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The gender gap in sickness absence: long-term trends in eight European countries

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Background: Most studies show that women have considerably higher rates of sickness absence than men, but little is known on how the gender gap has developed over time. **Methods**: Data are taken from the EU Labour Force Surveys. The dependent variable is whether the respondent reports being away from work the entire reference week or not. Trends are shown from 1980 onwards. Poisson regression is used to estimate relative risks for women vs. men, with various sets of control variables. **Results**: Increasing gross differences in sickness absence between women and men are found in five countries: Spain, Ireland, France, Belgium and the UK. No trend in the gender gap is found in Netherlands and Portugal, and probably even in Italy. The trends in the gender gap have been largely the same for men and women without children at home as in the population as a whole. The trends are little affected by control for detailed occupation and industry. **Conclusion**: The gender gap in sickness absence has increased in five out of eight countries. This is not due to increased labour force participation by mothers of small children, and neither can it be explained as a result of changes in how women and men are distributed across occupations or industries.

Introduction

A large number of studies have shown that women have considerably higher rates than men of absence from work due to illness.[1] So far there is, however, very little evidence on how the gender difference in sickness absence has developed over time. The present paper addresses this gap in the literature by examining data covering the period from the mid-1980 onwards in eight Western and Southern European countries, viz. Belgium, France, Ireland, Italy, the Netherlands, Portugal, Spain and the UK. Very short absences not comprising a full calendar week are not included.

One reason to expect change over time in the gender difference in sickness absence is the considerable changes that have been found in other health-related measures. Over the latter half of the previous century, most developed countries first experienced an increase in the female advantage in life expectancy, then a decline.[2,3] American and Korean studies have also shown decline in the gender differential in self-assessed health.[4,5] In this case, however, it was an initial female *dis*advantage that declined, or even disappeared.

There are also a number of theoretical reasons to expect gender differences in health to change over time. For one thing, education is generally found to be strongly related to health,[6–8] and women's education has risen much more strongly than men's, to the extent that women are now more educated than men in many countries. Second, and partly as a result of the change in level of education, women's labour force participation has grown strongly in most countries, and the composition of the female labour force is quite different from what it was in the 1980s. Third, some research also suggests that the level of occupational gender segregation has declined so that women and men to a greater extent work in the same kind of jobs,[9] although this may not be the case in all countries.[10]

To the extent that men and women are growing more similar in terms of education, employment and occupation, it seems reasonable to expect convergence also in terms of health, as has been observed both for life expectancy and self-assessed health. Factors may, however, also work in the opposite direction. Potential negative effects of combining paid work with domestic work and responsibilities may e.g. affect women more than men and contribute to larger gender differences in sickness absence.[11]

With regard to subpopulations such as the employed, gender differences may also be affected by selection processes. In particular, it seems reasonable to assume that healthy people are more likely to be employed than less healthy ones (cf. the literature on the 'healthy worker effect').[12] If this is the case, increasing female employment will contribute to a lower average level of health in the subpopulation of employed women and to a larger gender difference in sickness absence.

Long-term sickness absence has been shown to be a good predictor of mortality.[13–15] Nevertheless, it should not be seen as a straightforward measure of health but rather as a form of *illness behaviour*, which has been defined as 'the manner in which people monitor their bodies, define and interpret their symptoms, take remedial action and utilise various sources of help as well as the more formal health care system'.[16]

This article is mainly descriptive, showing long-term trends in the gender difference in sickness absence. In addition, we examine to what extent the observed trends can be accounted for by taking into consideration changes in the composition of the male and female labour force in terms of level of education, occupation and responsibility for children. We also consider whether the gender difference in sickness absence is related to the level of female employment.

Methods

The European Union Labour Force Survey (EU LFS) is a continuous household survey conducted in the 28 Member States of the European Union. We include countries for which data are available at least back to 1990, i.e. Spain, Portugal, Italy, France, Belgium, the Netherlands, UK and Ireland.

The main purpose of the EU LFS survey is to provide quarterly results on labour force participation for the entire adult population.

All countries apply probability sampling methods, but there is variation both between countries and over the period studied here with regard to stratification, number of sampling levels, etc. Earlier face-to-face interviewing was predominant, but most countries now use a mixture of face-to-face and telephone interviews. In 2011 the average (unweighted) response rate for the eight countries analysed by us was 74%, ranging from 54% in the Netherlands to 91% in Portugal.[17] The exact wording of the questions and the question order are not standardized across countries.

We restrict our analyses to employees between 20 and 59 years of age (self-employed are excluded). In most of the countries data on household composition are available only in data collected in the second quarter (except for the last few years). The analyses are therefore limited to these data.

In the LFS respondents are asked about their employment in a particular week. Sickness absence is coded 1 if the respondent reports being absent for the entire week, and 0 otherwise. Age is given in five-year intervals (21–25, 26–30, . . .). Education is given in three categories: lower secondary or less, upper secondary, and tertiary. Partnership status is a dichotomous variable distinguishing single from married or cohabiting. There are separate measures of children <5, 5–10 and 11–14 years of age; each distinguishing between no, one and two or more children. Occupation is given as three-digit ISCO (International Standard Classification of Occupations) codes. The number of occupations varies from 100 to 147 in the various countries; these are treated as dummy variables in the analyses. Industry is given as two-digit NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) codes; the 17 categories are treated as dummy variables.

The gender gap in sickness absence is measured in terms of relative risks (RRs), as women's risk relative to that of men. In order to estimate RRs with various sets of control variables, Poisson regression is used.[18,19] Since the error term for a binary variable is not Poisson distributed, robust ('sandwich') estimation of the standard errors is employed. In contrast to logistic regression, Poisson regression provides direct estimates of the RR. Poisson regression is preferred to logistic regression also because it is less sensitive to unobserved heterogeneity; thus it is less problematic to compare coefficients between both models and populations.[20–22]

The baseline model (Model 1) controls only for age:

$$P_i = exp(\alpha + \beta G_i + \boldsymbol{A_i}\gamma) \qquad \textbf{(Model 1)}$$

P_i is the probability of sickness absence for individual i, G is gender, **A** is a vector of dummy variables for seven age categories, α and β are regression coefficients and γ is a vector of coefficients. The RR for women relative to men is given by exp(β).

To take the (potential) importance of children into account, it is necessary not only to control for whether the respondent has children or not, but also for the possibility that children may have different effects for men and women. We also allow the impact of children to be different for lone parents as compared with married or cohabiting. This is done by means of interaction terms for the six number of children indicators with gender and with whether the respondent is single or not.

$$P_i = exp(\alpha + \beta G_i + \boldsymbol{A_i}\gamma + \delta S_i + \boldsymbol{C_i\theta} + G_i\boldsymbol{C_i}\mu + S_i\boldsymbol{C_i}\pi) \qquad \textbf{(Model 2)}$$

In Model 2, S is a dummy variable for single individuals, **C** is the vector of indicators for children in the various age categories, δ is a coefficient and θ, μ and π are vectors of coefficients; the other terms are as explained above. With this parameterization, exp(β) can be interpreted as the RR for women without children compared with similar men.

The importance of potential changes in occupational and industrial composition is evaluated by augmenting Model 1 with the dummy variables for occupation and industry (Model 3). This model also controls for education and working hours. Model 4 includes all variables included in either Model 2 or Model 3.

There are too few countries and years of data to allow for a rigorous (multi-level) analysis of how macro-level variables such as the overall level of gender equality in society affects the gender difference in sickness absence. We do, however, include a simple two-level analysis in which sickness absence is first regressed on gender in each country and year, with control for age (i.e. Model 1). A scattergram is then constructed showing the association over years between the estimated gender differences (the regression coefficients) and the proportion of women in employment. To consider only variation within countries, the variables in the scattergram are deviated from their country-specific means.

Results

Descriptive information on sickness absence in men and women 1984–2010 is given in figure 1. There are very large national differences in overall levels, from slightly above 0.01 (1%) to about 0.05 in the Netherlands in the 1990s. The long-term trends are also very variegated with general increases in Belgium, Spain and France, declines in the Netherlands, Portugal and Ireland, and relative stability in Italy and the UK. Variations over time are generally similar for men and women, but there seem to be increasing differences in Belgium, France, Ireland, the Netherlands, Spain and the UK, and no clear trend in Italy and Portugal.

Table 1 and figure 2 show increasing gross difference (Model 1) in sickness absence in five of the eight countries: Spain, Ireland, France, Belgium and the UK. In these countries the RR in the last period is significantly higher than in the first period (two-tailed *t*-tests with $\alpha = 0.05$; results not shown). The increase has been particularly large in Ireland and Spain. The gender difference has declined significantly in one country, Italy. Detailed inspection of the data shows that this is entirely due to very deviant absence figures in 1983, which is the first year with data. It seems likely that this reflects some sort of error in the data. At any rate, there is no change in the gender gap in Italy from 1984 onwards. Also, no trend is found for the Netherlands or Portugal. The results are generally as expected from the descriptive data in figure 1, except for the Netherlands where control for age in Model 1 eliminates the tendency towards increasing gender differences.

In most countries and most periods the estimated gender gap in sickness absence is smaller in Model 2 than in Model 1 and in Model 4 than in Model 3. With the parameterization used in Models 2 and 4, this implies that the gender gap is smaller for people without children in the household than for the population as a whole. The differences between the estimates are, however, very small; thus, the results suggest that responsibility for children is of little importance in accounting for the gender gap in sickness absence.

With regard to the role of responsibility for children in explaining over time increases in the size of the gender gap, a crucial question is whether the difference between the Model 1 and the Model 2 estimates or between the Model 3 and the Model 4 estimates have grown larger over time. There is very little evidence of this in figure 2. The gender gap in sickness absence seems to have developed over time in very much the same way for people without children (the reference group) as for the population as a whole. The Netherlands is to some extent an exception, however.

Turning to Models 3 and 4, it is noteworthy that in all countries except the UK, control for occupation and industry tends to increase the estimated gender gap in sickness absence, indicating that men more often than women are in high absence occupations and industries. Again, however, there are no clear trends over time; neither the difference between Models 3 and 1 nor that between Models 4 and 2 exhibits systematic change. Thus, an increasing representation of women in high absence occupations or industries does not explain the increasing gender gaps. The gender gap in sickness absence has increased largely within occupations and

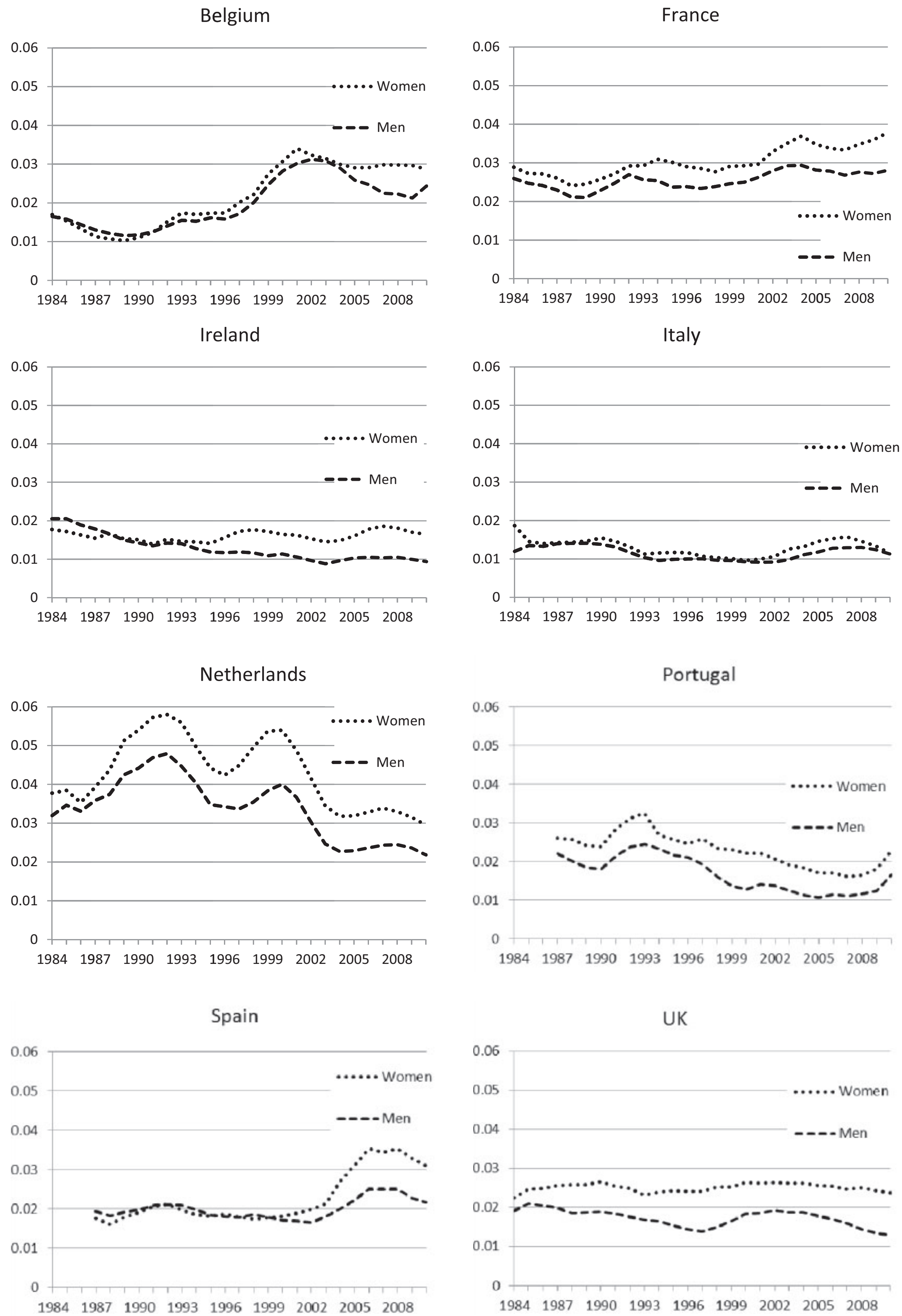

Figure 1 Proportion absent from work because of sickness in the entire reference week. 1984–2010. Three-year moving averages. Note: data for 1983 (1986 in the case of Portugal and Spain) and 2011 are also used in the calculations, but moving averages cannot be computed for these years

industries, i.e. between men and women in relatively similar types of work.

Figure 3 shows the association between the estimated gender differences (coefficients) and female employment. The association is positive as one would expect if increased female employment has entailed an increasing representation of less healthy women in the labour force and therefore a larger gender difference in sickness absence.

Table 1 RRs for sickness absence in women compared with men

	Model 1		Model 2		Model 3		Model 4		*N*
France									
1983–87	1.13	(1.07, 1.18)	1.13	(1.06, 1.21)					201 091
1988–91	1.12	(1.07, 1.18)	1.11	(1.04, 1.18)					253 099
1992–95	1.20	(1.14, 1.25)	1.20	(1.13, 1.27)	1.47	(1.37, 1.57)	1.45	(1.34, 1.57)	210 766
1996–99	1.20	(1.14, 1.25)	1.18	(1.12, 1.25)	1.39	(1.30, 1.48)	1.35	(1.26, 1.46)	274 095
2000–03	1.16	(1.11, 1.22)	1.13	(1.07, 1.20)	1.37	(1.28, 1.46)	1.33	(1.23, 1.43)	224 292
2004–07	1.22	(1.15, 1.29)	1.18	(1.09, 1.26)	1.35	(1.25, 1.46)	1.29	(1.18, 1.41)	137 490
2008–11	1.30	(1.21, 1.39)	1.26	(1.16, 1.38)	1.54	(1.40, 1.70)	1.49	(1.34, 1.66)	94 231
Belgium									
1983–87	1.16	(1.05, 1.29)	1.31	(1.16, 1.49)					103 826
1988–91	1.12	(1.00, 1.26)	1.16	(1.01, 1.33)					101 385
1992–95	1.20	(1.10, 1.32)	1.20	(1.08, 1.34)	1.48	(1.28, 1.72)	1.46	(1.24, 1.72)	91 424
1996–99	1.23	(1.12, 1.35)	1.19	(1.07, 1.34)	1.48	(1.29, 1.71)	1.43	(1.23, 1.66)	84 735
2000–03	1.12	(1.01, 1.24)	1.05	(0.93, 1.19)	1.41	(1.21, 1.64)	1.32	(1.12, 1.55)	40 508
2004–07	1.25	(1.12, 1.39)	1.25	(1.09, 1.42)	1.72	(1.47, 2.02)	1.69	(1.42, 2.00)	44 095
2008–11	1.42	(1.22, 1.66)	1.39	(1.16, 1.66)	1.62	(1.29, 2.03)	1.58	(1.24, 2.02)	24 652
Portugal									
1983–87	1.27	(1.13, 1.44)	1.30	(1.11, 1.52)					43 788
1988–91	1.43	(1.32, 1.55)	1.27	(1.15, 1.41)					104 685
1992–95	1.32	(1.20, 1.44)	1.28	(1.14, 1.43)	1.60	(1.40, 1.82)	1.54	(1.34, 1.79)	65 837
1996–99	1.50	(1.35, 1.67)	1.37	(1.20, 1.56)	1.86	(1.60, 2.16)	1.70	(1.44, 2.00)	65 448
2000–03	1.60	(1.43, 1.80)	1.50	(1.30, 1.72)	2.00	(1.70, 2.37)	1.89	(1.57, 2.26)	68 502
2004–07	1.54	(1.36, 1.75)	1.43	(1.23, 1.65)	2.22	(1.83, 2.69)	2.05	(1.67, 2.53)	69 617
2008–11	1.47	(1.24, 1.73)	1.41	(1.17, 1.71)	1.64	(1.28, 2.10)	1.58	(1.21, 2.05)	36 722
Ireland									
1983–87	0.92	(0.85, 1.00)	0.96	(0.87, 1.06)					151 699
1988–91	1.13	(1.04, 1.22)	1.09	(0.98, 1.22)					158 092
1992–95	1.20	(1.10, 1.30)	1.12	(1.01, 1.25)	1.56	(1.40, 1.74)	1.44	(1.27, 1.64)	167 739
1996–99	1.51	(1.39, 1.64)	1.16	(0.99, 1.35)	1.74	(1.55, 1.96)	1.39	(1.15, 1.67)	72 090
2000–03	1.60	(1.47, 1.75)			1.85	(1.64, 2.09)			153 088
2004–07	1.65	(1.51, 1.81)	1.63	(1.41, 1.88)	1.98	(1.74, 2.26)	1.96	(1.62, 2.37)	75 787
2008–11	1.69	(1.47, 1.94)	1.47	(1.24, 1.74)	2.15	(1.75, 2.64)	1.90	(1.52, 2.38)	60 325
Italy									
1983–87	1.41	(1.33, 1.48)	1.12	(1.05, 1.21)					399 160
1988–91	1.13	(1.07, 1.20)	1.04	(0.97, 1.12)					358 934
1992–95	1.18	(1.09, 1.28)	1.10	(1.00, 1.22)	1.58	(1.42, 1.75)	1.46	(1.30, 1.65)	228 518
1996–99	1.09	(1.01, 1.19)	1.05	(0.95, 1.15)	1.35	(1.21, 1.50)	1.27	(1.13, 1.43)	226 498
2000–03	1.20	(1.10, 1.30)	1.17	(1.06, 1.28)	1.51	(1.36, 1.67)	1.45	(1.30, 1.63)	229 594
2004–07	1.20	(1.11, 1.29)	1.13	(1.04, 1.23)	1.54	(1.40, 1.70)	1.44	(1.29, 1.61)	212 117
2008–11	1.07	(0.97, 1.18)	1.02	(0.91, 1.15)	1.45	(1.27, 1.66)	1.37	(1.18, 1.59)	120 373
Spain									
1983–87	1.10	(0.97, 1.25)	0.88	(0.68, 1.13)					32 728
1988–91	1.15	(1.08, 1.23)	1.04	(0.95, 1.13)					199 970
1992–95	1.15	(1.07, 1.23)	1.07	(0.99, 1.17)	1.49	(1.35, 1.64)	1.41	(1.26, 1.57)	195 145
1996–99	1.10	(1.03, 1.17)	1.02	(0.95, 1.11)	1.43	(1.30, 1.56)	1.34	(1.21, 1.48)	223 545
2000–03	1.26	(1.19, 1.34)	1.18	(1.10, 1.26)	1.61	(1.48, 1.76)	1.51	(1.38, 1.66)	242 901
2004–07	1.45	(1.37, 1.53)	1.38	(1.30, 1.47)	1.74	(1.61, 1.88)	1.65	(1.52, 1.79)	191 458
2008–11	1.48	(1.37, 1.60)	1.40	(1.28, 1.53)	1.91	(1.71, 2.13)	1.77	(1.57, 1.99)	93 877
UK									
1983–87	1.19	(1.13, 1.26)	1.21	(1.14, 1.28)					261 936
1988–91	1.40	(1.33, 1.47)	1.41	(1.33, 1.50)					255 685
1992–95	1.47	(1.39, 1.56)	1.45	(1.36, 1.55)	1.57	(1.45, 1.71)	1.56	(1.43, 1.71)	247 895
1996–99	1.61	(1.52, 1.71)	1.54	(1.44, 1.65)	1.60	(1.46, 1.76)	1.54	(1.39, 1.71)	180 987
2000–03	1.38	(1.31, 1.46)	1.31	(1.23, 1.40)	1.39	(1.28, 1.51)	1.34	(1.23, 1.47)	205 203
2004–07	1.51	(1.43, 1.60)	1.45	(1.35, 1.55)	1.46	(1.34, 1.58)	1.42	(1.30, 1.55)	211 392
2008–11	1.75	(1.60, 1.91)	1.71	(1.54, 1.91)	1.54	(1.37, 1.74)	1.56	(1.37, 1.78)	107 798
Netherlands									
1983–87	1.26	(1.18, 1.35)	1.24	(1.14, 1.35)					107 836
1988–91	1.30	(1.24, 1.37)	1.34	(1.26, 1.42)					124 010
1992–95	1.29	(1.23, 1.35)	1.30	(1.23, 1.38)	1.59	(1.47, 1.73)	1.57	(1.44, 1.71)	27 532
1996–99	1.39	(1.32, 1.46)	1.37	(1.29, 1.46)	1.51	(1.39, 1.64)	1.48	(1.35, 1.61)	126 020
2000–03	1.39	(1.33, 1.46)	1.35	(1.28, 1.44)	1.48	(1.37, 1.60)	1.43	(1.32, 1.55)	177 359
2004–07	1.43	(1.37, 1.49)	1.34	(1.28, 1.42)	1.62	(1.52, 1.74)	1.54	(1.43, 1.65)	333 703
2008–11	1.36	(1.27, 1.46)	1.27	(1.17, 1.38)	1.59	(1.41, 1.78)	1.47	(1.30, 1.66)	99 863

Separate Poisson regressions by country and time period. 95% CIs in parentheses. Model 1: control for age; Model 2: Model 1 + control for living with spouse/partner, children 0–4 years, children 5-9 years, interaction of spouse/partner with children, and interaction of gender with children; Model 3: Model 1 + control for level of education, working hours, occupation and industry; Model 4: control for all variables included in Models 1–3. The numbers of observation (*N*) given are for Model 4 when that model is estimated, otherwise for Model 2 (Models 3 and 1, respectively, for Ireland 2000–03).

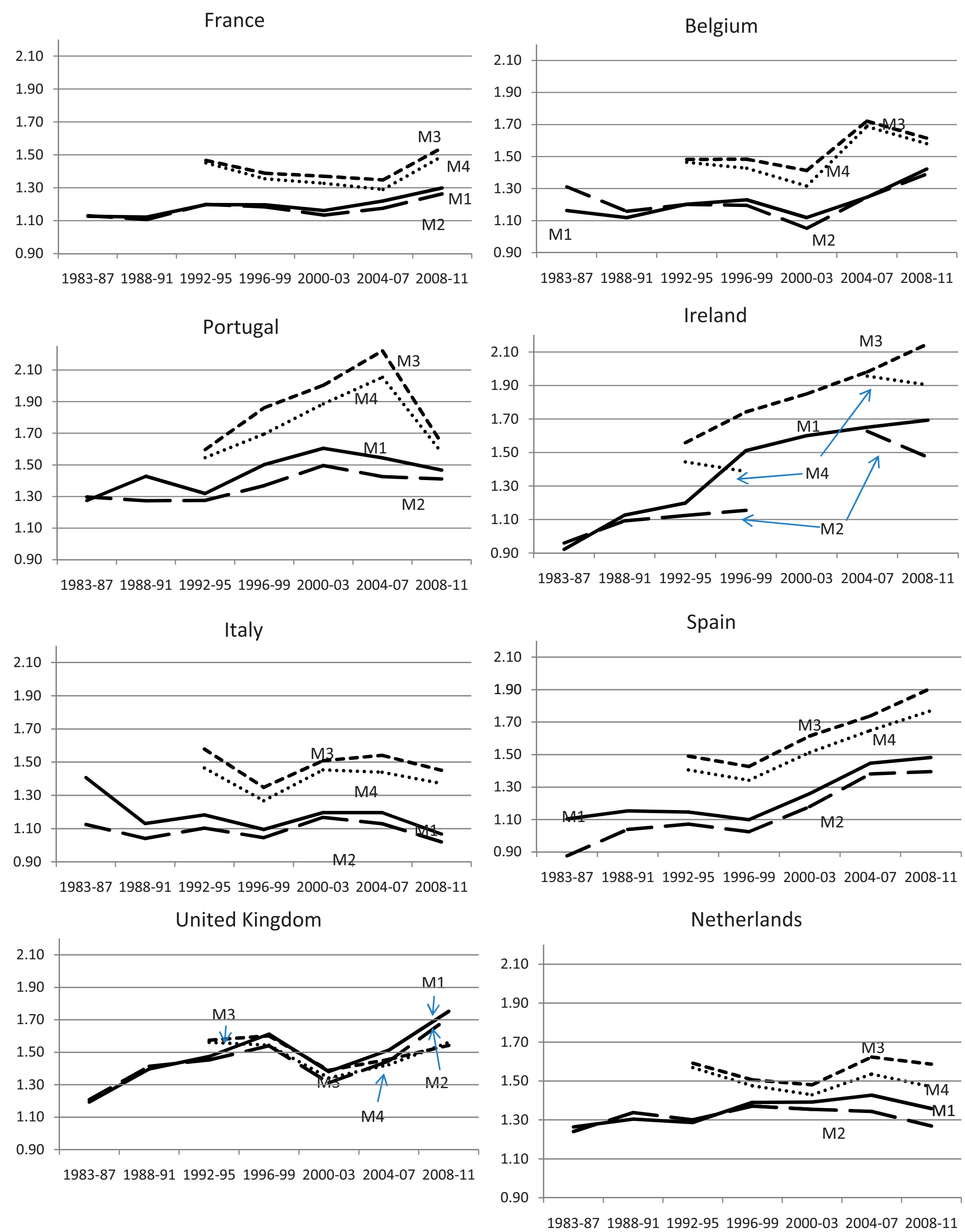

Figure 2 RR of sickness absence in the reference week for women vs. men as a function of country and time period. Note: based on estimates in table 1. M = Model. For more details on Models 1–4, see note to table 1.

Discussion

As noted above there is little systematic evidence on long-term trends in gender differences in sickness absence. A Swedish study shows, however, an increased gender difference from the early 1990s to about 2003, with little change in the period 2003–07.[23] A Norwegian study found a strong increase in 1974–94, but little change after that.[24] The present study shows that similar trends towards increased gender differences in sickness absence are also found in many other European countries.

The analyses indicate that a greater representation in the labour force of women with small children cannot explain the increasing gender gap in sickness absence found in most of the countries. This is not too surprising, as a previous cross-sectional study of a larger sample of European countries (including those analysed here) found very small differences in sickness absence between women with and without small children,[25] and similar findings have been reported in several studies of single countries.[26–29] Sweden might be an exception, however.[11,30] A recent Norwegian study with data and design more appropriate for uncovering causal effects also indicates that children have little impact on women's sickness absence (beyond the period of pregnancy).[31]

We also examined the hypothesis that larger gender differences might be the result of a greater representation of women in stressful or unhealthy occupations or industries. Even this hypothesis was not supported; the time trends in the gender gap are largely the same

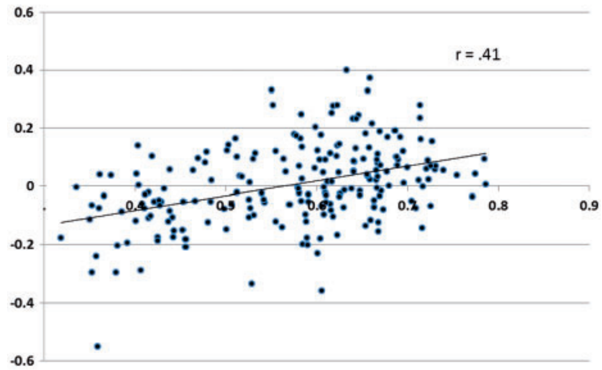

Figure 3 Association between estimated coefficients for gender (deviated from country-specific means) and proportion of women aged 20–59 years in employment.

irrespective of whether control for occupation or industry is included or not. We are not aware of previous research that has examined the importance of occupation and industry over time, but the results are consistent with a couple of cross-sectional studies that employed Norwegian data.[32,33] Somewhat different results were obtained in a Finnish study,[34] but in that study a sample of municipal employees and not a nationally representative sample was analysed, and the distribution of men and women across occupations and industries is likely to be quite different among municipal employees and in the labour force as a whole.

A methodological limitation should be noted here. The occupational coding employed here provides considerable detail with more than 100 separate categories in each country. Nevertheless, there may well be systematic gender differences even within these categories, with regard to wages and job rank as well as physical and psychosocial working conditions. There is no obvious reason, however, to assume that European labour markets have changed in such ways that women have been increasingly pushed into unhealthy positions or segments within occupations, but not into unhealthy occupations.

Increasing gender differences in sickness absence contrast with previous research on life expectancy and self-assessed health.[2–5] A possible explanation for the divergent results is that sickness absence is only measured (and defined) for the employed whereas studies of life expectancy and self-assessed health typically include the whole population. With health-related selection to employment an increase in women's employment means that a larger proportion of employed women will have health problems even without any increase in the population as a whole. Our finding of a positive correlation between the gender gap in absence and the level of female employment lends some support to this explanation. This correlation might, however, also be the result of various confounders that cannot be adequately taken into account with the data at hand.

Although selection might to a greater or lesser extent explain the changes in the gender gap in sickness absence, selection cannot explain why there is such a gap in the first place. To the contrary: the gap tends to be at its smallest in periods when the occupationally active female subpopulation is small and presumably most selective, and at its largest when the occupational activity of women approaches that of men. Given that the level of women's employment is positively (and strongly) related to women's position in society more broadly (and female employment is even part of common gender inequality indices such as UN's Gender Inequality Index),[35] we are left with the seeming paradox that the gender gap in sickness absence seems to be largest in otherwise relatively gender-equal societies. A further exploration of this is not, however, possible with the present data.

The present study is unique in studying the development of the gender difference in sickness absence over a fairly long time period and in a relatively diverse set of European countries. Nevertheless, there are a number of limitations. Inability to address heterogeneity within occupational categories has already been mentioned. Another limitation is that the underlying causal mechanisms producing the gender differences in sickness absence cannot be identified. Also, self-report measures of sickness absence are not ideal. Since respondents are only asked about the previous week, memory is not likely to be a problem, however. Incomplete standardization of the labour force surveys across countries is also unfortunate.[36] This is particularly problematic when comparing the absolute level of sickness absence across countries, but probably less so in analyses of within country gender differences. Finally, since absence periods not comprising a full calendar week are not registered, gender differences in such short-term absences could not be assessed.

This study has provided evidence of increasing gender gaps in sickness absence, although this is not the case in all the countries studied. Two possible explanations of this have been evaluated, viz. an increasing representation in the work force of mothers of small children and an increasing representation of women in high absence occupations. Neither of these explanations is supported by the data. The findings are less negative with regard to a third possible explanation, viz. that increased female labour force participation has led to a greater representation in the workforce of women with health problems or with lower job motivation. At this point the evidence is highly tentative, however, and further research is needed. Another interesting issue that also cannot be addressed with the data at hand is the potential importance of differential trends in men's and women's life styles, e.g. a stronger increase (or weaker decline) in tobacco and alcohol consumption.

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Conflicts of interest: None declared.

Key points

- The gender gap in sickness absence has increased in five out of eight European countries since the 1980s, with little change in the remaining three countries.
- A greater number of women with small children in the labour force has had little impact on the trends in the gender gap.
- Changes in men's and women's distribution over occupations and industries cannot explain increasing gender gaps.

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