Constructing the composite indicator "Quality of work" from the third European survey on working conditions

Andranik S. Tangian

Diskussionspapier Nr. 132

November 2004

Privatdozent Dr. Dr. Andranik Tangian
WSI in der Hans Böckler Stiftung
Hans-Böckler-Straße 39
D-40476 Düsseldorf
Tel: +49 211 7778-259
Fax: +49 211 7778-190
Andranik-Tangian@Boeckler.De

Abstract

The composite indicator "Quality of work" for comparing European countries is constructed from data of the Third European Survey on Working Conditions. The main findings are as follows: (a) European countries differ with respect to working conditions statistically more significantly than with respect to earnings; it implies a quite accurate discrimination threshold in ranking countries with respect to quality of work, (b) working conditions and earnings positively depend over the whole of Europe but little correlate within single countries; it indicates at the prevailing role of national determinants over professional or social specificities as contributing to the average quality of work, (c) earnings play no role in subjective satisfaction from work which exclusively depends on working conditions; consequently, more attention should be paid to improving the latter, (d) working conditions of women are significantly better than that of men, which is explained by their inclination to service occupations. Processing ordinal rather than metrical data requires an addendum to the methodology of composite indicators. The corresponding mathematical model is proposed.

Keywords: Quality of work, European Union, composite indicators, statistical indices, processing ordinal data.

JEL Classification:
C43 — Index Numbers and Aggregation,
C51 — Model Construction and Estimation,
J21 — Labor Force and Employment, Size, and Structure,
J88 — Public Policy.

Acknowledgements

The author thanks the European Foundation, Dublin, for having provided source data of the Third European Survey on Working Conditions 2000. Special thanks deserve Ana Franco Lopez, Jonny Johansson, and Antti Karjalainen (EuroStat, Luxemburg) for having cooperatively compiled special data sets. The contribution of Vera-Britt Sommer and Roman Böckmann to data research is gratefully acknowledged. Many useful hints were received from colleagues Heiko Massa-Wirth, Torsten Niechoj, Christina Klenner, and Thorsten Schulten.

Contents

In the new list an indicator **quality of work** *has been added in response to the emphasis put on this issue by the Stockholm European Council. The particular indicator on accidents at work has been chosen ... But other indicators of quality of work, such as "life-long learning", were already included in the list of structural indicators.*

European Communities
Structural indicators, p. 6
Brussels, 30.10.2001
COM(2001) 619 final

1 Political background

The concept of the European welfare state includes both economical and social aspects; see Esping-Andersern (1990). Since employees spend at least 1/3 of the time at work, more than devoted to family, friends, and leisure together (Esser and Schrader 1993, 2nd cover page, Halama 1997, p. 2), working conditions play in the total welfare as important role as income, consumption, or living standards.

Working conditions permanently remain in the focus of attention of the European Commission, national governments, and trade unions. In particular, it is one of issues of the European Employment Strategy (EES) launched in 1997 in Luxembourg. The EU Lisbon Summit 2000 claimed for " more and better jobs and greater social cohesion by 2010". Four years later, on March 2004, the European Council again emphasized "the urgency to take effective action in creating more and better jobs"; see European Commission (2001–2004).

At the European level, the supervision of working conditions is institutionalized in the *European Foundation for the Improvement of Living and Working Conditions*, Dublin, and the *European Agency for Safety and Health at Work*, Bilbao. The former is a European organization, one of the first to be established to work in specialized areas of EU policy. It was set up by the European Council (Council Regulation EEC No. 1365/75 of 26 May 1975) and since then carries out research and development projects, providing data and analysis for informing and supporting the formulation of EU policy. The Foundation has a network of experts throughout Europe who conduct research on its behalf including assessing the current national situations, the preparation of case studies and national reports and the conducting of surveys; see European Foundation (2004).

The European Agency closely collaborates with the European Foundation. It acts as a catalyst for developing, collecting, analyzing and disseminating information that improves the state of occupational safety and health. The Agency is a tripartite European Union organization also set up by the European Council (Council Regulation EEC No. 2062/94) to bring together representatives from three key decision-making groups in each of the EUs Member States — governments, employers and workers associations; see European Agency (2004)[1].

[1]Germany has contributed to these European initiatives as early as in the 1970s by a research program *Humanisierung des Arbeitslebens (HdA)* (= Humanization of Working Life) followed by programs *Arbeit und Technik* (= Work and Techniques), and *Innovative Arbeitsgestaltung* (= Innovative Work Structuring); see the Editorial to *Arbeit*, 2004/3. The actual program of this type, *Initiative Neue Qualität der Arbeit (INQA)* (= Initiative New Quality of Work), is complemented with the political initiative *Gute*

2 European surveys on working conditions

Both institutions use statistical data on working conditions collected by the EuroStat (2004) which are available from the *New Cronos* Internet page (section *Population and Social Conditions*). Selected data are annually summarized in the *Labour Force Surveys* and other EuroStat reports, also available on-line. These data are however not enough exhaustive for specialized studies on working conditions, and in 1990 the European Foundation has originated purpose-oriented *European Surveys on Working Conditions* which take place every five years, the third dating 2000 and the fourth being planned for 2005.

The most recent survey by the European Foundation (2000) is based on a questionnaire with over 200 questions related to

- occupation (position, industry branch, type of contract, size of enterprize, etc.),
- physical environment (vibrations, noise, painful positions, etc.),
- time (evening, weekend, and shift-work, schedule of working time, etc.),
- organizational issues (monotonicity of work, unforeseen tasks, independence and subordination, etc.),
- social climate (possibility to discuss working conditions, cases of violence, discrimination, etc.),
- health (different professional diseases, accidents, sick leaves, etc.), and
- income (basic, bonus, sharing profits, compensations for overtime, etc.)

Totally, 21703 persons from 15 European countries are interviewed by national institutes listed in p. 67 of the report. Each country is represented by ca. 1500 interviews, except for Luxembourg with 502 interviews. The interviewed persons are selected by the method of *random walk*, and the results are processed as in a microcensus. That is, the European figures are derived from the national averages accounted with weights proportional to the size of active population in the given country according to the *Labour Force Survey* of EuroStat (1997), ranging from 0.17 Mio in Luxembourg to 35.30 Mio in Germany; see pp. 1–3 and 67–68 of the report.

Thus, the interviews are aggregated in the *population* dimension (= vertical dimension of the survey data). Thereby the report provides a comprehensive outlook at single countries and the whole of Europe with respect to all the questionnaire items. For instance, one can find the percentage of employees working with computers at least 1/4 of the time or all the time (p. 8), or the percentage of fixed-termed employees or even trainees who dare to discuss their working conditions at their workplace (p. 26). It enables tracing the evolution of the corresponding European and national indicators since the first survey of 1990.

Arbeit (= Good Work) of the leading German trade union IG Metall; see Pickshaus and Urban (2004); for the current German debate on the quality of work see Peters and Schmitthenner (2003).

3 The surveys from the viewpoint of the EU policy goals

Contrary to the EU's aiming at "better jobs", the survey deals little with the 'worse—better' evaluation of working conditions. In some cases the evaluation follows from questions by default, like from the ones about disturbing factors (noise, vibration, etc.) but in other cases it appears to be quite ambiguous. For instance, one can learn almost everything about the variability of working hours and spontaneity of changes of the working time (pp. 23–25), but nothing is said on whether time flexibility is desirable, or evening work is voluntary, or overtime is fairly rewarded.

Neither countries, nor industrial branches are classified with respect to the quality of work in general. They are not even discriminated with respect to any composite factor like scheduling working time, physical environment, or social climate. It stems from the lack of *inter-question* aggregation of interviews (= in the horizontal dimension of the survey data) which could integrate answers to all or selected questions. For instance, there are over 20 questions on professional diseases but no integral characterization of health at work[2].

Therefore, it is impossible to judge which countries offer better working conditions, or which social groups are privileged. If a young European asks himself "In which country would I like to work?" the surveys mentioned will be of little help. Even an expert can have difficulties in finding the countries with most favorable/most critical working conditions, being lost in the totality of hardly observable information.

4 Composite indicators

Composite indicators, or synthetic indices, are increasingly propagating during the last decade. They appear in numerous world-wide documents (United Nations 2001–, International Institute for Management Development 2000–, World Economic Forum 2002–, OECD 2002–2004). On October 2001 the European Commission recommended to develop composite indicators for certain purposes within the Structural Indicators Exercise (European Commission 2001a) which was followed by the report (European Commission 2002b). As emphasized by the OECD (2003, p. 3),

> Composite indicators are valued for their ability to integrate large amounts of information into easily understood formats for a general audience... Despite their many deficiencies, composite indicators will continue to be developed due to their usefulness...

[2]Another survey-based dedicated report *Working Time Preferences in Sixteen European Countries* by the European Foundation (2002) also suggests no horizontal aggregation of answers. At most the answers on factual and preferable situations are compared. For instance, answers like "I work 19 hours a week but would prefer to work 21 hours" are processed to obtain conclusions like "50% employees would prefer to work fewer hours, 11% would like to work more, and the rest 38% are satisfied" (p. 43, Table 16).

The only occasional step towards horizontally aggregating interview answers is made in pp. 62–79, and 158. The desired increment/decrement in working time is explained with a regression model in variables 'managerial duties', 'blue/white collar', 'small child', etc. The regression coefficients, specifying substitution rates of the variables, allow to bind partial preferences together and thereby to horizontally aggregate interview answers. Regretfully, this possibility is not elaborated and the model is only used for finding most decisive preference factors.

Composite indicators are highly appreciated in international comparisons, where it is often required to surmount national particularities and to bring the consideration to the common denominator. As noted by Munda and Nardo (2003, p. 2),

> Composite indicators stem from the need to rank countries and benchmarking their performance whenever a country does not perform strictly better than another. Composite indicators are very common in fields such as economic and business statistics (e.g., the OECD Composite Leading Indicators) and are used in a variety of policy domains such as industrial competitiveness, sustainable development, quality of life assessment, globalization and innovation (see Cox and others 1992, Huggins 2003, Wilson and Jones 2002, Guerard 2001, Färe et al. 1994, Lovell et al. 1995, Griliches 1990 and Saisana and Tarantola 2002, among others)... A general objective of most of these indicators is the ranking of countries according to some aggregated dimensions (see Cherchye 2001 and Kleinknecht 2002).

A composite indicator is defined to be a weighted sum of several first-level indicators which weights reflect their substitution rates; see European Commission (2002c, p. 79), OECD (2003, p. 5), and Munda and Nardo (2003, p. 2). In other words, composite indicators are simplest utility functions considered in economics as long as since the 19th century (Jevons 1871, Menger 1871, Walras 1874); for a modern account see Keeney and Raiffa (1976), or Winterfeldt and Edwards (1986). Specific issues on the typology of composite indicators, requirements for input data, principles of weight assignments, and others are reviewed by Bossel (1999), Huggins (2002), and Saisana and Tarantola (2002). Practical aspects of composite indicators are outlined in brief guides by the OECD (2002, 2003), Pastille (2002), and Sendzimir (2004).

The difference between composite indicators and utility functions is rather methodological. The latter are used to represent individual or social preferences. Composite indicators reflect development of and differences between objects; they however are also often charged with a better/worse inclination. Another point is that several aspects of a phenomenon are likely associated with composite indicators than with utility functions. For instance, within the framework of working conditions, it is more natural to speak of composite indicators for health and for social climate than of utility sub-functions. To provide compatibility of scales, composite indicators are usually defined in standardized input variables. This is equally relevant to utility functions but only less emphasized.

Due to some fundamental difficulties of preference aggregation in multi-criteria analysis (Arrow and Raynaud 1986), universal constructing methods exist neither for utility functions, nor for composite indicators. In each case their construction is much determined by the particular application, includes both formal and heuristic elements, and incorporates some expert knowledge on the phenomenon; see proceedings of dedicated conferences on constructing utility functions (Tangian and Gruber 1997; 2002) and on composite indicators organized by the Joint Research Center of European Communities and the OECD (Saltelli 2003a–b and Hoffmann 2004).

Taking into account both political claims for "better jobs" and modern trends, the European Union needs composite indicators of working conditions to be used both as analytical tools and as instruments for pursuing the European Employment Policy. This need is explicitly expressed in some EU documents, like in the one cited in the epigraph. Such indicators are most urgent in view of integrating new country members which development should be adequately monitored.

5 Composite indicator "Quality of work" and main findings

The European surveys on working conditions significantly contribute to political goals of the EU. However, they leave open the key question, how to summarize the totality of the information and to compare countries with each other. The given study attempts to fill in this gap by constructing a composite indicator "Quality of work" for 15 European countries.

The source data are of the Third European Survey on Working Conditions available from the European Foundation. The general approach follows the OECD (2003) guidelines for developing composite indicators of country performance. The evaluation model is based on methods for practically constructing utility functions (Tangian 2002, 2004a) and, more specifically, on the author's experience in designing indices for equalizing German regional labour market policy and for monitoring European flexicurity policies (Tangian 2003, 2004b). Mathematical model is described in Annex 1. The detailed composition of the indicator is given in Annex 2.

The spatial location of countries with respect to three indicators "Working conditions", "Hourly earnings", and "Subjective satisfaction", is shown in Figures 1 and 2. The first coordinate is the national average of working conditions. It is derived from answers to 102 "non-subjective" questions of the survey. The second coordinate is the national average of "Hourly earnings". It is derived from monthly earnings expressed in standard harmonized units and hours actually worked. The third coordinate, "Subjective satisfaction" is derived from answers to seven questions on subjective estimation of working conditions. The third dimension is depicted by colors as the height of relief in geographic maps and is shown spatially in Figure 2.

The best working conditions are in the Netherlands and Denmark which are rightmost in Figure 1. Greece at the left hand has the worst working conditions. Germany is in the upper (= right-hand) third of the European range, being close to the United Kingdom, Belgium, Finland, Luxembourg, and Italy. As one can see, German working conditions are not as good as in Sweden and Austria but better than in France, Spain, and Portugal. The difference between working conditions in West and East Germany is insignificant.

1. The dispersion of vectors of individual indices in Figure 1 around the national average is analyzed by the method of prime components (= factor analysis); see Jackson (1988), Krzanowski (1988), and Seber (1984). The results are visualized by the ellipse which envelopes the vectors of prime components (= directions of maximal and minimal variance) as diameters. The ellipse depicts the standard deviation from the mean depending on the direction. Note that the variance of earnings is smallest in Sweden and largest in Luxembourg and Ireland, whereas the **national variance of working conditions is almost equal over all European countries**.

2. The ellipses in Figure 1 have no visible slope. It means that **within countries working conditions and earnings are little correlated**. It is not the case over the whole of Europe. The regression line fitted to the totality of individual data (not countries!) exhibits a clear dependence between earnings and working conditions: the better conditions, the higher earnings. Due to a large number of observations (almost 17 000 respondents who provided income information), the

Figure 1: Quality of work for European countries and West/East Germany (West Germany and East Germany are indexed by W and E respectively); ellipses depict the deviation of observations reduced to 0.02 of its size

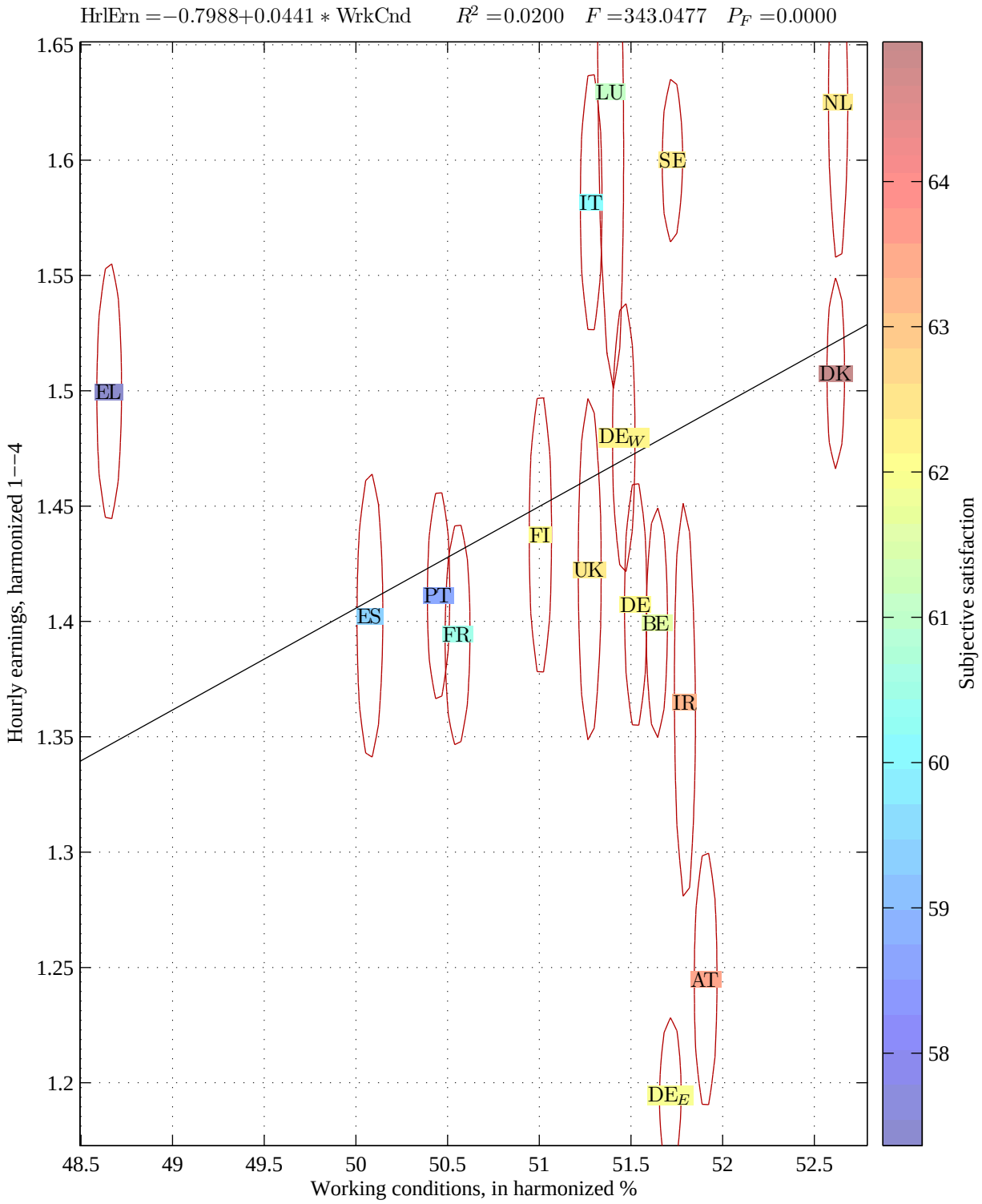
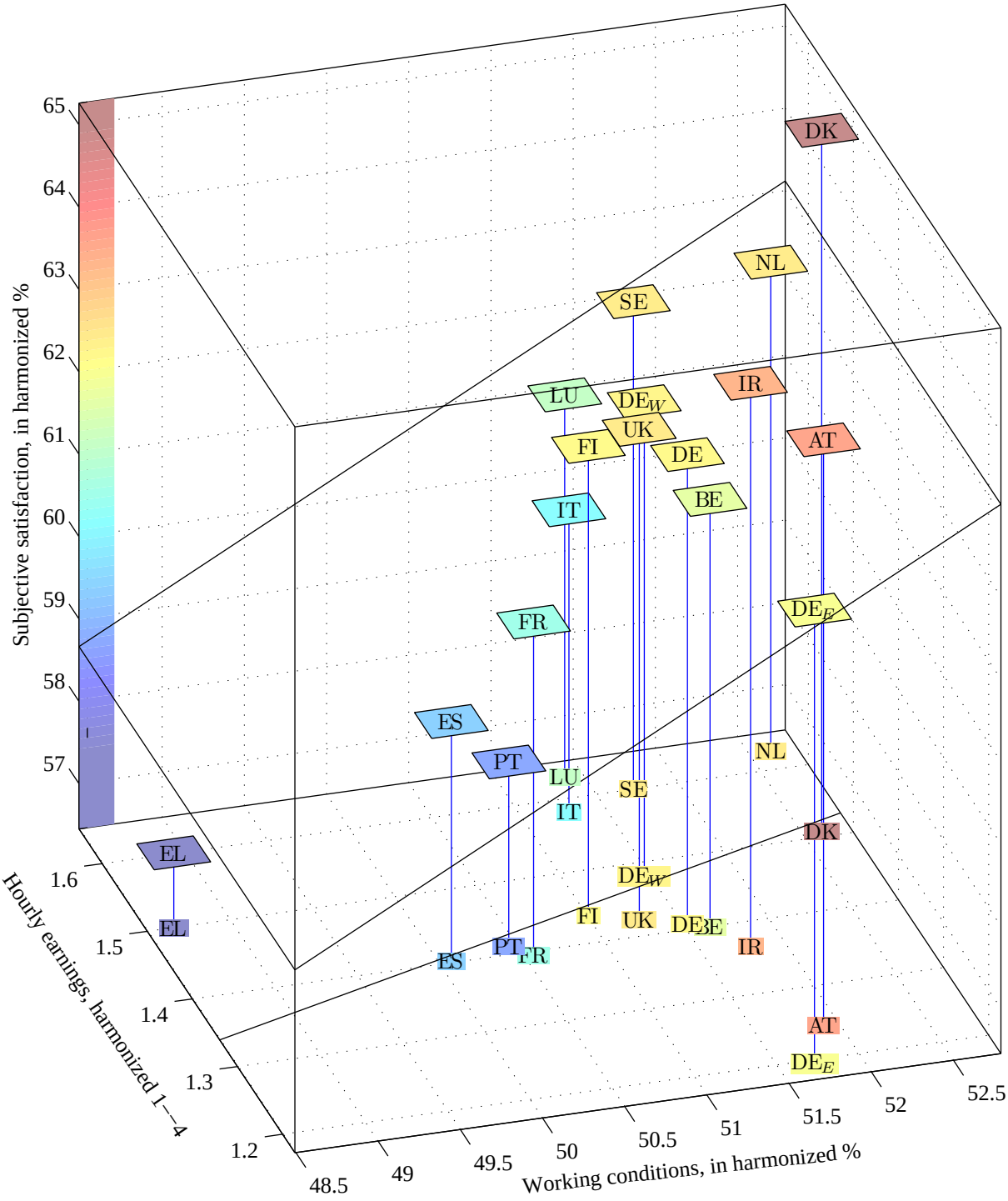


Figure 2: Quality of work for European countries and West/East Germany (West Germany and East Germany are indexed by W and E respectively)

HrlErn $=$	-0.7988	$+0.0441 * \text{WrkCnd}$	$R^2 = 0.0200$	$F = 343.0477$ $P_F = 0.0000$
SbjSat $=$	8.4098	$+1.0364 * \text{WrkCnd}$	$R^2 = 0.2288$	$F = 4998.2832$ $P_F = 0.0000$
SbjSat $=$	60.8384	$+0.4589 * \text{HrlErn}$	$R^2 = 0.0044$	$F = 73.9330$ $P_F = 0.0000$
SbjSat $=$	8.4014	$+1.0368 * \text{WrkCnd} - 0.0104 * \text{HrlErn}$	$R^2 = 0.2288$	$F = 2499.0246$ $P_F = 0.0000$



statistical significance of the null-hypothesis (= no dependence) is below 0.00005. We conclude that this trend is rather inter-national, that is, **the better *national* working conditions, the higher *national* average earnings**.

3. The much longer vertical extension of the ellipses means that in the European space national hourly earnings are more dispersed than national working conditions[3]. Consequently, **European countries differ with respect to working conditions statistically more significantly than with respect to earnings.** It does not mean that the differences are larger but that the fact of difference is more certain.

   It is quite unexpected in the background of globalization with expanding common technologies, and in spite of European integration with intensive demographic flows and communications. It is likely caused by persistent differences in national norms, in industrial traditions, and in labour movement activity. Therefore, equalization of working conditions can become a goal of the European Employment Policy to meet another European program on reducing disparities among countries and regions.

4. The regression plane in Figure 2 explains the indicator "Subjective satisfaction" as a function in "Working conditions" and "Hourly earnings" (again, the computations are performed for individuals but not for countries). The position of the plane demonstrates that **earnings play no role in the subjective satisfaction from work** and the only decisive are working conditions. This observation contributes to recent discoveries of Canadian survey *What's a Good Job?* by Lowe and Schellenberg (2001), that the absolutely predominating in appreciating the job are social factors, in particular, relationships between colleagues; see also Lowe (2003).

   The predominating role of social motivation for work, as opposed to economic motivation, manifested itself in extreme forms during certain historical periods. For instance, Russian workers under Stalin were rewarded poorer than before the Revolution of 1917 but were much more satisfied. From the standpoint of psychoanalysis, money is a surrogate for the expression of love (Freud 1915, 1933); reformulating this idea, wages compensate the lack of love in employment relations. Soviet workers, having been assured that the state took care of them, were quite satisfied, and many people remembered this period as the most happy.

   Therefore, "adding more love" to employment relations by improving working conditions can discharge the tension which apparently manifests itself through demands for higher earnings. This idea goes in line with German political initiatives of the 1970s *Humanisierung des Arbeitslebens (HdA)* (= Humanization of Working Life); see the Editorial to *Arbeit*, 2004/3. Consequently, it makes sense to invest in improving working conditions even more than it might have seem necessary. This issue should be put on the agenda of governments, employers, and worker's associations, especially for the new EU member states.

5. Supplementary to the main goal of the study, the index "Quality of work" can be used to make comparisons other than of countries. Annex 3 contains figures analogous to Figures 1–2 but for social groups with respect to occupation, industry branches (NACE classification), type of employment, type of contract, type of employer, size of the local unit, gender, and the gender of superior. The regression line

[3]The reference to the European space with standardized vertical–horizontal dispersion of counties is important, otherwise, there would be no sense to compare axes measured in different units.

and plane are the same throughout all the figures because they are fitted to individual indices (which are the same) but not to group indices (which vary depending on the classification).

In particular, it turns out that **working conditions of women are significantly better than that of men**, which is explained by their inclination to service occupations. Moreover, **employees with a female immediate superior have all over Europe distinctly better working conditions than those with a male boss.**

6 Statistical significance of national differences

A number of statistical properties indicate at national differences in working conditions. Therefore, the question emerges, how significant are disparities among the countries?

Table 1 shows the levels of statistical significance of null-hypotheses that pairs of countries cannot be discriminated with respect to the index "Quality of work". The headline of the table contains the number of respondents from each country. The table is computed for the Behrens-Fischer t-test with possibly unequal variances which uses the Satterthweite's approximation for the effective degrees of freedom (Milliken and Johnson 1992).

The significance levels in Table 3 are given in %. As traditional in social sciences (Kühnel and Krebs 2001, p. 404), a null hypotheses with significance $< 5\%$ (meaning statistical unlikelihood), is rejected and its opposite is accepted. For instance, the element 1-2 of Table 3 is equal to 0. That is, the national means of Belgium and Denmark are highly unlikely to coincide, consequently, they differ in average working conditions. It is not the case of Belgium and Germany. The null hypothesis that they have the same working conditions is quite probable, having the significance 66%, and cannot be rejected. Consequently, working conditions in Belgium and Germany do not differ significantly, at least for the given number of observations.

Testing hypotheses on pairs of countries is only the first step. When there are many group means, there are also many pairs to compare. If one applies a statistical test in this situation, the significance value is determined for each comparison disjointly. Then the risk that one hypothesis of many is wrong grows as the number of pairs increases. To resolve this problem, multiple comparison procedures are designed. They provide an upper bound on the significance of the joint discrimination hypothesis for the totality of pairs (Hochber and Tanhane 1987).

The results of the multiple comparison procedure for the joint significance level 5% are depicted in Figure 3. For instance, Germany is shown by a blue segment centered at the German national average. Countries do not significantly differ from Germany *jointly* if their segments are shaded by the German segment, ever if partially; these countries are shown by grey color. Otherwise, the difference is jointly significant; these countries are shown by red. Thus, Germany significantly differs *jointly* from Denmark, Greece, Spain, France, Netherlands, Portugal, United Kingdom, and Finland. This list includes no Italy and Austria, although *disjointly* Germany and Italy, and Germany and Austria differ significantly; see Table 1.

Figure 3 can be used for testing hypotheses on joint difference of other countries; one should only imagine right colors and the shade from the interval of the country selected. See Annex 3 for the application of this techniques to other situations.

Table 1: Statistical significance of pairwise difference in working conditions for European countries and West/East Germany (in %)

	BE	DK	DE	DE_W	DE_E	EL	IT	ES	FR	IR	LU	NL	PT	UK	FI	SE	AT
	1523	1506	1540	1173	367	1500	1500	1500	1502	1502	502	1516	1502	1514	1496	1574	1526
BE		0	66	88	41	0	3	0	0	41	37	0	0	0	0	21	0
DK	0		0	0	0	0	0	0	0	0	0	85	0	0	0	0	0
DE	66	0		80	58	0	1	0	0	21	24	0	0	0	0	43	0
DE_W	88	0	80		48	0	3	0	0	37	34	0	0	0	0	32	0
DE_E	41	0	58	48		0	3	0	0	18	17	0	0	0	0	94	14
EL	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
IT	3	0	1	3	3	0		0	0	18	60	0	0	22	0	0	0
ES	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
FR	0	0	0	0	0	0	0	0		0	0	0	82	0	0	0	0
IR	41	0	21	37	18	0	18	0	0		72	0	0	1	0	4	0
LU	37	0	24	34	17	0	60	0	0	72		0	0	18	1	9	0
NL	0	85	0	0	0	0	0	0	0	0	0		0	0	0	0	0
PT	0	0	0	0	0	0	0	0	82	0	0	0		0	0	0	0
UK	0	0	0	0	0	0	22	0	0	1	18	0	0		9	0	0
FI	0	0	0	0	0	0	0	0	0	0	1	0	0	9		0	0
SE	21	0	43	32	94	0	0	0	0	4	9	0	0	0	0		1
AT	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	1	

7 Conclusions

1. The given study suggests a method for constructing a composite indicator "Quality of work" for comparing European countries. The indicator is constructed from the data of the Third European Survey on Working Conditions.

2. European countries differ with respect to working conditions statistically more significantly than with respect to earnings. It implies a quite accurate discrimination threshold in ranking countries with respect to quality of work.

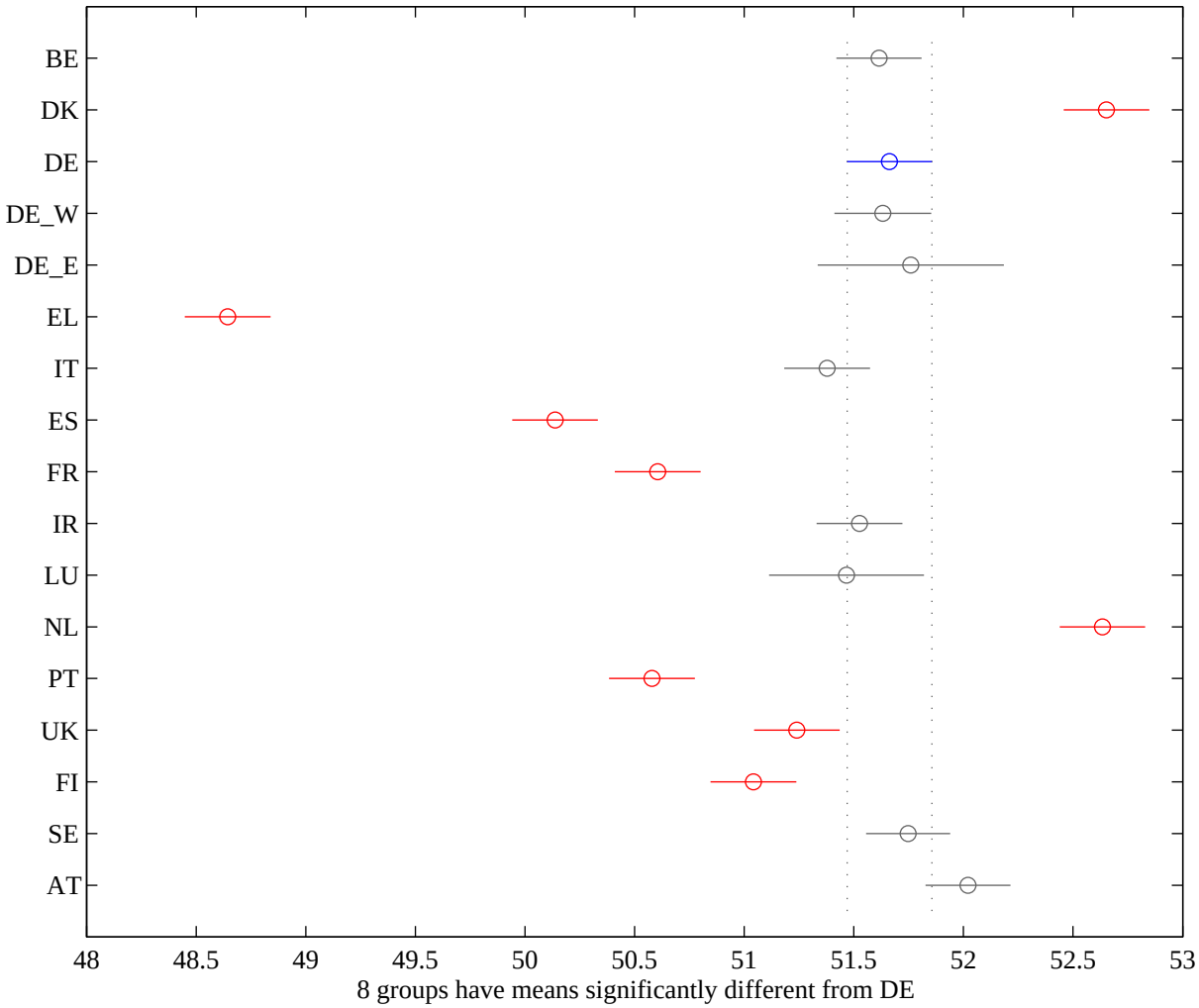
3. Working conditions and earnings positively depend over the whole of Europe but little correlate within single countries. It indicates at the prevailing role of national determinants over professional or social specificities as contributing to the average quality of work.

4. Earnings play no role in subjective satisfaction from work which exclusively depends on working conditions. Consequently, more attention should be paid to improving the latter.

5. Working conditions of women are significantly better than that of men. It can be explained by their inclination to service occupations.

6. Processing ordinal rather than metrical data requires an addendum to the methodology of composite indicators. The corresponding mathematical model is proposed.

Figure 3: The 5%-significant joint difference in working conditions for European countries and West/East Germany



8 References

Arrow, K.J., and Raynaud, H. (1986) *Social Choice and Multicriterion Decision Making.* Cambridge MA, MIT Press.

Black, D. (1958) *The Theory of Committees and Elections.* Cambridge, At the University Press.

Bossel, H. (1999) *Indicators for Sustainable Development: Theory, Method, Applications.* Winnipeg, Manitoba, Canada, International Institute for Sustainable Development.

Bundesministerium für Bildung und Forschung (??)*Rahmenkonzept Innovative Arbeitsgestaltung—"Zukunft der Arbeit"* `http://www.bmbf.de/pub/uekon.pdf`

Cherchye, L. (2001) Using data envelopment analysis to assess macroeconomic policy performance. *Applied Economics*, 33, 407–416.

CORDIS (2003) *Third European Report on Science & Technology Indicators for the European Research Area (STI-ERA) 2003. Towards a Knowledge-based Economy.* DG RTD publication March 2003. `http://www.cordis.lu/indicators//home.html`

Cox, D., Fitzpatrick, R., Fletcher, A., Gore, S., Spiegelhalter, D., and Jones, D. (1992) Quality-of-life assessment: can we keep it simple? *Journal of the Royal Statistical Society*, 155 (3), 353–393.

Editorial to INQA-Sonderheft (2004), *Arbeit,* 13 (3), 191–192.

Esping-Andersern C. (1990) *The Three Worlds of Welfare Capitalism.* Princeton, Princeton University Press.

Esser, J., and Schrader, H.-Ch. (1995) *Krieg im Büro.* Fischer Taschenbuch Verlag Nr. 12372.

European Agency (2004) *Homepage.* `http://agency.osha.eu.int`

European Commission (2001) *Employment and Social Policies: a Framework for Investing in Quality.* Brussels, 26.6.2001 COM(2001) 313.
`http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0313en01.pdf`

European Commission (2001a) *Structural Indicators.* Brussels 30.10.2001, COM(2001) 619
`http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0619en.html`

European Commission (2002a) *Industrial Relations in Europe 2002.* Luxembourg.
`http://europa.eu.int/comm/employment_social/news/2002/oct/indust_rels_europe_en.pdf`

European Commission (2002b) *Towards a European Research Area "Science, Technology and Innovation": Key Figures 2002.*
`http://europa.eu.int/comm/research/era/pdf/benchmarking2002_en.pdf`

European Commission (2002c) Methodology of Composite Indicators. In: *Towards a European Research Area "Science, Technology and Innovation": Key Figures 2002*. DG RTD publication, 79–84.
http://europa.eu.int/comm/research/era/pdf/benchmarking2002_en.pdf.

European Commission (2003) *Improving Quality in Work: a Review of Recent Progress*. Brussels 26.11.2003, COM(2003) 728. http://europa.eu.int/comm/employment_social/employment_strategy/pdf/comm_en.pdf

European Commission (2004) *European Employment Strategy. Homepage. Today and Tomorrow*. http://europa.eu.int/comm/employment_social/employment_strategy/eestm_en.htm

European Foundation (2001) *3rd European Survey on Working Conditions 2000*, by P. Paoli and D. Merllié. Dublin, European Foundation for the Improvement of Living and Working Conditions.
http://www.eurofound.eu.int/publications/EF0121.htm

European Foundation (2002) *Working Time Preferences in Sixteen European Countries*, by H. Bielenski, G. Bosch and A. Wagner. Dublin, European Foundation for the Improvement of Living and Working Conditions.
http://www.eurofound.eu.int/publications/EF0207.htm

European Foundation (2004) *Homepage*.
http://www.eurofound.eu.int/about/about.htm

EuroStat (1997) *Labour Force Survey*. Luxembourg, European Communities.
www.europa.eu.int/comm/eurostat

EuroStat (2004) *New Cronos On-Line*. Luxembourg, European Communities.
http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=welcomeref&open=/popul/edtr&language=en&product=EU_MAIN_TREE&root=EU_MAIN_TREE&scrollto=0

Färe, R., Grosskopf, S., Norris, M., and Zhang, Z. (1994) Productivity growth, technical progress and efficiency change in industrialized countries. *American Economic Review*, 84(1), 66–83.

Freud, S. (1915) Observations on transference-love: technique of psycho-analysis. *The Standard Edition of the Complete Psychological Works of Sigmund Freud, Vol. 12*. Hogarth, London, 1958, 159-171.

Freud, S. (1933) *The Interpretation of Dreams* (trans. A.A.Brill). London, Allen and Unwin.

Grubb, D., and Wells, W. (1993) Employment regulation and patterns of work in EC countries. *OECD Economic Studies*, 21 (Winter), 7–58.

Guerard, J.B. (2001) A note on the forecasting effectiveness of the US leading economic indicators. *Indian Economic Review*, 36 (1), 251–268.

Halama, P. (1997) *Mobbing Aktuelle und vergleichbare Ergebnisse über Schikane am Arbeitsplatz*, Epd-Dokumentation Nr. 43a/97.

Hochberg, Y., and Tamhane, A.C. (1987) *Multiple Comparison Procedures*. New York, Wiley.

Hoffmann, A. (Org.) *Second Workshop on Composite Indicators of Country performance, paris, 26–27 February, 2004.* http://webfarm.jrc.cec.eu.int/uasa/index.asp?app=jrc&prj=frames&sec=home&dic=1&mode=6&mn=6&head=8&swebSite=/uasa/&menuopen=1&start=yes

Huggins, R. (2003) Creating a UK competitive index: regional and local benchmarking. *Regional Studies*, 37, 89–96.

International Institute for Management Development (2000–) *The World Competitiveness Yearbook*. Lausanne, International Institute for Management Development.

Jackson, J.E. (1988) *A User's Guide to Principal Components*. New York, Wiley.

Jevons, W.S. (1871): *The Theory of Political Economy*. London: Macmillan.

Keeney, R., and Raiffa, H. (1976) *Decisions with Multiple Objectives: Preferences and Value Trade-offs*. New York, Wiley.

Kendall, M. G., and Moran, P. A. P. (1963) *Geometric Probability*. New York: Hafner, 1963.

Kendall, M., and Stuart, A. (1958): *The Advanced Theory of Statistics, Vol. I*, London, Ch. Griffin.

Kleinknecht, A., van Montfort, K., and Brouwer, E. (2002) The non trivial choice between innovation indicators. *Economic Innovation and New Technologies*, 11 (2), 109–121.

Kohonen, T. (2001) *Self-Organizing Maps*. 3rd extended Edition. Berlin, Springer.

Korn, G.A., and Korn, Th.M. (1968) *Mathematical handbook for Scientists and Engineers*. New York, McGrow-Hill.

Kreyszig, E. (1970) *Introductory Mathematical Statistics*. New Zork, Wiley.

Krzanowski, W.J. (1988) *Principles of Multivariate Analysis*. Oxford, Oxford University Press.

Kühnel, S.-M., and Krebs, D. (2001) *Statistik für die Sozial-Wissenschaften*. Hamburg, Rowohlt Taschenbuch Verlag.

Lovell, C.A.K., Pastor, J.T., and Turner, J.A. (1995) Measuring macroeconomic performance in the OECD: a comparison of European and non-European countries. *European Journal of Operational Research,* 87, 507–518.

Lowe, G., and Schellenberg, G. (2001) *What's A Good Job? The Importance of Employment Relationships* Canadian Policy Research Network. Ottawa, Renouf Publishing Company. http://www.cprn.com/en/doc.cfm?doc=50

Lowe, G. (2003) *The case for investing in high quality work.* Paper presented at the European Commission's Mid-Term Review of the Social Policy Agenda: Achievements and Perspectives, March 2003, Brussels.
http://www.longwoods.com/HRR/pdf/highqualitywork1.pdf

McLean, I., and A.D.Urken (Eds.) (1994): *Classics of Social Choice.* Ann Arbor: University of Michigan Press.

Menger, C. (1871): *Grundsätze der Volkswirtschaftslehre.* 2nd Ed. Wien-Leipzig: Hoelder-Pichler-Tempsley, 1923.

Milliken, G.A., and Johnson, D.E. (1992) *Analysis of Messy Data, Volume 1: Designed Experiments.* New York, Chapman and Hall.

Munda, G., and Nardo, M. (2003) *On the Methodological Foundations of Composite Indicators Used for Ranking Countries.* Ispra (IT), Joint Research Center.
http://webfarm.jrc.cec.eu.int/uasa/events/oecd_12may03/Background

OECD (1999) *Employment Outlook.* Paris, OECD.

OECD (2002) *Aggregated Environmental Indices: Review of Aggregation Methodologies in Use.* ENV/EPOC/SE(2001)1/Final. Paris, OECD.
http://www.olis.oecd.org/olis/2001doc.nsf/LinkTo/env-epoc-se(2001)2-final

OECD (2003) *Composite Indicators of Country Performance: A Critical Assessment.* DSTI/DOC (2003)16. Paris, OECD.
http://www.olis.oecd.org/olis/2003doc.nsf/43bb6130e5e86e5fc12569fa005d004c/8bb0f462911c2cc6c1256ddc00436279/$FILE/JT00153477.PDF

OECD (2004) *OECD Composite Leading indicators: a tool for short-term analysis.*
http://www.oecd.org/dataoecd/4/33/15994428.pdf

OECD (2004a) *Employment Outlook.* Paris, OECD.

Pastille (2002) *Indicators into Action: A Practitioners Guide for Improving Their Use at the Local Level.* Vienna–Winterthur–Lyon–London–Graz–Zurich.

Peters, J., and Schmitthenner, H. (Eds.) (2003) *Gute Arbeit.* Hamburg, VSA-Verlag.

Pickshaus, K., and Urban, H.-J. (2004) "Gute Arbeit" — eine arbeits- und gesundheitspolitische Initiative der IG Metall. *Arbeit*, 13 (3), 220–228.

Saisana, M., and Tarantola, S. (2002) *State-of-the-art Report on Current Methodologies and Practices for Composite Indicator Development*, EUR 20408 EN Report, European Commission, Joint Research Center, Ispra, Italy, see Saltelli (2003).

Saltelli, A. (2003a) (Org.) *First Workshop on Composite Indicators of Country Performance, Ispra (VA), Italy, May 12th, 2003.* Ispra, Joint Research Centre of the European Commission.
http://webfarm.jrc.cec.eu.int/uasa/index.asp?app=jrc&prj=frames/&sec=home&dic=1&mode=6&mn=6&head=8&swebSite=/uasa/&menuopen=1&start=yes

Saltelli, A. (2003b) (Org.) *Workshop on Composite Indicators on e-business readiness, Ispra (VA) - Italy, September 29th, 2003.* Ispra, Joint Research Centre of the European Commission.
http://webfarm.jrc.cec.eu.int/uasa/index.asp?app=jrc&prj=frames/&sec=home&dic=1&mode=6&mn=6&head=8&swebSite=/uasa/&menuopen=1&start=yes

Seber, G.A.F. (1984) *Multivariate Observations.* New York, Wiley.

Sendzimir, J. (2004) A Guide to Sustainability Indicators: A General Introduction and Overview. International Institute of Applied Systems Analysis, Laxenburg, Austria.

Tangian (Tanguiane), A.S. (1991) *Aggregation and Representation of Preferences: Introduction to Mathematical Theory of Democracy*, Berlin–Heidelberg, Springer.

Tangian A.S. (2001) Constructing a monotonic quadratic objective functions in n variables from a few 2-dimensi-onal indifferences. *European Journal of Operational Research*, 130 (2), 276–304.

Tangian A.S. (2002) Constructing a quasi-concave quadratic objective function from interviewing a decision maker. *European Journal of Operational Research*, 141, 608–640.

Tangian A.S. (2003): *Optimizing German regional policy-2004: A study based on empirical data from 1994 to 2001.* WSI Diskussionspapier 119, Hans Böckler Stiftung, Düsseldorf.

Tangian A.S. (2004) Redistribution of university budgets with respect to the status quo. *European Journal of Operational Research*, 157 (2), 409–428.

Tangian A.S. (2004) A model for ordinally constructing additive objective functions. *European Journal of Operational Research*, 159, 476–512.

Tangian A.S. (2004) *Liberal and trade-unionist concepts of flexicurity: Modelling in application to 16 European countries.* WSI Diskussionspapier 131, Hans Böckler Stiftung, Düsseldorf. http://www.boeckler.de/pdf/p_wsi_diskp_131.pdf

United Nations (2001–) Human Development Index and Technology Achievement Index. In: *Human Development Report 2001–.* New York, United Nations.

Walras, L. (1874): *Éléments d'économie politique pure.* Lausanne: Corbaz.

Wilson, J.W., and Jones, C.P. (2002) An analysis of the S&P-500 index and Cowle's extensions: price indexes and stock returns, 1870–1999. *Journal of Business*, 75, 505–533.

Winterfeldt D. von, and W. Edwards (1986): *Decision Analysis and Behaioral Research.* Cambridge University Press.

World Economic Forum (2002–) *Pilot Environmental Performance Index.* Yale Center for Environmental Law and Policy.

9 Annex 1: Rank-based composite indicators

Why composite indicators are weighted sums of variables A *composite indicator* in the general form is a formula with n entries (for first-level indicators), in other words, a function f in n variables which to each set of input values $x_1, \ldots, x_n$ puts into correspondence the indicator value $y = f(x_1, \ldots, x_n)$. Usually a composite indicator is not expected to abruptly change its *behavior*, meaning the differentiability of f. Then its Taylor expansion in a neighborhood of some reference point $(x_1^0, \ldots, x_n^0)$ gives the *first-order approximation* of f:

$$\begin{aligned} f(x_1, \ldots, x_n) &\approx \underbrace{f\left(x_1^0, \ldots, x_n^0\right)}_{\substack{\text{Function value} \\ \text{at } (x_1^0, \ldots, x_n^0)}} + \sum_{i=1}^{n} \underbrace{\frac{\partial f\left(x_1^0, \ldots, x_n^0\right)}{\partial x_i}}_{\substack{\text{Partial derivative} \\ \text{of } f \text{ at } (x_1^0, \ldots, x_n^0)}} \underbrace{\left(x_1 - x_1^0\right)}_{\substack{\text{Argument} \\ \text{increment}}} \\ &= \underbrace{f\left(x_1^0, \ldots, x_n^0\right) - \sum_{i=1}^{n} \frac{\partial f\left(x_1^0, \ldots, x_n^0\right)}{\partial x_i} x_i^0}_{\text{Constant } C} + \underbrace{\sum_{i=1}^{n} \frac{\partial f\left(x_1^0, \ldots, x_n^0\right)}{\partial x_i} x_i}_{\substack{\text{Weighted sum of variables} \\ \sum_{i=1}^{n} a_i^0 x_i}} . \quad (1) \end{aligned}$$

Since composite indicators are primarily designed for comparisons and tracing relative progress, the constant C in (1) is omitted. The remaining weighted sum of variables is, consequently, the general composite indicator to within its first-order approximation.

Apparent problems with rank-based composite indicators The input first-level indicators are usually metrical (= measured in a cardinal scale). Ordinal first-level indicators (= expressed in ranks) create certain problems discussed by the OECD (1999, p. 115) in the context of composite indicator for the strictness of employment protection legislation:

> One limitation of a summary indicator based on ranking is that a given country's strictness score could either rise or fall over time, even though its employment protection practice were completely unchanged, for the simple reason that other countries changed their policies. Even more fundamentally, it would be invalid to compare rank-based score for the late 1980s, which was based on an analysis of 16 European countries, with a rank-based score for the late 1990s based on a sample of 27 countries. Quite independently of any changes in EPL, the maximum rank score has nearly doubled.

By these reasons the OECD replaced originally ordinal data by metrical expert estimates. The method survived (OECD 2004), although the OECD itself acknowledges that 'the scoring algorithm is somewhat arbitrary' (Op. cit., p. 115).

Thus, the first anxiety is that rank-based indicators can make a country's score dependent on changes in other countries. It is similar to what occurs in tournaments when one's rating is altered by wins/losses of competitors. This phenomenon, known in the theory of choice as the *dependence of irrelevant alternatives*, is not always critical; for the historical discussion see Black (1958, pp. 156–238) and McLean and Urken (1994, Introduction). In any case, the ranking method can be modified as follows.

Method of Total Ranks To be specific, consider Denmark (DK) and Netherlands (NL) with regard to the duration of unemployment insurance in 1994–2004. In 1994 the duration of Danish insurance was 30 months, and in the Netherlands it was 6–54 months, depending on the length of service and age (Schmid and Reissert 1996, p. 239–241). In 2004 Denmark extended the duration unconditionally to 48 months (European Commission 2004). Although the duration of Dutch insurance remained unchanged, the Netherlands fall in the two successive rankings:

Rank	1994		2004	
	Country	Insurance duration	Country	Insurance duration
1	NL	6–54 months, conditioned	DK	48 months, unconditioned
2	DK	30 months, unconditioned	NL	6–54 months, conditioned

Now rank all the pairs *Country/Year*. For this purpose consider Denmark in 1994 and Denmark in 2004 as two different objects (as they actually are) and the Netherlands in 1994 and in 2004 as two copies of the same object. Hence, the total ranking is

Rank	Country	Year	Insurance duration
1	DK	2004	48 months, unconditioned
2	NL	1994	6–54 months, conditioned
2	NL	2004	6–54 months, conditioned
3	DK	1994	30 months, unconditioned

which implies the constant rank of the Netherlands and changing ranks of Denmark:

Rank	1994		2004	
	Country	Insurance duration	Country	Insurance duration
1			DK	48 months, unconditioned
2	NL	6–54 months, conditioned	NL	6–54 months, conditioned
3	DK	30 months, unconditioned		

Thus ranks can be made independent of 'irrelevant alternatives'.

Accuracy of a rank-based composite indicator The second 'more fundamental' anxiety of the OECD is that the first-level indicators based on ranks are invalid when the number of countries changes (e.g. the top rank of 27 countries almost doubles the top rank of 16 countries). This problem can be resolved by proportionally reducing all the ranks to the standard scale 0–1. The rigorous normalizing rules as well as the estimation of error from substituting ordinal ranks for cardinal scores are given below.

Consider ranks as manifestations of continuous evaluations which are not observed directly. Consequently, if one defines an indicator as a weighted sum of partial scores and disposes but partial ranks, it is natural to substitute the ranks for the scores.

This idea goes back to the justification of Borda's (1733–1799) method of marks by Laplace (1749–1827); for the modern account see Black (1958), Tangian (1991), and McLane and Urken (1994). Recall that Borda proposed to evaluate candidates to the members of the Royal Academy of Sciences in Paris by the sum of their ranks in the ballot schedules. Laplace assumed that these ranks were manifestations of some n latent metrical estimates (scores) uniformly distributed in the segment $[0; 1]$. He showed that the ratio of expectations of the scores was as that of their ranks

$$\mu_1 : \mu_2 : \ \ldots \ : \mu_n = 1 : 2 : \ \ldots \ : n \ .$$

By the Central Limit Theorem (the first version is attributed to Moivre (1667–1754); see Kendall and Stuart 1958, Korn and Korn 1968) a sum of a large number of metrical scores is well approximated by the sum of their expectations, or ranks. Laplace concluded that in a large statistical model scores could be replaced by ranks with a negligible error.

This way of thought can be implemented already for a few metrical estimates (scores) under a controllable accuracy of approximation. The next theorem suggests a normalizing rule for the input ranks (differing from the standardization of metrical input) and estimates the errors of the composite indicator which result from 'ordinal rounding' of its continuous entries.

Theorem 1 (Accuracy of a rank-based composite indicator)
Let given options be independently ranked with respect to first-level partial criteria $k = 1, \dots, K$*, each time falling into* R_k *ranking classes, depending on the criterion* k*. For each partial criterion, the ranks are ordinal manifestations of unknown scores of continuous first-level indicators* $x_1, \dots, x_{R_k}$ *which are random variables uniformly distributed in the segment* $[0; 1]$ *(in statistics, if a distribution is not known it is assumed uniform by default). Consider a composite indicator (weighted sum of first-level indicators with weights* a_k*) both for normalized ranks and continuous scores:*

$$I = \sum_k a_k \frac{r_k}{R_k + 1} \quad \leftrightarrow \quad \tilde{I} = \sum_k a_k x_{r_k}, \qquad \sum_k a_k = 1, \quad a_k \geq 0 \ , \tag{2}$$

where x_{r_k} *is the* r_k*th score from the bottom in the set of the scores of the* k*th first-level indicator. Then the error from 'ordinal rounding'* $\Delta = I - \tilde{I}$ *has the expectation and the variance, respectively,*

$$\begin{aligned} \mu = \mathsf{E}\,\Delta &= 0 \\ \sigma^2 = \mathsf{V}\,\Delta &= \sum_k a_k^2 \frac{0.25 - \left(0.5 - \frac{r_k}{R_k+1}\right)^2}{R_k + 2} \qquad \left(\leq \frac{1}{4} \sum_k \frac{a_k^2}{R_k + 2} \right) \end{aligned} \tag{3}$$

Proof. Fix the kth criterion. As shown by Kendall and Moran (1963), the r_kth *ordered* score x_{r_k} is beta-distributed with the expectation and variance

$$\mathsf{E}x_{r_k} = \frac{r_k}{R_k + 1}, \qquad \mathsf{V}x_{r_k} = \frac{r_k(R_k - r_k + 1)}{(R_k + 1)^2(R_k + 2)} \ .$$

Hence, taking into account that I is constant regardless of values x_{r_k}

$$\mu = \mathsf{E}\,\Delta = \mathsf{E}\,I - \mathsf{E}\,\tilde{I} = \sum_k a_k \frac{r_k}{R_k + 1} - \sum_k a_k \mathsf{E}\,x_{r_k} = 0 \ .$$

By the independence of estimation with respect to different criteria, the variance of the sum of scores is equal to the sum of their variances. We obtain

$$\begin{aligned} \sigma^2 &= \mathsf{V}\,\Delta \\ &= \mathsf{V}\,I + \mathsf{V}\,\tilde{I} \qquad \overset{\mathsf{V}\,I=0 \text{ since } I \text{ is constant}}{\Longrightarrow} \\ &= \sum_k a_k^2 \frac{r_k(R_k - r_k + 1)}{(R_k + 1)^2(R_k + 2)} \qquad \overset{\text{Identity}}{\Longrightarrow} \\ &= \sum_k a_k^2 \frac{0.25 - \left(0.5 - \frac{r_k}{R_k+1}\right)^2}{R_k + 2} \ . \end{aligned}$$

■

Independence of answers to interview questions To apply Theorem 1 verify the independence of answers to questions k. Compute the correlation between pairs of variables constituted by answers to questions i, j throughout all the countries. (Each variable is thereby a 21703-vector.) We have $102^2 = 10404$ pairs i, j. The histogram of the correlation in Figure 4 demonstrates a rather low overall correlation between answers to different questions (pairs i, i with correlation 1 at the right-hand of the histogram should be ignored). A few cases of medium correlation are collected in Table 2. As one can see, the overall correlation is not much high. Theorem 1 can be applied with certain reservations, implying that the factual inaccuracy of the composite indicator is somewhat greater than the theoretical estimate (3) which lacks cross-correlation terms.

Computation of the composite indicator "Quality of work" The answer of respondent $n = 1, \dots, 21703$ to question $k = 1, \dots, 102$ is coded as rank $1 \le r_{nk} \le R_k$, where R_k is the maximal rank allowed by the kth question. If necessary, rankings are inverted to $R_k + 1 - r_k$ to standardize the direction of preference. Then the composite indicator "Quality of work" of respondent n is computed by formula (2) with equal weights $a_k = \frac{1}{102}$:

$$I_n = \frac{1}{102} \sum_k \frac{r_k}{R_k + 1} \ .$$

The composite indicator of a country C with $|C|$ respondents is the mean of individual indicators:

$$I_C = \frac{1}{|C|} \sum_{n \in C} I_n \ .$$

Weights in multi-individual-multi-criteria problems Equal weights are assumed by the following reasons. First, it is known that a cybernetical system tends to distribute its resources proportionally to the amount and importance of the incoming information (Kohonen 2001). For instance, Eskimos use 10 notions for different kinds of snow, whereas Germans suffice only one. Adapting the number of cells to the size, frequency, or importance of tasks is widely used in neuronal networks. In application to sections of the interview "Physical environment", "Health", etc., this principle can be understood as 'the more important topic, the more questions'. For instance, over 20 interview questions on health can be regarded as reflecting the actual role of health in working conditions.

Second, if no information is available, it is traditional to assume the equiprobable distribution, which also meets the principle of maximal likelihood; see Kendall and Moran (1963). Within sections of the interview like "Health", it implies that under no other information the questions should be equally weighted. Or should we give more weight to "Hearing problems" than to "Sleeping problems"?

Since thematic sections of the interview are weighted proportionally to the number of their questions, and within sections their questions are equally weighted, all questions get finally equal weights. If necessary, weights can be certainly adjusted. However, taking into account their large number (102), one can expect that weighting errors statistically annihilate each other and that the equally-weighted composite indicator provides a reasonable approximation.

It should be also emphasized that weighting questions (criteria) in multivariate problems is similar to weighting individuals in democracy. In large collectives, individuals are often considered with equal weights regardless of education, experience, or intelligence.

Figure 4: Histogram of paired correlation between variables $i, j = 1 : 102$ of the survey

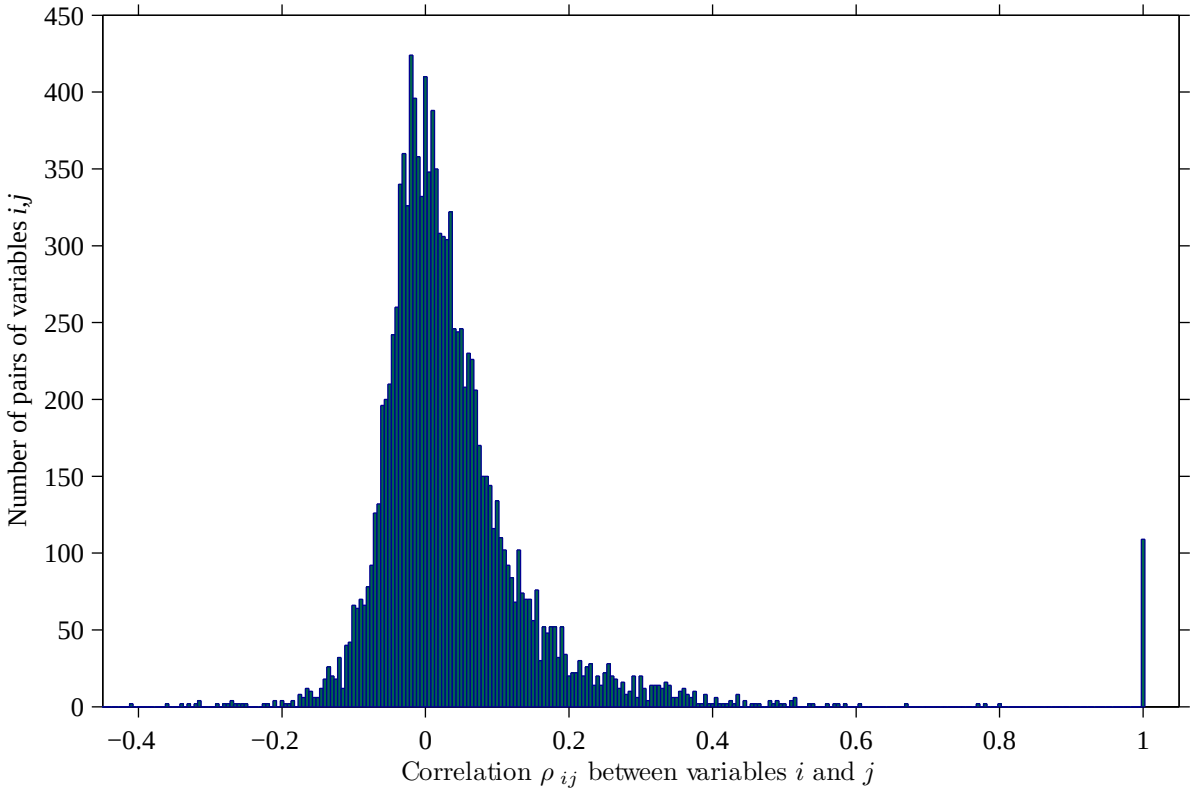


Table 2: Most correlated variables i, j in the survey (for $\rho_{ij} \leq -0.40$ and $\rho_{ij} \geq 0.40,\ i < j$)

Variable i	Variable j	Correlation	Variable i	Variable j	Correlation
Q2405	Q2406	−0.4080	Q21B1	Q21B2	0.4853
Q12A	Q35C05	0.4027	Q11B	Q11E	0.4884
Q35C05	Q35C09	0.4028	Q16D	Q16C	0.4909
Q35C04	Q35C17	0.4038	Q35C05	Q35C08	0.4927
Q11C	Q11E	0.4095	Q2501	Q2503	0.4985
Q3102	Q3103	0.4165	Q35C08	Q35C09	0.5109
Q3204	Q3210	0.4192	Q3204	Q3205	0.5123
Q16B	Q16D	0.4251	Q14	Q16E	0.5142
Q11B	Q11C	0.4274	Q3102	Q3202	0.5163
Q3209	Q3210	0.4312	Q12A	Q12B	0.5163
Q16B	Q16C	0.4329	Q2502	Q2503	0.5350
Q3104	Q3204	0.4331	Q3202	Q3203	0.5389
Q16B	Q16E	0.4348	Q11E	Q11F	0.5609
Q3101	Q3201	0.4354	Q3103	Q3203	0.5679
Q16A	Q16C	0.4425	Q35C09	Q35C10	0.5773
Q11C	Q11D	0.4472	Q11A	Q11B	0.5871
Q27B1	Q27B2	0.4548	Q2501	Q2502	0.6060
Q11A	Q11E	0.4622	Q3107	Q3108	0.6707
Q12A	Q12C	0.4650	Q3207	Q3208	0.7677
Q3106	Q3206	0.4796	Q30A1	Q30A2	0.7794
Q3105	Q3205	0.4822	EF2004	EF2005	0.7989

Any deviation from equal weights is a source of debate. To avoid it, equal weights are accepted whenever possible. The main reason is the lack of alternative arguments.

In multi-criteria decision making there is no tradition to assign equal weights by default. However, multiple criteria within a choice problem are similar to individuals within a collective. Indeed, each criterion has its 'own opinion' and 'votes' for or against given options. If criteria are few, they are likely unequal (as well as in case of a few individuals). In case of a large number of criteria, the situation becomes so unclear that equal weights can be the best solution.

Multi-individual-multi-criteria problems like ours are even more obscure. It should be taken into account that each individual has his/her own criterion ratio. For instance, a young women with a small child pays the prime attention to time factors, a middle-aged man is most interested in carrier prospects, and a handicap worker is dependent on physical factors. Therefore, assigning a higher weight to carrier prospects we favor the middle-aged man and discriminate both the woman and the handicap.

Generally speaking, higher weights of certain criteria are advantageous for those who are most interested in them and disadvantageous for those who are not. Thereby unequal criteria weights implicitly result in a factual inequality of individuals. Therefore, the problem of weighting criteria is closely linked to the one of weighting individuals. If the individual weights are equal, the criteria weights should be likely equal as well.

Accuracy of the composite indicator "Quality of work" Estimate the standard error of the composite indicator "Quality of work" for each country C as follows:

- Find the variance of the composite indicator σ_n^2 of respondent n by formula (3):

$$\sigma_n^2 = \frac{1}{102^2} \sum_{k=1}^{102} \frac{0.25 - \left(0.5 - \frac{r_{nk}}{R_k+1}\right)^2}{R_k + 2} \qquad \left(\leq \frac{102}{102^2 \cdot 8} = \frac{1}{832}\right) \ .$$

- Assume the independence of respondents. Recall that the variance of a sum of independent random variables is the sum of their variances. Hence, the standard error of the composite indicator for country C is as follows

$$\sigma_C = \sqrt{\sum_{n \in C} \frac{\sigma_n^2}{|C|^2}} = \frac{1}{|C|} \sqrt{\sum_{n \in C} \sigma_n^2} \ .$$

Due to a large number of respondents (about 1500 in every country), the standard error is under 0.07% of the composite indicator for all European countries, except for Luxembourg (0.11%) which is represented by three times fewer interviews. This is the standard deviation of the composite indicator based on "ordinally rounded" first-level indicators from the same composite indicator based on some unknown 'true' cardinal first-level indicators. The standard error for each country is specified in the last section of Table 3 in Annex 2.

Composite indicator "Subjective satisfaction from work" The composite indicator "Subjective satisfaction from work" is constructed absolutely in the same way. It is based on seven questions of the interview in the next to last section of Table 3 from Annex 2.

10 Annex 2: Composition of the indicator "Quality of Work"

The composition of the indicator "Quality of work" is displayed in Table 3. The columns of the table correspond to 109 questions selected from the *Third European Survey on Working Conditions 2000*. The labels (Q11A, Q11B, etc.), grouping into thematic sections (Physical environment, Health, etc.), and coding conventions are specified in the table head. With minor exceptions, they follow European Foundation (2001, pp. 45–62).

Rows of the table correspond to countries and contain cells with three numbers. The top number is the code of the national average answer to the given question. For instance, 6.12 in the top left cell means that the average Belgian almost never experiences vibrations. The average Dane with the answer code 6.38 experiences vibrations the least, which is reflected by the rank 1 as the third element of the cell. The second number in the cell, 76.50 for the Belgian and 79.73 for the Dane, is the harmonized score of the average answer given in % (that is, converted to the 0–100% scale in the way to attain the maximal statistical likelihood and if necessary inverted to reflect the preference direction; see Annex 1 for details).

The three columns from the last section, "Summary indicators", are used for monitoring and analytical purposes. The first summary indicator, "Score of working conditions", is the national average score derived from all the columns but of the section "Subjective estimations". The cells in this column contain the national average score (= the composite indicator of working conditions), the estimate of its standard error in % which specifies the indicator accuracy (see Annex 1), and the rank of the country.

The next column, "Hourly earnings", is the national average given in harmonized units ranging 1–4. It should be noted that 22.4% of respondents provided no data on their income. These respondents are omitted while explaining subjective satisfaction from work in working conditions and earnings. The number of retained respondents for each country is indicated in parentheses.

Composition of the indicator "Subjective satisfaction from work" The last column of the table is the average of the section "Subjective estimations". This composite indicator is used to characterize the subjective satisfaction from work/working conditions. The layout of the last column is similar to that of the column "Score of working conditions". It also contains national average, the standard error of the indicator estimate, and the country rank.

Table 3: Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Physical environment				
	Q11A Vibrations	Q11B Noise	Q11C High temperatures	Q11D Low temperatures	Q11E Breathing difficulties
	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never
BE (1019) Belgium	6.12 76.50 / 7	5.84 72.99 / 5	6.09 76.18 / 8	6.27 78.32 / 6	6.25 78.16 / 3
DK (1377) Denmark	6.38 79.73 / 1	5.78 72.19 / 9	6.31 78.91 / 1	6.32 79.03 / 4	6.26 78.21 / 2
DE (1103) Germany	5.86 73.23 / 12	5.83 72.86 / 6	6.09 76.07 / 9	6.24 77.98 / 9	6.15 76.93 / 6
DE_W (823) West Germany	5.76 72.04 / 14	5.75 71.87 / 10	6.04 75.56 / 11	6.23 77.90 / 10	6.13 76.58 / 8
DE_E (280) East Germany	6.14 76.74 / 6	6.06 75.76 / 2	6.20 77.54 / 6	6.26 78.21 / 8	6.24 77.95 / 4
EL (1261) Grece	5.74 71.79 / 16	5.62 70.26 / 16	5.58 69.70 / 17	5.82 72.70 / 17	5.16 64.51 / 17
IT (970) Italy	6.15 76.93 / 5	6.01 75.15 / 3	6.31 78.90 / 2	6.43 80.32 / 2	6.20 77.45 / 5
ES (1023) Spain	5.70 71.20 / 17	5.67 70.83 / 13	5.81 72.57 / 16	5.99 74.83 / 14	5.80 72.50 / 15
FR (1270) France	5.98 74.70 / 10	5.64 70.50 / 15	6.02 75.23 / 12	6.01 75.10 / 13	5.84 73.05 / 14
IR (907) Ireland	6.11 76.39 / 8	5.69 71.10 / 12	6.18 77.23 / 7	6.06 75.77 / 12	6.07 75.92 / 9
LU (344) Luxemburg	5.88 73.55 / 11	5.81 72.57 / 8	6.07 75.91 / 10	6.16 77.00 / 11	5.87 73.40 / 13
NL (1356) Netherlands	6.36 79.47 / 2	5.92 74.00 / 4	6.00 75.02 / 13	6.26 78.31 / 7	6.26 78.24 / 1
PT (1241) Portugal	5.75 71.84 / 15	5.70 71.29 / 11	6.24 78.05 / 5	6.44 80.54 / 1	5.94 74.19 / 12
UK (1040) United Kingdom	6.20 77.45 / 4	5.81 72.58 / 7	5.96 74.45 / 14	5.90 73.76 / 16	6.03 75.32 / 10
FI (1433) Finland	5.80 72.53 / 13	5.33 66.67 / 17	5.89 73.60 / 15	5.94 74.20 / 15	5.67 70.94 / 16
SE (1425) Sweden	6.31 78.86 / 3	5.66 70.78 / 14	6.28 78.54 / 3	6.32 79.02 / 5	6.00 75.03 / 11
AT (1079) Austria	6.09 76.08 / 9	6.09 76.12 / 1	6.25 78.08 / 4	6.38 79.78 / 3	6.13 76.66 / 7

Table 3: Sheet A. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Physical environment				
	Q11F Contact with dangerous substances	Q11G Radiation	Q12A Painful positions	Q12B Heavy loads	Q12C Repetitive movements
	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never
BE (1019) Belgium	6.52 81.53 / 3	6.77 84.59 / 7	5.25 65.66 / 6	5.66 70.71 / 7	4.62 57.69 / 9
DK (1377) Denmark	6.56 82.04 / 1	6.78 84.71 / 5	5.62 70.23 / 1	5.84 73.03 / 2	4.93 61.63 / 2
DE (1103) Germany	6.44 80.46 / 7	6.74 84.20 / 9	5.12 63.97 / 9	5.49 68.57 / 11	4.87 60.88 / 3
DE_W (823) West Germany	6.40 79.95 / 10	6.73 84.13 / 10	5.11 63.87 / 10	5.43 67.91 / 13	4.77 59.60 / 4
DE_E (280) East Germany	6.56 81.96 / 2	6.75 84.42 / 8	5.14 64.29 / 8	5.64 70.54 / 8	5.17 64.64 / 1
EL (1261) Grece	5.91 73.90 / 17	6.70 83.78 / 13	3.81 47.62 / 17	5.20 65.02 / 16	3.88 48.54 / 14
IT (970) Italy	6.48 81.04 / 4	6.85 85.61 / 1	5.19 64.92 / 7	6.06 75.72 / 1	4.68 58.52 / 6
ES (1023) Spain	6.29 78.57 / 12	6.72 83.98 / 11	4.84 60.48 / 14	5.49 68.62 / 10	3.69 46.08 / 16
FR (1270) France	6.28 78.51 / 13	6.81 85.11 / 2	4.47 55.83 / 16	5.14 64.28 / 17	3.82 47.76 / 15
IR (907) Ireland	6.24 77.98 / 14	6.69 83.63 / 14	5.35 66.81 / 4	5.67 70.91 / 6	4.62 57.79 / 8
LU (344) Luxemburg	6.35 79.43 / 11	6.79 84.88 / 3	5.08 63.48 / 11	5.77 72.13 / 4	4.67 58.39 / 7
NL (1356) Netherlands	6.41 80.17 / 8	6.77 84.63 / 6	5.59 69.87 / 2	5.81 72.62 / 3	3.97 49.67 / 12
PT (1241) Portugal	6.45 80.64 / 6	6.79 84.86 / 4	4.67 58.39 / 15	5.68 70.96 / 5	3.97 49.58 / 13
UK (1040) United Kingdom	6.17 77.10 / 16	6.68 83.53 / 15	5.25 65.69 / 5	5.27 65.89 / 15	4.28 53.52 / 10
FI (1433) Finland	6.17 77.13 / 15	6.58 82.19 / 17	5.05 63.08 / 12	5.45 68.16 / 12	3.66 45.78 / 17
SE (1425) Sweden	6.41 80.08 / 9	6.66 83.23 / 16	5.00 62.49 / 13	5.32 66.48 / 14	4.23 52.83 / 11
AT (1079) Austria	6.48 80.94 / 5	6.72 83.94 / 12	5.41 67.60 / 3	5.64 70.52 / 9	4.73 59.09 / 5

Table 3: Sheet B. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Health				
	Q35C02 Hearing problems	Q35C03 Vision problems	Q35C04 Skin problems	Q35C05 Backaches problems	Q35C06 Headaches
	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No
BE (1019) Belgium	0.05 64.90 / 4	0.14 61.99 / 16	0.04 65.26 / 4	0.27 57.74 / 3	0.13 62.35 / 5
DK (1377) Denmark	0.08 63.86 / 13	0.02 65.92 / 2	0.06 64.73 / 8	0.31 56.45 / 6	0.18 60.83 / 13
DE (1103) Germany	0.06 64.64 / 8	0.05 65.10 / 6	0.04 65.28 / 3	0.38 53.91 / 12	0.13 62.35 / 6
DE_W (823) West Germany	0.07 64.32 / 11	0.05 65.05 / 7	0.05 65.13 / 7	0.39 53.67 / 13	0.13 62.33 / 7
DE_E (280) East Germany	0.03 65.60 / 2	0.04 65.24 / 4	0.03 65.71 / 1	0.36 54.64 / 10	0.13 62.38 / 4
EL (1261) Grece	0.06 64.71 / 7	0.09 63.76 / 10	0.12 62.54 / 16	0.41 53.16 / 16	0.22 59.34 / 16
IT (970) Italy	0.09 63.81 / 14	0.13 62.20 / 15	0.06 64.67 / 9	0.33 55.57 / 7	0.18 60.55 / 14
ES (1023) Spain	0.09 63.60 / 15	0.11 62.85 / 13	0.06 64.61 / 12	0.41 52.85 / 17	0.17 60.90 / 12
FR (1270) France	0.06 64.51 / 10	0.16 61.42 / 17	0.08 64.12 / 14	0.39 53.65 / 14	0.16 61.50 / 11
IR (907) Ireland	0.03 65.71 / 1	0.02 66.01 / 1	0.03 65.67 / 2	0.12 62.77 / 1	0.04 65.27 / 1
LU (344) Luxemburg	0.07 64.24 / 12	0.12 62.69 / 14	0.06 64.53 / 13	0.38 54.07 / 11	0.15 61.63 / 10
NL (1356) Netherlands	0.06 64.55 / 9	0.05 64.87 / 8	0.04 65.19 / 6	0.26 58.01 / 2	0.12 62.51 / 3
PT (1241) Portugal	0.05 64.95 / 3	0.09 63.71 / 11	0.06 64.63 / 10	0.33 55.55 / 8	0.15 61.64 / 9
UK (1040) United Kingdom	0.05 64.87 / 5	0.05 65.16 / 5	0.06 64.62 / 11	0.27 57.60 / 4	0.14 61.96 / 8
FI (1433) Finland	0.18 60.57 / 17	0.09 63.83 / 9	0.15 61.57 / 17	0.40 53.38 / 15	0.21 59.53 / 15
SE (1425) Sweden	0.15 61.73 / 16	0.04 65.29 / 3	0.11 62.88 / 15	0.35 55.04 / 9	0.22 59.23 / 17
AT (1079) Austria	0.05 64.84 / 6	0.09 63.61 / 12	0.04 65.21 / 5	0.29 56.94 / 5	0.10 63.48 / 2

Table 3: Sheet C. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Health				
	Q35C07 Stomach ache	Q35C08 Muscular pains in shoulders and neck	Q35C09 Muscular pains in upper limbs	Q35C10 Muscular pains in lower limbs	Q35C11 Respiratory problems
	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No
BE (1019) Belgium	0.09 63.59 / 16	0.17 60.88 / 3	0.11 63.13 / 6	0.11 62.97 / 7	0.03 65.78 / 4
DK (1377) Denmark	0.02 65.92 / 5	0.34 55.34 / 15	0.18 60.69 / 13	0.13 62.36 / 10	0.03 65.77 / 5
DE (1103) Germany	0.04 65.49 / 9	0.24 58.81 / 9	0.10 63.37 / 5	0.08 64.10 / 5	0.03 65.61 / 7
DE_W (823) West Germany	0.04 65.33 / 10	0.24 58.77 / 10	0.09 63.75 / 3	0.06 64.56 / 2	0.03 65.53 / 9
DE_E (280) East Germany	0.02 65.95 / 4	0.23 58.93 / 8	0.13 62.26 / 9	0.12 62.74 / 9	0.03 65.83 / 3
EL (1261) Grece	0.07 64.23 / 15	0.28 57.31 / 13	0.26 57.89 / 17	0.28 57.20 / 17	0.10 63.36 / 17
IT (970) Italy	0.06 64.71 / 13	0.20 60.10 / 7	0.11 62.99 / 8	0.11 62.92 / 8	0.04 65.36 / 10
ES (1023) Spain	0.03 65.53 / 8	0.29 56.96 / 14	0.19 60.28 / 14	0.20 59.92 / 16	0.07 64.32 / 16
FR (1270) France	0.05 64.86 / 11	0.25 58.32 / 12	0.15 61.52 / 10	0.15 61.76 / 11	0.04 65.35 / 11
IR (907) Ireland	0.01 66.45 / 1	0.09 63.76 / 1	0.04 65.23 / 1	0.04 65.42 / 1	0.02 65.89 / 2
LU (344) Luxemburg	0.07 64.24 / 14	0.16 61.34 / 2	0.17 61.14 / 12	0.15 61.63 / 12	0.05 65.12 / 13
NL (1356) Netherlands	0.01 66.20 / 2	0.25 58.46 / 11	0.10 63.50 / 4	0.06 64.53 / 3	0.02 66.10 / 1
PT (1241) Portugal	0.03 65.73 / 6	0.19 60.25 / 6	0.16 61.46 / 11	0.17 61.08 / 14	0.05 64.92 / 14
UK (1040) United Kingdom	0.02 66.12 / 3	0.19 60.42 / 5	0.11 63.01 / 7	0.08 63.97 / 6	0.03 65.54 / 8
FI (1433) Finland	0.06 64.76 / 12	0.54 48.57 / 17	0.21 59.60 / 15	0.18 60.76 / 15	0.06 64.64 / 15
SE (1425) Sweden	0.11 62.88 / 17	0.40 53.22 / 16	0.25 58.39 / 16	0.16 61.36 / 13	0.04 65.19 / 12
AT (1079) Austria	0.03 65.68 / 7	0.19 60.46 / 4	0.07 64.35 / 2	0.06 64.50 / 4	0.03 65.62 / 6

Table 3: Sheet D. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Health				
	Q35C12 Heart problems	Q35C13 Injury	Q35C14 Stress	Q35C15 Overall fatigue	Q35C16 Sleeping problems
	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No
BE (1019) Belgium	0.02 66.08 / 14	0.08 63.85 / 13	0.31 56.49 / 11	0.24 58.55 / 13	0.10 63.30 / 14
DK (1377) Denmark	0.01 66.40 / 6	0.03 65.63 / 2	0.28 57.30 / 9	0.11 62.91 / 3	0.06 64.58 / 6
DE (1103) Germany	0.01 66.42 / 4	0.07 64.40 / 9	0.23 58.93 / 5	0.17 60.86 / 6	0.07 64.49 / 7
DE_W (823) West Germany	0.01 66.34 / 9	0.07 64.32 / 12	0.24 58.61 / 7	0.17 61.12 / 5	0.07 64.24 / 11
DE_E (280) East Germany	0.00 66.67 / 1	0.06 64.64 / 6	0.20 59.88 / 4	0.20 60.12 / 9	0.04 65.24 / 2
EL (1261) Grece	0.02 66.11 / 13	0.05 65.03 / 5	0.52 49.19 / 17	0.63 45.78 / 17	0.08 64.16 / 12
IT (970) Italy	0.01 66.32 / 10	0.05 65.12 / 4	0.36 54.50 / 14	0.23 58.90 / 12	0.06 64.81 / 5
ES (1023) Spain	0.01 66.41 / 5	0.09 63.73 / 14	0.29 57.09 / 10	0.37 54.35 / 16	0.07 64.48 / 8
FR (1270) France	0.01 66.38 / 8	0.10 63.18 / 15	0.32 55.88 / 12	0.34 55.43 / 15	0.11 62.94 / 15
IR (907) Ireland	0.00 66.52 / 2	0.03 65.82 / 1	0.14 62.04 / 1	0.11 63.10 / 2	0.05 65.05 / 3
LU (344) Luxemburg	0.02 65.89 / 17	0.14 62.11 / 17	0.37 54.26 / 15	0.18 60.66 / 8	0.07 64.24 / 10
NL (1356) Netherlands	0.01 66.40 / 7	0.06 64.53 / 7	0.25 58.24 / 8	0.20 60.00 / 10	0.07 64.48 / 9
PT (1241) Portugal	0.02 66.08 / 15	0.05 65.14 / 3	0.18 60.52 / 2	0.21 59.55 / 11	0.03 65.73 / 1
UK (1040) United Kingdom	0.01 66.47 / 3	0.07 64.36 / 11	0.24 58.81 / 6	0.18 60.80 / 7	0.10 63.40 / 13
FI (1433) Finland	0.01 66.25 / 12	0.07 64.36 / 10	0.34 55.27 / 13	0.26 57.90 / 14	0.14 61.92 / 16
SE (1425) Sweden	0.02 65.99 / 16	0.13 62.48 / 16	0.40 53.43 / 16	0.13 62.27 / 4	0.16 61.17 / 17
AT (1079) Austria	0.01 66.27 / 11	0.07 64.47 / 8	0.20 60.06 / 3	0.05 64.87 / 1	0.06 64.81 / 4

Table 3: Sheet E. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Health				
	Q35C17 Allergies	Q35C18 Anxiety	Q35C19 Irritability	Q35C20 Trauma	Q35C21 Other
	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No	1: Yes 0: No
BE (1019) Belgium	0.03 65.69 / 7	0.10 36.74 / 5	0.13 62.25 / 14	0.01 66.21 / 7	0.02 66.05 / 12
DK (1377) Denmark	0.04 65.26 / 12	0.01 33.72 / 15	0.07 64.44 / 5	0.03 65.53 / 15	0.01 66.33 / 6
DE (1103) Germany	0.03 65.76 / 6	0.02 33.85 / 13	0.08 64.10 / 6	0.01 66.30 / 6	0.01 66.46 / 3
DE_W (823) West Germany	0.03 65.65 / 8	0.01 33.82 / 14	0.08 63.91 / 7	0.01 66.38 / 3	0.01 66.46 / 2
DE_E (280) East Germany	0.02 66.07 / 3	0.02 33.93 / 12	0.06 64.64 / 3	0.02 66.07 / 10	0.01 66.43 / 4
EL (1261) Grece	0.08 63.92 / 15	0.20 40.07 / 1	0.10 63.28 / 10	0.06 64.79 / 17	0.01 66.22 / 10
IT (970) Italy	0.04 65.43 / 9	0.10 36.74 / 4	0.14 62.16 / 15	0.03 65.74 / 13	0.01 66.25 / 9
ES (1023) Spain	0.04 65.27 / 11	0.09 36.27 / 6	0.10 63.34 / 9	0.05 64.91 / 16	0.03 65.69 / 17
FR (1270) France	0.06 64.83 / 13	0.15 38.35 / 2	0.14 61.89 / 16	0.01 66.17 / 9	0.01 66.30 / 7
IR (907) Ireland	0.01 66.19 / 1	0.04 34.80 / 9	0.03 65.53 / 1	0.02 66.01 / 12	0.02 66.04 / 13
LU (344) Luxemburg	0.04 65.31 / 10	0.03 34.30 / 11	0.11 62.89 / 13	0.01 66.38 / 4	0.00 66.57 / 1
NL (1356) Netherlands	0.03 65.83 / 5	0.01 33.65 / 17	0.10 63.40 / 8	0.01 66.49 / 2	0.03 65.71 / 16
PT (1241) Portugal	0.06 64.68 / 14	0.04 34.57 / 10	0.06 64.68 / 2	0.01 66.37 / 5	0.02 66.08 / 11
UK (1040) United Kingdom	0.02 66.09 / 2	0.07 35.77 / 7	0.11 63.11 / 12	0.02 66.03 / 11	0.03 65.80 / 15
FI (1433) Finland	0.08 63.88 / 16	0.06 35.22 / 8	0.15 61.71 / 17	0.03 65.74 / 14	0.01 66.34 / 5
SE (1425) Sweden	0.09 63.77 / 17	0.13 37.57 / 3	0.11 63.11 / 11	0.01 66.20 / 8	0.02 66.04 / 14
AT (1079) Austria	0.02 65.93 / 4	0.01 33.70 / 16	0.07 64.47 / 4	0.00 66.57 / 1	0.01 66.30 / 8

Table 3: Sheet F. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Health				Time factors
	Q35C22 Positive influence of work on health	Q36A Sick leave due to accident at work	Q36B Sick leave caused by the work	Q36C Sick leave caused by other problems	Q14 Hours worked per week
	1: Yes 0: No	1: No 2: 1–2 days 3: 3–7 days 4: 8–14 days 5: 15–30 days 6: 31–90 days 7: 91–180 d. 8: 181–270 d. 9: >270 days	1: No 2: 1–2 days 3: 3–7 days 4: 8–14 days 5: 15–30 days 6: 31–90 days 7: 91–180 d. 8: 181–270 d. 9: >270 days	1: No 2: 1–2 days 3: 3–7 days 4: 8–14 days 5: 15–30 days 6: 31–90 days 7: 91–180 d. 8: 181–270 d. 9: >270 days	Hours
BE (1019) Belgium	0.00 33.40 / 16	1.27 12.70 / 4	1.30 12.97 / 7	1.89 18.90 / 10	36.29 71.77 / 4
DK (1377) Denmark	0.01 33.82 / 4	1.13 11.31 / 12	1.24 12.42 / 10	2.18 21.76 / 2	36.45 71.64 / 5
DE (1103) Germany	0.03 34.48 / 2	1.30 13.05 / 2	1.36 13.58 / 6	2.08 20.77 / 8	35.63 72.29 / 3
DE_W (823) West Germany	0.04 34.55 / 1	1.33 13.26 / 1	1.40 14.00 / 4	2.10 20.96 / 5	35.08 72.74 / 2
DE_E (280) East Germany	0.03 34.29 / 3	1.24 12.43 / 5	1.24 12.36 / 11	2.02 20.21 / 9	37.26 70.99 / 7
EL (1261) Grece	0.01 33.62 / 9	1.04 10.44 / 17	1.13 11.30 / 16	1.45 14.54 / 17	42.43 66.85 / 17
IT (970) Italy	0.01 33.51 / 13	1.09 10.91 / 16	1.15 11.55 / 15	2.09 20.92 / 6	38.85 69.72 / 13
ES (1023) Spain	0.00 33.50 / 14	1.22 12.24 / 7	1.18 11.80 / 13	1.51 15.12 / 16	39.72 69.02 / 14
FR (1270) France	0.01 33.60 / 10	1.21 12.09 / 9	1.26 12.63 / 9	1.64 16.43 / 14	37.56 70.75 / 10
IR (907) Ireland	0.01 33.74 / 5	1.11 11.15 / 15	1.12 11.18 / 17	1.75 17.45 / 13	38.76 69.79 / 12
LU (344) Luxemburg	0.01 33.53 / 12	1.23 12.30 / 6	1.29 12.91 / 8	1.86 18.60 / 11	37.42 70.86 / 9
NL (1356) Netherlands	0.01 33.65 / 8	1.12 11.25 / 14	1.55 15.53 / 1	2.13 21.29 / 3	31.71 75.43 / 1
PT (1241) Portugal	0.00 33.39 / 17	1.13 11.31 / 11	1.17 11.75 / 14	1.60 15.95 / 15	40.59 68.33 / 16
UK (1040) United Kingdom	0.00 33.43 / 15	1.13 11.35 / 10	1.22 12.23 / 12	1.77 17.71 / 12	36.81 71.35 / 6
FI (1433) Finland	0.01 33.57 / 11	1.28 12.78 / 3	1.51 15.11 / 2	2.13 21.28 / 4	39.84 68.93 / 15
SE (1425) Sweden	0.01 33.68 / 7	1.13 11.26 / 13	1.39 13.94 / 5	2.18 21.80 / 1	37.33 70.93 / 8
AT (1079) Austria	0.01 33.70 / 6	1.22 12.15 / 8	1.42 14.15 / 3	2.08 20.83 / 7	37.72 70.62 / 11

Table 3: Sheet G. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Time factors				
	Q15R Time to work and back	Q16A Nightwork for at least 2 hours between 22:00–5:00	Q16B Evening work for at least 2 hours between 18:00–22:00	Q16D Saturday work	Q16C Sunday work
	1: 0min 2: 1–30min 3: 31–60min 4: 61–90min 5: 91–120min 6: 121–180min 7: 181–240min 8: 241–300min 9: >300min	1: no 2: 1–3 per month 3: 4–8 p.month 4: 9–12 p.month 5: 13–20 p.month 6: > 20 p.month	1: no 2: 1–3 per month 3: 4–8 p.month 4: 9–12 p.month 5: 13–20 p.month 6: > 20 p.month	1: no 2: 1 per month 3: 2 per month 4: 3 per month 5: >3 p.month	1: no 2: 1 per month 3: 2 per month 4: 3 per month 5: >3 p.month
BE (1019) Belgium	2.70 76.09 / 15	1.43 79.69 / 11	2.10 69.39 / 9	2.25 62.40 / 8	1.62 72.79 / 10
DK (1377) Denmark	2.68 76.41 / 13	1.34 81.25 / 5	1.83 73.99 / 4	1.75 71.67 / 1	1.62 72.24 / 11
DE (1103) Germany	2.68 76.10 / 14	1.32 81.62 / 4	1.81 74.10 / 3	2.09 64.98 / 6	1.39 77.65 / 2
DE_W (823) West Germany	2.63 76.85 / 11	1.31 81.79 / 3	1.79 74.36 / 2	2.10 64.85 / 7	1.36 78.29 / 1
DE_E (280) East Germany	2.83 73.89 / 17	1.35 81.12 / 6	1.86 73.35 / 5	2.07 65.36 / 4	1.49 75.77 / 4
EL (1261) Grece	2.43 81.09 / 1	1.60 77.41 / 16	3.33 50.62 / 16	3.48 40.82 / 17	2.24 62.27 / 17
IT (970) Italy	2.47 80.18 / 2	1.29 82.18 / 1	2.24 67.31 / 12	2.99 49.54 / 16	1.49 75.48 / 5
ES (1023) Spain	2.53 78.80 / 4	1.53 78.48 / 13	3.40 49.71 / 17	2.67 55.15 / 15	1.61 73.66 / 9
FR (1270) France	2.54 78.45 / 7	1.42 80.05 / 9	2.30 66.50 / 15	2.65 55.44 / 14	1.70 71.86 / 12
IR (907) Ireland	2.65 76.80 / 12	1.52 78.38 / 15	2.24 67.24 / 13	2.46 58.58 / 11	1.77 70.17 / 13
LU (344) Luxemburg	2.53 78.65 / 5	1.31 82.01 / 2	1.65 76.78 / 1	2.27 62.25 / 9	1.51 75.29 / 6
NL (1356) Netherlands	2.56 78.00 / 8	1.34 80.96 / 8	1.99 71.01 / 8	1.90 68.98 / 3	1.52 74.65 / 7
PT (1241) Portugal	2.52 79.11 / 3	1.38 80.97 / 7	2.02 71.30 / 7	2.50 58.13 / 12	1.47 76.68 / 3
UK (1040) United Kingdom	2.67 76.92 / 10	1.61 76.72 / 17	2.23 67.39 / 11	2.48 58.06 / 13	1.87 68.15 / 15
FI (1433) Finland	2.71 75.70 / 16	1.47 78.38 / 14	2.26 66.64 / 14	2.09 65.16 / 5	1.83 68.54 / 14
SE (1425) Sweden	2.60 77.94 / 9	1.44 79.51 / 12	2.22 67.51 / 10	1.87 69.14 / 2	1.82 68.01 / 16
AT (1079) Austria	2.55 78.60 / 6	1.41 80.04 / 10	1.97 71.41 / 6	2.30 61.31 / 10	1.55 74.26 / 8

Table 3: Sheet H. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Time factors		Stressing factors		
	Q16E Overwork (more than 10 hours a day)	Q18B Shiftwork	Q19B1 Planning working time changes	Q21A Repetitive tasks	Q21B1 Work at very high speed
	1: no 2: 1–3 per month 3: 4–8 p.month 4: 9–12 p.month 5: 13–20 p.month 6: > 20 p.month	1: Yes 2: No	1: Same day 2: 1 day in advance 3: 2–3 days i.adv. 4: 4–7 days i.adv. 5: 8–14 days i.adv. 6: 15–30 days i.adv. 7: >30 days i.adv.	1: every 5 sec 2: every 30 sec 3: every min 4: every 5 min 5: every 10 min 6: no repetitive tasks	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never
BE (1019) Belgium	1.68 75.31 / 8	1.81 60.29 / 12	2.14 33.41 / 6	4.79 68.47 / 3	4.85 60.66 / 4
DK (1377) Denmark	1.66 74.77 / 9	1.92 63.91 / 1	2.01 31.45 / 11	4.90 70.07 / 1	4.63 57.92 / 8
DE (1103) Germany	1.50 78.18 / 3	1.81 60.32 / 11	1.99 30.32 / 14	4.48 64.01 / 11	4.39 54.88 / 12
DE_W (823) West Germany	1.48 78.52 / 2	1.81 60.39 / 8	1.98 30.32 / 13	4.40 62.91 / 13	4.41 55.18 / 11
DE_E (280) East Germany	1.57 77.19 / 5	1.80 60.12 / 13	2.01 30.32 / 15	4.71 67.24 / 6	4.32 54.02 / 13
EL (1261) Grece	2.20 67.71 / 17	1.84 61.25 / 6	2.00 31.99 / 9	3.69 52.71 / 17	4.29 53.66 / 14
IT (970) Italy	1.70 74.68 / 10	1.78 59.31 / 14	2.13 33.61 / 5	4.75 67.84 / 4	4.60 57.49 / 9
ES (1023) Spain	1.66 76.11 / 6	1.77 59.07 / 16	2.08 33.03 / 8	3.90 55.68 / 16	5.19 64.93 / 1
FR (1270) France	1.75 74.49 / 11	1.81 60.34 / 10	2.20 34.29 / 1	4.44 63.42 / 12	4.68 58.44 / 6
IR (907) Ireland	1.88 71.82 / 13	1.81 60.49 / 7	2.14 33.65 / 4	4.30 61.49 / 14	5.04 62.97 / 2
LU (344) Luxemburg	1.48 78.78 / 1	1.84 61.43 / 5	2.14 33.82 / 2	4.84 69.10 / 2	4.78 59.81 / 5
NL (1356) Netherlands	1.60 75.94 / 7	1.87 62.46 / 3	2.10 33.21 / 7	4.61 65.82 / 7	3.88 48.53 / 16
PT (1241) Portugal	1.59 77.68 / 4	1.92 63.85 / 2	2.08 33.72 / 3	4.52 64.57 / 10	4.66 58.26 / 7
UK (1040) United Kingdom	2.00 70.26 / 16	1.73 57.63 / 17	2.04 31.54 / 10	4.54 64.89 / 9	4.85 60.69 / 3
FI (1433) Finland	1.90 70.28 / 15	1.78 59.27 / 15	1.96 30.08 / 16	3.94 56.36 / 15	3.99 49.82 / 15
SE (1425) Sweden	1.85 70.85 / 14	1.81 60.37 / 9	1.65 24.46 / 17	4.56 65.21 / 8	3.63 45.32 / 17
AT (1079) Austria	1.76 73.74 / 12	1.86 62.03 / 4	1.99 31.33 / 12	4.73 67.64 / 5	4.48 56.01 / 10

Table 3: Sheet I. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Stressing factors				
	Q21B2 Work to tight deadlines	Q2201 Dependence on work of colleagues	Q2202 Dependence on customers	Q2203 Numerical production targets	Q2204 Automatic speed determined by machines
	1: always 2: ∼always 3: 3/4 time 4: 1/2 time 5: 1/4 time 6: ∼never 7: never	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	4.74 59.20 / 4	1.56 52.04 / 11	1.26 42.17 / 12	1.71 57.08 / 11	1.84 61.43 / 5
DK (1377) Denmark	4.48 56.05 / 8	1.54 51.30 / 14	1.27 42.48 / 11	1.85 61.68 / 1	1.89 63.08 / 3
DE (1103) Germany	4.14 51.76 / 13	1.64 54.76 / 2	1.38 45.94 / 3	1.74 58.02 / 6	1.82 60.62 / 7
DE_W (823) West Germany	4.19 52.40 / 11	1.62 54.11 / 3	1.39 46.38 / 2	1.73 57.68 / 9	1.79 59.58 / 15
DE_E (280) East Germany	3.99 49.87 / 15	1.70 56.67 / 1	1.34 44.64 / 5	1.77 59.05 / 3	1.91 63.69 / 2
EL (1261) Grece	4.49 56.18 / 7	1.61 53.74 / 5	1.25 41.77 / 14	1.62 54.00 / 16	1.80 59.90 / 11
IT (970) Italy	4.65 58.13 / 5	1.58 52.68 / 7	1.28 42.58 / 10	1.72 57.22 / 10	1.81 60.27 / 8
ES (1023) Spain	5.18 64.80 / 2	1.60 53.41 / 6	1.33 44.44 / 6	1.65 55.00 / 14	1.78 59.47 / 16
FR (1270) France	4.44 55.52 / 9	1.58 52.55 / 9	1.28 42.65 / 9	1.69 56.38 / 12	1.81 60.18 / 9
IR (907) Ireland	4.27 53.42 / 10	1.43 47.78 / 16	1.29 43.07 / 8	1.76 58.65 / 5	1.77 59.13 / 17
LU (344) Luxemburg	4.77 59.63 / 3	1.53 51.16 / 15	1.36 45.35 / 4	1.74 57.95 / 7	1.79 59.69 / 12
NL (1356) Netherlands	4.58 57.27 / 6	1.58 52.51 / 10	1.32 43.85 / 7	1.85 61.65 / 2	1.84 61.18 / 6
PT (1241) Portugal	5.51 68.90 / 1	1.58 52.67 / 8	1.43 47.60 / 1	1.74 57.94 / 8	1.79 59.63 / 14
UK (1040) United Kingdom	3.78 47.28 / 17	1.43 47.56 / 17	1.20 40.16 / 17	1.67 55.80 / 13	1.79 59.65 / 13
FI (1433) Finland	3.98 49.76 / 16	1.55 51.66 / 12	1.24 41.43 / 15	1.54 51.45 / 17	1.80 60.01 / 10
SE (1425) Sweden	4.03 50.33 / 14	1.54 51.42 / 13	1.20 40.16 / 16	1.62 54.04 / 15	1.92 63.86 / 1
AT (1079) Austria	4.16 52.05 / 12	1.61 53.78 / 4	1.26 41.89 / 13	1.76 58.76 / 4	1.85 61.69 / 4

Table 3: Sheet J. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Stressing factors				
	Q2205 Direct control of the boss	Q23A Interruptions and unforseen tasks	Q2401 Precise quality standards	Q2402 Assessing yourself the quality	Q2403 Solving unforeseen problems on your own
	1: Yes 2: No	1: several a day 2: a few in a day 3: several a week 4: a few in a week 5: seldom	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.61 53.75 / 14	2.78 46.32 / 12	1.35 44.85 / 7	1.27 57.80 / 7	1.13 37.62 / 14
DK (1377) Denmark	1.84 61.17 / 3	2.44 40.61 / 16	1.20 40.09 / 16	1.11 63.16 / 1	1.07 35.54 / 17
DE (1103) Germany	1.69 56.18 / 8	3.24 53.99 / 4	1.37 45.54 / 5	1.31 56.30 / 13	1.22 40.83 / 7
DE_W (823) West Germany	1.68 56.01 / 9	3.21 53.48 / 5	1.36 45.48 / 6	1.31 56.34 / 12	1.22 40.83 / 8
DE_E (280) East Germany	1.70 56.67 / 6	3.33 55.48 / 2	1.37 45.71 / 4	1.31 56.19 / 14	1.23 40.83 / 6
EL (1261) Grece	1.63 54.40 / 10	3.58 59.66 / 1	1.46 48.82 / 1	1.38 54.08 / 17	1.27 42.22 / 3
IT (970) Italy	1.70 56.60 / 7	2.99 49.90 / 8	1.32 44.16 / 9	1.30 56.77 / 11	1.21 40.27 / 9
ES (1023) Spain	1.62 54.09 / 12	3.28 54.59 / 3	1.32 44.09 / 10	1.28 57.28 / 9	1.17 38.97 / 12
FR (1270) France	1.62 54.07 / 13	3.08 51.34 / 7	1.29 43.07 / 12	1.19 60.21 / 4	1.14 37.87 / 13
IR (907) Ireland	1.53 51.08 / 16	2.87 47.89 / 11	1.30 43.44 / 11	1.29 56.96 / 10	1.27 42.45 / 2
LU (344) Luxemburg	1.63 54.26 / 11	2.92 48.69 / 10	1.34 44.57 / 8	1.34 55.43 / 16	1.26 42.15 / 4
NL (1356) Netherlands	1.90 63.18 / 1	2.34 38.93 / 17	1.21 40.24 / 15	1.15 61.58 / 2	1.07 35.57 / 16
PT (1241) Portugal	1.61 53.56 / 15	3.18 52.95 / 6	1.41 47.06 / 3	1.32 55.84 / 15	1.32 43.94 / 1
UK (1040) United Kingdom	1.53 51.03 / 17	2.57 42.90 / 15	1.19 39.62 / 17	1.22 59.46 / 5	1.19 39.52 / 11
FI (1433) Finland	1.86 62.01 / 2	2.62 43.65 / 14	1.24 41.29 / 13	1.19 60.41 / 3	1.23 41.03 / 5
SE (1425) Sweden	1.83 60.96 / 4	2.69 44.81 / 13	1.43 47.77 / 2	1.23 59.04 / 6	1.07 35.72 / 15
AT (1079) Austria	1.72 57.43 / 5	2.99 49.86 / 9	1.23 40.96 / 14	1.27 57.58 / 8	1.20 39.94 / 10

Table 3: Sheet K. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Stressing factors		Independence		
	Q2404 Monotonous tasks	Q2405 Complex tasks	Q2501 Choosing the order of tasks	Q2502 Choosing methods of work	Q2503 Choosing speed of work
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.67 55.61 / 9	1.53 51.06 / 5	1.33 55.61 / 7	1.34 55.45 / 10	1.34 55.45 / 12
DK (1377) Denmark	1.68 55.94 / 8	1.29 43.04 / 16	1.19 60.45 / 1	1.19 60.30 / 3	1.18 60.52 / 1
DE (1103) Germany	1.72 57.21 / 3	1.34 44.67 / 13	1.46 51.19 / 15	1.28 57.45 / 5	1.34 55.30 / 13
DE_W (823) West Germany	1.72 57.27 / 2	1.35 45.16 / 12	1.46 51.28 / 14	1.28 57.47 / 4	1.36 54.80 / 15
DE_E (280) East Germany	1.71 57.02 / 5	1.30 43.21 / 15	1.47 50.95 / 17	1.28 57.38 / 6	1.30 56.79 / 6
EL (1261) Grece	1.43 47.63 / 15	1.58 52.52 / 3	1.44 51.89 / 12	1.42 52.58 / 16	1.33 55.51 / 11
IT (970) Italy	1.67 55.57 / 10	1.55 51.68 / 4	1.46 51.44 / 13	1.29 56.87 / 8	1.26 57.84 / 3
ES (1023) Spain	1.37 45.62 / 17	1.61 53.50 / 2	1.41 52.92 / 10	1.39 53.57 / 15	1.35 54.87 / 14
FR (1270) France	1.60 53.18 / 11	1.49 49.69 / 7	1.32 55.88 / 5	1.35 54.88 / 13	1.33 55.80 / 8
IR (907) Ireland	1.48 49.39 / 14	1.48 49.43 / 8	1.40 53.22 / 9	1.39 53.66 / 14	1.33 55.60 / 10
LU (344) Luxemburg	1.69 56.49 / 7	1.51 50.29 / 6	1.42 52.71 / 11	1.35 55.14 / 12	1.33 55.62 / 9
NL (1356) Netherlands	1.71 57.15 / 4	1.40 46.68 / 10	1.22 59.46 / 3	1.18 60.55 / 2	1.19 60.18 / 2
PT (1241) Portugal	1.55 51.60 / 12	1.63 54.26 / 1	1.47 51.01 / 16	1.43 52.19 / 17	1.41 53.08 / 17
UK (1040) United Kingdom	1.41 46.99 / 16	1.40 46.67 / 11	1.33 55.64 / 6	1.34 55.48 / 9	1.29 56.96 / 5
FI (1433) Finland	1.51 50.29 / 13	1.30 43.22 / 14	1.22 59.25 / 4	1.29 57.04 / 7	1.31 56.34 / 7
SE (1425) Sweden	1.75 58.20 / 1	1.43 47.72 / 9	1.20 60.07 / 2	1.13 62.27 / 1	1.36 54.62 / 16
AT (1079) Austria	1.71 56.90 / 6	1.23 40.84 / 17	1.39 53.75 / 8	1.34 55.39 / 11	1.28 57.28 / 4

Table 3: Sheet L. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Independence				
	Q2602 Choosing time for break	Q2603 Choosing time for holidays	Q2604 Influence working hours	Q2605 Sufficient time to make the job	Q2606 Possibility to make private calls
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.47 51.13 / 13	1.38 53.84 / 6	1.56 48.05 / 7	1.19 60.19 / 6	1.36 54.66 / 14
DK (1377) Denmark	1.34 55.41 / 3	1.34 55.48 / 3	1.42 52.77 / 1	1.29 57.10 / 17	1.08 63.86 / 1
DE (1103) Germany	1.57 47.69 / 16	1.55 48.38 / 13	1.65 44.88 / 14	1.21 59.66 / 8	1.33 55.70 / 12
DE_W (823) West Germany	1.56 48.00 / 15	1.53 48.97 / 12	1.63 45.61 / 12	1.22 59.25 / 11	1.31 56.30 / 8
DE_E (280) East Germany	1.60 46.79 / 17	1.60 46.67 / 16	1.72 42.74 / 16	1.18 60.83 / 3	1.38 53.93 / 16
EL (1261) Grece	1.44 52.05 / 8	1.46 51.28 / 8	1.54 48.61 / 6	1.19 60.32 / 5	1.27 57.73 / 6
IT (970) Italy	1.25 58.42 / 1	1.37 54.23 / 4	1.60 46.70 / 11	1.18 60.76 / 4	1.31 56.19 / 9
ES (1023) Spain	1.44 51.84 / 10	1.58 47.41 / 14	1.75 41.74 / 17	1.12 62.59 / 1	1.28 57.41 / 7
FR (1270) France	1.34 55.41 / 4	1.51 49.71 / 11	1.58 47.32 / 9	1.21 59.53 / 9	1.37 54.17 / 15
IR (907) Ireland	1.44 52.04 / 9	1.40 53.47 / 7	1.57 47.70 / 8	1.15 61.52 / 2	1.20 60.05 / 3
LU (344) Luxemburg	1.45 51.74 / 11	1.50 50.10 / 10	1.65 44.96 / 13	1.24 58.53 / 13	1.32 56.10 / 10
NL (1356) Netherlands	1.48 50.76 / 14	1.33 55.63 / 2	1.49 50.20 / 3	1.25 58.33 / 14	1.33 55.60 / 13
PT (1241) Portugal	1.31 56.35 / 2	1.59 46.90 / 15	1.68 43.94 / 15	1.22 59.31 / 10	1.32 56.06 / 11
UK (1040) United Kingdom	1.42 52.79 / 6	1.32 56.06 / 1	1.52 49.26 / 5	1.24 58.65 / 12	1.23 58.88 / 5
FI (1433) Finland	1.38 54.06 / 5	1.60 46.55 / 17	1.52 49.36 / 4	1.28 57.27 / 16	1.22 59.41 / 4
SE (1425) Sweden	1.42 52.70 / 7	1.47 51.02 / 9	1.46 51.44 / 2	1.27 57.71 / 15	1.12 62.67 / 2
AT (1079) Austria	1.46 51.34 / 12	1.38 54.09 / 5	1.59 47.11 / 10	1.21 59.78 / 7	1.43 52.43 / 17

Table 3: Sheet M. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Collectivity			Social environment	
	Q2601 Assistence from collegues	Q27B1 Rotating tasks between colleagues	Q27B2 (Partially) working in a team	Q30A1 Ability to discuss working conditions in general	Q30A2 Ability to discuss the changes of work organization
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.16 61.50 / 12	1.58 47.17 / 11	1.47 50.90 / 12	1.18 60.61 / 7	1.20 60.12 / 6
DK (1377) Denmark	1.06 64.73 / 1	1.56 48.08 / 9	1.33 55.56 / 4	1.08 63.91 / 2	1.12 62.75 / 2
DE (1103) Germany	1.14 62.16 / 8	1.56 48.08 / 8	1.45 51.56 / 10	1.28 57.24 / 12	1.29 57.03 / 12
DE_W (823) West Germany	1.14 62.09 / 9	1.54 48.52 / 7	1.44 51.84 / 9	1.29 57.03 / 14	1.30 56.62 / 14
DE_E (280) East Germany	1.13 62.38 / 7	1.60 46.79 / 13	1.48 50.71 / 13	1.26 57.86 / 10	1.25 58.21 / 9
EL (1261) Grece	1.35 55.01 / 17	1.59 47.16 / 12	1.52 49.27 / 16	1.31 56.36 / 16	1.35 55.14 / 15
IT (970) Italy	1.20 59.93 / 13	1.63 45.70 / 14	1.59 46.94 / 17	1.26 57.94 / 9	1.26 58.04 / 10
ES (1023) Spain	1.23 58.88 / 15	1.69 43.73 / 17	1.51 49.53 / 15	1.31 56.37 / 15	1.36 54.74 / 16
FR (1270) France	1.22 59.34 / 14	1.57 47.59 / 10	1.46 51.50 / 11	1.28 57.22 / 13	1.27 57.66 / 11
IR (907) Ireland	1.10 63.47 / 5	1.41 52.85 / 1	1.25 58.18 / 2	1.16 61.45 / 5	1.20 60.12 / 5
LU (344) Luxemburg	1.15 61.63 / 11	1.49 50.19 / 6	1.35 54.84 / 6	1.18 60.56 / 8	1.22 59.30 / 8
NL (1356) Netherlands	1.09 63.72 / 4	1.49 50.20 / 5	1.33 55.75 / 3	1.08 64.16 / 1	1.10 63.37 / 1
PT (1241) Portugal	1.28 57.43 / 16	1.64 45.31 / 16	1.48 50.63 / 14	1.49 50.23 / 17	1.51 49.50 / 17
UK (1040) United Kingdom	1.08 64.17 / 3	1.42 52.76 / 2	1.24 58.65 / 1	1.18 60.67 / 6	1.22 59.36 / 7
FI (1433) Finland	1.12 62.62 / 6	1.64 45.41 / 15	1.37 54.18 / 7	1.12 62.50 / 3	1.13 62.25 / 3
SE (1425) Sweden	1.07 64.33 / 2	1.49 50.20 / 4	1.39 53.61 / 8	1.13 62.27 / 4	1.19 60.44 / 4
AT (1079) Austria	1.15 61.66 / 10	1.43 52.39 / 3	1.34 55.33 / 5	1.28 57.34 / 11	1.29 56.87 / 13

Table 3: Sheet N. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Social environment				
	Q3101 Personal experience of physical violence from colleagues	Q3102 Personal experience of physical violence from other people	Q3103 Personal experience of intimidation	Q3104 Personal experience of sexual discrimination	Q3105 Personal experience of unwanted sexual attention
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.98 33.95 / 6	1.95 35.13 / 5	1.87 37.52 / 5	1.98 33.95 / 9	1.98 33.92 / 12
DK (1377) Denmark	1.98 34.06 / 4	1.97 34.28 / 10	1.91 36.31 / 8	1.98 33.84 / 11	1.99 33.79 / 13
DE (1103) Germany	2.00 33.39 / 16	1.98 34.12 / 11	1.92 35.90 / 10	1.98 34.06 / 6	1.98 34.15 / 9
DE_W (823) West Germany	2.00 33.41 / 15	1.98 34.02 / 13	1.92 36.01 / 9	1.98 34.10 / 5	1.97 34.18 / 8
DE_E (280) East Germany	2.00 33.33 / 17	1.97 34.40 / 9	1.93 35.60 / 11	1.98 33.93 / 10	1.98 34.05 / 10
EL (1261) Grece	2.00 33.47 / 14	1.99 33.78 / 15	1.95 34.95 / 14	1.98 33.97 / 8	1.97 34.26 / 6
IT (970) Italy	1.99 33.51 / 13	1.99 33.57 / 17	1.96 34.50 / 17	1.99 33.68 / 15	1.99 33.51 / 17
ES (1023) Spain	1.99 33.63 / 11	1.97 34.44 / 8	1.95 34.86 / 15	1.99 33.72 / 14	1.99 33.76 / 14
FR (1270) France	1.99 33.81 / 8	1.96 34.83 / 7	1.89 37.03 / 7	1.99 33.78 / 12	1.98 33.99 / 11
IR (907) Ireland	1.98 34.14 / 3	1.94 35.21 / 4	1.88 37.27 / 6	1.99 33.77 / 13	1.97 34.22 / 7
LU (344) Luxemburg	1.99 33.72 / 9	1.98 34.11 / 12	1.94 35.17 / 13	1.99 33.62 / 16	1.99 33.62 / 16
NL (1356) Netherlands	1.98 33.95 / 7	1.91 36.41 / 2	1.86 37.86 / 4	1.97 34.19 / 3	1.96 34.59 / 4
PT (1241) Portugal	1.99 33.63 / 10	1.99 33.68 / 16	1.96 34.78 / 16	2.00 33.47 / 17	1.99 33.71 / 15
UK (1040) United Kingdom	1.95 35.06 / 2	1.89 36.92 / 1	1.83 39.01 / 1	1.97 34.36 / 2	1.96 34.68 / 2
FI (1433) Finland	1.99 33.57 / 12	1.93 35.54 / 3	1.85 38.24 / 2	1.98 34.05 / 7	1.96 34.61 / 3
SE (1425) Sweden	1.94 35.25 / 1	1.95 34.99 / 6	1.86 37.99 / 3	1.97 34.18 / 4	1.95 34.92 / 1
AT (1079) Austria	1.98 33.98 / 5	1.98 33.98 / 14	1.93 35.56 / 12	1.97 34.38 / 1	1.97 34.41 / 5

Table 3: Sheet O. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Social environment				
	Q3106 Personal experience of age discrinimation	Q3107 Personal experience of discrinimation linked to nationality	Q3108 Personal experience of discrinimation linked to ethnic back-ground/race	Q3109 Personal experience of discrinimation linked to disability	Q3110 Personal experience of discrinimation linked to sexual orientation
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.97 34.38 / 10	1.99 33.73 / 8	1.99 33.66 / 9	2.00 33.50 / 6	2.00 33.43 / 7
DK (1377) Denmark	1.98 33.89 / 16	2.00 33.45 / 15	2.00 33.45 / 14	2.00 33.38 / 15	2.00 33.38 / 13
DE (1103) Germany	1.97 34.45 / 7	1.99 33.61 / 11	2.00 33.45 / 15	2.00 33.45 / 10	2.00 33.39 / 12
DE_W (823) West Germany	1.97 34.47 / 6	1.99 33.70 / 9	2.00 33.50 / 12	2.00 33.45 / 9	2.00 33.41 / 9
DE_E (280) East Germany	1.97 34.40 / 9	2.00 33.33 / 17	2.00 33.33 / 17	2.00 33.45 / 11	2.00 33.33 / 17
EL (1261) Grece	1.98 34.15 / 12	1.99 33.76 / 5	1.99 33.76 / 6	2.00 33.41 / 14	2.00 33.47 / 5
IT (970) Italy	1.98 33.95 / 13	2.00 33.40 / 16	2.00 33.37 / 16	2.00 33.44 / 12	2.00 33.47 / 4
ES (1023) Spain	1.98 33.92 / 14	1.99 33.53 / 12	2.00 33.50 / 10	2.00 33.46 / 8	2.00 33.40 / 11
FR (1270) France	1.96 34.54 / 5	1.99 33.73 / 7	1.99 33.83 / 5	1.99 33.60 / 4	1.99 33.52 / 3
IR (907) Ireland	1.97 34.36 / 11	1.99 33.66 / 10	1.99 33.66 / 8	2.00 33.37 / 16	2.00 33.44 / 6
LU (344) Luxemburg	1.98 33.91 / 15	1.97 34.50 / 1	1.98 34.11 / 1	2.00 33.43 / 13	2.00 33.43 / 8
NL (1356) Netherlands	1.97 34.41 / 8	1.98 33.90 / 3	1.98 34.02 / 2	1.99 33.78 / 1	1.99 33.68 / 1
PT (1241) Portugal	1.99 33.68 / 17	2.00 33.49 / 13	2.00 33.49 / 13	2.00 33.36 / 17	2.00 33.33 / 16
UK (1040) United Kingdom	1.96 34.74 / 1	1.98 33.91 / 2	1.98 33.88 / 3	1.99 33.53 / 5	1.99 33.53 / 2
FI (1433) Finland	1.96 34.68 / 2	2.00 33.47 / 14	2.00 33.50 / 11	2.00 33.50 / 7	2.00 33.33 / 15
SE (1425) Sweden	1.96 34.62 / 3	1.99 33.75 / 6	1.99 33.68 / 7	1.99 33.68 / 2	2.00 33.40 / 10
AT (1079) Austria	1.96 34.60 / 4	1.98 33.86 / 4	1.98 33.86 / 4	1.99 33.61 / 3	2.00 33.36 / 14

Table 3: Sheet P. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Social environment				
	Q3201 Awareness of cases of physical violence from colleagues	Q3202 Awareness of cases of physical violence from other people	Q3203 Awareness of cases of intimidation	Q3204 Awareness of cases of sexual discrimination	Q3205 Awareness of cases of unwanted sexual attention
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.95 35.03 / 5	1.91 36.18 / 7	1.81 39.55 / 6	1.95 35.00 / 10	1.93 35.66 / 5
DK (1377) Denmark	1.94 35.37 / 3	1.89 36.89 / 5	1.81 39.63 / 5	1.96 34.81 / 11	1.96 34.69 / 12
DE (1103) Germany	1.98 33.85 / 15	1.96 34.57 / 13	1.86 37.87 / 10	1.95 35.06 / 8	1.96 34.69 / 10
DE_W (823) West Germany	1.98 33.94 / 14	1.96 34.59 / 12	1.86 37.91 / 9	1.94 35.20 / 6	1.95 34.87 / 9
DE_E (280) East Germany	1.99 33.57 / 17	1.96 34.52 / 14	1.87 37.74 / 11	1.96 34.64 / 12	1.98 34.17 / 15
EL (1261) Grece	1.97 34.26 / 12	1.94 35.18 / 10	1.90 36.66 / 14	1.95 35.05 / 9	1.94 35.26 / 8
IT (970) Italy	1.99 33.68 / 16	1.99 33.81 / 17	1.94 35.43 / 17	1.98 33.95 / 16	1.99 33.75 / 17
ES (1023) Spain	1.98 34.05 / 13	1.95 34.86 / 11	1.94 35.48 / 16	1.98 34.15 / 15	1.98 33.89 / 16
FR (1270) France	1.95 34.86 / 6	1.92 35.85 / 8	1.86 38.14 / 8	1.96 34.51 / 13	1.97 34.36 / 13
IR (907) Ireland	1.94 35.32 / 4	1.90 36.68 / 6	1.83 38.85 / 7	1.94 35.17 / 7	1.94 35.46 / 7
LU (344) Luxemburg	1.96 34.79 / 7	1.94 35.47 / 9	1.90 36.82 / 12	1.97 34.40 / 14	1.96 34.69 / 11
NL (1356) Netherlands	1.96 34.64 / 9	1.84 38.52 / 3	1.80 40.04 / 4	1.93 35.72 / 3	1.89 36.85 / 2
PT (1241) Portugal	1.97 34.33 / 10	1.97 34.46 / 15	1.92 35.97 / 15	1.98 33.90 / 17	1.97 34.19 / 14
UK (1040) United Kingdom	1.89 36.86 / 1	1.81 39.68 / 1	1.79 40.45 / 3	1.93 35.80 / 2	1.91 36.22 / 4
FI (1433) Finland	1.96 34.73 / 8	1.83 39.10 / 2	1.74 42.08 / 1	1.92 36.15 / 1	1.89 37.10 / 1
SE (1425) Sweden	1.91 36.44 / 2	1.88 37.17 / 4	1.77 40.84 / 2	1.94 35.35 / 4	1.90 36.65 / 3
AT (1079) Austria	1.97 34.26 / 11	1.97 34.41 / 16	1.90 36.79 / 13	1.94 35.31 / 5	1.93 35.62 / 6

Table 3: Sheet Q. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Social environment				
	Q3206 Awareness of cases of age discrinimation	Q3207 Awareness of cases of discrinimation linked to nationality	Q3208 Awareness of cases of discrinimation linked to ethnic back-ground/race	Q3209 Awareness of cases of discrinimation linked to disability	Q3210 Awareness of cases of discrinimation linked to sexual orientation
	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	1.93 35.75 / 2	1.94 35.39 / 5	1.93 35.53 / 4	1.97 34.28 / 5	1.97 34.38 / 4
DK (1377) Denmark	1.95 34.88 / 10	1.95 34.88 / 10	1.94 35.42 / 6	1.99 33.79 / 12	1.99 33.62 / 14
DE (1103) Germany	1.95 34.94 / 9	1.97 34.36 / 13	1.98 33.91 / 16	1.99 33.73 / 15	1.99 33.61 / 15
DE_W (823) West Germany	1.95 35.03 / 8	1.96 34.67 / 12	1.98 34.06 / 13	1.99 33.74 / 14	1.99 33.66 / 12
DE_E (280) East Germany	1.96 34.64 / 11	2.00 33.45 / 17	2.00 33.45 / 17	1.99 33.69 / 16	2.00 33.45 / 17
EL (1261) Grece	1.96 34.63 / 12	1.94 35.18 / 8	1.95 35.16 / 9	1.99 33.81 / 11	1.97 34.23 / 5
IT (970) Italy	1.97 34.23 / 17	1.98 33.88 / 16	1.98 33.92 / 15	1.98 33.85 / 10	1.99 33.78 / 11
ES (1023) Spain	1.97 34.44 / 14	1.98 33.99 / 15	1.98 34.02 / 14	1.99 33.76 / 13	1.99 33.63 / 13
FR (1270) France	1.96 34.54 / 13	1.95 35.07 / 9	1.94 35.33 / 7	1.98 34.02 / 9	1.98 34.02 / 7
IR (907) Ireland	1.94 35.28 / 6	1.96 34.69 / 11	1.96 34.58 / 11	1.98 34.14 / 7	1.98 34.03 / 6
LU (344) Luxemburg	1.97 34.30 / 16	1.92 36.05 / 1	1.94 35.17 / 8	1.98 34.11 / 8	1.99 33.82 / 10
NL (1356) Netherlands	1.94 35.25 / 7	1.93 35.59 / 3	1.93 35.72 / 2	1.96 34.54 / 2	1.96 34.66 / 2
PT (1241) Portugal	1.97 34.43 / 15	1.97 34.30 / 14	1.97 34.46 / 12	1.99 33.52 / 17	1.99 33.60 / 16
UK (1040) United Kingdom	1.93 35.74 / 3	1.94 35.32 / 6	1.93 35.77 / 1	1.98 34.17 / 6	1.96 34.58 / 3
FI (1433) Finland	1.84 38.59 / 1	1.93 35.57 / 4	1.94 35.45 / 5	1.95 34.92 / 1	1.96 34.68 / 1
SE (1425) Sweden	1.93 35.60 / 5	1.92 35.95 / 2	1.93 35.63 / 3	1.97 34.29 / 4	1.99 33.82 / 9
AT (1079) Austria	1.93 35.68 / 4	1.94 35.31 / 7	1.95 34.85 / 10	1.97 34.45 / 3	1.98 33.86 / 8

Table 3: Sheet R. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Carrier (training)		Work–Life balance		
	Q2406 Learning new things at work	Q29 Professional training in past 12 months	EF2001 Voluntary or charitable activity	EF2002 Political/trade union activity	EF2003 Caring for and educating children
	1: Yes 2: No	1: No 2: 1–2 days 3: 3–7 days 4: 8–14 days 5: 15–30 days 6: 31–90 days 7: >90 days	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never
BE (1019) Belgium	1.26 58.10 / 6	1.76 23.11 / 8	5.39 22.95 / 9	5.77 17.52 / 8	3.59 48.76 / 5
DK (1377) Denmark	1.12 62.50 / 2	2.37 32.13 / 1	5.39 22.98 / 8	5.78 17.49 / 9	3.39 51.51 / 3
DE (1103) Germany	1.36 54.82 / 13	1.61 20.85 / 11	5.43 22.37 / 10	5.80 17.15 / 11	3.86 44.89 / 16
DE_W (823) West Germany	1.37 54.35 / 15	1.58 20.40 / 13	5.46 22.01 / 12	5.81 16.99 / 12	3.90 44.30 / 17
DE_E (280) East Germany	1.31 56.19 / 11	1.71 22.18 / 9	5.36 23.42 / 6	5.77 17.60 / 7	3.74 46.63 / 9
EL (1261) Grece	1.52 49.35 / 17	1.37 16.56 / 16	5.64 19.43 / 15	5.72 18.28 / 5	3.86 44.91 / 15
IT (970) Italy	1.28 57.22 / 9	1.62 20.69 / 12	5.49 21.61 / 13	5.71 18.37 / 4	3.06 56.22 / 1
ES (1023) Spain	1.37 54.48 / 14	1.55 19.05 / 15	5.66 19.10 / 16	5.80 17.19 / 10	3.79 45.82 / 12
FR (1270) France	1.27 57.66 / 7	1.58 20.06 / 14	5.49 21.55 / 14	5.85 16.37 / 14	3.63 48.08 / 7
IR (907) Ireland	1.32 56.08 / 12	1.82 24.19 / 6	5.33 23.85 / 5	5.83 16.65 / 13	3.48 50.24 / 4
LU (344) Luxemburg	1.28 57.36 / 8	1.68 21.61 / 10	5.24 25.17 / 3	5.71 18.40 / 3	3.76 46.35 / 11
NL (1356) Netherlands	1.22 59.34 / 4	2.05 27.82 / 4	5.02 28.34 / 1	5.91 15.58 / 15	3.39 51.54 / 2
PT (1241) Portugal	1.46 51.25 / 16	1.28 15.25 / 17	5.66 19.07 / 17	5.94 15.10 / 17	3.59 48.73 / 6
UK (1040) United Kingdom	1.24 58.72 / 5	2.18 29.62 / 2	5.45 22.17 / 11	5.92 15.44 / 16	3.75 46.43 / 10
FI (1433) Finland	1.10 63.22 / 1	2.08 28.81 / 3	5.29 24.40 / 4	5.75 17.86 / 6	3.81 45.59 / 13
SE (1425) Sweden	1.17 61.05 / 3	1.95 26.46 / 5	5.08 27.47 / 2	5.70 18.62 / 1	3.84 45.12 / 14
AT (1079) Austria	1.29 56.87 / 10	1.81 23.64 / 7	5.39 23.06 / 7	5.70 18.62 / 2	3.67 47.57 / 8

Table 3: Sheet S. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Work–Life balance				
	EF2004 Cooking	EF2005 Housework	EF2006 Caring for eldery/disabled relatives	EF2007 Taking training or educational course	EF2008 Sporting activity
	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never
BE (1019) Belgium	2.86 59.15 / 10	3.05 56.50 / 12	5.57 20.50 / 15	5.36 23.45 / 8	4.45 36.46 / 11
DK (1377) Denmark	2.21 68.44 / 3	2.32 66.87 / 3	5.67 18.99 / 16	5.13 26.78 / 4	4.38 37.36 / 7
DE (1103) Germany	2.86 59.16 / 9	2.58 63.10 / 8	4.88 30.28 / 2	5.44 22.29 / 11	4.30 38.53 / 6
DE_W (823) West Germany	2.85 59.23 / 8	2.61 62.78 / 9	4.98 28.83 / 3	5.49 21.63 / 14	4.27 38.93 / 5
DE_E (280) East Germany	2.87 58.98 / 11	2.52 64.03 / 5	4.58 34.54 / 1	5.30 24.23 / 5	4.39 37.35 / 8
EL (1261) Grece	3.84 45.08 / 17	3.78 46.02 / 17	5.45 22.18 / 13	5.72 18.31 / 17	5.18 25.98 / 16
IT (970) Italy	3.41 51.27 / 16	3.42 51.16 / 15	4.99 28.78 / 4	5.48 21.75 / 13	4.56 34.80 / 14
ES (1023) Spain	3.24 53.67 / 15	3.10 55.72 / 13	5.49 21.52 / 14	5.36 23.46 / 7	4.54 35.20 / 13
FR (1270) France	2.71 61.35 / 7	3.00 57.10 / 11	5.76 17.68 / 17	5.55 20.74 / 15	4.63 33.85 / 15
IR (907) Ireland	2.69 61.60 / 6	2.70 61.44 / 10	5.29 24.40 / 6	5.36 23.44 / 9	4.40 37.11 / 9
LU (344) Luxemburg	3.10 55.77 / 14	3.45 50.66 / 16	5.42 22.51 / 10	5.46 22.01 / 12	4.44 36.50 / 10
NL (1356) Netherlands	2.60 62.80 / 5	2.47 64.69 / 4	5.36 23.44 / 7	4.92 29.66 / 1	4.21 39.83 / 4
PT (1241) Portugal	2.93 58.19 / 13	3.17 54.68 / 14	5.43 22.42 / 12	5.64 19.48 / 16	5.34 23.68 / 17
UK (1040) United Kingdom	2.45 65.07 / 4	2.57 63.23 / 7	5.38 23.12 / 8	5.37 23.23 / 10	4.47 36.15 / 12
FI (1433) Finland	2.16 69.19 / 2	2.00 71.46 / 1	5.22 25.41 / 5	5.09 27.34 / 2	3.05 56.38 / 1
SE (1425) Sweden	2.13 69.56 / 1	2.14 69.44 / 2	5.39 23.06 / 9	5.10 27.18 / 3	3.85 44.98 / 2
AT (1079) Austria	2.91 58.39 / 12	2.56 63.38 / 6	5.43 22.49 / 11	5.31 24.14 / 6	3.99 43.00 / 3

Table 3: Sheet T. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Work–Life balance		Subjective estimations		
	EF2009 Cultural activity	EF2010 Leisure activity	Q13 Information about risks	Q34 Health risks at work	Q37 Possibility to do the same work after 60
	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: everyday 2: every 2 days 3: every week 4: every months 5: every year 6: never	1: Full 2: Rather full 3: Rather little 4: Little	1: Yes 2: No	1: Yes 2: No
BE (1019) Belgium	4.79 31.63 / 8	3.40 51.37 / 5	1.76 64.89 / 10	1.73 57.70 / 11	1.36 54.56 / 14
DK (1377) Denmark	4.76 31.95 / 7	4.01 42.74 / 16	1.54 69.30 / 1	1.76 58.80 / 8	1.28 57.23 / 7
DE (1103) Germany	4.82 31.17 / 10	3.46 50.59 / 7	1.67 66.60 / 6	1.78 59.20 / 4	1.26 58.14 / 4
DE_W (823) West Germany	4.88 30.34 / 11	3.42 51.17 / 6	1.68 66.49 / 7	1.77 58.93 / 7	1.26 58.08 / 5
DE_E (280) East Germany	4.65 33.62 / 2	3.58 48.88 / 11	1.65 66.93 / 5	1.80 60.00 / 2	1.25 58.33 / 3
EL (1261) Grece	5.16 26.29 / 15	3.65 47.90 / 12	1.92 61.67 / 16	1.54 51.44 / 17	1.38 53.90 / 16
IT (970) Italy	4.80 31.41 / 9	3.75 46.47 / 13	1.86 62.72 / 15	1.76 58.52 / 10	1.23 58.93 / 1
ES (1023) Spain	4.54 35.16 / 1	3.03 56.72 / 2	1.83 63.44 / 14	1.62 54.12 / 15	1.29 56.96 / 9
FR (1270) France	4.65 33.57 / 3	3.83 45.26 / 14	1.78 64.43 / 13	1.71 57.11 / 12	1.37 54.20 / 15
IR (907) Ireland	5.09 27.26 / 14	3.39 51.58 / 4	1.60 68.00 / 4	1.77 59.02 / 6	1.29 57.11 / 8
LU (344) Luxemburg	4.90 29.94 / 12	3.58 48.92 / 10	1.78 64.48 / 12	1.71 56.88 / 13	1.34 55.33 / 12
NL (1356) Netherlands	4.94 29.40 / 13	2.91 58.40 / 1	1.76 64.72 / 11	1.77 59.05 / 5	1.31 56.42 / 10
PT (1241) Portugal	5.33 23.82 / 17	4.62 33.96 / 17	2.03 59.40 / 17	1.58 52.70 / 16	1.39 53.51 / 17
UK (1040) United Kingdom	5.27 24.71 / 16	3.47 50.37 / 8	1.56 68.87 / 2	1.70 56.54 / 14	1.27 57.63 / 6
FI (1433) Finland	4.73 32.49 / 5	3.97 43.22 / 15	1.71 65.75 / 8	1.76 58.64 / 9	1.35 55.01 / 13
SE (1425) Sweden	4.67 33.23 / 4	3.52 49.69 / 9	1.72 65.68 / 9	1.96 65.33 / 1	1.34 55.42 / 11
AT (1079) Austria	4.75 32.15 / 6	3.23 53.79 / 3	1.59 68.21 / 3	1.78 59.44 / 3	1.24 58.54 / 2

Table 3: Sheet U. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Subjective estimations			
	Q17B Appreciation of the number of working hours	Q20 Compatibility of working hours with family and social commitments	Q28R Matching working demands	Q38 Satisfaction with working conditions
	1: No 2: Yes	1: Very good 2: Rather good 3: Rather bad 4: Bad	1: Yes 2: No	1: Yes 2: Rather yes 3: Rather no 4: No
BE (1019) Belgium	1.91 63.76 / 15	1.72 65.52 / 4	1.14 62.02 / 4	1.85 63.04 / 7
DK (1377) Denmark	1.95 65.00 / 6	1.47 70.65 / 1	1.08 64.00 / 1	1.51 69.76 / 1
DE (1103) Germany	1.95 64.91 / 7	1.84 63.23 / 11	1.14 61.89 / 6	1.95 61.09 / 11
DE_W (823) West Germany	1.96 65.21 / 3	1.83 63.45 / 8	1.14 61.89 / 7	1.93 61.48 / 10
DE_E (280) East Germany	1.92 64.05 / 14	1.87 62.57 / 13	1.14 61.90 / 5	2.00 59.93 / 12
EL (1261) Grece	1.98 65.87 / 1	2.39 52.24 / 17	1.15 61.78 / 8	2.27 54.64 / 17
IT (970) Italy	1.96 65.36 / 2	2.19 56.29 / 16	1.19 60.27 / 15	2.06 58.72 / 14
ES (1023) Spain	1.93 64.19 / 13	2.12 57.60 / 15	1.16 61.39 / 12	2.11 57.81 / 16
FR (1270) France	1.93 64.20 / 12	1.86 62.77 / 12	1.16 61.34 / 13	2.03 59.43 / 13
IR (907) Ireland	1.93 64.42 / 10	1.67 66.68 / 2	1.19 60.49 / 14	1.64 67.30 / 2
LU (344) Luxemburg	1.94 64.83 / 8	1.76 64.83 / 5	1.21 59.79 / 16	1.92 61.51 / 9
NL (1356) Netherlands	1.90 63.20 / 16	1.77 64.54 / 7	1.15 61.77 / 9	1.65 67.04 / 3
PT (1241) Portugal	1.95 65.08 / 5	2.03 59.34 / 14	1.12 62.72 / 3	2.10 58.07 / 15
UK (1040) United Kingdom	1.93 64.33 / 11	1.77 64.58 / 6	1.21 59.65 / 17	1.74 65.25 / 5
FI (1433) Finland	1.94 64.69 / 9	1.83 63.38 / 9	1.08 63.95 / 2	1.82 63.63 / 6
SE (1425) Sweden	1.89 63.04 / 17	1.83 63.37 / 10	1.15 61.73 / 10	1.90 62.02 / 8
AT (1079) Austria	1.95 65.12 / 4	1.67 66.65 / 3	1.16 61.45 / 11	1.72 65.51 / 4

Table 3: Sheet V. Average indicators of quality of work for European countries and West/East Germany and their scores in harmonized % / ranks

	Summary indicators		
	Score of working conditions	Hourly earnings	Subjective satisfaction
	Conditional %	Harmonized units 1–4	Conditional %
BE (1019) Belgium	51.64±0.06 / 7	1.40 / 13	61.64±0.26 / 11
DK (1377) Denmark	52.62±0.06 / 2	1.51 / 5	64.96±0.22 / 1
DE (1103) Germany	51.53±0.06 / 8	1.41 / 11	62.15±0.25 / 8
DE_W (823) West Germany	51.46±0.07 / 9	1.48 / 7	62.22±0.29 / 7
DE_E (280) East Germany	51.71±0.12 / 6	1.19 / 17	61.96±0.49 / 10
EL (1261) Grece	48.65±0.06 / 17	1.50 / 6	57.36±0.23 / 17
IT (970) Italy	51.28±0.07 / 11	1.58 / 4	60.12±0.26 / 14
ES (1023) Spain	50.08±0.06 / 16	1.40 / 12	59.36±0.26 / 15
FR (1270) France	50.55±0.06 / 14	1.39 / 14	60.50±0.23 / 13
IR (907) Ireland	51.79±0.07 / 4	1.36 / 15	63.29±0.27 / 3
LU (344) Luxemburg	51.39±0.11 / 10	1.63 / 1	61.09±0.44 / 12
NL (1356) Netherlands	52.63±0.06 / 1	1.63 / 2	62.39±0.22 / 5
PT (1241) Portugal	50.45±0.06 / 15	1.41 / 10	58.69±0.23 / 16
UK (1040) United Kingdom	51.27±0.06 / 12	1.42 / 9	62.40±0.25 / 4
FI (1433) Finland	51.01±0.05 / 13	1.44 / 8	62.15±0.22 / 9
SE (1425) Sweden	51.73±0.05 / 5	1.60 / 3	62.37±0.22 / 6
AT (1079) Austria	51.91±0.06 / 3	1.24 / 16	63.56±0.25 / 2

11 Annex 3: Working conditions of selected social groups

Figure 5: Quality of work for occupation in EU-15 and Germany (indexed by G): L—Legislators and senior officials and managers, P—Professionals, T—Technicians, C—Clerks, S—Service/shop/market workers, A—skilled Agricultural and fishery workers, W—craft and related trades Workers, O—Operators of plants and machines and assemblers, E—Elementary occupations, M—Military and armed forces in European countries and in Germany (indexed by G); ellipses depict the deviation of observations reduced to 0.02 of its size

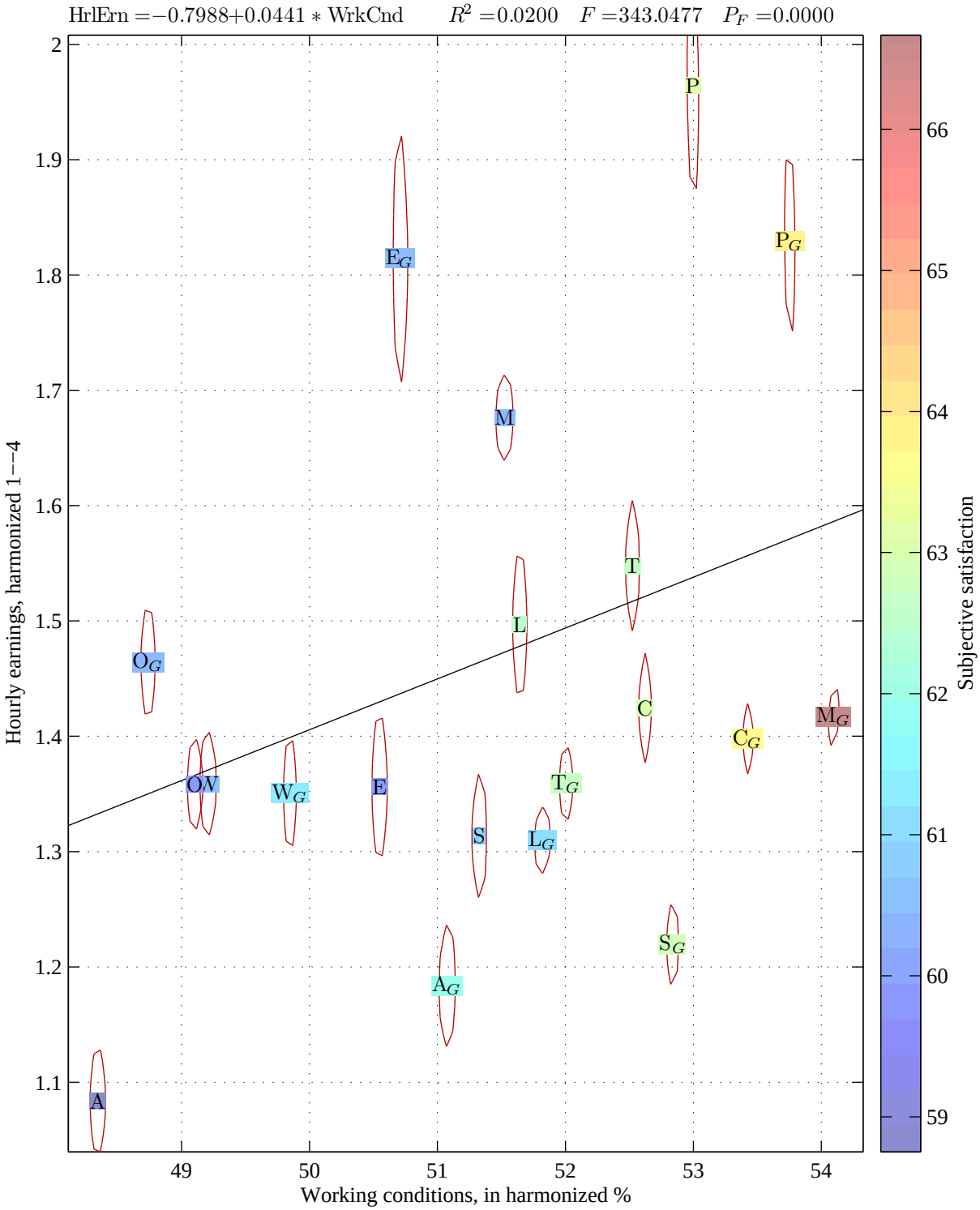


Figure 6: The 5%-significant joint difference in working conditions for occupation in EU-15 and Germany (indexed by G): L—Legislators and senior officials and managers, P—Professionals, T—Technicians, C—Clerks, S—Service/shop/market workers, A—skilled Agricultural and fishery workers, W—craft and related trades Workers, O—Operators of plants and machines and assemblers, E—Elementary occupations, M—Military and armed forces

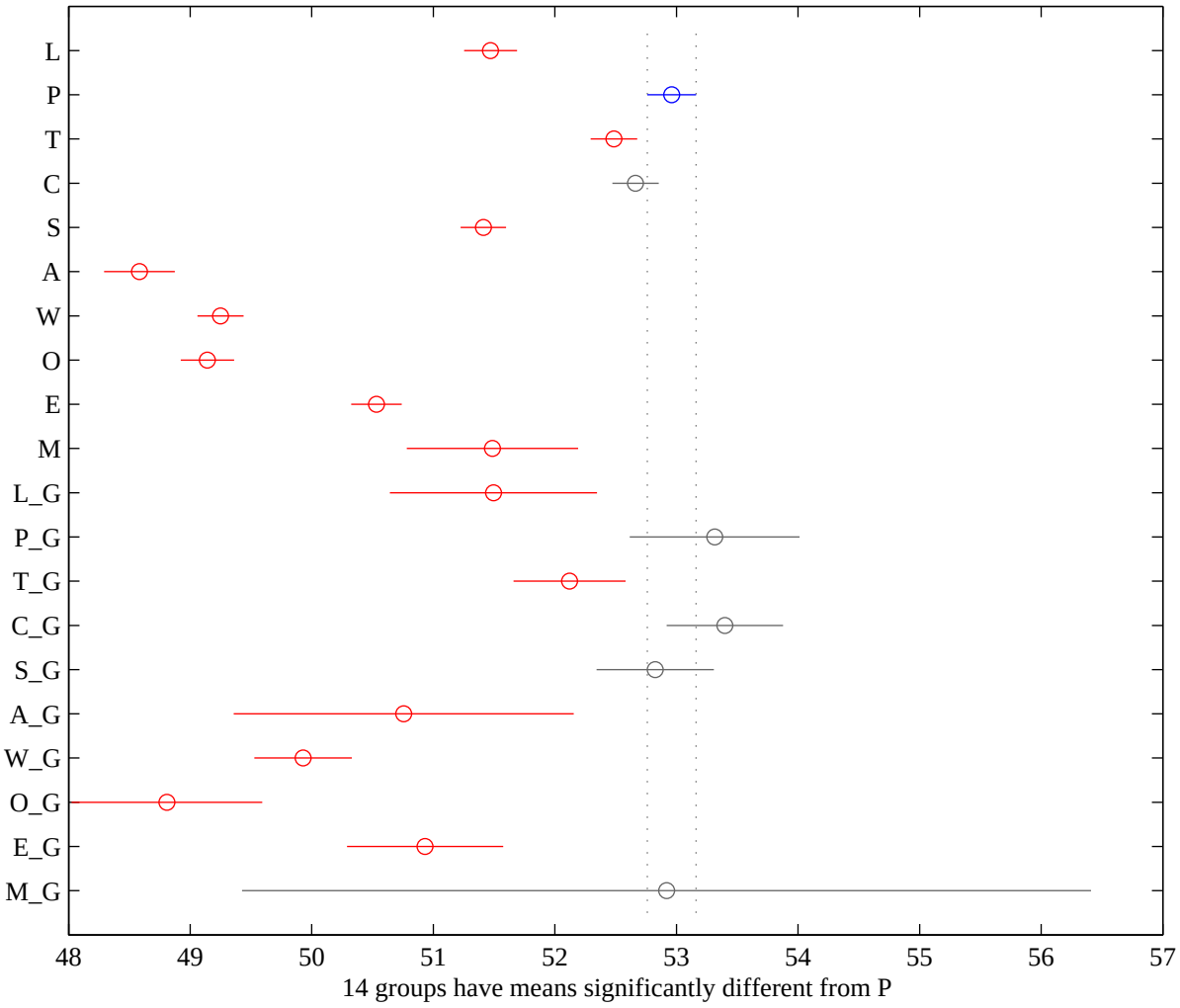


Figure 7: Quality of work for economic activities (NACE) in EU-15 and Germany (indexed by G): A+B—Agriculture, hunting, forestry, and fishing, C—Mining and quarrying, D—Manufacturing, E—Electricity, gas and water supply, F—Construction, G—Wholesale and retail trade, repair of motor vehicles and household goods, H—Hotels and resaurants, I—Transport, storage and communication, J—Financial intermediation, K—Real estate, renting and business activities, L—Public administration and defence; compulsory social security, M—Education, N—Health and social work, O—Other community, social and personal service activities, P+Q—Private households with employed persons; extra-territorial organizations in European countries and in Germany (indexed by G); ellipses depict the deviation of observations reduced to 0.02 of its size

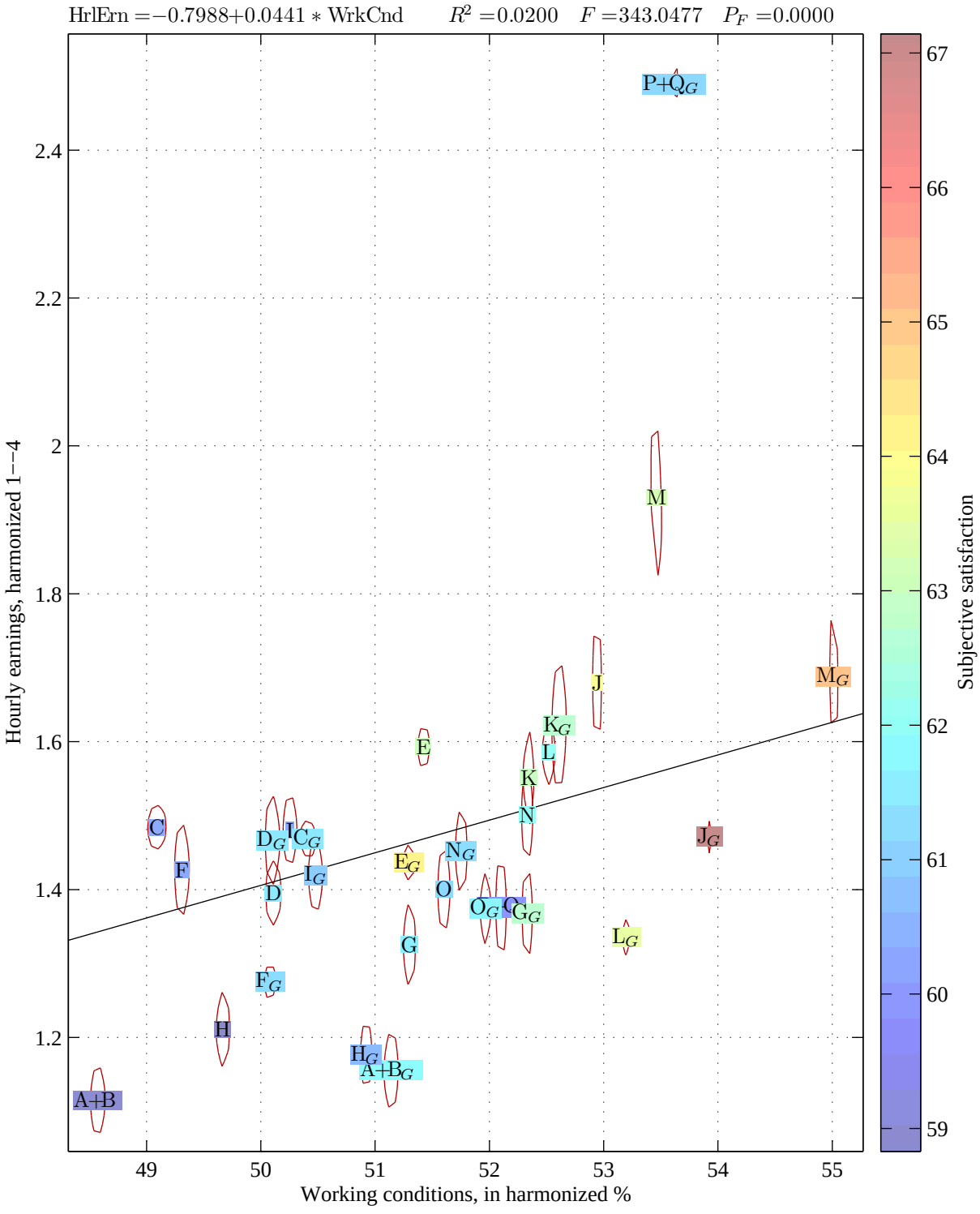


Figure 8: The 5%-significant joint difference in working conditions for economic activities (NACE) in EU-15 and Germany (indexed by G): A+B—Agriculture, hunting, forestry, and fishing, C—Mining and quarrying, D—Manufacturing, E—Electricity, gas and water supply, F—Construction, G—Wholesale and retail trade, repair of motor vehicles and household goods, H—Hotels and resaurants, I—Transport, storage and communication, J—Financial intermediation, K—Real estate, renting and business activities, L—Public administration and defence; compulsory social security, M—Education, N—Health and social work, O—Other community, social and personal service activities, P+Q—Private households with employed persons; extra-territorial organizations

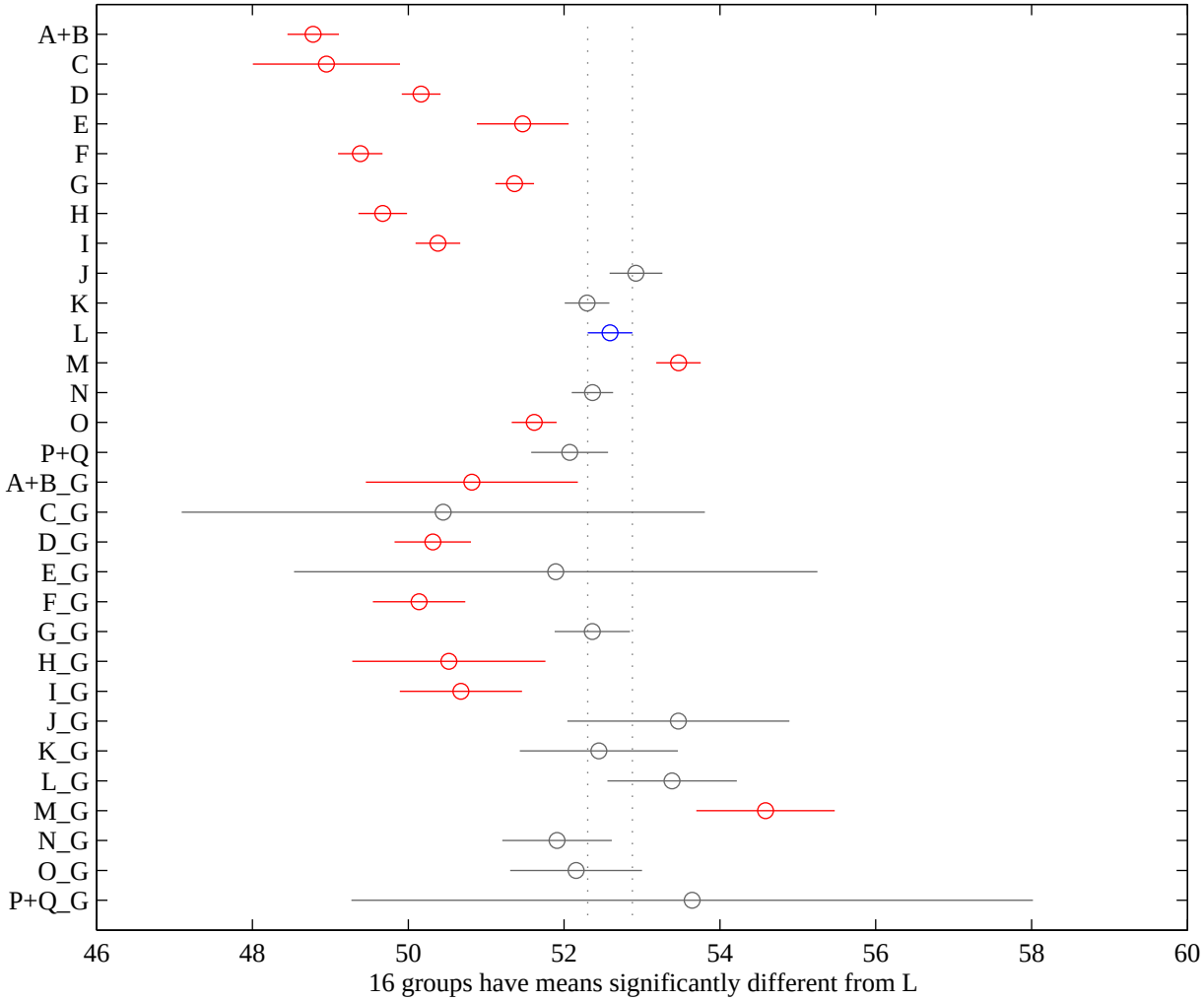


Figure 9: Quality of work for S—Self-employed and E—Employees in EU-15, Germany, West Germany, and East Germany in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

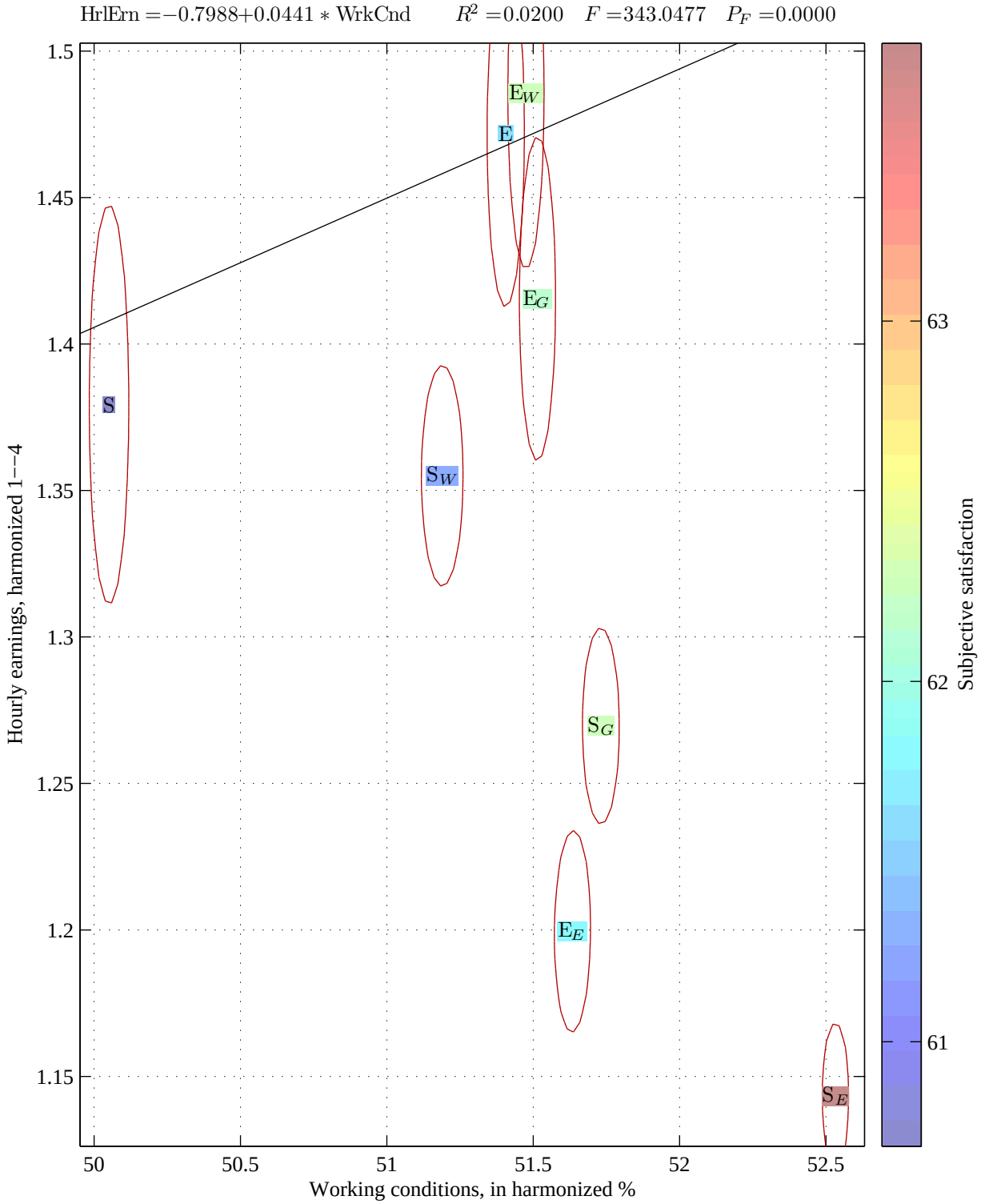


Figure 10: The 5%-significant joint difference in working conditions for S—Self-employed and E—Employees in EU-15, Germany, West Germany, and East Germany

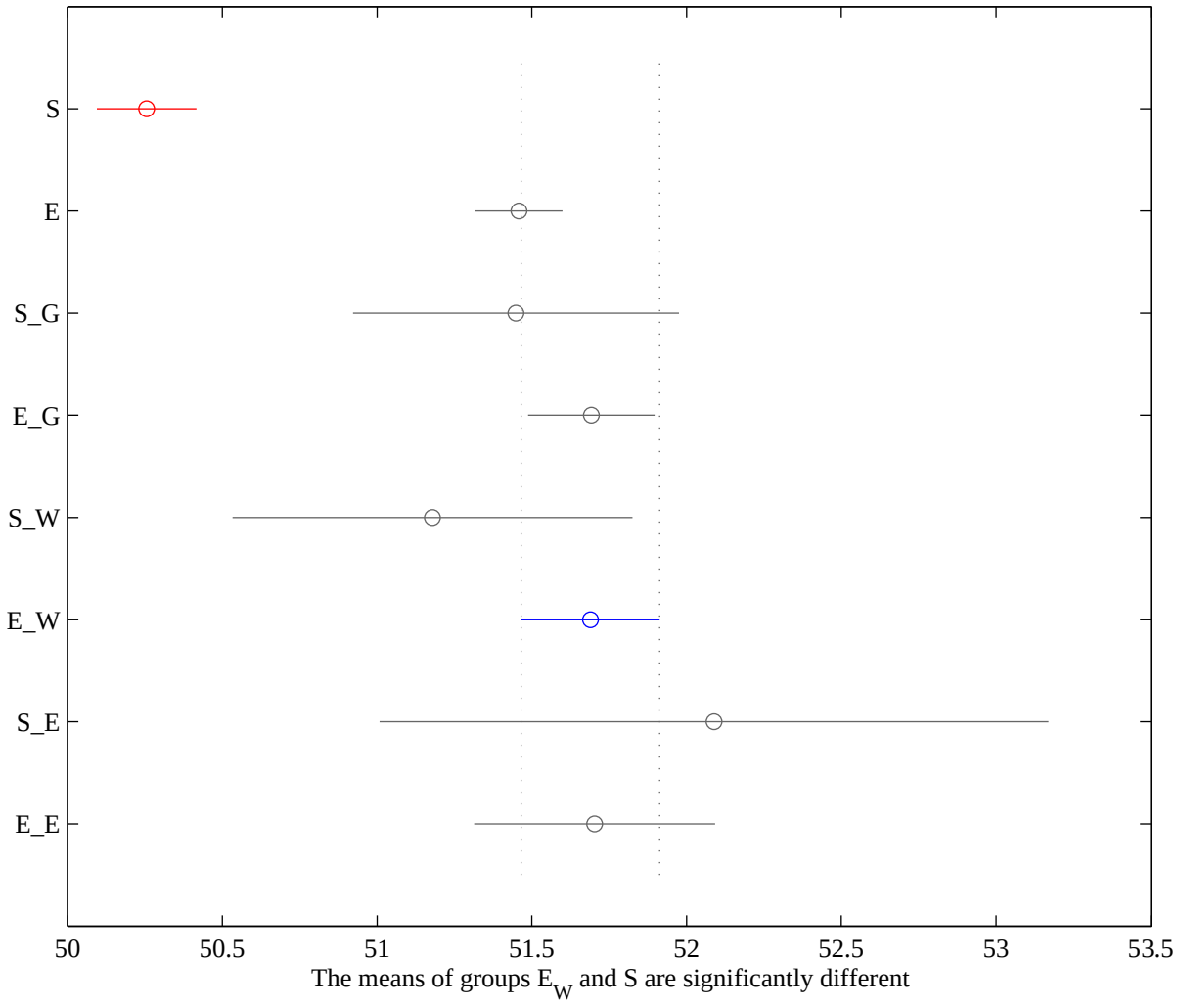


Figure 11: Quality of work for P—Permanently employed, F—Fixed-term employed in EU-15, Germany, West Germany, and East Germany A—temporary employment Agency workers, and T—Trainees in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

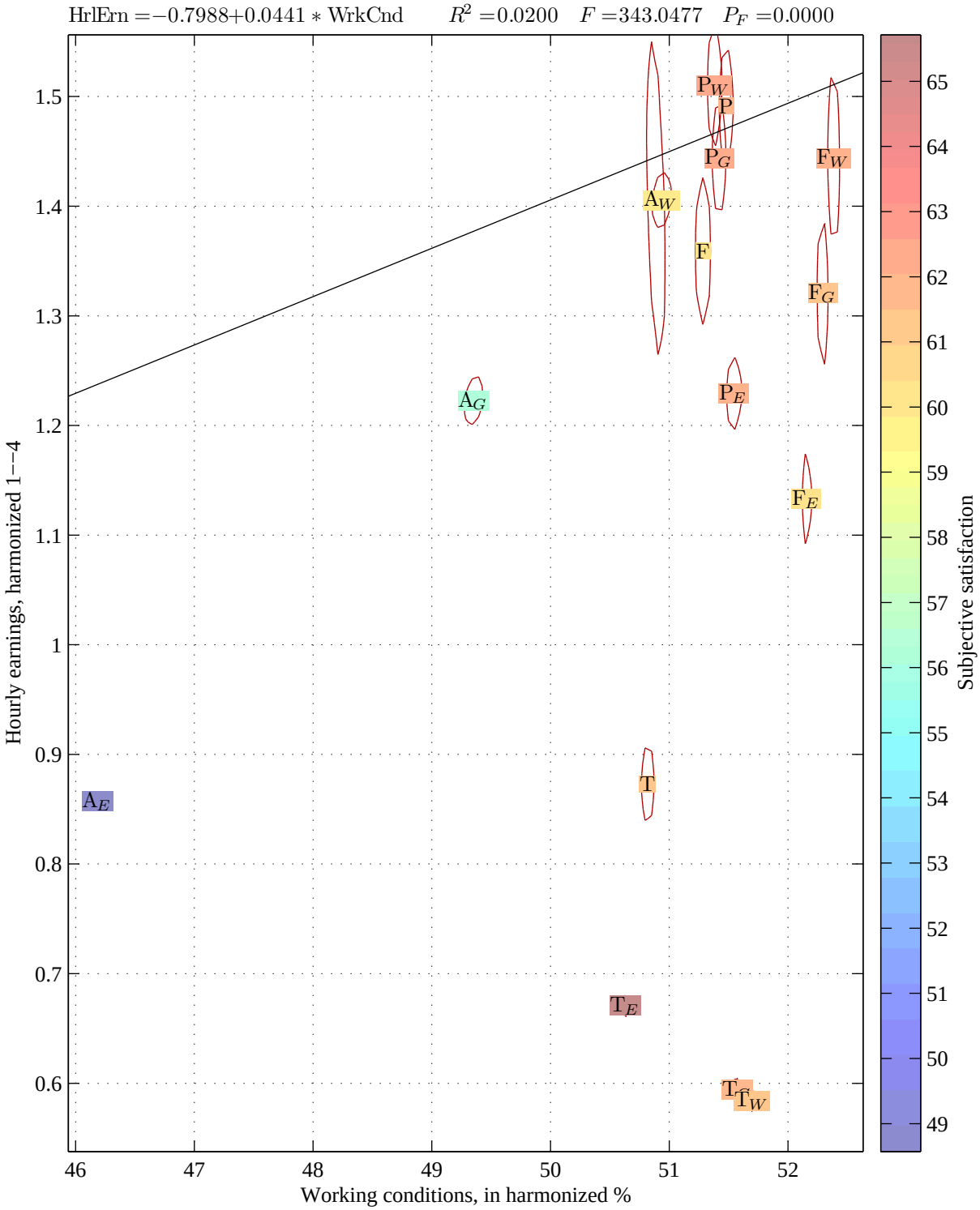


Figure 12: The 5%-significant joint difference in working conditions for P—Permanently employed, F—Fixed-term employed in EU-15, Germany, West Germany, and East Germany A—temporary employment Agency workers, and T—Trainees

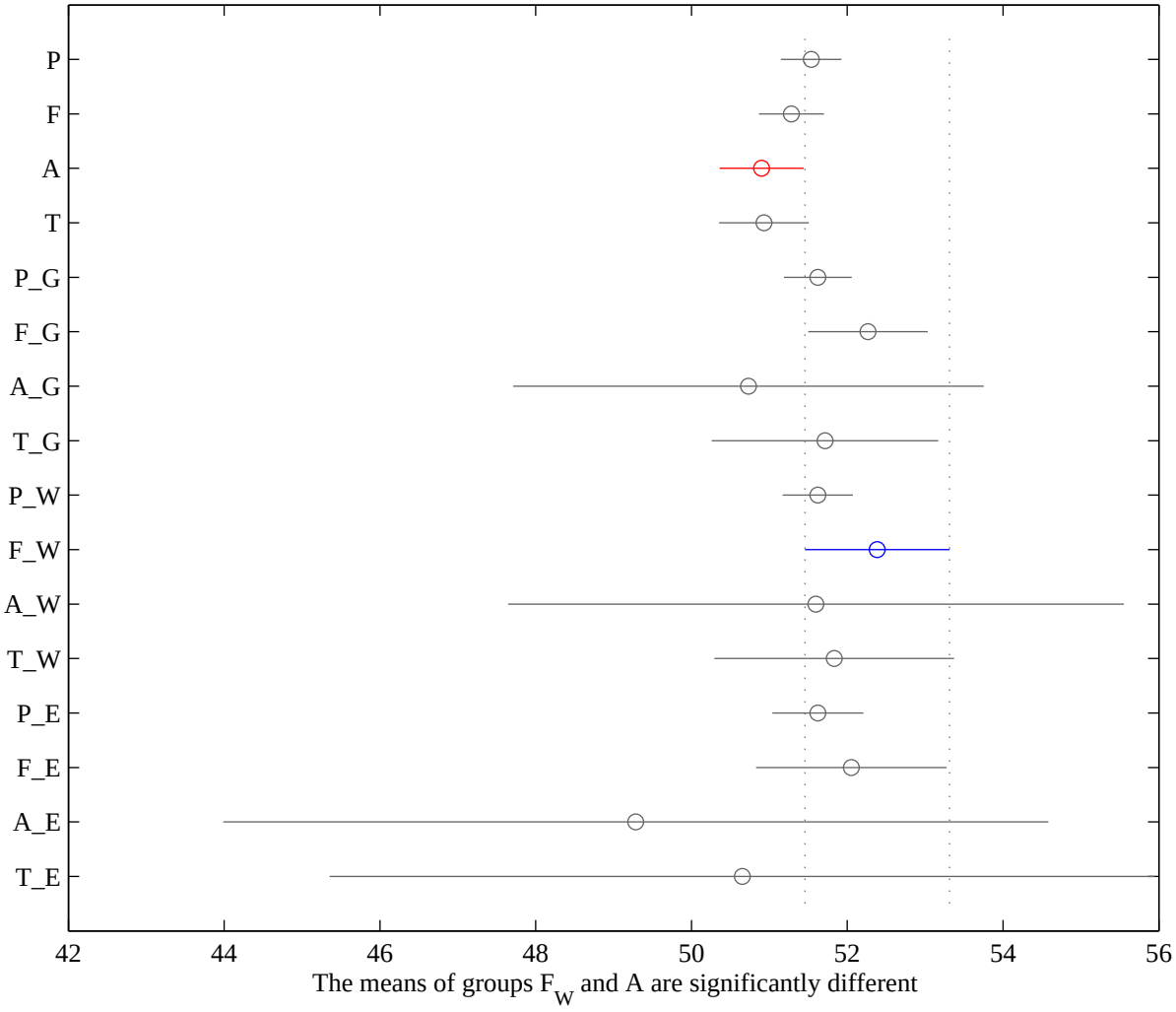


Figure 13: Quality of work for P—Part-timers and F—Full-timers in EU-15, Germany, West Germany, and East Germany in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

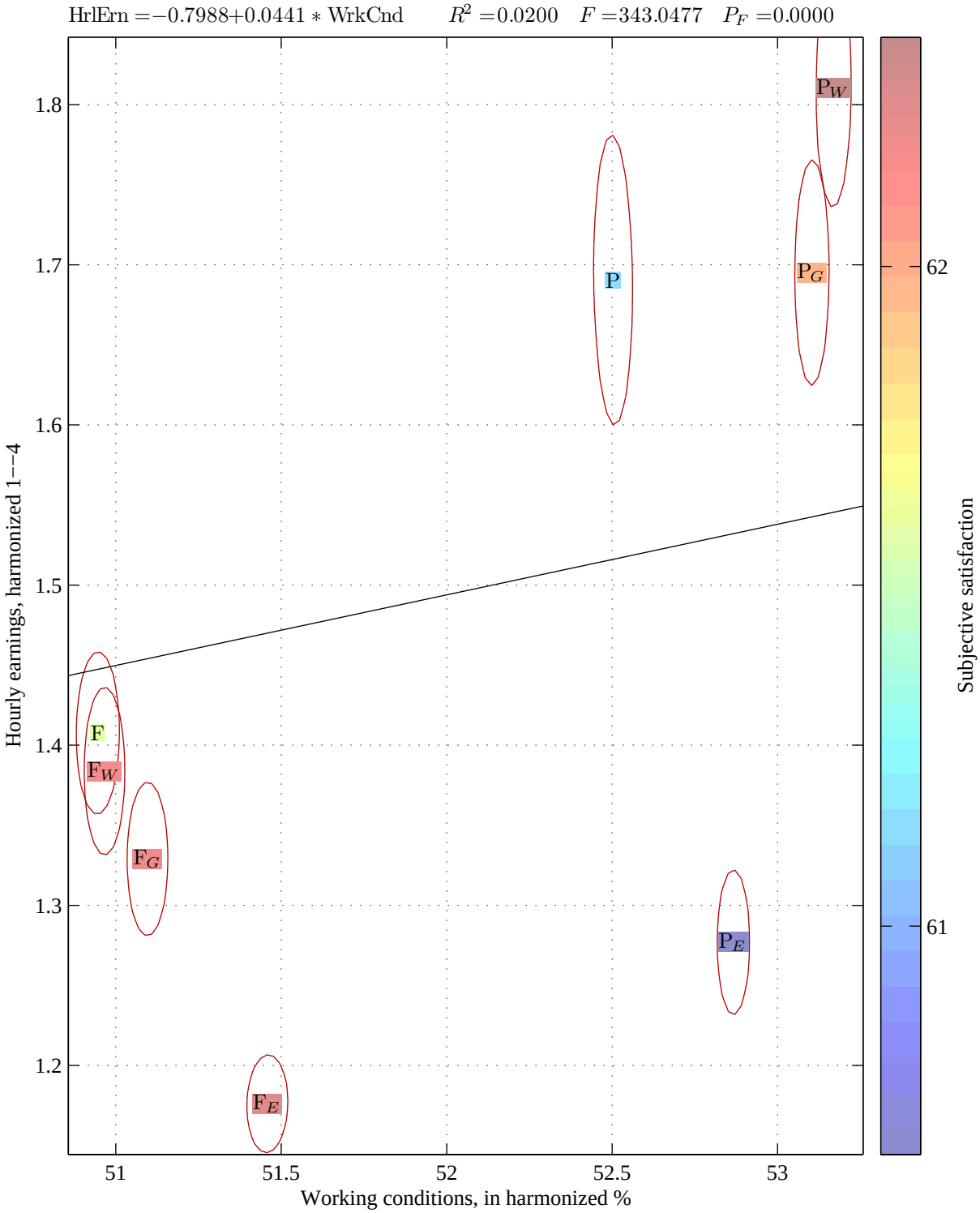


Figure 14: The 5%-significant joint difference in working conditions for P—Part-timers and F—Full-timers in EU-15, Germany, West Germany, and East Germany

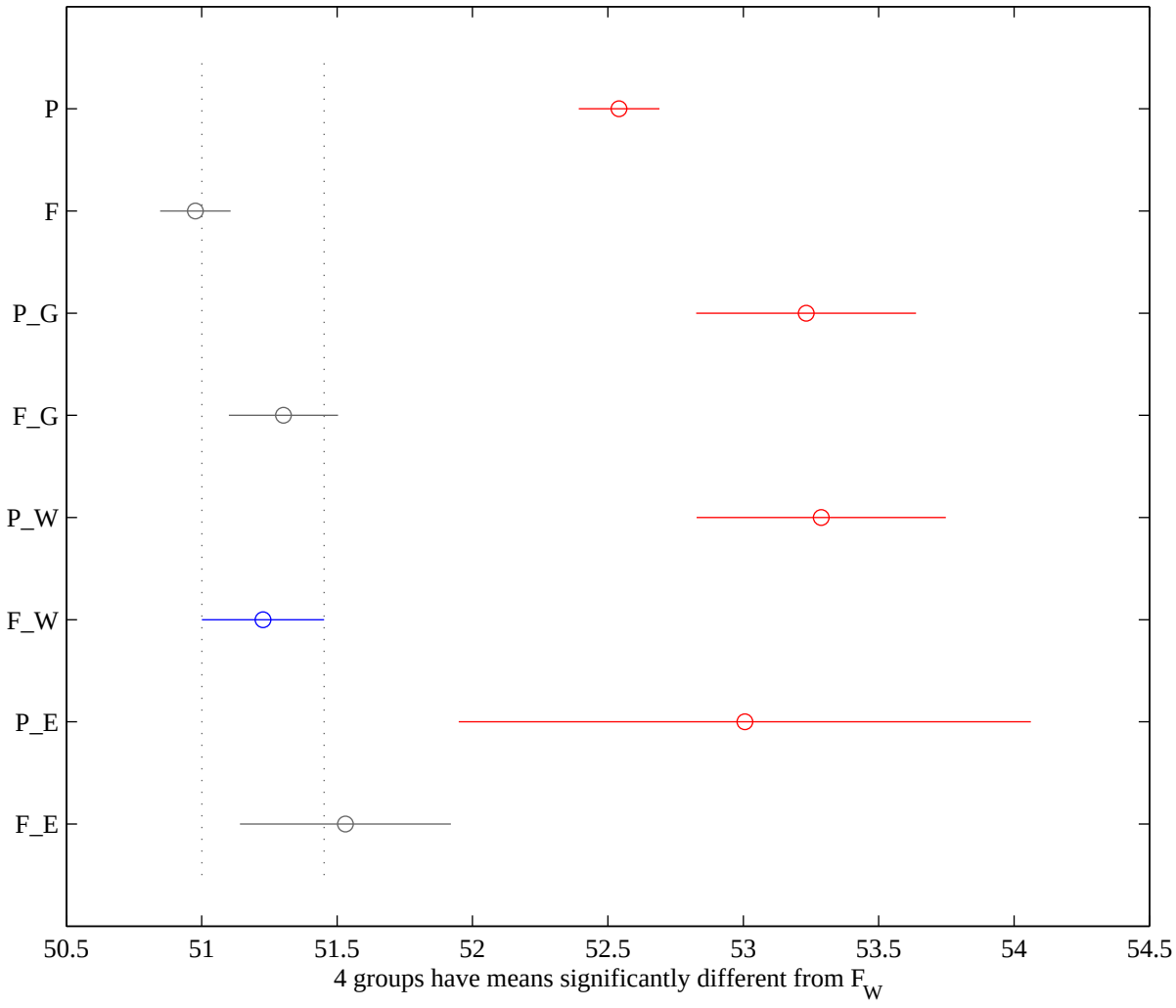


Figure 15: Quality of work for size of local unit in EU-15 and Germany: 1—one employee, 2—2-4 employees, 5—5-9 employees, 10—10-49 employees, 50—50-99 employees, 100—100-249 employees, 250—250-499 employees, 500—500 and over in European countries and in Germany (indexed by G); ellipses depict the deviation of observations reduced to 0.02 of its size

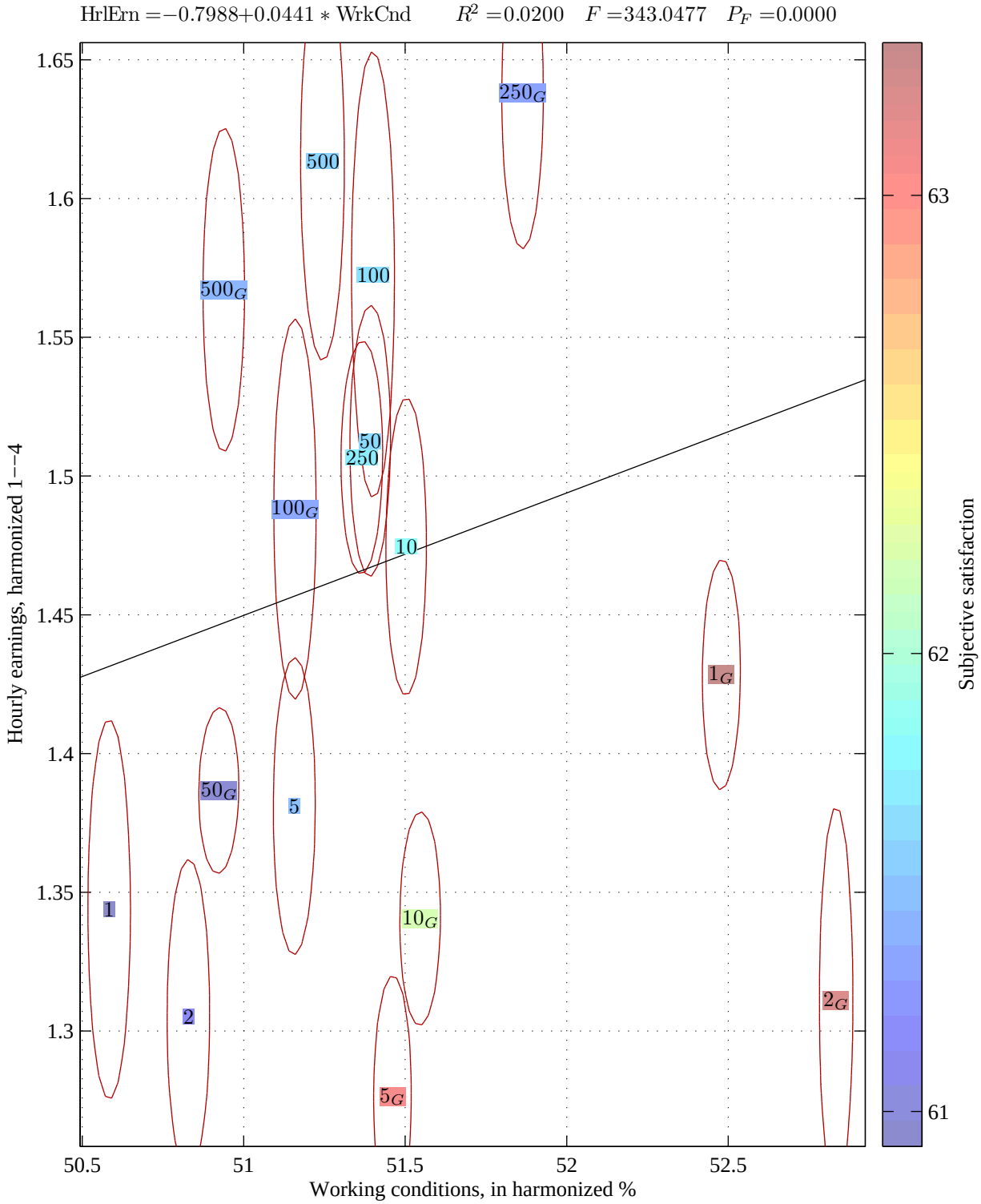


Figure 16: The 5%-significant joint difference in working conditions for size of local unit in EU-15 and Germany: 1—one employee, 2—2-4 employees, 5—5-9 employees, 10—10-49 employees, 50—50-99 employees, 100—100-249 employees, 250—250-499 employees, 500—500 and over

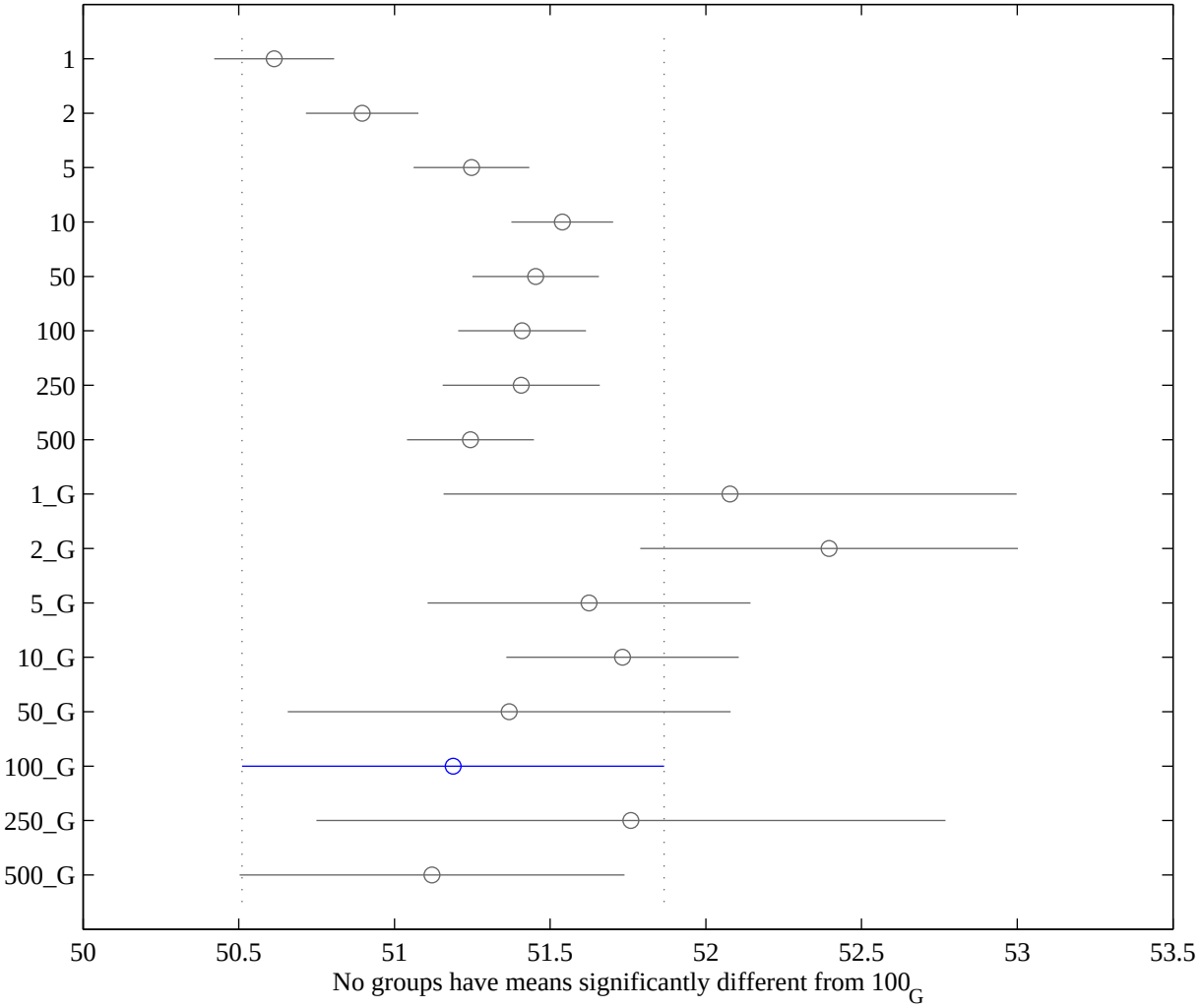


Figure 17: Quality of work for G—employed of national or Governmental services, S—State-owned companies, P—Private companies, and O—Others in EU-15, Germany, West Germany, and East Germany in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

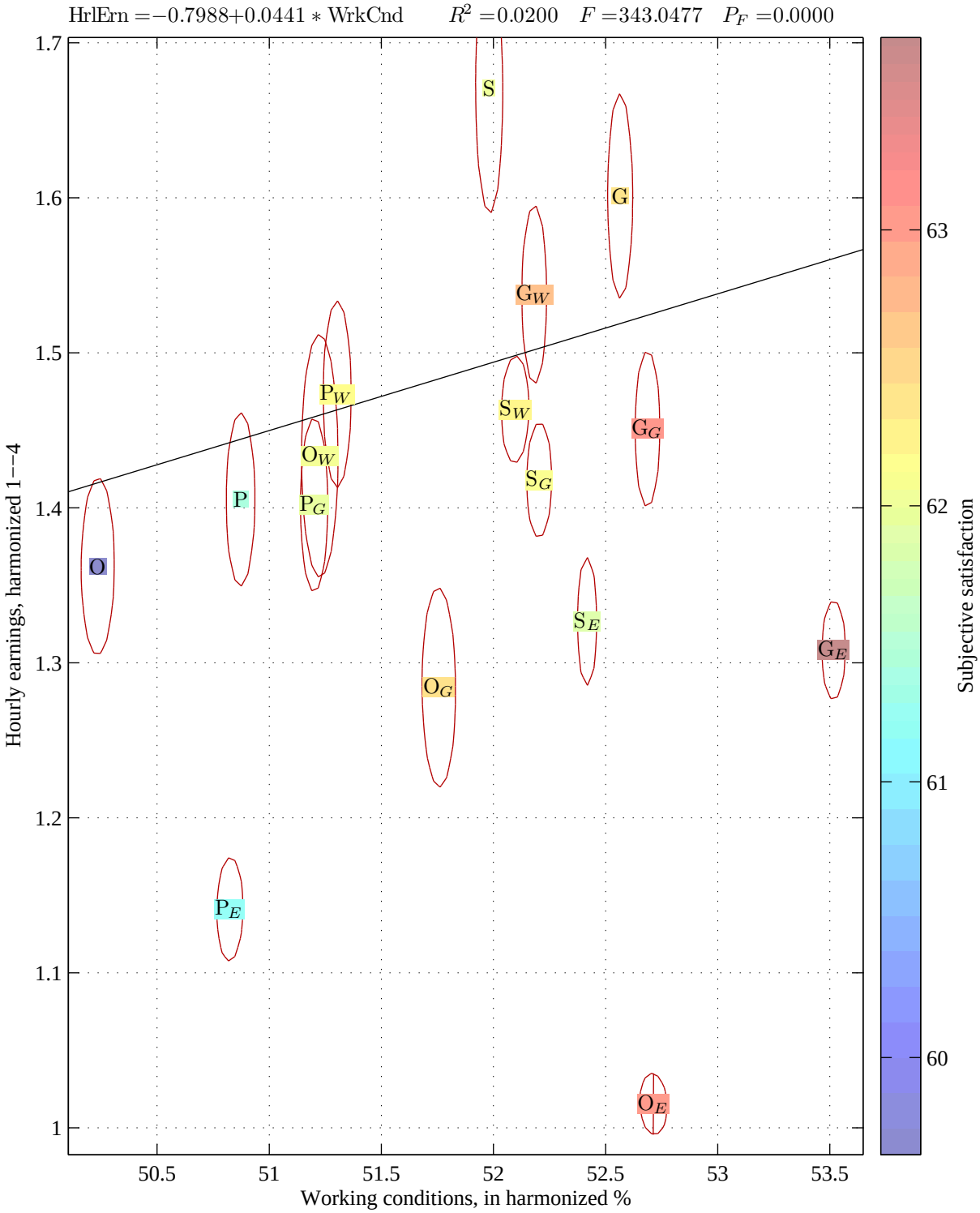


Figure 18: The 5%-significant joint difference in working conditions for G—employed of national or Governmental services, S—State-owned companies, P—Private companies, and O—Others in EU-15, Germany, West Germany, and East Germany

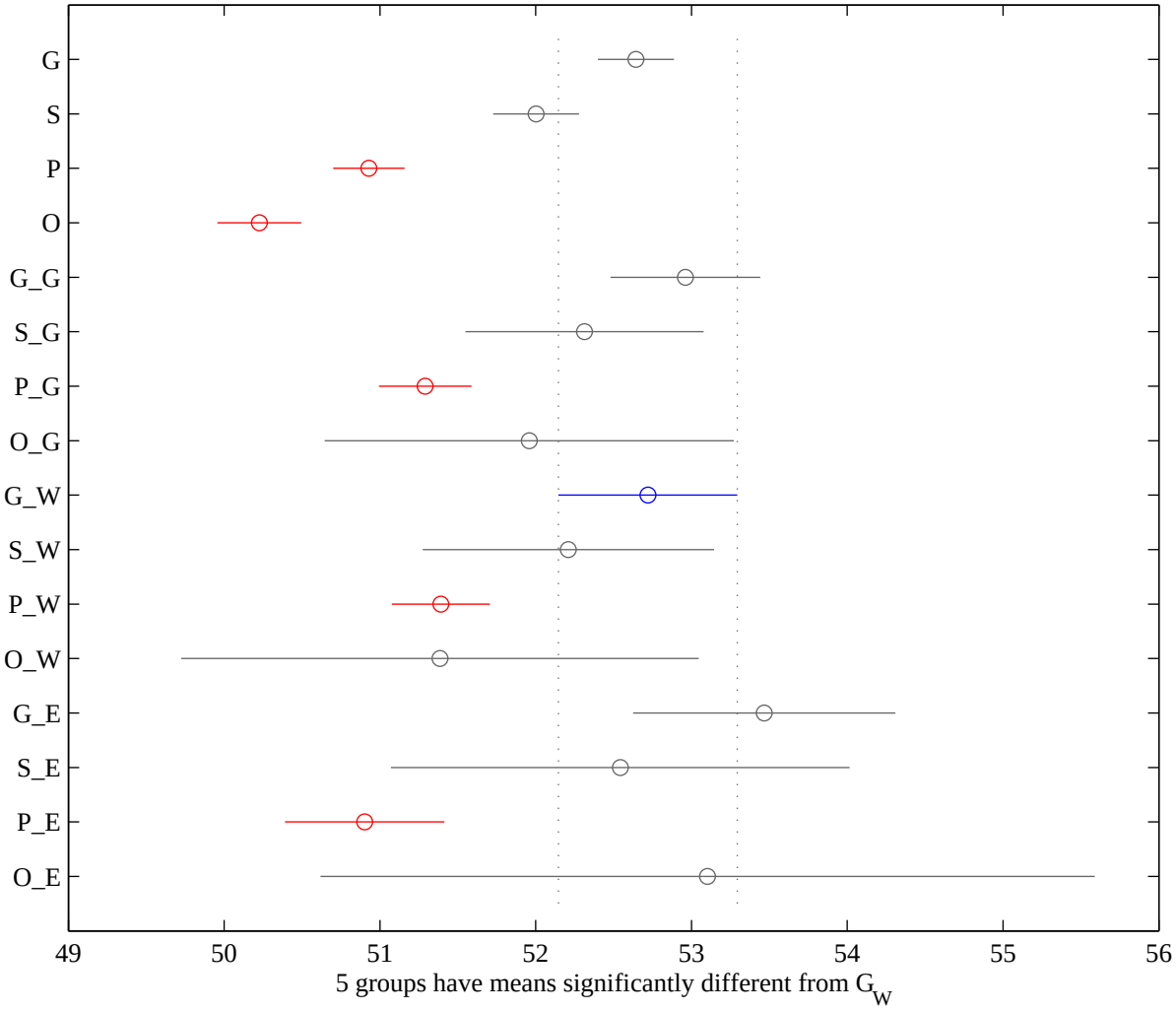


Figure 19: Quality of work for m—male employees and f—female employees in EU-15, Germany, West Germany, and East Germany in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

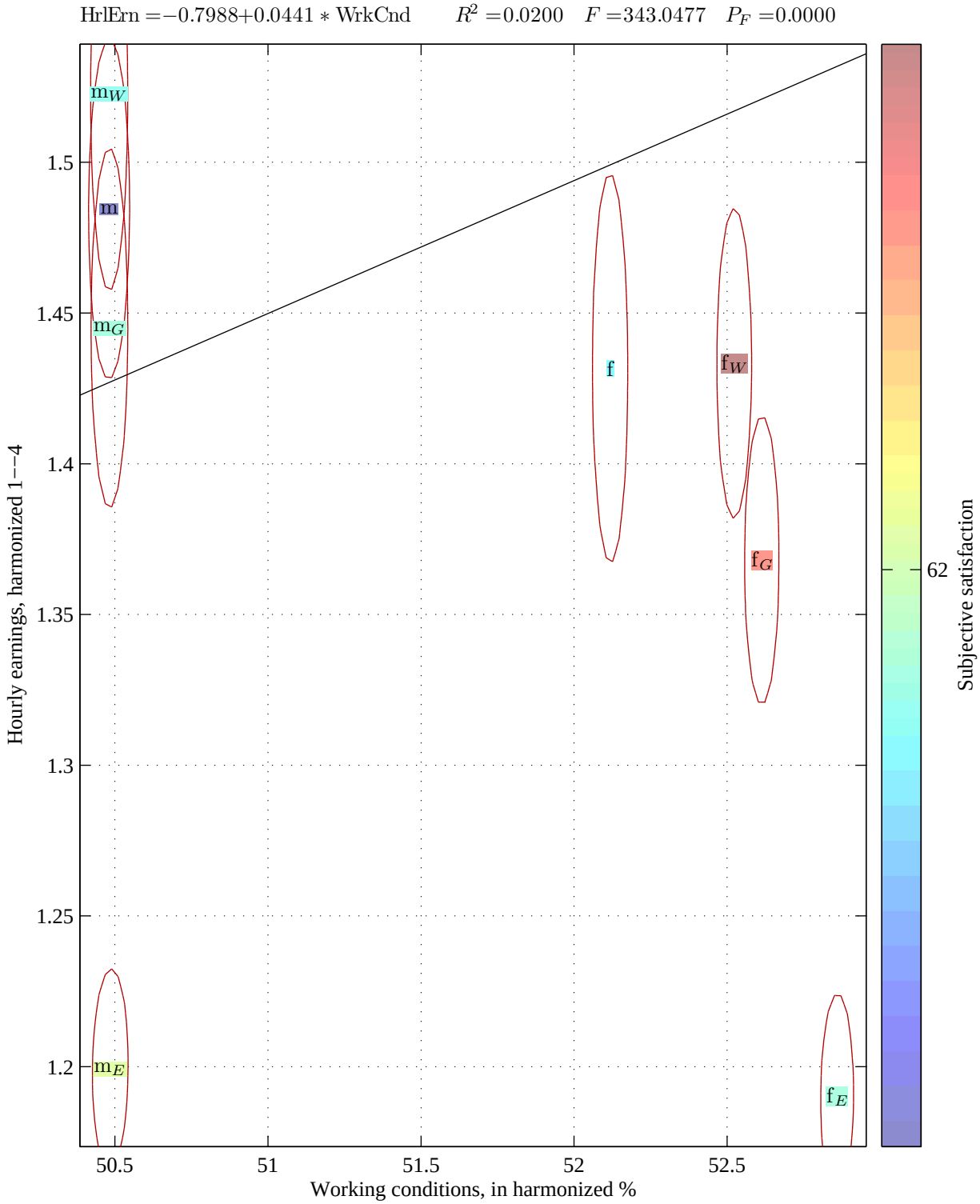


Figure 20: The 5%-significant joint difference in working conditions for m—male employees and f—female employees in EU-15, Germany, West Germany, and East Germany

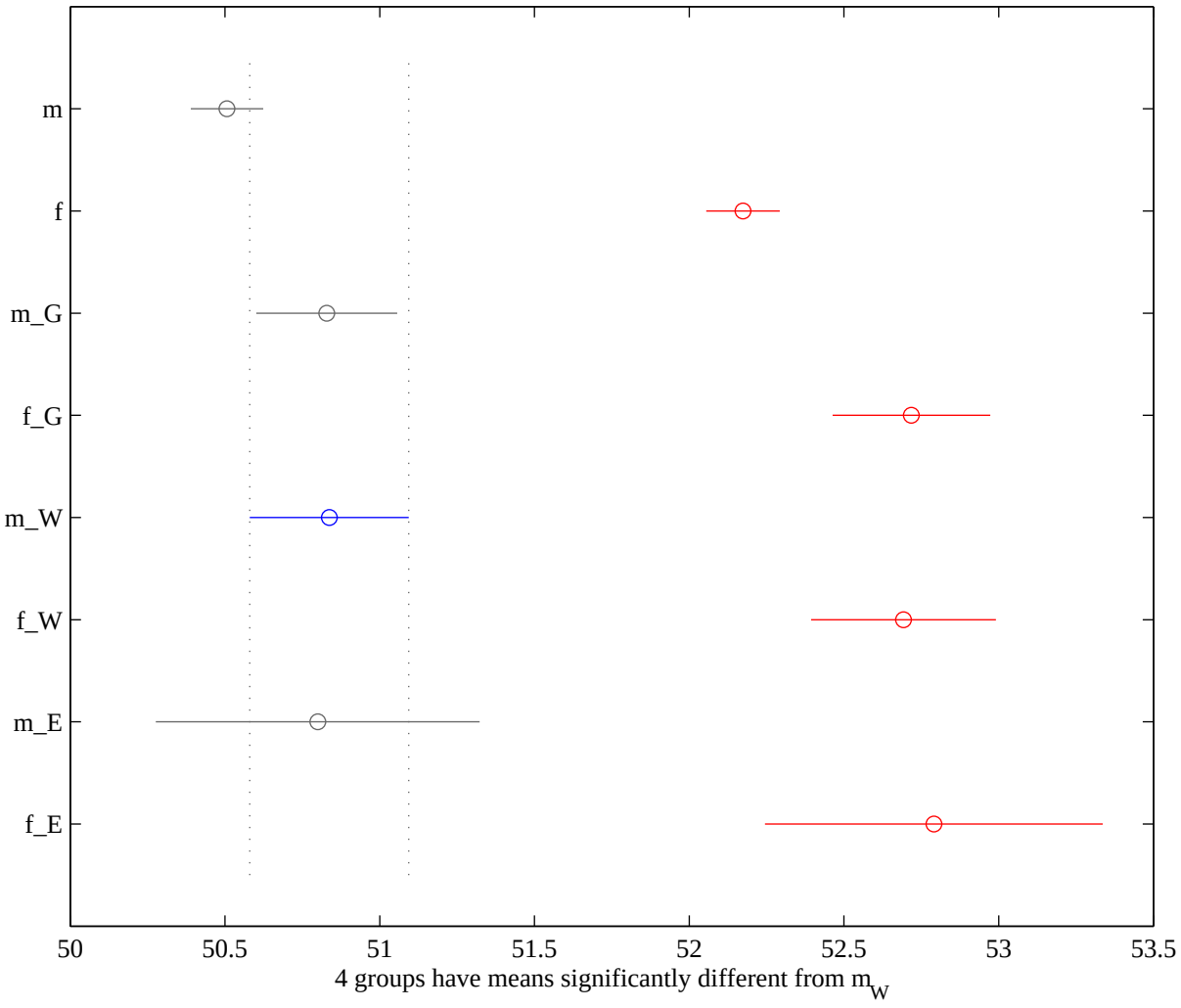


Figure 21: Quality of work for M—Male or F—female immediate boss in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

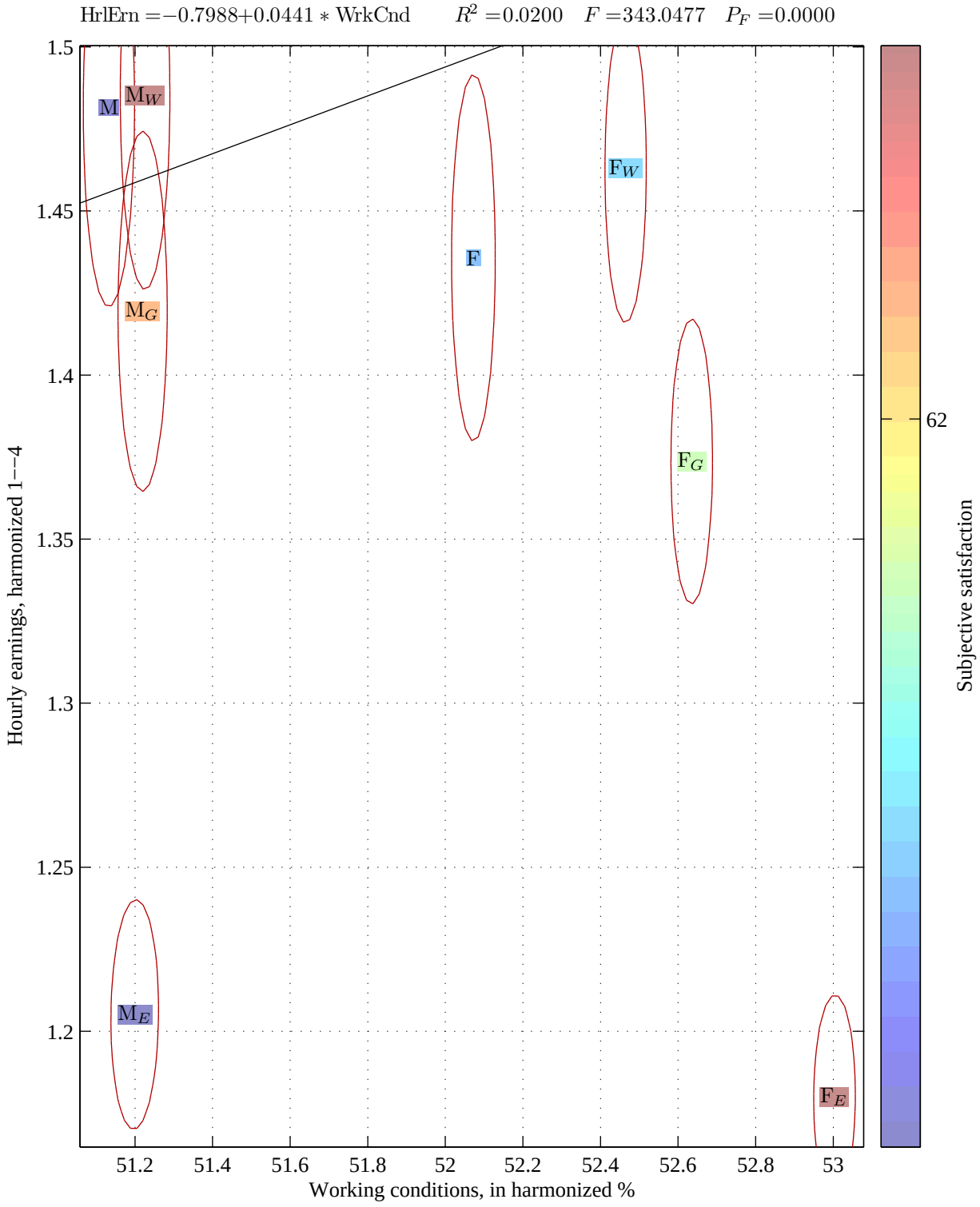


Figure 22: The 5%-significant joint difference in working conditions for M—Male or F—female immediate boss

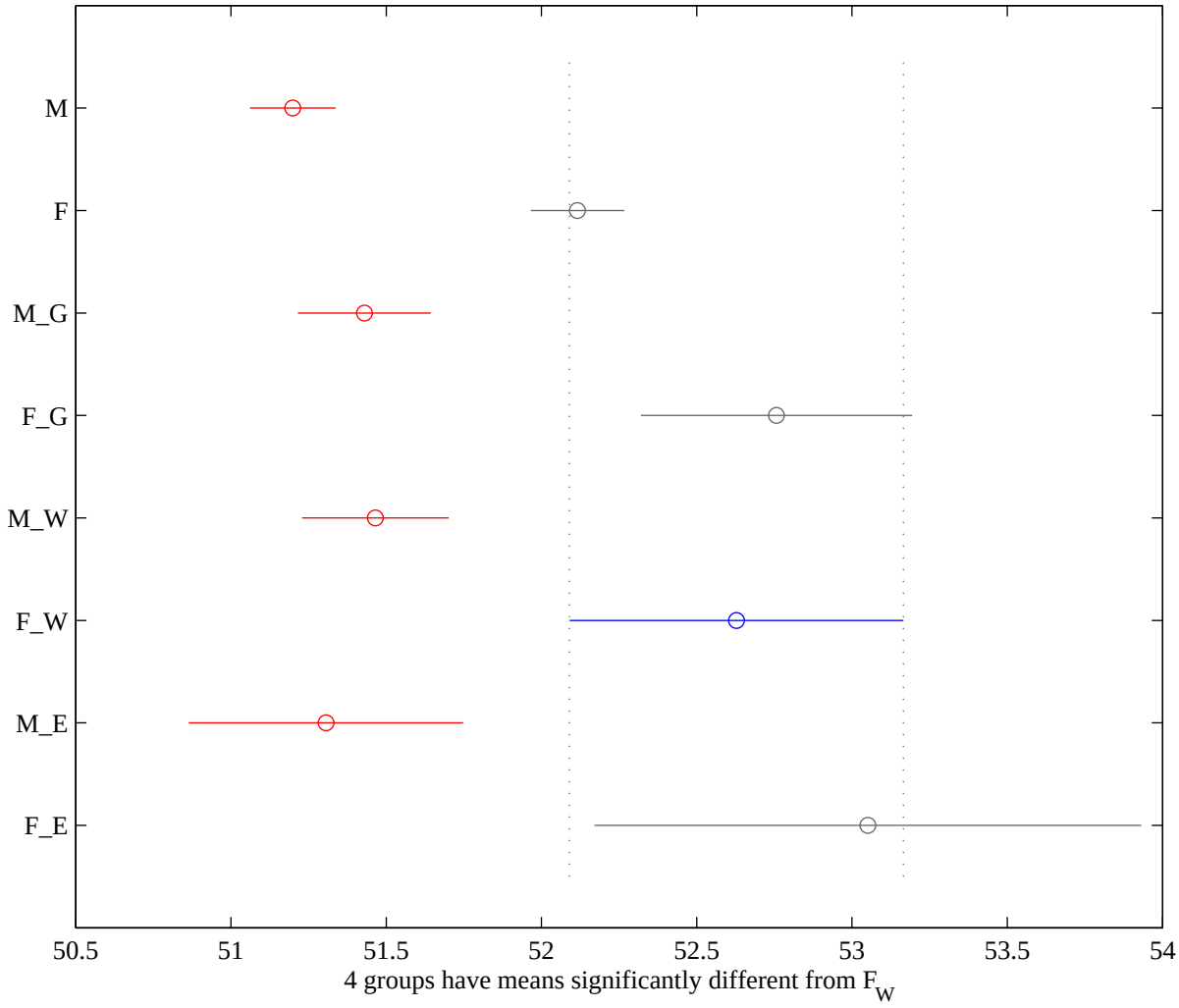


Figure 23: Quality of work for mF—male employees with Male boss, mF—male employees with Female boss, fM—female employees with Male boss, fF—female employees with Female boss in EU-15, Germany, West Germany, and East Germany in Germany, West Germany, East Germany, and EU-15 (indexed respectively by G, W, E, and no indexed); ellipses depict the deviation of observations reduced to 0.02 of its size

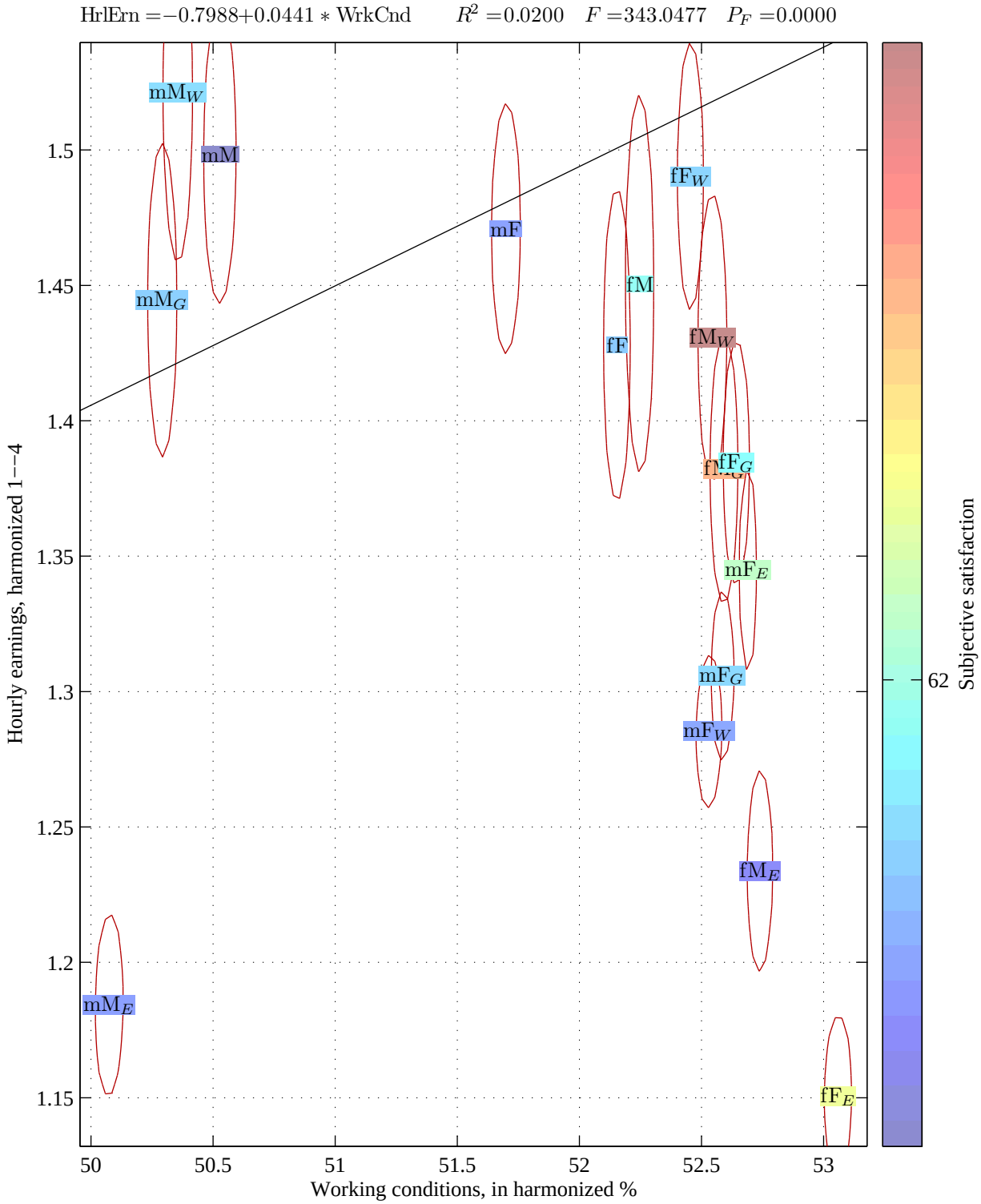


Figure 24: The 5%-significant joint difference in working conditions for mF—male employees with Male boss, mF—male employees with Female boss, fM—female employees with Male boss, fF—female employees with Female boss in EU-15, Germany, West Germany, and East Germany