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The value of meaningful work

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Abstract

We test the arguments that the extent to which work is meaningful depends strongly on the job, and that it has its own effect on the labour market. We argue that the meaningfulness of the job mainly depends on opportunities for self-realization and on the social value of the work. We test the hypotheses on EWCS 2015 and ISSP 2015. Respondents show a high level of agreement about the meaningfulness of their job. The analysis shows that the meaningfulness is strongly determined by job characteristics related to self-realization. We find that workers in non-commercial organizations find their jobs more meaningful than workers in commercial organizations. There is a trade-off between the wage and the meaningfulness of the work, when we hold constant for self-realization. We conclude that the extent to which work is meaningful strongly depends on the opportunities for self-realization, and is cause for trade-offs between wages and meaningfulness.

Key-words:

Meaningful work, useful work, job satisfaction, pay inequality, underpayment

The value of meaningful work

1 Introduction

In recent years the meaning of work has come to attention of researchers again (Wingerden, Stoep 2018, Graeber 2018, Cassar, Meier 2018, Nikolova, Cnossen 2020). Meaningful work has a big effect on the intrinsic motivation of workers and for the work that needs to be done. This implies that the work is worth the effort, not because the work must be done in exchange for a wage or status, or because someone is telling you to do the job, but because it gives meaning to the worker. These intrinsically motivated workers want to deliver a qualitative good job and are willing to help others, which is good for society at large and for their employers.

Meaningful work has big advantages for workers, employers and society at large. Intrinsically motivated workers are more satisfied and therefore more productive (Bockerman, Ilmakunnas 2012). An important advantage of intrinsically motivated workers is that the costs of control and monitoring decrease for the employers, especially when the interests of the workers and the employers are aligned (Van der Meer, Peter H., Wielers 1996). These workers can be trusted to do a good job and do not need to be controlled.

The goal of this paper is to deepen our knowledge about meaningful work. We want to address two questions. Firstly, we want to know what drives meaningful work, or stated otherwise, what makes work meaningful. Which working conditions and/or job characteristics improve the meaning of work. Secondly, we want to investigate the effects of meaningful work on the labour market. We expect a two-sided effect. On the one hand we expect to find that meaningful work has a positive effect on job satisfaction. Workers with meaningful jobs are more satisfied (Cassar, Meier 2018). On the other hand this can make workers more vulnerable on the labour market, accepting jobs with lower wages because they are more meaningful. We base our arguments on the work of (Cassar, Meier 2018, Graeber 2018, Lepisto, Pratt 2017), who argue that wages and meaningful work can be seen as substitutes. Workers who value their work highly, might be vulnerable for exploitation by employers, because these workers might accept lower wages to still do their job. One can think of workers in occupations like teachers, nurses, firefighters and others; occupations that were and are highly valued as essential in these times of the covid-19 pandemic.

In this paper we will use the data from European Working Conditions Survey and the International Social Survey Program, both from 2015, to test our hypotheses. Firstly, we will describe which occupations are the most meaningful, based on the questions in the EWCS and the ISSP. Although these surveys are held in different countries, the order of the occupations according to their meaning is rather similar. Secondly, we develop a model in which we connect job characteristics on bases of the Self Determination Theory like autonomy, competence and relatedness (Ryan, Deci 2000) to meaning of the job and job satisfaction. We also show that the purpose of the job contributes to job

satisfaction independently from autonomy, competence and relatedness. On bases of these analyses we can also draw conclusions about the substitution between income and purpose and value of the job (cf. (Helliwell, Huang 2011).

2 Meaningful work

In the literature the question what makes work meaningful is highly debated. Researchers use their own, different definitions (Rosso, Dekas & Wrzesniewski 2010). In this paper we follow the suggestions made by (Cassar, Meier 2018), who proposed a model about nonmonetary incentives in work and their relation to meaning. They connect a traditional neoclassical model of labour supply with the self-determination theory (SDT) by (Ryan, Deci 2000) and include an additional argument which they call purpose or mission of the organisation. This follows the arguments made by (Martela, Pessi 2018) who argue that meaning of work consists of two sub-dimensions: a broader purpose and self-realization.

(Cassar, Meier 2018) argue that subjective well-being of workers first of all depends on their wages and level of effort, like in the standard neo-classical labour supply model, and secondly on the meaning of the job. The meaning of the job captures the most important nonmonetary incentives for the job. The main nonmonetary incentives consist of the three basic psychological needs: autonomy, competence and relatedness as formulated in the Self Determination Theory of (Ryan, Deci 2000) and, additionally, the purpose of the job. ‘A job where I can make an impact’ is an important aspect of many people’s jobs. This was already recognized by (Hackman, Oldham 1980) in their Job Characteristics Model who named it task significance.

The wages represent all types of monetary rewards from the job. Total income depends on the hourly wages, hours worked and other efforts. Effort depends on the hours worked and the total work load. Sometimes someone is being asked to do some extra work in the same amount of time, and sometimes the workload is somewhat lesser, depending on the demands of the employer.

In this theory autonomy ‘refers to volition – the organismic desire to self-organize experience and behavior and to have activity be concordant with one’s integrated sense of self’ (Deci, Ryan 2000). In that sense it is different from locus of control, because it refers to being able to decide what to do, how to do, when to do and where to do, commonly used measures of autonomy. There is ample evidence that workers who have a high level of autonomy, but also involvement or empowerment, report high levels of subjective well-being (Van der Meer, Peter H., Wielers 2013, Benz, Frey 2008, Schneck 2014, van der Meer 2018). It also is a basic part of the job characteristic model of (Hackman, Oldham 1980), that sees job satisfaction as one of the major outcomes.

The second basic need is competence. Competence is about using, showing and developing skills. A feeling of competence arises when one is able to show one’s skills and abilities, not only at work but also in general. In general people like to engage in activities in which they are good

(Loewenstein 1999). People also would like to improve their competences, so they like opportunities for skill development, i.e. by learning on-the-job or by training activities. If people don't feel competent, they would like to increase their competence, i.e. trying to master the trade by learning on-the-job.

Relatedness is about entering or being in meaningful relationships with other people. People want to be respected and have good relationships within their communities, one of which is the organisation they work in. They would like to have a feeling of belonging. The more the job contributes to relatedness, the greater the intrinsic motivation to do the job. People are social beings and want to relate and connect to other people. Social identity theory argues that workers who identify with their colleagues, managers and goals of their organization will be more productive (Akerlof, Kranton 2005, Akerlof, Kranton 2008). People want to be seen and to belong to a group. If this group is a part of an organisation, or a (small) organisation, then it will increase their productivity. People will do their best for the group to create a sense of belonging and relatedness.

(Cassar, Meier 2018) add a fourth factor to these three basic psychological needs and that is purpose. People would like to make an impact and this impact can be quite diverse. It appears to overlap with the notion of 'task significance' of (Hackman, Oldham 1980), but the concept defined by Cassar and Meier is somewhat broader. It explicitly includes having a positive impact on society at large. In that sense they follow (Martela, Pessi 2018, Lepisto, Pratt 2017), who discuss social usefulness as one of the factors giving meaning. So the impact can be on other persons, but also on society at large. Cassar and Meier, and Lepisto and Pratt describe evidence that workers accept lower wages in organisations that have an explicit purpose, like NGO's. But it could also hold for for-profit organisations with a clearly stated mission. Organisations that pay their workers a lower wage are still seen as attractive employers, because these organisations make an impact. This follows (Martela, Pessi 2018) who distinguish between self-realisation, conform the SDT and a broader purpose, a contribution to some greater good, beyond one owns benefits.

(Nikolova, Cnossen 2020) support the model of Cassar and Meier. In their paper they also relate meaningful work to the three basic psychological needs, autonomy, competence and relatedness as defined by Ryan and Deci. The level to which these three needs are fulfilled determine if workers are a-motivated, fully intrinsically motivated or somewhere in between. In their paper they find strong empirical support for their model, using the European Working Conditions Survey.

On basis of these arguments we hypothesize that the three basic psychological needs, autonomy, competence and relatedness will have a positive effect on the purpose or social usefulness of the job. We further hypothesize that the purpose of the job will have a positive effect on subjective well-being next to and independent of autonomy, competence and relatedness.

Cassar and Meier (2018) write that on basis of their model it is possible to see the wages both as a complement or as a substitute of meaning. Wages can be a substitute of meaning or purpose if people accept lower wages for a meaningful job. These are complements when wages and meaning of

the job rise together. A case for substitution could be made for civil service workers. It can be assumed that working in the public sector comes with meaningful work, i.e. with a higher level of purpose than in the private sector cf. (Dur, van Lent 2019), because in general the civil workers work for the public interest. However, according to Cassar and Meier evidence on wage differentials between the public and private sector is mixed, which might be caused by self-selection and the share of workers who prefer to have a meaningful job. However, experimental evidence shows that workers are willing to accept lower paying jobs when firms offer jobs with more purpose, i.e. when firms show a high level of corporate responsibility (Hu, Hirsh 2017).

Wages and meaning could also be complements. Well-designed jobs aligned with High Commitment HRM also pay well. So in these cases meaning of the job, mainly based on autonomy, competence and relatedness, goes hand in hand with high wages. However, notice that the examples given by Cassar and Meier about substitution are mainly concerned with the relation between purpose and wages and the examples about complements are mainly concerned with the relation between wages and the three psychological needs that produce meaning.

(Graeber 2018) goes one step further. In his book 'Bullshit Jobs' he devotes an entire chapter to possible externalities of jobs. In this chapter he argues, on basis of mainly anecdotal evidence, that useful jobs (jobs with a broader purpose) are underpaid, and that useless jobs (jobs without a broader purpose) are overpaid. One of the examples is the comparison between the pay-levels of firefighters with workers in the FIRE-sector¹. The jobs of the firefighters and, more generally, the more caring jobs, are seen as less economically productive, that is less paying, but at the same time these jobs produce high social value. Firefighters have socially very useful jobs, by increasing security and by helping in case of emergencies, but are being underpaid compared to their social value, whereas workers in the FIRE-sector produce socially useless, and sometimes even harmful products and services, but receive high wages in excess of their societal value. The reason is that jobs in the FIRE-sector redistribute the added value and the created status, say by a tournament like promotion system, in which the top jobs are highly paid (Lazear, Gibbs 2009) and the lower jobs underpaid. This implies that we can expect that many socially useless jobs are overpaid, whereas many socially useful jobs are being underpaid.

We hypothesize and test whether income and meaning of the job, and more focused the purpose of the job, can be seen as substitutes. Next to that we also hypothesize and test whether useful jobs are being underpaid and useless jobs overpaid.

¹ Finance, Insurance and Real Estate

3 Data and method

3.1 Data

We use two large scale data sets to test our hypotheses. The first is the European Working Conditions Survey 2015 (EWCS) and the second is data from the work orientations module of the International Social Survey Program 2015 (ISSP). Both data sets contain data from people in paid employment in a great number of countries. Eurofound, a research institute sponsored by the EU, conducts the EWCS. Extensive information about this and other data sets can be found on:

<https://www.eurofound.europa.eu/>. The survey was held in 35 European countries.

The ISSP is a research organization that is supported by a great number of countries and conducts every year surveys on basis of and for the social sciences. Extensive information and further documentation can be found on www.issp.org. Approximately once in every six years respondents are being asked about their work orientations; the last time in 2015. The survey was conducted in countries all over the world, in every continent. In total 36 countries took part in the survey.

Both data sets have been used in similar research (Dur, van Lent 2019, Nikolova, Cnossen 2020), but compared to both these articles we add new evidence. Nikolova and Cnossen use meaning as a dependent variable, whereas we also use it as an independent variable with respect to job satisfaction and well-being. Dur and van Lent use only one question, a job useful to society, whereas we combine that with a question about being able to help other people. So our measure of a useful job differs from theirs. We restrict our analyses to workers in paid employment aged between 20 and 65 years of age of all countries involved. We analyse cleaned data sets, implying that we removed all respondents who did not answer one or more of the questions, with the exception of our measure of income. The number of respondents is 28,746 for the EWCS and 18,742 for the ISSP.

Both data sets contain questions to measure the main concepts in a comparable way, i.e. job satisfaction, purpose of the job, autonomy, competence, relatedness, other job and personal characteristics, occupation and industry that affect job satisfaction.

In the EWCS respondents are asked whether they have the feeling of doing useful work and whether the job gives a feeling of work well done. We combine these two questions into one variable 'purpose' following Nikolova and Cnossen who showed that these two variables together form one scale with high reliability ($\alpha = .724$). It is a five point scale (1 low to 5 high) with a mean of 4.2. The ISSP asks their respondents if they can help other people and if the job is useful to society (Hu, Hirsh 2017), with a range from 1 (low) to 5 (high). The mean of the scale is 3.9.

In the EWCS we use different measures of subjective well-being. First we use a question about satisfaction with the working conditions in the main job, a four point scale. Secondly a measure that we named vitality and is based on question 87 in the questionnaire. This question consists of five items like: 'I have felt cheerful and in good spirits' and 'My daily life has been filled with things that interest me'. We combine them in one variable 'vitality' with a reliability of .874 and which is a six

point scale. We also use four items of question 90 to construct a second measure of job satisfaction. Example items are: 'at my work I feel full of energy' and 'time flies when I am working'. This scale has a reliability of 0.71 and is a five point scale. In the ISSP we only have one measure of job satisfaction. The question reads: 'How satisfied are you in your main job' and is a seven point scale (Wanous, Reichers & Hudy 1997).

Occupation is coded according to the two digit version of ISCO08.

In the EWCS we have two measures for autonomy. The first one refers to the discretion in the work, and consists of items as: 'are you able to choose or change the order of tasks, methods of work and speed of work' and is a two point scale. The second we call empowerment and consists of five items like: 'you are consulted before objectives are set for your work', 'you have a say in the choice of your work colleagues' and is a five point scale with alpha 0.79.

Competence is measured with variables like task complexity, the use of skills and possibilities for development. Task complexity is measured by five items consisting of questions like does your job involve meeting high standards, assessing quality of own work, complex tasks, learning new things. The reliability is 0.64 and is a two point scale. The use of skills is measured by one item and is coded 1, present skills correspond well with my duties, 0 otherwise. Possibilities for development is measured by the question my job offers good prospects for career advancement.

Relatedness is measured by two items about the support from colleagues and the supervisor. It is a five point scale and the reliability is 0.67.

In the ISSP we have two measures for autonomy: discretion, 'I am free to decide how my daily work is organized', which is a three point scale, and empowerment, 'I can work independently', a five point scale. Competence is measured by the use of skills, a four point scale, and the possibilities for further development at the job, a five point scale. Relatedness is measured by how well the relation is between colleagues and between management and employees. It is a five point scale and the reliability is 0.68. We also use a question about contact with other people, which is five point scale.

We further use other job characteristics and demographic information. Other job characteristics on basis of the EWCS are: a supervisory position (yes, no); permanent contract (yes, no); hours worked (natural logarithm); dirty work (nine items, seven point scale, alpha 0.82); irregular working hours (how often do you work on Saturdays, Sundays or at night, alpha = 0.65); having flexible working hours (do you work same number of hours every day, same number of days every week, same number of hours every week, fixed starting and finishing times, two point scale); work pressure (do you work at high speed, to tight deadlines, seven point scale alpha = 0.78); sector (private, public, public-private, NGO, other) and firm size (1, 2-9, 10-249, >250).

Demographic variables are: gender (1 = woman, 0 = men); age (divided by ten) and its square; having a partner (yes, no); children present in the household (yes, no); level of education (ISCED, one digit); subjective health (five point scale); subjective income (six point scale); income (natural logarithm, plus a dummy indicating missing observations).

In the ISSP data set we use similar variables, most often measured with a single question. We use a supervisory position; permanent contract; hours worked; irregular working hours (how often in weekend, five point scale); flexible working hours (fixed hours, some flexibility, completely free); work pressure (how often is your job stressful) and sector (private, public). Furthermore: gender; age and its square; partner; presence of children; level of education; subjective health; subjective income; and income (income deciles, plus a dummy indicating missing observations).

3.2 Method

We use simple descriptive statistics, to start with. We compute the mean level of purpose by occupation and compare between data sets. We do the same for income and also compare the ranking of the occupations by purpose and income. A first simple test of the suggestion by Graeber that useful jobs are underpaid and useless jobs are underpaid would show a negative rank correlation.

To test our hypotheses we estimate three different multi-level models. The first model is:

$$P_{ic} = \beta_{0c} + \beta_1 A_{ic} + \beta_2 C_{ic} + \beta_3 R_{ic} + \beta_4 SI_{ic} + \beta_5 H_{ic} + \beta_6 PC_{ic} + \beta_7 JC_{ic} + \varepsilon_{ic} \quad (i)$$

In which P_{ic} = Purpose of individual i in Country c

A_{ic} = Autonomy

C_{ic} = Competence

R_{ic} = Relatedness

SI_{ic} = subjective income

H_{ic} = Ln(hours worked)

PC_{ic} = Personal characteristics

JC_{ic} = other job characteristics

ε_{ic} = error term

The second model is:

$$SW_{ic} = \beta_{0c} + \beta_1 P_{ic} + \beta_2 A_{ic} + \beta_3 C_{ic} + \beta_4 R_{ic} + \beta_5 SI_{ic} + \beta_6 H_{ic} + \beta_7 PC_{ic} + \beta_8 JC_{ic} + \varepsilon_{ic} \quad (ii)$$

In which SW_{ic} = Subjective well-being of individual i in Country c

Model ii follows the suggestion by Cassar and Meier. To test the relation between purpose and income, we perform some additional tests. First we include subjective income in equation (ii). According to (Helliwell, Huang 2011) we can test for compensating wage differentials in this way. Usually this is done by estimating a wage equation, but that comes with problems like unobserved heterogeneity and self-selection into occupations. Econometricians tried to overcome these problems by using instrumental variables methods, but it is very hard to find good instruments. We also don't

have panel data, so we cannot control for unobserved time invariant effects, by estimating a fixed effects model. (Helliwell, Huang 2011) argue that estimating a subjective well-being equation, comparing the contribution of income and say, purpose, to well-being gives an estimate of the compensating wage differential. We also estimate these equations using income levels as a further independent variable, instead of subjective income.

The second model only tests for compensating wage differentials, i.e. if income and purpose are substitutes or complements, but does not show that useful jobs are being underpaid or overpaid. We need another test for this idea of Graeber. We do that by testing for spill-over effects of income on purpose. For this test we re-estimated equation (i) and include the centralized average income by occupation or industry. A negative effect of this measure would show that above average paying occupations or industries have lower purpose and below average paying occupations and industries have more purpose. In this exercise we use different measures of income, including and excluding respondents who did not reveal their income as a robustness check. We assume that the purpose of the job is highly dependent on the occupation and that this pattern correlates highly between countries. The ranking of the occupations according to their meaning supports this assumption. This method follows the way in which educational spill-over effects on income is tested (Moretti 2003). However, this method comes with its own problems (Angrist, Pischke 2009), p.192.

4 Results

Table 1 contains the mean purpose by occupations. The occupations are ranked from high to low purpose on basis of the EWCS. High ranking occupations are: medical specialists, doctors, teachers, scientists, lawyers. Most of them are highly educated. Low ranking occupations are various unschooled blue collar jobs in manufacturing, salesmen, farmers and other lower educated occupations. The ranking according to the ISSP is very similar to that of the EWCS, the correlation on basis of mean purpose is high and also the rank correlation is high.

The occupations with the highest purpose coincide with the occupations mentioned by (Graeber 2018) and (Dur, van Lent 2019). The occupations with the lowest purpose differ. They report occupations like financial planner or pr-manager to belong to the occupations with the lowest purpose. The difference can be explained by the difference in measure. Whereas Dur and Van Lent and Graeber only look at socially useful jobs, we include a measure like a job well done and helping others.

We do not find a negative correlation between income and purpose on the occupational level on basis of the EWCS. Occupations with high levels of purpose also appear to pay well. The correlation between the mean income and mean purpose is approximately 0.7, depending on how this correlation is calculated. The rank correlation between the ranking of the occupations according to purpose and income is 0.47. So on basis of simple correlations we do not find support for the idea by Graeber that useless jobs are overpaid and useful jobs underpaid. Only at the individual level, without

controlling for country effects, is the correlation negative, but small and insignificant. Controlling for fixed country effects the effect of income on purpose is positive. On basis of the ISSP we get similar results, although with lower correlations in the range of 0.20 to 0.30. This might be caused by the difference in income measure, absolute income vs. income deciles.

Table 2 contains the results of the analyses of purpose on basis of the EWCS. The table shows that autonomy, competence and relatedness have significant effects on purpose as shown in model 1. This holds when we control for income, effort and personal characteristics. Even when we include other job characteristics into the model, most effects remain strong and significant. The effect of autonomy disappears, but that of empowerment remains at the same level. We see the same with competence, the effect disappears, but the other measure, advance, remains at the same level or becomes even stronger. So these first analyses on basis of the EWCS support our hypothesis that relates purpose with autonomy, competence and relatedness.

Looking at subjective income, we see that the initial positive effect disappears and becomes insignificant. This suggests that there is no relation between income and purpose. However, absolute income shows a negative effect. Higher income goes hand in hand with lower purpose on the job, after controlling for autonomy, competence, relatedness personal and other job characteristics. Once we control for the autonomy, competence and relatedness we find this negative effect of absolute income. This might be, because jobs scoring high on these three dimensions also pay well. This suggests that jobs with purpose are being underpaid. However, we need more evidence to make strong conclusions. We also see that the number of hours worked has a negative effect on purpose. So, working long hours does not contribute to society at large. One could interpret this as support for the thesis by Graeber that highly productive jobs, measured as economic productivity, do not produce that much social value.

A final effect worth mentioning is that persons working in the public sector find their jobs having much more purpose than persons in the private sector. Workers in the private sector find their jobs having least purpose. Again this gives food to the thought of Graeber that purposeful jobs are underpaid, because in many cases public sector workers earn less than private sector workers.

Table 3 contains the results of the same analyses on basis of the ISSP. The analyses on the ISSP confirm the analyses on the EWCS. Again we find strong effects of autonomy, competence and relatedness on purpose. We find one strange negative effect of autonomy on purpose, but this effect disappears once we control for personal and other job characteristics. The effect might have become negative due to the strong effect of empowerment, another measure of autonomy. But all in all we find similar effects as on the EWCS.

The effect of subjective income on purpose is negative, in all our models, supporting the view of Graeber that jobs with purpose are being underpaid. This negative income effect is confirmed when we replace the subjective income with the income deciles. This measure of income shows a negative effect as well. Although this measure of income is not absolute, it is a kind of ranking, the ranking is based on absolute income and not on a subjective perception. So we see that high income reduces the

purpose of the job. We see the same with working hours. Persons who work long hours have less purposeful jobs than persons working shorter hours. This is further support for the thesis by Graeber that purposeful jobs are underpaid and purposeless jobs overpaid. It also shows that purpose and income are substitutes as suggested by Cassar and Meier. We do not find support for their thesis that purpose and income can also be complements, once we control for other important non-monetary job characteristics. Also on basis of the ISSP we find that jobs in the private sector have less purpose than jobs in the public sector, again suggesting that workers in purposeful jobs are being underpaid.

Table 4 contains the results of the analyses of job satisfaction on the EWCS. They show that purpose has a strong effect on job satisfaction. It is stronger than the effects of autonomy, competence and relatedness as can be seen in model 1. The effect of purpose does not change after the inclusion of income, personal characteristics and other job characteristics. The other effects of autonomy, competence and relatedness hardly change as well, although it is remarkable that the effect of autonomy becomes insignificant and that of complexity increases and becomes significant, but overall the effects are stable as predicted by the SDT. The effect of competence on job satisfaction is negative. This might be caused by the effect of complexity. A complex job asks a high level of knowledge, skills and ability from the worker and this might be beyond their level of competence.

We see that income has a positive effect on job satisfaction, too. We find both a positive effect of subjective income as well as a positive effect of absolute income. The effect of subjective income is stronger than that of absolute income, as is often shown in research of income effects on well-being.

These results suggest that purpose and income are job characteristics that can be substituted. To remain at the same level of job satisfaction, one can trade purpose against income. I.e. a job with a lower level of purpose but that is better paying gives an equal amount of job satisfaction as a job with a higher level of purpose but a lower income. So a worker would be indifferent these two jobs. It also suggests that the workers with a higher preference for purpose would choose the job with much purpose whereas the workers with a higher preference for income would choose the better paying jobs. How the preferences actually work out at the labour market depends on total demand and supply for different jobs. If many workers would like to have a purposeful job, but these jobs are scarce, then these jobs could pay a low wage and still find some persons to do these jobs. If on the other hand the labour supply for purposeful jobs is low, but demand is high than these employers must pay a decent wage as well.

If we compare these results with the findings of (Helliwell, Huang 2011), who found that trust was among the most important job characteristics that affect job satisfaction, we find similar strong effects with respect to purpose. According to them workers are willing to give up to 30% of their wages to increase the level of trust in their organisation and between colleagues and managers with one standard deviation. Our results show that the effect of purpose is as strong as that of relatedness and the effect of (subjective) income on job satisfaction is relatively small. This shows that workers in purposeful jobs, jobs that make a social impact, are willing to refrain from income. If they had the

choice, say, between a job with a high level of income and a low level of purpose and a job with relatively low income but with much purpose given the same level of job satisfaction as the first job, most would choose the second job. This gives room for employers to underpay these workers. However, this merely substitution effect between purpose and wages is not enough to show that purposeful jobs are being underpaid. In an efficient labour market with compensating wage differentials one can expect to find these kinds of effects as long as the number of persons with preferences for purposeful jobs is higher than labour demand. These analyses only show that employers have the opportunity to underpay these workers, not that they actually do. Therefore we have to perform some additional analyses that shows that some kind of external effects exists, i.e. that the social value of work is not the same as the individual productivity or individual monetary returns.

Table 5 shows the comparable analyses on basis of the ISSP. The results are similar to those of the EWCS. We find strong effects of purpose and of autonomy, competence and relatedness. The main difference is that now we find very strong effects of support, i.e. trust between colleagues and managers, followed by purpose and possibilities for advancement. All effects are significant and have the expected sign. These effects hardly change after the inclusion of income, personal characteristics and other characteristics. This shows again the importance of purpose, autonomy, competence and relatedness for the well-being and motivation of workers.

Again the effect of income is positive, both for subjective income and for absolute income. The effect of subjective income is stronger than that of absolute income. The effect of subjective income is of similar size as that of purpose. The effect of purpose is approximately five times larger than that of absolute income. We thus find again support for the possible substitution between purpose and income, indicating that workers with a strong preference for purposeful jobs might earn less than workers with a low preference for purposeful jobs. The effect of hours worked is negative, indicating that workers need to be compensated for working long hours.

In the EWCS we have two other measures of well-being. The first one is vitality, while the second one could also be interpreted as job satisfaction. We ran analyses with these two measures as dependent variables as a robustness check of our results. We present the results in tables 6, vitality and 7, job satisfaction.

Table 6 shows similar results with respect to purpose and income as table 4. We find a positive effect of purpose and subjective income on vitality. Again this supports the idea of substitution between purpose and income. However we do not find a significant effect of absolute income. It is positive but small, so it hardly contributes to vitality, so there is no room for substitution. We furthermore see that the effect of complexity is negative. The effect reduces considerably once we control for the other job characteristics. It might be that the negative effect is caused by work pressure. Although complex jobs are fun to do, it increases job satisfaction, they are also hard to do. It drains resources thereby affecting negatively vitality. Our other measures of autonomy, competence and relatedness, following SDT, have a positive effect on vitality, as expected. So the three basic

psychological needs not only increase job satisfaction, they increase vitality as well. We furthermore see a relatively strong negative effect of hours worked. The longer hours worked the lower the level of vitality. All these effects give further support to the model by Cassar and Meier.

Table 7 presents the results of our second measure of job satisfaction that we found in the EWCS, although the reliability of this measure is not very high (.71), but still acceptable. Once again our previous results are confirmed. Again, we find strong effect of purpose on job satisfaction and this effect remains strong after we include income, personal characteristics and other job characteristics in the model. We also find effects of autonomy, competence and relatedness. Most of these effects are positive, as expected. The odd one out this time is competence, which is negative, but all in all we again find support for the model of Cassar and Meier.

The effect of both subjective and absolute income is positive and again the effect of subjective income is stronger than that of absolute income. It is approximately twice as strong. Comparing the effects of purpose and income we find that workers are willing to forgo quite a lot of income to gain additional purpose in their jobs. This supports the idea of purpose and income being substitutes. Again we find a negative effect of working hours, implying that workers need to be compensated the longer hours they work.

On basis of these results we find support for the model of Cassar and Meier and we conclude that income and meaning of the job are substitutes, as suggested by Graeber. We do not find evidence that purpose and income are complements. The next step we need to make is testing the idea of Graeber that the social value of jobs is not equal to their productive value, i.e. that purposeful jobs are being underpaid and purposeless jobs overpaid. We therefor estimated again a model of purpose, that is with purpose as the dependent variable, but now include some extra measure of income. Next to the absolute level of income we also include the centered average income by occupation and by industry. This method mimics the method used to test for spill-over effects of education (Moretti 2003), although it comes with its own problems. We report the results in tables 8, 9 and 10. For this exercise we use a decile measure of income per country in both datasets. First of all because this is the income measure we use in the ISSP and makes income comparable between countries without being disturbed by exchange values of the different currencies and controls for the level of living costs. I.e. in this way we are able to compare high income countries with low income countries. We therefor also use deciles in the EWCS, although we have a comparable measure of absolute income. Perhaps it would be better to use average income by occupation or industry by country, but the number of respondents makes such a route unfeasible. We are of the opinion that we can use an average by occupation and industry, because we do not find big differences between the countries. In all our models presented thus far the variance at the country level is much smaller than the variance at the individual level indicating that differences between countries are small.

The results in tables 8, 9 and 10 are inconclusive. In table 8 we find negative spill-over effects of absolute income on purpose by occupation. Hourly wages do not show spill-over effects, just as

income measured in deciles. Subjective income shows positive spill-over effects. In table 9 that reports the spill-over effects by industry on basis of the EWCS2015, we find similar effects. A negative spill-over effect of absolute income, no effect of hourly wage, and a positive spill-over effect of subjective income. In this case the spill-over effect of the income deciles are positive. Table 10 shows the spill-over effects on basis of the ISSP. We find positive effects of the income deciles by occupation and also of the subjective income measure. We find the same results for the sample with and without respondents who did not reveal their income. We also tried a ranking of the occupations by income, but do not find that higher paying occupations do have less purpose than lower paying occupations, controlling for all other effects. So, all in all we do not find support for the thesis of Graeber that useful jobs are being underpaid, whereas useless jobs are being overpaid.

5 Summary and conclusion

In this paper we tried to answer two questions. The first question is what makes work meaningful. The second question is about the effects of meaningful work on the labour market. We answered the first question with the model of Cassar and Meier about non-monetary incentives on the labour market, which leans on the Self Determination Theory of Deci and Ryan. Cassar and Meier propose that the meaning of the job depends on job characteristics like autonomy, competence, relatedness and purpose of the organisation. Furthermore they argue that the meaning of the job and wages can be seen as substitutes. We developed hypotheses that state that the three basic psychological needs, autonomy, competence and relatedness will have a positive effect on the purpose or social usefulness of the job. We further hypothesize that the purpose of the job will have a positive effect on subjective well-being next to and independent of autonomy, competence and relatedness. Finally we hypothesized whether income and meaning of the job, and more focused the purpose of the job, can be seen as substitutes. Next to that we also hypothesize whether purposeful jobs are being underpaid and useless jobs overpaid.

To test these hypotheses we used data from the EWCS 2015 and the ISSP 2015. Both data sets contain information about the theoretical concepts, although the measures differ somewhat between the data sets. We used information for workers in paid employment between 20 and 65 years of age. In both data sets we find a clear ranking of the occupations according to purpose. Both data sets show almost the same ordering of occupations, with occupations like health professionals, teachers and scientists as belonging to the highest ranking and occupations like unschooled blue collar workers in manufacturing, salesmen, farmers and other lower educated occupations as belonging to the lowest ranking. We also find a positive correlation between income and the level of purpose of the occupations in both data sets.

The analyses of purpose of the job showed that the three basic psychological needs do have the expected positive effect. So, jobs with high levels of intrinsic motivation, according to the Self

Determination Theory, are also jobs that have purpose. These effects are relatively strong, also after controlling for other personal and job characteristics. In the ISSP data set contact with other people has the biggest impact. In the EWCS the effects of autonomy, competence and relatedness are of similar strength. We do find a negative effect of absolute income on purpose in both data sets, implying that purposeful jobs are relatively low paid. We find a similar effect for subjective income in the ISSP, but not in the EWCS.

The analyses of job satisfaction and other measures of subjective well-being show that purpose has a strong positive effect, independent of autonomy, competence, relatedness, and other personal and job characteristics. The effect of purpose on job satisfaction is among the strongest of the four factors that give meaning to the job. These effects hold irrespective the data set and the operationalization of subjective well-being. Next to that we find a positive effect of income and a negative effect of working hours. On basis of these analyses we do find support for the model by Cassar and Meier.

Addressing the question whether income and meaning, or income and purpose are substitutes or complements we find that they are substitutes. Although at the occupational level the correlation between purpose and income is positive, we find in our analyses of purpose a negative effect of income and in the analyses of subjective well-being positive effects of both purpose and income, suggesting a trade-off between these two, holding the level of subjective well-being constant. So a worker is equally satisfied holding a low paying job with much purpose or holding a high paying job with low purpose. The workers are indifferent between these type of jobs. According to the preferences of the workers, i.e. a preference for income versus a preference for purpose, workers will sort into different jobs.

So we can follow the analyses of Cassar and Meier, with the restriction that we do find substitution effects between income and purpose, but no complementary effects. Because jobs with high purpose are also jobs with high levels of autonomy, competence and relatedness, this suggests that meaning of the job and income could be complements. Jobs with high levels of autonomy and responsibility, and jobs that ask for high level of skills and thus competence, are highly paid jobs in the labour market. Also employers might want to reward, monetarily, workers that they value highly. This would suggest that income and meaning, or income and purpose are complements. And that is why, at the occupational level, we find a positive correlation between income and purpose. Careful analysis at the individual level with respect to purpose and well-being shows a negative effect of income on purpose and also a trade-off between income and purpose on well-being. This clearly suggests the existence of substitution effects between income, or wages, and purpose.

So, we did find that purpose is being traded against wages, like a compensating wage differential, just as Helliwell and Huang showed that trust and wages act like substitutes. We find that the trade-off between usefulness and wages is just as strong as that between trust or relatedness and wages. This trade-off is being caused by a relatively large effect of purpose on job satisfaction whereas

the effect of wages or income is rather small. This suggests that workers are willing to give up quite some income to increase the usefulness of the job. However, we did not find that workers are being exploited or being underpaid as Graeber suggests in his book. We could not show that jobs or occupations without purpose are highly paid occupations and that jobs with purpose are poorly paid occupations. The correlation between income and purpose is positive and we do not find consistent spill-over effects from income to purpose.

The explanation for this can be manifold. First of all it is difficult to show under- and overpayment. The question always is: compared to what? Next to that we have to consider that the measure of purpose of a job is a subjective measure. So a person who is doing a purposeless job according to some other person, might herself consider the job as being purposeful, may be due to the high wages, because these high wages show that according to their employer the job has purpose. The wage as a monetary reward just shows how the worker is being valued by the employer or manager, and why should the worker consider the job as being purposeless if it is being valued by the employer. The evidence for spill-over effects is scarce. One of the exceptions is (Michel et al. 2019) who showed that people living in countries with high per capita spending on advertisement are less happier than people from other countries, indicating that marketing jobs might have less purpose than the worker herself may think.

Of course, this research comes with its weaknesses. We use cross-sectional data, whereas it probably would be better to use panel data, to control for unobserved personal effects, like preferences. Furthermore, we use only the 2 digit occupational code, where a more detailed inference at the occupational and industrial level might be more informative. For example wages and income within healthcare is highly skewed. On the one hand we have the lower paid nurses and on the other hand the highly paid medical specialists. To find effects of under- and overpayment in specific occupations or industries a more detailed analysis is needed, but data is hard to come by.

Although it could be useful to look for institutional differences between countries, we think that this will be hard to show. In all models we see that most of the variance is high at the individual level and low at the country level. This indicates a low intraclass correlation, so there is not much need to use a multilevel model. We do so, because this model is more parsimonious in its parameters and gives similar results as an OLS regression with country fixed effects. It further indicates that the differences between countries is small. So a search for (institutional) country differences seems to be fruitless. It suggests that people all over the world are quite similar, with respect to the importance of meaning into the job, irrespective of the country they live in, or the institutional arrangements they have to deal with.

Our results show that purpose and meaning of the job are important to workers. We hope that these results contribute to a change in labour market policies, away from the quantity, or availability, of jobs towards the quality of jobs. The rise of the gig- or platform economy does not make us

hopeful. These jobs are of low quality and badly paid. Also the increase in self-employed in precarious work is not favourable.

A further concern is the development of wages, especially in jobs that have purpose. On average the development of wages lags behind the growth in productivity. This might be even worse for jobs in the public sector due to austerity policies in the last twenty odd years or so. Policies should try to increase the wages of these workers. Although we could not show that these workers are underpaid, we know that they receive a low wage and are vulnerable for exploitation, given their preferences for jobs with purpose. Employers might use this vulnerability and that should be circumvented.

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Table 1. Ranking of occupation by mean purpose, EWCS

Occupation	EWCS				ISSP			ranking ISSP
	ISCO	Mean	St.dev.	N	Mean	St.dev.	N	
Health associate professionals	32	4.49	0.61	740	4.50	0.64	501	3
Health professionals	22	4.49	0.57	968	4.57	0.60	570	1
Personal care workers	53	4.45	0.68	1105	4.52	0.59	600	2
Teaching professionals	23	4.45	0.63	2222	4.48	0.60	1417	4
Legal and related associate professionals	34	4.42	0.59	361	4.15	0.86	316	6
Chief executives	11	4.40	0.66	194	4.09	0.73	182	7
Hospitality, retail managers	14	4.38	0.65	233	3.97	0.80	168	12
Science associate professionals	31	4.37	0.67	784	3.83	0.76	686	17
Production managers	13	4.37	0.65	556	3.99	0.82	537	11
Legal, social and cultural professionals	26	4.36	0.68	629	4.17	0.82	524	5
Armed forces	3	4.34	0.83	51	4.05	0.83	42	8
Business and administration professionals	24	4.30	0.68	903	3.69	0.82	593	32
Science and engineering professionals	21	4.30	0.66	725	3.73	0.83	542	28
Electrical and electronic trades workers	74	4.30	0.72	413	3.75	0.84	297	26
ICT technicians	35	4.28	0.72	217	3.68	0.90	115	33
Market-oriented skilled agricultural workers	61	4.27	0.84	195	3.79	0.81	156	21
Building and related trades workers	71	4.27	0.75	1034	3.77	0.86	585	24
Non-commissioned officers	2	4.27	0.64	30	3.92	0.87	26	14
Administrative managers	12	4.25	0.69	537	3.85	0.82	418	15
Commissioned officers	1	4.24	0.72	39	4.02	0.84	32	10
ICT professionals	25	4.24	0.66	405	3.66	0.77	282	34
Business and administration associate professionals	33	4.24	0.73	1661	3.81	0.87	1349	19
Protective services workers	54	4.24	0.79	679	4.04	0.90	403	9
Metal, machinery and related trades workers	72	4.23	0.81	965	3.70	0.83	592	30
Food preparation assistants	94	4.23	0.86	214	3.78	1.02	97	22
General and keyboard clerks	41	4.21	0.75	1165	3.70	0.91	646	31
Handicraft and printing workers	73	4.20	0.83	146	3.40	1.01	81	42
Numerical and material recording clerks	43	4.19	0.87	877	3.62	0.85	497	35
Food processing, wood working etc. workers	75	4.19	0.83	677	3.60	0.92	374	36
Personal service workers	51	4.19	0.84	1667	3.83	0.91	761	18
Drivers and mobile plant operators	83	4.18	0.82	1230	3.78	0.86	716	23
Other clerical support workers	44	4.16	0.86	380	3.93	0.84	181	13
Cleaners and helpers	91	4.15	0.94	1182	3.73	0.89	656	27
Refuse workers and other elementary workers	96	4.14	0.89	413	3.76	0.88	225	25
Customer services clerks	42	4.12	0.83	675	3.84	0.87	430	16
Subsistence farmers, fishers, hunters	63	4.12	0.95	33	3.06	1.45	9	43
Agricultural, forestry and fishery labourers	92	4.08	1.01	179	3.52	0.95	156	37

Sales workers	52	4.05	0.87	2482	3.72	0.83	1235	29
Stationary plant and machine operators	81	4.03	0.92	798	3.51	0.95	413	39
Other	99	4.00	0.88	88	3.79	0.82	722	20
Market-oriented skilled forestry workers	62	3.98	0.78	33	3.48	0.76	33	41
Labourers in mining, construction etc.	93	3.94	0.96	648	3.50	0.89	450	40
Assemblers	82	3.94	1.04	202	3.52	0.82	126	38
Street and related sales and service workers	95	3.59	1.22	11	3.00	0.00	1	44
Total		4.25	0.79	28746	3.90	0.87	18742	
Correlation on basis of the means		0.80						
Rank correlations by occupation		0.73						

Table 2. Multilevel model of purpose, EWCS2015

	M1		M2		M3		M4		M5	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	2.623*	(0.041)	2.993*	(0.056)	2.246*	(0.083)	2.472*	(0.088)	2.558*	(0.094)
autonomy	0.047*	(0.012)	0.040*	(0.012)	0.040*	(0.012)	0.014	(0.012)	0.015	(0.012)
empower	0.188*	(0.005)	0.188*	(0.006)	0.179*	(0.005)	0.181*	(0.006)	0.183*	(0.006)
complexity	0.162*	(0.017)	0.178*	(0.017)	0.216*	(0.017)	0.292*	(0.017)	0.293*	(0.017)
competence	0.026*	(0.009)	0.026*	(0.009)	0.010	(0.008)	0.004	(0.008)	0.005	(0.008)
advance	0.034*	(0.003)	0.034*	(0.003)	0.045*	(0.004)	0.045*	(0.004)	0.047*	(0.004)
support	0.151*	(0.005)	0.150*	(0.005)	0.147*	(0.005)	0.147*	(0.005)	0.147*	(0.005)
sinc			0.011*	(0.004)	0.007	(0.004)	0.007	(0.004)		
lninc									-0.018*	(0.008)
misinc									-0.142*	(0.059)
lnhrs			-0.117*	(0.011)	-0.097*	(0.011)	-0.075*	(0.012)	-0.068*	(0.012)
Female					0.079*	(0.009)	0.057*	(0.009)	0.054*	(0.009)
partner					0.001	(0.010)	0.004	(0.010)	0.006	(0.009)
Child < 12										
home					0.005	(0.011)	0.005	(0.011)	0.003	(0.011)
age					0.066*	(0.030)	0.066*	(0.030)	0.068*	(0.030)
age # age					0.003	(0.004)	0.001	(0.004)	0.001	(0.004)
educ					-0.026*	(0.003)	-0.030*	(0.003)	-0.028*	(0.003)
shealth					0.098*	(0.006)	0.086*	(0.006)	0.088*	(0.006)
public							0.094*	(0.010)	0.093*	(0.010)
joint							0.054*	(0.022)	0.054*	(0.022)
not-for-prof							0.085*	(0.039)	0.083*	(0.039)
other							0.178*	(0.044)	0.178*	(0.044)
2-9							-0.208*	(0.031)	-0.205*	(0.031)
10-249							-0.168*	(0.031)	-0.163*	(0.031)
250+							-0.218*	(0.032)	-0.211*	(0.032)
tenure							0.000	(0.001)	0.000	(0.001)
supervisor							-0.053*	(0.012)	-0.051*	(0.012)
dirty							-0.017*	(0.005)	-0.018*	(0.005)
irreg2							0.035*	(0.005)	0.035*	(0.005)
flexhrs							-0.027*	(0.005)	-0.026*	(0.005)
press							-0.033*	(0.002)	-0.033*	(0.002)
var(country)	0.020	(0.005)	0.020	(0.005)	0.020	(0.005)	0.018	(0.005)	0.018	(0.004)
var(individ)	0.502	(0.004)	0.500	(0.004)	0.487	(0.004)	0.478	(0.004)	0.478	(0.004)
N	28746		28746		28746		28746		28746	
Chi2	5603.41		5738.13		6656.40		7307.95		7313.30	
loglik	30936.57		30880.11		30502.35		30240.59		30238.60	
degr. frd.	6		8		15		28		29	

Table 3. Multilevel model of purpose. ISSP 2015

	M1		M2		M3		M4		M5	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	1.025*	(0.050)	1.302*	(0.074)	0.885*	(0.100)	1.217*	(0.098)	1.160*	(0.099)
autonomy	-0.043*	(0.008)	-0.041*	(0.008)	-0.054*	(0.008)	-0.009	(0.008)	-0.008	(0.008)
empower	0.142*	(0.006)	0.143*	(0.006)	0.142*	(0.006)	0.153*	(0.006)	0.152*	(0.006)
competence	0.071*	(0.006)	0.073*	(0.006)	0.062*	(0.006)	0.062*	(0.006)	0.064*	(0.006)
advance	0.066*	(0.005)	0.079*	(0.006)	0.088*	(0.006)	0.081*	(0.006)	0.078*	(0.005)
support	0.081*	(0.008)	0.080*	(0.008)	0.083*	(0.008)	0.095*	(0.008)	0.093*	(0.008)
relatedn	0.412*	(0.007)	0.411*	(0.007)	0.400*	(0.007)	0.373*	(0.007)	0.373*	(0.007)
sinc			-0.024*	(0.006)	-0.026*	(0.006)	-0.016*	(0.006)		
dinc									-0.016*	(0.003)
misinc									-0.115*	(0.025)
lnhrs			-0.071*	(0.015)	-0.040*	(0.015)	-0.041*	(0.015)	-0.023	(0.015)
Female					0.113*	(0.011)	0.073*	(0.011)	0.062*	(0.011)
Child home					0.024	(0.013)	0.024	(0.013)	0.025*	(0.013)
age					0.039	(0.036)	0.035	(0.035)	0.054	(0.035)
age # age					0.001	(0.004)	0.000	(0.004)	-0.002	(0.004)
educ					0.032*	(0.004)	0.010*	(0.004)	0.016*	(0.004)
Private employer							-0.372*	(0.012)	-0.375*	(0.012)
supervisor							0.001	(0.013)	0.006	(0.013)
wrkwknd							0.032*	(0.004)	0.031*	(0.004)
flexhrs							-0.092*	(0.010)	-0.091*	(0.010)
wrkprs							0.010	(0.005)	0.011*	(0.005)
var(country)	0.026	(0.006)	0.026	(0.006)	0.028	(0.007)	0.019	(0.005)	0.020	(0.005)
var(indivd)	0.536	(0.006)	0.534	(0.006)	0.526	(0.005)	0.495	(0.005)	0.494	(0.005)
N	18742		18742		18742		18742		18742	
Chi2	6494.49		6552.14		6939.89		8606.04		8637.59	
loglik	-		-		-		-		-	
dgr. frd.	20799.42		20778.05		20634.69		20048.51		20037.37	
	6		8		14		19		20	

Table 4. Multi-level model of job satisfaction, EWCS2015

	M1		M2		M3		M4		M5	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	1.582*	(0.037)	1.685*	(0.047)	1.069*	(0.068)	1.395*	(0.072)	1.327*	(0.078)
purpose	0.171*	(0.005)	0.166*	(0.005)	0.150*	(0.005)	0.137*	(0.005)	0.139*	(0.005)
autonomy	0.077*	(0.010)	0.061*	(0.010)	0.057*	(0.010)	0.022*	(0.010)	0.026*	(0.010)
empower	0.103*	(0.005)	0.091*	(0.005)	0.090*	(0.005)	0.086*	(0.005)	0.091*	(0.005)
complexity	-0.246*	(0.014)	-0.240*	(0.014)	-0.210*	(0.014)	-0.109*	(0.014)	-0.116*	(0.014)
competence	0.050*	(0.007)	0.049*	(0.007)	0.047*	(0.007)	0.038*	(0.007)	0.040*	(0.007)
advance	0.124*	(0.003)	0.112*	(0.003)	0.107*	(0.003)	0.105*	(0.003)	0.110*	(0.003)
support	0.088*	(0.004)	0.085*	(0.004)	0.078*	(0.004)	0.079*	(0.004)	0.081*	(0.004)
sinc			0.088*	(0.003)	0.075*	(0.003)	0.071*	(0.003)		
lninc									0.050*	(0.007)
misinc									0.373*	(0.049)
lnhrs			-0.087*	(0.009)	-0.075*	(0.009)	-0.039*	(0.009)	-0.045*	(0.010)
Female					0.045*	(0.007)	0.014	(0.007)	0.017*	(0.007)
partner					0.005	(0.008)	0.007	(0.008)	0.021*	(0.008)
Child < 12										
home					-0.003	(0.009)	-0.001	(0.009)	-0.018*	(0.009)
age					-0.009	(0.025)	-0.015	(0.024)	-0.063*	(0.025)
age # age					0.005	(0.003)	0.005	(0.003)	0.010*	(0.003)
educ					-0.007*	(0.002)	-0.013*	(0.002)	-0.009*	(0.002)
shealth					0.160*	(0.005)	0.141*	(0.005)	0.154*	(0.005)
public							0.017*	(0.008)	0.013	(0.008)
joint							-0.004	(0.018)	-0.010	(0.018)
not-for-prof							-0.025	(0.032)	-0.029	(0.033)
other							0.052	(0.036)	0.056	(0.036)
2-9							-0.072*	(0.026)	-0.071*	(0.026)
10-249							-0.101*	(0.025)	-0.099*	(0.026)
250+							-0.121*	(0.026)	-0.116*	(0.026)
tenure							-0.001	(0.000)	0.000	(0.000)
supervisor							-0.028*	(0.010)	-0.023*	(0.010)
dirty							-0.052*	(0.004)	-0.058*	(0.004)
irreghr2							-0.021*	(0.004)	-0.024*	(0.004)
flexhrs							-0.028*	(0.004)	-0.026*	(0.004)
press							-0.033*	(0.002)	-0.035*	(0.002)
var(country)	0.014	(0.004)	0.008	(0.002)	0.007	(0.002)	0.007	(0.002)	0.008	(0.002)
var(indivd)	0.352	(0.003)	0.342	(0.003)	0.331	(0.003)	0.321	(0.003)	0.326	(0.003)
N	28696		28696		28696		28696		28696	
Chi2	8849.95		9957.72		11326.75		12476.94		11872.19	
loglik	25802.51		25386.52		-24887.8		24480.19		-24692.1	
degr. frd.	7		9		16		29		30	

Table 5. Multilevel model of job satisfaction, ISSP2015

	M1		M2		M3		M4		M5	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	0.808*	(0.060)	0.921*	(0.091)	0.958*	(0.124)	1.366*	(0.125)	1.502*	(0.128)
purpose	0.169*	(0.009)	0.174*	(0.009)	0.169*	(0.009)	0.157*	(0.009)	0.157*	(0.009)
autonomy	0.116*	(0.010)	0.100*	(0.010)	0.104*	(0.010)	0.100*	(0.011)	0.100*	(0.011)
empower	0.082*	(0.007)	0.070*	(0.007)	0.067*	(0.007)	0.065*	(0.007)	0.076*	(0.007)
competence	0.077*	(0.007)	0.070*	(0.007)	0.066*	(0.007)	0.074*	(0.007)	0.073*	(0.007)
advance	0.162*	(0.007)	0.100*	(0.007)	0.115*	(0.007)	0.114*	(0.007)	0.168*	(0.007)
support	0.615*	(0.010)	0.600*	(0.010)	0.595*	(0.010)	0.552*	(0.010)	0.566*	(0.010)
relatedn	0.034*	(0.009)	0.034*	(0.009)	0.039*	(0.009)	0.058*	(0.009)	0.057*	(0.009)
sinc			0.152*	(0.007)	0.155*	(0.007)	0.155*	(0.007)		
dinc									0.035*	(0.004)
misinc									0.279*	(0.032)
lnhrs			-0.063*	(0.019)	-0.052*	(0.019)	0.011	(0.019)	-0.011	(0.020)
Female					0.027	(0.014)	0.022	(0.014)	0.029*	(0.014)
Child home					-0.009	(0.016)	-0.004	(0.016)	-0.003	(0.016)
age					-0.079	(0.045)	-0.040	(0.045)	-0.088	(0.045)
age # age					0.015*	(0.005)	0.010	(0.005)	0.015*	(0.005)
educ					-0.029*	(0.005)	-0.028*	(0.005)	-0.032*	(0.005)
Private employer							-0.123*	(0.015)	-0.112*	(0.016)
supervisor							0.005	(0.016)	0.007	(0.017)
wrkwknd							-0.004	(0.005)	-0.004	(0.005)
flexhrs							-0.009	(0.013)	0.005	(0.013)
wrkprs							-0.144*	(0.007)	-0.149*	(0.007)
var(country)	0.024	(0.006)	0.022	(0.006)	0.022	(0.006)	0.021	(0.005)	0.025	(0.007)
var(indivd)	0.864	(0.009)	0.845	(0.009)	0.838	(0.009)	0.815	(0.008)	0.830	(0.009)
N	18698		18698		18698		18698		18698	
Chi2	8548.79		9172.26		9414.45		10218.22		9681.27	
loglik	25216.80		25006.74		24925.30		24662.21		24834.37	
dgr. frd.	7		9		15		20		21	

Table 6. Multilevel model of vitality, EWCS2015

	M1		M2		M3		M4		M5	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	2.451*	(0.051)	2.527*	(0.071)	1.322*	(0.100)	1.570*	(0.106)	1.684*	(0.114)
purpose	0.311*	(0.007)	0.306*	(0.007)	0.276*	(0.007)	0.262*	(0.007)	0.263*	(0.007)
autonomy	0.013	(0.016)	-0.006	(0.016)	0.010	(0.015)	-0.020	(0.015)	-0.015	(0.015)
empower	0.089*	(0.007)	0.075*	(0.007)	0.073*	(0.007)	0.071*	(0.007)	0.077*	(0.007)
complexity	-0.244*	(0.021)	-0.241*	(0.021)	-0.157*	(0.020)	-0.056*	(0.021)	-0.058*	(0.021)
competence	0.008	(0.011)	0.007	(0.011)	0.008	(0.010)	-0.003	(0.010)	-0.001	(0.010)
advance	0.116*	(0.004)	0.102*	(0.004)	0.079*	(0.004)	0.077*	(0.004)	0.084*	(0.004)
support	0.113*	(0.006)	0.110*	(0.006)	0.089*	(0.006)	0.089*	(0.006)	0.091*	(0.006)
sinc			0.103*	(0.005)	0.073*	(0.005)	0.072*	(0.005)		
lninc									0.006	(0.010)
misinc									0.072	(0.071)
lnhrs			-0.088*	(0.014)	-0.111*	(0.014)	-0.083*	(0.014)	-0.074*	(0.014)
Female					-0.092*	(0.010)	-0.121*	(0.011)	-0.124*	(0.011)
partner					-0.002	(0.012)	0.000	(0.011)	0.014	(0.011)
Child < 12										
home					-0.020	(0.013)	-0.018	(0.013)	-0.035*	(0.013)
age					-0.021	(0.036)	-0.019	(0.036)	-0.057	(0.036)
age # age					0.006	(0.004)	0.006	(0.004)	0.010*	(0.004)
educ					-0.035*	(0.003)	-0.036*	(0.003)	-0.029*	(0.003)
shealth					0.422*	(0.007)	0.403*	(0.007)	0.418*	(0.007)
public							0.007	(0.012)	0.002	(0.012)
joint							0.060*	(0.027)	0.055*	(0.027)
not-for-prof							-0.093*	(0.047)	-0.099*	(0.047)
other							0.038	(0.052)	0.043	(0.053)
2-9							-0.069	(0.038)	-0.063	(0.038)
10-249							-0.083*	(0.037)	-0.073	(0.037)
250+							-0.126*	(0.038)	-0.109*	(0.038)
tenure							-0.001	(0.001)	0.000	(0.001)
supervisor							-0.028	(0.015)	-0.019	(0.015)
dirty							-0.042*	(0.006)	-0.048*	(0.006)
irreghr2							0.003	(0.006)	0.000	(0.006)
flexhrs							-0.066*	(0.005)	-0.064*	(0.005)
press							-0.032*	(0.003)	-0.034*	(0.003)
var(country)	0.019	(0.005)	0.019	(0.005)	0.021	(0.005)	0.020	(0.005)	0.021	(0.005)
var(indivd)	0.799	(0.007)	0.786	(0.007)	0.701	(0.006)	0.690	(0.006)	0.695	(0.006)
N	28737		28737		28737		28737		28737	
Chi2	5834.94		6424.54		10657.19		11302.15		10992.23	
loglik	37611.47		37367.53		35733.87		35501.51		35613.39	
degr. frd.	7		9		16		29		30	

Table 7. Multilevel model of jobsatisfaction2, EWCS2015

	M1		M2		M3		M4		M5	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	2.027*	(0.030)	2.180*	(0.040)	1.596*	(0.058)	1.625*	(0.062)	1.619*	(0.067)
purpose	0.335*	(0.004)	0.333*	(0.004)	0.317*	(0.004)	0.315*	(0.004)	0.316*	(0.004)
autonomy	0.024*	(0.009)	0.017*	(0.009)	0.015	(0.009)	0.011	(0.009)	0.012	(0.009)
empower	0.053*	(0.004)	0.050*	(0.004)	0.049*	(0.004)	0.046*	(0.004)	0.047*	(0.004)
complexity	0.005	(0.012)	0.012	(0.012)	0.040*	(0.012)	0.058*	(0.012)	0.056*	(0.012)
competence	-0.021*	(0.006)	-0.022*	(0.006)	-0.026*	(0.006)	-0.028*	(0.006)	-0.027*	(0.006)
advance	0.070*	(0.002)	0.067*	(0.002)	0.066*	(0.002)	0.066*	(0.002)	0.067*	(0.002)
support	0.045*	(0.003)	0.044*	(0.003)	0.040*	(0.003)	0.041*	(0.003)	0.041*	(0.003)
sinc			0.029*	(0.003)	0.022*	(0.003)	0.022*	(0.003)		
lninc									0.012*	(0.006)
misinc									0.099*	(0.041)
lnhrs			-0.063*	(0.008)	-0.052*	(0.008)	-0.050*	(0.008)	-0.050*	(0.008)
Female					0.047*	(0.006)	0.037*	(0.006)	0.038*	(0.006)
partner					-0.009	(0.007)	-0.008	(0.007)	-0.004	(0.007)
Child < 12										
home					0.022*	(0.007)	0.023*	(0.007)	0.018*	(0.007)
age					0.039	(0.021)	0.044*	(0.021)	0.030	(0.021)
age # age					0.000	(0.002)	-0.001	(0.002)	0.001	(0.002)
educ					-0.011*	(0.002)	-0.012*	(0.002)	-0.011*	(0.002)
shealth					0.120*	(0.004)	0.117*	(0.004)	0.121*	(0.004)
public							0.015*	(0.007)	0.014	(0.007)
joint							0.016	(0.016)	0.014	(0.016)
not-for-prof							-0.008	(0.028)	-0.010	(0.028)
other							0.083*	(0.031)	0.085*	(0.031)
2-9							0.015	(0.022)	0.016	(0.022)
10-249							-0.012	(0.022)	-0.011	(0.022)
250+							-0.030	(0.022)	-0.028	(0.022)
tenure							-0.001	(0.000)	-0.001	(0.000)
supervisor							0.019*	(0.009)	0.021*	(0.009)
dirty							-0.019*	(0.004)	-0.020*	(0.004)
irreghr2							0.012*	(0.003)	0.011*	(0.003)
flexhrs							-0.009*	(0.003)	-0.009*	(0.003)
press							-0.001	(0.002)	-0.001	(0.002)
var(country)	0.009	(0.002)	0.008	(0.002)	0.008	(0.002)	0.008	(0.002)	0.008	(0.002)
var(indivd)	0.246	(0.002)	0.244	(0.002)	0.237	(0.002)	0.236	(0.002)	0.237	(0.002)
N	28745		28745		28745		28745		28745	
Chi2	13633.59		13895.48		15202.28		15338.78		15249.87	
loglik	20685.46		-20597.3		20163.29		20118.53		20147.47	
degr. frd.	7		9		16		29		30	

Table 8. External effects of income by occupation, EWCS2015

	M1		M2		M3		M4	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	1.605*	(0.154)	2.473*	(0.099)	2.348*	(0.099)	2.568*	(0.104)
lninc	0.152*	(0.024)						
lnincM	-0.186*	(0.023)						
lnwage			0.009	(0.021)				
lnwageM			-0.035	(0.019)				
dinc					-0.015*	(0.004)		
dincM					0.005	(0.004)		
sinc							-0.038*	(0.016)
sincM							0.044*	(0.016)
lnhrs	-0.058*	(0.014)	-0.086*	(0.014)	-0.052*	(0.013)	-0.069*	(0.013)
var(country)	0.018	(0.004)	0.018	(0.004)	0.018	(0.004)	0.018	(0.004)
var(indivd)	0.476	(0.004)	0.477	(0.004)	0.477	(0.004)	0.477	(0.004)
N	23645		23645		23645		23645	
Chi2	5948.73		5871.21		5892.63		5872.11	
loglik	-24831.72		-24862.79		-24854.05		-24862.33	
degr. frd.	29		29		29		29	

Table 9. External effects of income by industry, EWCS2015

	M1		M2		M3		M4	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	2.001*	(0.137)	2.463*	(0.100)	2.385*	(0.100)	2.570*	(0.110)
lninc	0.076*	(0.020)						
lnincM2	-0.103*	(0.017)						
lnwage			0.006	(0.019)				
lnwageM2			-0.032	(0.017)				
dinc					-0.023*	(0.005)		
dincM2					0.014*	(0.005)		
sinc							-0.032	(0.018)
sincM2							0.037*	(0.017)
lnhrs	-0.058*	(0.014)	-0.084*	(0.014)	-0.051*	(0.013)	-0.070*	(0.013)
var(country)	0.018	(0.004)	0.018	(0.004)	0.018	(0.004)	0.018	(0.004)
var(indivd)	0.477	(0.004)	0.477	(0.004)	0.477	(0.004)	0.477	(0.004)
N	23645		23645		23645		23645	
Chi2	5910.29		5871.23		5902.64		5867.97	
loglik	-24847.14		-24862.78		-24850.04		-24864.00	
degr. frd.	29		29		29		29	

Table 10. External effects of income by occupation, ISSP2015

	M1		M2		M3		M4	
	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.	Coeff	s.e.
Constant	1.294*	(0.103)	1.244*	(0.111)	1.597*	(0.108)	1.573*	(0.115)
dinc	-0.047*	(0.007)	-0.045*	(0.008)				
dincM	0.034*	(0.007)	0.031*	(0.008)				
sinc					-0.194*	(0.022)	-0.192*	(0.023)
sincM					0.183*	(0.022)	0.179*	(0.023)
lnhrs	-0.020	(0.015)	-0.018	(0.017)	-0.030*	(0.015)	-0.030	(0.016)
var(country)	0.020	-0.005	0.021	-0.005	0.019	-0.005	0.020	-0.005
var(indivd)	0.493	(0.005)	0.497	(0.006)	0.493	(0.005)	0.496	(0.006)
N	18742		16148		18742		16148	
Chi2	8669.21		7314.46		8709.77		7346.35	
loglik	-20026.47		-17313.41		-20013.00		-17302.81	
dgr. frd.	21		20		20		20	



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