	Yes	Yes
Party vote FE	No	No	No	No	No	No	Yes	Yes
Observations	5,141	5,141	5,140	5,140	5,140	5,140	5,140	5,140
Panel B				*Dependent variable: Unemployment benefits up or down*				
Income register (ln)	0.35***		0.17**		0.15**		0.05	
	(0.06)		(0.07)		(0.07)		(0.08)	
Income survey (ln)		0.38***		0.28***		0.27***		0.20***
		(0.05)		(0.05)		(0.05)		(0.05)
Panel C				*Dependent variable: Immigrant assistance up or down*				
Income register (ln)	-0.04		-0.03		-0.03		-0.10	
	(0.06)		(0.07)		(0.07)		(0.08)	
Income survey (ln)		-0.003		-0.008		-0.003		-0.06
		(0.04)		(0.05)		(0.05)		(0.06)
Panel D				*Dependent variable: Succes determined by hard work or luck*				
Income register (ln)	-0.26***		-0.28***		-0.29***		-0.24***	
	(0.05)		(0.06)		(0.07)		(0.07)	
Income survey (ln)		-0.21***		-0.21***		-0.21***		-0.17***
		(0.04)		(0.05)		(0.05)		(0.05)
Panel E				*Dependent variable: Turnout*				
Income register (ln)	0.62***		0.33**		0.31**		0.39**	
	(0.09)		(0.13)		(0.14)		(0.16)	
Income survey (ln)		0.39***		0.21**		0.20**		0.23*
		(0.08)		(0.09)		(0.09)		(0.12)
Panel F				*Dependent variable: Right wing vote*				
Income register (ln)	0.39***		0.32***		0.32***		0.14	
	(0.06)		(0.08)		(0.08)		(0.15)	
Income survey (ln)		0.39***		0.34***		0.35***		0.15
		(0.05)		(0.06)		(0.06)		(0.10)

Notes. The table reports coefficients from regressions of the dependent variables mentioned in each of the panels A-F on register-based income and survey income. Coefficients from models using register income is shown in odd columns, and from survey income in even columns. All panels are estimated using ordered logit models. The models in panels B-F are identical to those in Panel A. All models include a constant term (not reported). to save space). Robust standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels.

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