

# Gender roles and selection mechanisms across contexts: a comparative analysis of the relationship between unemployment, self-perceived health and gender

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## Abstract

Health literature shows that unemployment has a gendered effect on health. However, whether men or women are more affected and why remains unclear. We assume that unemployment harms women less than men because of two mechanisms: social roles theories and health selection. First, the availability and centrality in individuals' lives of roles other than employment may reduce the detrimental effect of unemployment for women. Second, the gendered impact of unemployment on health results from the different ways selection mechanisms operate across genders. Moreover, these two mechanisms may operate differently in different contexts – for example, across different gender regimes. We investigate this by pursuing a three-step comparative approach. The analysis relies on EU-SILC data covering Italy and Sweden for 2004 to 2015 and SOEP data for Germany (1995–2017) and applies correlated dynamic random-effects probit models. While we find weak support for the role of health selection in shaping the relations between unemployment, health, and

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gender, our empirical results are in line with the hypothesis of a larger gendered effect in older (vs younger) cohorts, western (vs eastern) Germany and Italy (vs. Sweden). Future empirical research needs to directly address the role of gender regimes in moderating such complex relationships.

#### KEYWORDS

dynamic panel models, gender roles, health inequality, social selection, unemployment consequences

## INTRODUCTION

The role of gender in the relationship between unemployment and health has been on the research agenda for a long time (Jahoda et al., 1974) but with inconclusive results. While some studies find that unemployed women have worse health than men (e.g. see McKee-Ryan et al., 2005), others find harsher consequences for men (e.g. see Norström et al., 2014; Paul & Moser, 2009). In this article, we contribute to this debate by analysing the relationships between unemployment, general self-rated health and gender in different contexts, and exploring possible mechanisms underlying these relationships.

Studies focusing on the gendered association between unemployment and health have explained such variation by focusing on an array of factors: men and women react differently to unemployment because of gendered differences in family responsibilities (Artazcoz et al., 2004; Ensminger & Celentano, 1990; Leana & Feldman, 1991; Leeflang et al., 1992; Strandh et al., 2013), coping strategies (Ensminger & Celentano, 1990; Leana & Feldman, 1991), economic situation (Leeflang et al., 1992; Strandh et al., 2013), and social class (Artazcoz et al., 2004). Moreover, the broader institutional context also seems to contribute to explaining the variation in bad health among unemployed men and women (Strandh et al., 2013). Notwithstanding the insights coming from previous research, our empirical knowledge on the topic is somewhat tempered by some limitations: most studies are rather out of date (Ensminger & Celentano, 1990; Leana & Feldman, 1991; Leeflang et al., 1992) and provide only partial pictures by selecting samples that do not represent the whole working population (Ensminger & Celentano, 1990; Leana & Feldman, 1991; Leeflang et al., 1992; Strandh et al., 2013); they rely on cross-sectional and single-country data, hence failing to address the causality/selection issue and neglecting important contextual factors that might explain gender differential (Artazcoz et al., 2004). An exception is the work by Strandh et al. (2013), who implemented a robust analytical strategy by employing longitudinal data and choosing Sweden and Ireland to investigate whether contextual variation matters. However, their theoretical and methodological framework only builds on differences in the institutional characteristics of the two countries, although other country differences, for example, in gender cultures – values and norms about the ‘correct’ gender division of labour (Pfau-Effinger, 1998)—may trigger country-specific gender differentials in the effect of unemployment on health.

Our paper aims to contribute to existing literature by empirically testing two theoretical mechanisms that could explain the gendered association between unemployment and health. We do this by merging for the first time two different strands of research and two theoretical arguments: *social role theories* and *health selection*. The former sees the health consequences of

job loss as gendered through the different importance that men and women confer on different social roles and, crucially, on the occupational role (Hakim, 1991) as an instrument for meeting their psychological and material needs (Nordenmark & Strandh, 1999). Other roles—partnership, parenthood—may compensate the losses coming with unemployment, when these alternatives are not normatively sanctioned and are conceived as valuable by the unemployed person for their self-realisation and identity. However, this depends on the structurally different positions that men and women occupy in the family and the labour market – that is, configuration of roles. According to the latter theoretical argument, health selection (a threefold social process including unobserved heterogeneity, path dependence and reverse causality) could channel people into different social roles and positions according to their health and health determinants (West, 1991). Health selection has been found to be contingent on gender (Arrow, 1996; McDonough & Amick, 2001) to the extent that this individual structured social position signifies men's and women's different demands for and access to social roles (other than employment). Thus, social roles and health selection can be considered as two mechanisms that jointly contribute to gender differences in the relation between unemployment and health. In fact, individuals' (*self*-)selection out of employment can be enabled or even favoured by the availability of alternative roles. In the event of illness, those with access to alternative roles can withdraw from work more easily than those for whom availability of roles is limited or even absent.

The theoretical foundations for expecting gender differences in the relationship between unemployment and health are based on the assumption that men and women have different roles in society. The configuration of gender roles, however, is intimately connected to the institutional and cultural context – gender regime (Lewis, 1992; Pfau-Effinger, 1998; Sainsbury, 1994). Consequently, social roles, selection mechanisms, and their interplay are expected to vary across different gender regimes. As the data used do not provide information on individual traditionalism/egalitarianism, in the empirical part of this article, we develop a multiple-step comparative approach and investigate how the gendered association between unemployment and health varies between (1) Italy and Sweden; (2) western and eastern Germany; and (3) cohorts of people born before and after 1960 (western Germany). Drawing on a rich literature on gender regimes (for instance, Pfau-Effinger, 1998; Pfau-Effinger & Geissler, 2005; Rosenfeld et al., 2004; Sprengholz et al., 2020), gender norms and related indicators (Bauernschuster & Rainer, 2012; Beblo & Görges, 2018; Ebner et al., 2020; Lee et al., 2007; Lippman et al., 2020), we assume that the cases selected for the cross-country, cross-region, and cross-cohort comparisons represent opposite institutional and cultural contexts in terms of gender norms – that is, represent traditional versus egalitarian gender regimes.

Moreover, the three-step comparison is an attempt to progressively reduce institutional heterogeneity and maximise cultural differences. In particular, the comparison between Italy and Sweden should provide both institutional and cultural variation. The successive comparison between western and eastern Germany, then between older and younger cohorts (for western Germany), should instead progressively 'keep constant' institutional aspects and let vary only the gender regime's cultural component (norms and values) (see Bauernschuster & Rainer, 2012; Beblo & Görges, 2018; Ebner et al., 2020; Lee et al., 2007; Lippman et al., 2020; Pollmann-Schult & Reynolds, 2017). Albeit with limitations, this approach should provide insights into whether the empirical results fit the theoretical assumptions of this article: a more strongly gendered effect of unemployment on health in contexts such as Italy, western Germany and the older cohort (assumed to represent traditional regimes) than in putatively egalitarian contexts such as Sweden, eastern Germany and the younger cohort.

We contribute to the literature testing the proposed mechanisms by using longitudinal data and employing dynamic panel models in order to fully control for selection mechanisms.

Understanding the heterogeneity of unemployment consequences has important policy implications: it allows us to identify the most vulnerable groups of workers in order to efficiently address the health costs of unemployment and at the same time reduce health inequalities.

## THEORETICAL BACKGROUND AND HYPOTHESES

The relationship between unemployment and health has been generally understood as a combined function of the ‘psychosocial’ role (Jahoda, 1982; Warr, 1987) and the ‘material’ role (Fryer, 1986, 1992) of paid work for individuals. People perceive unemployment as problematic and adverse because it entails losses, both psychosocial (time structure, status, social relationships) and economic (income, social security). Because of such losses, unemployment has been shown to negatively affect a set of health outcomes including physical wellbeing (Korpi, 2001), general self-rated health (Tøge & Blekesaune, 2015), mental health and depression (Bubonya et al., 2017), and health behaviours (Falba et al., 2005).

While unemployment is expected to be bad for everyone’s health, health responses tend to differ by gender (see Paul & Moser, 2009 for a review). A recent study on unemployment in Europe, for instance, found that becoming unemployed increases the risk of bad self-perceived health by 3 percentage points for men, whereas no effect is found for women, after controlling for selection (Tattarini et al., 2018). However, while many studies report that unemployment is harder for men than for women, evidence is neither consistent nor undisputed (see McKee-Ryan et al., 2005). Some scholars point to the role of context as the ground for this inconsistency (Norström et al., 2014; Strandh et al., 2013). Accordingly, this paper aims to contribute to the literature by addressing two mechanisms responsible for the gendered effect of unemployment on health: social roles and health selection. To do that, we compare different contexts that are assumed to represent different gender regimes.

### Social role theories

A long tradition in research on the gender differential in the relationship between unemployment and health is rooted in *social role theories*. The main idea is that the availability and centrality of roles alternative to employment may fill the ‘void’ that unemployment leaves in individuals’ lives by fulfilling their socially constructed needs (Nordenmark & Strandh, 1999). In this argument, having more than one principal role – that is, being a worker, a husband/wife or a parent – may improve health, or at least has no negative effects on it (Nordenmark, 2002; Sorensen & Verbrugge, 1987; Verbrugge, 1982, 1986). Being involved in multiple roles, indeed, may expand an individual’s stock of resources, support, and rewards, providing alternate sources of satisfaction, self-realisation and self-esteem, and structure for individual identity (Sieber, 1974). In turn, these benefits may improve psychological and physical wellbeing by reducing stress and the sense of losing control of one’s own life (Nordenmark, 2004; Sorensen & Verbrugge, 1987). Thus, other roles may offer support after job loss and buffer the negative health consequences of unemployment.

However, the availability of alternative roles is contingent on the different positions that men and women have in society – such as the configuration of gender roles. In many western societies, a woman’s traditional primary roles are assumed to be ‘wife’ and ‘mother’, while the primary breadwinner role is still reserved to men (Hochschild & Machung, 1989; Sjöberg, 2004). Moreover women, if employed, tend to occupy disadvantaged positions in the labour market (e.g.

less secure, lower pay and lower quality, etc.) (Mascherini et al., 2016) and usually are the secondary earner in the family. These different social positions may lead to differences in the (psychological and financial) centrality of work in men's and women's lives (Nordenmark & Strandh, 1999). Accordingly, our argument builds on the idea that work-related roles are more central to men's lives while family-related roles are more central to women's (Hakim, 1991). Therefore, we expect unemployment to have more negative consequences for men's than for women's health.

## Self-selection and alternative roles

The availability of alternative roles could work as a parachute when leaving employment is motivated by illness. Indeed, people with health problems may choose to leave their work role more easily if other roles are available to them. The mechanism by which poor health channels people out of employment is known as health selection – a social process by which people are sorted into social positions on the basis of their health or health determinants (Bartley, 1994; West, 1991). Literature recognises two sets of health selection mechanisms: direct and indirect selection (Stowasser et al., 2012). Indirect selection refers to unobserved heterogeneity, the presence of a number of unobserved individual characteristics (genetics, cognitive ability, etc.) associated with both employment and health histories. These unobserved factors, if not properly addressed, may confound the relationship between job loss and health (Krug & Eberl, 2018; Tøge & Blekesaune, 2015). Direct selection includes path dependence and reverse causality. The first, also known as state dependence, refers to the current health status possibly resulting from the previous trend in health. Research has shown that health statuses tend to be strongly associated over time (Blackwell et al., 2001), and this relationship may get stronger when adverse life events, such as job loss, are experienced (Sarti & Zella, 2016). The second mechanism – reverse causality – refers to the possibility that while on one hand unemployment may bring negative consequences for individual health (Flint et al., 2013; Steele et al., 2013), on the other hand, poor health may impair people's productivity at work and their ability to fully participate in the labour market (Ross & Mirowsky, 1995; Virtanen et al., 2013).

So far, research has shown that health selection may be responsible for the negative association between job loss and health (Heggebø, 2015; Sarti & Zella, 2016; Tøge & Blekesaune, 2015). Even so, health selection may be contingent on material and social rewards having a distribution structured systematically in the distinctive experience of different social groups (McDonough & Amick, 2001:136). Indeed, the role of selection mechanisms has been shown to vary by social attributes, such as gender (Arrow, 1996; McDonough & Amick, 2001). Some studies, for instance, have shown that, among people with poor health, women are more likely to become or remain unemployed than men (Andreeva et al., 2015; Korpi, 2001) and that, when both time-constant unobserved heterogeneity and path dependence are controlled for, the effect of job loss on health persists and is strong for men, whereas it disappears for women (Tattarini et al., 2018). Further, a recent study that investigates the relative importance of causation and selection in the relationship between health and socioeconomic status has highlighted the importance of previous health status in explaining how current health varies between women and men (Hoffmann et al., 2018).

Thus, health selection outside employment depends on gender, interpreted in terms of structured individual social position. To the extent that individual location within this position signifies different access to social roles other than employment – such as family-related roles – gender structures the health selection process. In the framework of the 'alternative roles' argument, then, health selection can be interpreted as a form of *self-selection* (McDonough & Amick, 2001),

capable of explaining the gender differential in the relationship between unemployment and health. Unhealthy women might be selected out of employment more often than unhealthy men because leaving employment is not as normatively sanctioned for women as it is for men, and other roles are (normatively) more available to them than to their male counterparts. In other words, women have greater discretion over their labour supply; while men have little or no choice about whether to work or not. Following this argument, we assume that women suffer less than men because selection is stronger for them than for their male counterparts.

## The role of context

In many respects, the position of women in society has changed rapidly over recent decades. Western societies have experienced a general trend towards more egalitarian attitudes to gender roles (Knight & Brinton, 2017), and women now participate more in the labour market, many are primary earners, work in traditionally male-dominated occupations and are strongly committed to their (paid) work. For these women, employment may be considered their principal role, as it is for men. However, modernisation has not followed a unique pathway in Europe, resulting in different gender cultures predominating and different divisions of work across contexts – that is, gender regimes (Esping-Andersen, 2009; Lewis, 1992; Pfau-Effinger, 1998; Sainsbury, 1994). While in some countries an egalitarian dual breadwinner/dual career model has completely replaced the traditional male breadwinner/female carer model, in other countries, this has only partially developed. These two models reflect radically different notions of integration of men and women into work and family: symmetrical and equitable in egalitarian contexts; asymmetrical and unequal in traditional contexts.

Drawing on the notion that egalitarian and traditional gender regimes structure men's and women's roles in society differently, several leading researchers put the emphasis squarely on these differences to explain the literature's divergent findings on the gender differential between unemployment and health (Hammarström et al., 2011; McKee-Ryan et al., 2005; Strandh et al., 2013). Indeed, in more egalitarian gender regimes, employment may nowadays represent a principal role for women. Conversely, in more traditional gender regimes, employment may still be less central to women's lives and other roles – that is, motherhood – may fulfil their socially constructed needs. This discussion brings us to our first hypothesis.

**Hypothesis 1** *Unemployment has a similar effect on health for men and women in egalitarian contexts, but a gendered effect in traditional contexts, with women suffering less than men.*

So far, as social role options for women (and men) differ in different gender regimes, this should also be connected to how far health selection operates according to gender, across contexts. Previous research has shown that health selection mechanisms may vary across countries. A common line of argument is that this variation depends on differences in labour market structures or economic cycles (Heggebø, 2015; Martikainen & Valkonen, 1996): health-based exit from employment is assumed to be commoner in prosperous times and economies than during recessions, when unemployment affects more people. Despite the quantity of previous research on unemployment, selection and health, there has been very little theoretical reasoning on how selection might vary across gender regimes. Moreover, we do not know whether context and gender interact in shaping health selection mechanisms. Following the idea that health selection works in combination with the availability of 'alternative roles', one would expect that traditional

gender regimes allow ill women to leave employment more easily than ill men, for whom alternative roles are limited or even absent, while in more egalitarian contexts, selection should work similarly for both men and women.

**Hypothesis 2** *In more traditional gender regimes, women suffer less from unemployment than men because selection is stronger for women than for men whereas, in more egalitarian contexts, women suffer as much as men because selection is similar for both genders.*

As stated earlier, to support these expectations, we implement a three-step comparison, which assumes differences between countries, regions and cohorts as a proxy for different gender regimes. This approach builds on extensive existing research that leverages cross-context variation to measure (see Bauernschuster & Rainer, 2012; Beblo & Görges, 2018; Brooks & Bolzendahl, 2004; Ebner et al., 2020; Lee et al., 2007; Lippmann et al., 2020; Piotrowski et al., 2019) and to proxy variation in traditionalism and egalitarianism (see Altweck et al., 2021; Pollmann-Schult & Reynolds, 2017; Russell & Barbieri, 2000; Scheuring et al., 2021; Strandh et al., 2013).

### Comparison 1: Sweden vs. Italy

Our first comparison includes Sweden and Italy. On one hand, Sweden achieved a high employment rate for women by promoting public (part-time) jobs, egalitarian family and employment policies, and high availability of childcare services; on the other, in Italy, female labour force participation has historically been substantially lower and the division of labour within households strongly gendered. According to Eurostat statistics, for instance, in 2016, 79% of women (82% of men) aged 16–65 years in Sweden, while in the same year, in Italy, 51% of women held employment compared with 71% of men (Eurostat, 2020). The two contexts also differ greatly in gender culture, with Swedish men and women showing on average greater agreement with an egalitarian system of values than the Italian population. In particular, in 2017, the share of women who agreed or strongly agreed with the statement ‘a job is alright but what women want is a home and children’ was 14% in Sweden and 54% in Italy (EVS, 2017). Given these contextual differences between Italy and Sweden, we expect gender to affect the relationship between unemployment and health differently in the two countries. Sweden can be considered a prototype of an egalitarian gender regime, whereas Italy represents a traditional context with respect to female employment and gender norms (Esping-Andersen, 2009; Ferrera, 1996; Lewis, 1992). While the Swedish regime enables women’s decommodification and reduces gender stratification, the Italian regime channels men and women into different ‘spheres of production’—men into paid work and women into unpaid housework/family work. One would thus expect a gendered relationship between unemployment and health in Italy but not in Sweden.

### Reducing heterogeneity

Although the use of national contexts as proxies for gender regimes is both theoretically and empirically supported both in the literature (Esping-Andersen, 2009; Lewis, 1992; Pfau-Effinger, 1998; Strandh et al., 2013) and by gender culture indicators (EVS, 2017), we recognise that this approach might not be ideal. In fact, different countries vary greatly in many institutional and

cultural respects, and if any gendered effect of unemployment on health in Sweden and Italy shows a country-specific pattern, this could come from institutional factors, cultural (gender norms) factors or both. Strandh et al. (2013) framed the observed variation in the gender differential between Ireland and Sweden in terms of institutional and welfare policy differences but, in fact, culture or other factors may also play a role. In another study comparing three Scandinavian countries – Norway, Denmark and Sweden – Heggebø (2015) found substantial differences in health selection outside employment across these contexts, which had substantially different employment regulations and economies during the period under investigation. However, he did not find cross-country differences in the way health selection interacts with gender, which in all the three cases was a non-significant interaction. This is probably because the three contexts do not vary substantially in gender culture – they all have egalitarian value systems. On one side, this result supports our hypothesis that no gender differences should be found in selection mechanisms in contexts assumed to be egalitarian; on the other side, it signals the necessity to consider other sources of heterogeneity – such as gender cultures – to better understand the process of social selection.

Furthermore, treating institutional setting and gender culture as a unit might be problematic (Pfau-Effinger, 1998). Indeed, evidence suggests that, in some contexts, lower employment barriers for women can coexist with women's identification with domestic and care-giving roles (Charles and Grusky 2004); while in other contexts, women might incline to autonomy and independence through work, but the institutional setting restricts how far they can act on this (Lewis, 1992). Moreover, the assumption that all women share similar values and preferences (or all men) might be questioned: different, competing values systems may coexist within the same institutional context (Hakim, 1991).

All in all, this evidence seems to support the role of gender norms as potential drivers of the gendered association between unemployment and health. Hence, in the following sections of this paper, we try to reduce part of the cross-context institutional heterogeneity that the Sweden–Italy comparison entails and maximise differences in gender cultures within the same institutional context.

## Comparison 2: eastern vs. western Germany

Our second comparison considers Germany, as it provides substantial variation in gender norms in the comparison between eastern Germany (more egalitarian) and western Germany (more traditional), while at the same time reducing the variation in other contextual characteristics (see Bauernschuster & Rainer, 2012; Beblo & Görges, 2018; Ebner et al., 2020; Lee et al., 2007; Lippmann et al., 2020).

Western Germany has generally been classified as a prototype of a conservative-traditional gender regime, in which social policies, the taxation system and social security regulations strengthen the role of women as homemakers and caregivers (Esping-Andersen, 2009; Leitner et al., 2008; Pfau-Effinger, 1998). Conversely, the socialist German Democratic Republic (GDR) actively fostered female employment and systematically promoted egalitarian ideologies before reunification with West Germany and the resulting assimilation into a conservative welfare state and market economy (Rosenfeld et al., 2004). After 1990, the GDR territory adopted West German laws and institutions, including employment regulations, the educational system and family policies. However, although eastern and western Germany have come to share both labour market and family policies, they still differ in gender norms and roles, with the



eastern German population remaining more egalitarian than the western one (Bauernschuster & Rainer, 2012; Ebner et al., 2020; Pfau-Effinger & Geissler, 2005; Zoch, 2021). Moreover, recent studies confirm that in the east, women still hold jobs more often than in the west, despite the changed structural conditions and even after controlling for the availability of alternative roles (Matysiak & Steinmetz, 2008). Given these considerations, one would expect to find a gendered association between unemployment and health in western Germany, but not in eastern Germany.

### Comparison 3: young vs. old cohorts in western Germany

While eastern and western Germany share both labour market and family policies, some differences at the institutional level, such as the provision of childcare services, still provide western and eastern women with different incentives to participate in employment (Trappe et al., 2015). Accordingly, in our third comparison, we focus only on western Germany to further reduce cross-context institutional heterogeneity and exploit another source of variation to capture gender norms: cross-cohort variation.

Previous research has shown that inter-cohort comparisons are particularly suitable for explaining changes in gender norms and ideologies (see Brooks & Bolzendahl, 2004; Ebner et al., 2020; Lee et al., 2007; Piotrowski et al., 2019). Although slowly and with some delay compared with other European countries, social norms have changed over time in western Germany (see Lee et al., 2007; Trappe et al., 2015). Women's orientation towards work has strengthened, and attitudes towards gender roles and women employment have become more liberal. Moreover, Germany has progressively introduced family and social policies that sustain a more equal redistribution of social roles between men and women. Given these social and policy changes, we expect work to occupy a more central role for western German women than in the past. Accordingly, we compare a cohort of younger individuals born after 1960, assumed to have embraced egalitarian gender norms, with a cohort of older individuals born up to 1960, assumed to embrace traditional gender norms (Lee et al., 2007). We expect the health of German men from older cohorts to suffer more than that of female counterparts when they become unemployed. These men and women were socialised when support for the male breadwinner model was strong, and social norms or social policy provided many incentives for women to work less and care for the family. We expect German men and women from younger cohorts, in contrast, to be (almost) equally affected by unemployment. These men and women were socialised when gender ideologies were changing and policies encouraged a more equal distribution of social roles between genders.

### Data and methods

We study Sweden and Italy over the years 2004 to 2015 relying on the European Union Statistics on Income and Living Conditions (EU-SILC). EU-SILC has a rotational design in which each year 25% of the sample leaves the survey and is replaced by a new group of participants. This implies that we observe individuals for a maximum of four years. Further, we study Germany from 1995 to 2017 using the German Socio-Economic Panel (SOEP), a representative panel study of German households (Wagner et al., 2007). We restrict the samples to men and women in the labour force aged between 25 and 55 years. To deal with missing

values, which—apart from partner economic status in the German samples (see Table S2)—were always less than 5%, we used listwise deletion in the analyses presented below. To ensure that the missing data do not bias the results and jeopardise representativeness, we also reran models for Germany by including missing values as a separate category. The results of these analyses suggest that there is no systematic bias attributable to missing data (see Table S3). Our final analytical samples include 59,637 respondents in Italy (33,087 men and 26,550 women); 8932 in Sweden (4453 and 4479); 29,235 in western Germany (13,847 men and 15,388 women); 7771 in eastern Germany (3731 and 4040); 7864 in the older cohort (3853 and 4011) and 21,371 in the younger (9994 and 11,377) in western Germany.<sup>1</sup> A description of samples is reported in Tables S1 and S4.

## Dependent variable

Our outcome variable is self-perceived (bad) health (SPH). This measure of health has been frequently included in population surveys and widely used for cross-national comparisons in Europe. Its success is explained by its good validity (Cullati et al., 2020; DeSalvo et al., 2006) and reliability (Cox et al., 2009), and its scope to measure a broad range of health dimensions – physical, mental and functional health and health behaviours (Yamada et al. 2012). EU-SILC surveys this information with the question ‘How is your health in general; would you say it is...’ very good, good, fair, bad, very bad. Likewise, SOEP employs a five-point scale, ranging from ‘very good’ via ‘good’, ‘satisfactory’ and ‘bad’ to ‘very bad’. Such measures provide an ordinal ranking of individuals’ perception of their health. Following common practice in the literature (Bambra & Eikemo, 2009; Ferrarini et al., 2014), the five-point scale is recoded as a binary variable, collapsing ‘very good’ and ‘good’ to 0, and ‘fair’, ‘bad’ and ‘very bad’ to 1. Accordingly, our outcome variable takes the value 1 for bad (and very bad) health, and 0 otherwise.<sup>2</sup> Although a binary split might reduce the variation in the data and requires a cut-off point to be identified, we follow this strategy to facilitate comparison with previous studies (see, for instance, Tattarini et al., 2018).

## Independent variables

Our main independent variable is the subject’s self-defined economic status at present; this is coded 1 for respondents unemployed at time of interview and 0 if they are employed. The target variable captures and differs from the more objective International Labour Organization (ILO) definition. We use self-defined economic status to identify those subjects who consider themselves ‘unemployed’ but do not meet the strict ILO criteria. These are the ‘hidden unemployed’, people who aspire to a job but have given up looking for one through discouragement, for example. This, in our view, is a particularly important point because people do not randomly opt to join the hidden unemployed, and women are more likely to fall into this group than men.

Our models also include a set of control variables: age and age<sup>2</sup>, level of education (ISCED 0/2; ISCED 3/4; ISCED 5/6), whether a partner is present and their economic status (no partner; partner employed; partner unemployed; partner inactive), number of children (no children; 1; 2; 3 or more children), and disposable household income (logarithm). All models also include year dummies.

## Analytical strategy

To assess the differential impact of unemployment for men and women, we compared the differences between (unemployed and employed) men with the differences between (unemployed and employed) women. To do this, we calculate predicted probabilities and average marginal effect from two distinct random-effects probit models.

Our first step was to estimate a random-effects model (Model 1) that assesses the association between unemployment and self-perceived health, controlling for observable characteristics. Model 1 takes the form:

$$y_{it}^* = \beta une_{it} + \gamma Z_{it} + v_{it} \quad (1)$$

In Equation (1), the latent outcome variable  $y_{it}^*$  expresses the chances of experiencing bad health for individual  $i$  ( $i = 1, \dots, N$ ) at time  $t$  as a function of a time-varying unemployment indicator  $une_{it}$ , a set of observable characteristics  $Z_{it}$  (listed in the previous section) and an error component  $v_{it}$ .

In the second step, we controlled for both direct and indirect selection (Model 2). We did this using dynamic correlated random-effects (CRE) models building on the contribution of Rabe-Hesketh and Skrondal (2013) (see Grotti & Cutuli, 2018 for details on its implementation; Cutuli & Grotti, 2020). Direct selection was captured by augmenting our model with the lagged value of the response variable  $y_{i,t-1}$  as in Equation (2), where  $t-1$  stands for the wave before the current wave. The associated coefficient  $\rho$  captures state dependence processes in bad health and at the same time indirectly controls for reverse causality.

$$y_{it}^* = \beta une_{it} + \rho y_{i,t-1} + \gamma Z_{it} + u_i + \epsilon_{it} \quad (2)$$

Indirect selection is controlled by capturing individual unobserved heterogeneity. Specifically, the error component  $v_{it}$  in Equation (1) is decomposed into an individual effect  $u_i$  and an idiosyncratic error term  $\epsilon_{it}$  in Equation (2), where  $u_i$  refers to individual, time-constant, unobserved heterogeneity and is modelled as

$$u_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2 \bar{Z}_i + \alpha_3 Z_{i0} + a_i \quad (3)$$

$y_{i0}$  and  $Z_{i0}$  stand for the initial values of the response variable and of the time-varying explanatory variables respectively. Finally,  $\bar{Z}_i$  represents the within-unit averages of the time-varying explanatory variables and  $a_i$  is a (residual) individual-specific, time-constant, error term. In our application, time-varying variables include age, partner's presence and economic status, number of children and household income.

Based on Model 2, we tested our hypothesis on gender roles (Hypothesis 1) by comparing several contexts, estimating models separately for each context. For this hypothesis, we pooled men and women and included a term for interaction between unemployment and gender. This has the advantage of allowing us to directly test whether, in the effects of unemployment, gender differences exist and are statistically significant.

Finally, we tested the role of selection mechanisms (Hypothesis 2). This was done using the Karlson, Holm and Breen (KHB) method, which allows coefficients to be compared across nested nonlinear models (Breen et al., 2013; Kohler et al., 2011). Specifically, we tested the role of selection for the relationship between unemployment and health, based on the comparison between

Models 1 and 2. To allow selection mechanisms to operate differently between genders, we ran separate models for men and women.<sup>3</sup> Full results for all models are reported in the supplementary material.

## RESULTS

### Social roles in context

Our first hypothesis regards whether gender differences in the effect of unemployment on health can be observed across contexts characterised by differences in gender roles – *Hypothesis 1: Unemployment has a similar effect on health for men and women in egalitarian contexts, but a gendered effect in traditional contexts, with women suffering less than men.* We evaluated this hypothesis relying on average marginal effects (AMEs) from our fully adjusted model – Model 2 (men and women pooled with interaction). Table 1 shows the results for the comparison between countries, regions and cohorts, according to our three-step comparative approach.

Looking at Comparison 1, in Sweden, the risk that unemployed men have worse health than employed men is 4.3 percentage points higher; for Swedish women, the risk is 3.1 percentage points higher. Turning our attention towards Italy, we observe an unemployment penalty of 4.3 and 2.3 percentage points for men and women, respectively. These results show that in both Sweden and Italy, unemployment affects women's health less than men's health, suggesting the existence of a gender differential.

However, if we compare the gender differential between these two countries, while men exhibit the same penalty in the two countries, Italian women are less affected by unemployment than Swedish women, relatively. We tested these differences via the interaction term between

TABLE 1 Average marginal effect (AME) of unemployment on the probability of bad health. Dynamic random-effects probit. Model 2 pooled by gender with interaction effect. EU-SILC 2004–2015, SOEP 1995–2017

Egalitarian contexts			Traditional contexts		
Sweden			Italy		
Men	Women	Diff. M–W	Men	Women	Diff. M–W
Context comparison 1					
4.28**	3.13*	NS	4.26***	2.32***	***
Eastern Germany			Western Germany		
Men	Women	Diff. M–W	Men	Women	Diff. M–W
Context comparison 2					
5.43***	5.42***	NS	6.72***	4.10***	**
Younger cohort			Older cohort		
Men	Women	Diff. M–W	Men	Women	Diff. M–W
Context comparison 3					
5.77***	3.60***	*	8.43***	5.22***	+

Column 'Diff. M–W' tests statistical significance of gender differences via interaction. NS = not significant, <sup>+</sup> $p < 0.1$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

gender and unemployment status. Results reported in the column 'Diff. M–W' in Table 1 confirm our hypothesis: Italian women are less affected by unemployment than Italian men while the difference we observed between men and women in Sweden is not statistically significant.

To give a meaning to the magnitude of the effect, consider that the predicted probabilities (Table S5) of bad health for employed people (the baseline level of bad health) are 8.0 and 9.0 per cent for Swedish men and women, respectively. This means that, in Sweden, unemployment increases the risk of bad health by 30 per cent for women, and about 50 per cent for men. In Italy, however, unemployment increases the risk of bad health by less than one-seventh for women and by almost one-third for men. Looking at gender differences in relative terms further strengthens our theoretical assumption that there is a gender gap in the effect of unemployment, and how it varies across egalitarian and traditional contexts.

These results are echoed in the analyses for Germany – Comparisons 2 and 3. When unemployed, women's health is less at risk than men's health in western Germany and in the older cohort, namely, in contexts assumed to be characterised by a traditional gender regime. Conversely, in eastern Germany and in the younger cohort, the gender differential is neither substantial nor significant. The expected patterns, therefore, remain visible even when institutional heterogeneity is reduced. This result is in line with the assumption of the role of context-specific gender culture in shaping the observed gender differences in the relationship between unemployment and health.

## Social roles and social selection across contexts

We move now to our second hypothesis regarding the interplay between health selection mechanisms and social roles in shaping the gendered effect of unemployment on health – Hypothesis 2: *In more traditional gender regimes, women suffer less from unemployment than men because selection is stronger for women than for men whereas, in more egalitarian contexts, women suffer as much as men because selection is similar for both genders.*

We measured health selection comparing AMEs obtained from Models 1 and 2, separately by gender. Figure 1 reports the results for egalitarian and traditional contexts. The figure shows that moving from Model 1 (controlling for observable characteristics only) to Model 2 (also controlling for selection), the effect of unemployment decreases substantially for all countries and both genders, Swedish men being the exception.

We explicitly test the role of selection mechanisms in Table 2, which reports differences in the AMEs presented in Figure 1 together with a test for statistical significance obtained through the KHB method.

Our aim is to assess the impact of total selection – direct +indirect selection. By doing so, we aim to understand whether and to what extent health selection mechanisms work differently for men and women, thus explaining the gender differential. If the difference between the AMEs from Model 1 and Model 2 is statistically significant and larger for women than for men, we will conclude that health selection mechanisms are stronger for women.

In Comparison 1, the results for Sweden indicate that health selection strongly reduces the effect of unemployment on bad health among women ( $M1-M2 = 6.09-2.92 = 3.17^{***}$ ), while it has negligible effect among men ( $M1-M3 = 4.42-4.29 = 0.13^{***}$ ). Substantially, total health selection halves the effect of unemployment on women's health. In Italy, the impact of (total) health selection is almost the same for men ( $M1-M2 = 7.27-4.59 = 2.68^{**}$ ) and women ( $M1-M2 = 4.80-2.02 = 2.78^{***}$ ). A similar pattern is found in Germany for both Comparisons 2 and 3.

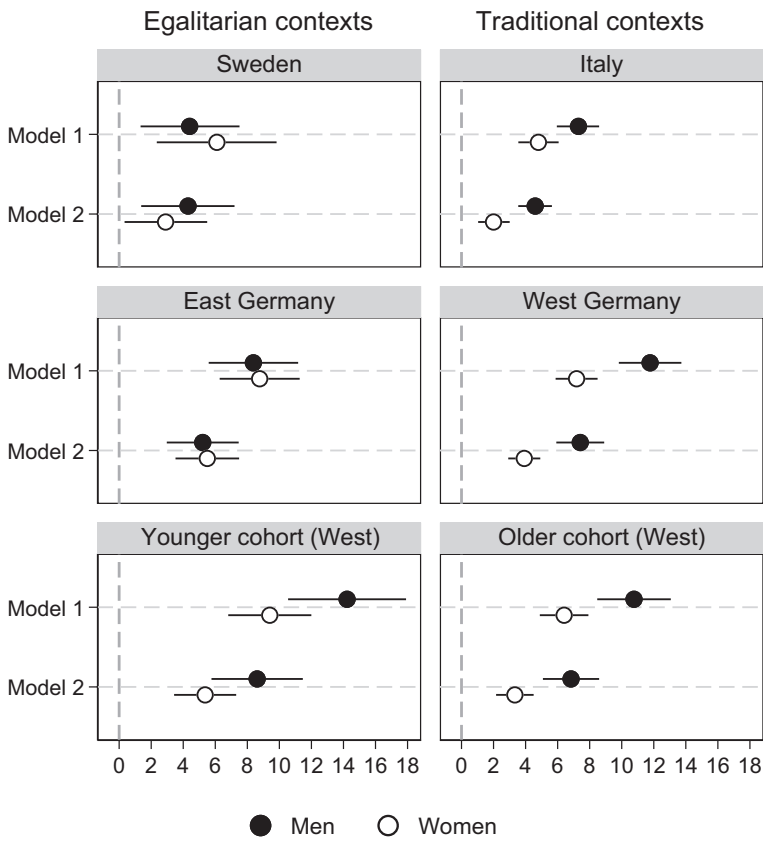


FIGURE 1 AME of unemployment on bad health. Separate models for men and women, EU-SILC 2004–2015, SOEP 1995–2017

TABLE 2 Bad health. Differences between AME from dynamic random-effects probit models, by gender

	Total selection	
	M1–M2	
	Men	Women
<b>Comparison 1</b>		
Sweden	0.13***	3.17***
Italy	2.68***	2.78***
<b>Comparison 2</b>		
Eastern	3.16	3.27
Western	4.36**	3.27
<b>Comparison 3</b>		
Young	3.93	3.09
Old	5.61	4.03

Note: Significance tests obtained from KHB models.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

All in all, these results do not support our hypothesised interplay between health selection mechanisms and social roles in shaping the gendered effect of unemployment on health (Hypothesis 2): health selection seems to be stronger for women in egalitarian contexts but not in traditionalist ones.

## CONCLUSIONS

Long-established literature has shown that the impact of unemployment on self-perceived health in western societies varies by gender. However, whether men are more penalised than women or the other way around (McKee-Ryan et al., 2005; Norström et al., 2014; Paul & Moser, 2009) and especially the mechanisms that may lead to the gender differential are not sufficiently clear. The goal of the study reported here was to contribute to the literature on unemployment by studying how it stratifies (self-perceived) health according to gender and the broader institutional and cultural contexts in which men and women are embedded.

To understand why there exists a gender differential in the relationship between unemployment and health, we relied on two theoretical arguments: the availability of alternative roles and health selection. The first argument builds on the idea that men and women may compensate the detrimental health consequences of unemployment through committing to 'alternative roles', which can provide the resources needed to meet people's socially constructed needs (Nordenmark & Strandh, 1999). Importantly, the availability of alternative options depends on the different positions that men and women have in society. Further, we attached the availability of 'alternative roles' argument to the health selection argument. Health selection plays a fundamental role in shaping the relationship between unemployment and health. Hence, we assumed that health selection can be contingent on people's social position as defined by gender (McDonough & Amick, 2001; West, 1991) and, thus, explain the gender differential in the relationship between unemployment and health. Ill people might be less reluctant to become or remain unemployed (i.e. self-select) if they have alternative roles. In western societies, more alternative roles are generally available to women than to men and thus women have more choice in whether and how they engage in the labour market. Therefore, health selection should be stronger for them, explaining why unemployment is less of a menace for women than for their male counterparts.

Further, relying on the idea of different gender regimes, we extended these arguments to a comparison across contexts. Notwithstanding that over recent decades the breadwinner model has weakened in favour of more gender equality, there are still substantial differences across and within European countries – traditional gender regimes vs egalitarian gender regimes (Lewis, 1992; Pfau-Effinger, 1998; Pfau-Effinger, 2005; Sainsbury, 1999). In contexts where 'wife' and 'mother' are still assumed to be women's traditional and primary roles and the primary breadwinner role is still reserved to men, unemployment is less stigmatised and taking up alternative roles is more socially accepted for women than for men. Accordingly, social (self-)selection should be stronger for women than for men in traditional contexts where, if they fall ill, the choice to cease employment is eased by the availability of alternative roles. Building on these considerations, we hypothesised that in more traditional contexts (as opposed to egalitarian ones), women would suffer less from unemployment than men (Hypothesis 1) and that this could be partially attributed to the interplay between alternative social roles and health selection (Hypothesis 2).

We applied a three-step comparison – cross-country, cross-region and cross-cohort – focusing on contexts that we assumed to represent different gender regimes. Building on existing literature and relying on gender equality indicators, we selected Italy, western Germany and the older

cohorts in western Germany to represent traditional contexts and Sweden, eastern Germany and the younger cohorts in western Germany to represent egalitarian contexts. In particular, the two German comparisons were adopted to try to disentangle the role of the institutional setting from the role of gender culture – the two components of a gender regime (Pfau-Effinger, 1998). We based our analysis on the longitudinal component of EU-SILC (2004–2015) for Sweden and Italy and SOEP data for Germany (1995–2017). By applying correlated dynamic random-effects probit models, we tested our hypotheses on a sample of men and women between 25 and 55 years old.

In line with previous meta-analysis (Norström et al., 2014) and empirical studies (Strandh et al., 2013), we found support for our first hypothesis that the relationship between unemployment, health and gender seems to be associated with the context in which people are embedded and socialised. We found that the gendered effect of unemployment on health in Sweden is smaller than in Italy and not statistically significant, while in Italy, we observed substantial and statistically significant gender differences in the effect of unemployment on bad health, with women suffering less than men. We found a similar pattern for the comparisons between eastern and western Germany and younger and older cohorts in western Germany. We interpret our results, especially those on cohorts, as supporting the existence of two opposing gender norm systems shaping a gender differential in the relationship between unemployment and health, independently from the institutional setting. Thus, our findings extend previous research (i.e. Strandh et al., 2013) and make an important contribution to the literature on unemployment, health and gender. We believe that these results allow the reconciliation of the contrasting results that past research has found about the gendered effect of unemployment on health.

However, our results did not support our hypothesis on social selection. We found that, in Sweden, women are more often selected out of employment than men when they fall ill, whereas in Italy, health selection does not seem to be the main mechanism behind the gender differential – Italian men and women seem to be selected out of employment to the same extent. In other words, we do not find any evidence that health selection is stronger for women in contexts assumed to be more traditional (Hypothesis 2), although such a context would offer women a wider range of ‘alternative roles’ than men. Moreover, our second hypothesis also failed the second and third comparisons. Results for Germany showed that men are more often health-selected into unemployment than women. One potential explanation for this consistent result could come from the way in which we address selection. Since the transition into unemployment was our only focus, we *ipso facto* neglect those people who leave employment for inactivity, because of ill-health. Theory and previous evidence suggest that these people are more frequently women (Korpi, 2001), especially in traditional gender regimes (Esping-Andersen, 2009). Accordingly, our analyses do not allow us to grasp part of the social selection mechanism – namely, the one that channels women out of the labour force – which could potentially confirm our Hypothesis 2. Further research addressing selection into inactivity is needed to evaluate the interplay between selection and social roles across gender regimes.

Before concluding, some limitations and avenues for future research need to be mentioned. Owing to data limitations, we tested our hypotheses using general self-rated health as the dependent variable. Because of its subjective nature, the reliability of SPH has been often questioned, especially in gender comparisons. It has been argued that SPH may be vulnerable to several biases, such as gender-specific heterogeneity in the evaluative process – men and women may place different weights on particular inputs when judging their own health (Peersman et al., 2012) – and heterogeneity in gender-related reporting behaviours – women are thought to report ill-health more often than men (Crimmins et al., 2011). These differences could be problematic if they were to occur systematically among men and women because they could bias our



understanding of health inequalities between genders. Rather, the literature is not consistent in this matter. Other studies have challenged and contradicted the results mentioned above (see for instance Oksuzyan et al., 2019), leaving open the debate about the degree of gender bias in SPH. We tried to limit the potential bias by doing sensitivity analysis with separate models for men and women, and this did not reveal problematic differences. Nevertheless, we acknowledge that an objective health measure would be preferable to limit this and other potential biases. Psychological justification, for instance, may mediate whether individuals who are unemployed project health as a reason for their job loss (McDonough & Amick, 2001). If that is the case, we might face the risk of overestimating the effect of unemployment on health, especially among groups more exposed to self- and social stigmatisation during unemployment, namely Italian men.

We also must highlight once again that our context comparisons are only proxies for gender norms and leave gender norms as a 'black box'. We believe that this issue would not be solved via the use of contextual (macro-level) measures of gender norms. In fact, as our data cover only short time spans, exploiting changes over time would not be a viable solution given that values and norms change very slowly. Also, changes across a large number of countries, which could provide sufficient variation in cultural aspects, would also introduce large heterogeneity in institutional characteristics – which we want to minimise. A more promising approach for further research would instead be addressing gender roles from a micro-level perspective, for example, studying how role specialisation within couples may shape the health consequences of unemployment for men and women. Notwithstanding these limitations, we still believe that our paper expands existing literature and contributes to our further understanding of the complex relationship between unemployment, gender and general health.

To conclude, results from this study could also be read from a gender equality perspective. Undoubtedly, gender equality in opportunities and roles is desirable for contemporary societies and a political goal that should not be postponed further. However, the broader question that arises from this study might be what kind of equality should be pursued in order to provide men and women with both good quality of life and equal chances in the public and private spheres? In this sense, we believe that social and labour policies aiming to improve women's integration in the labour market should be partnered with policies targeting men and fathers, facilitating their involvement in family life. A more equal redistribution of social roles could then activate a crucial transformation both of gender roles and of the cultural models that sustain them.

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## AUTHOR CONTRIBUTIONS

**Giulia Tattarini:** Conceptualization (lead); Data curation (lead); Formal analysis (lead); Investigation (lead); Methodology (equal); Project administration (lead); Resources (equal); Visualization (supporting); Writing – original draft (lead); Writing – review & editing (lead).  
**Raffaele Grotti:** Conceptualization (supporting); Data curation (supporting); Formal analysis (supporting); Investigation (supporting); Methodology (equal); Project administration

(supporting); Resources (equal); Visualization (lead); Writing – original draft (supporting); Writing – review & editing (supporting).

## DATA AVAILABILITY STATEMENT

The study uses data from SOEP, provided by DIW Berlin and EUSILC provided by Eurostat. Both datasets are available only for scientific research and can be obtained by signing an agreement with the respective Institutions.

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## ENDNOTES

- <sup>1</sup> Differences in the sampling design implemented in Italy and Sweden partially explain the large difference in sample size between the two countries. Both designs, however, provide representative samples of the population (see EU-SILC Guidelines 2016:24). Total sample sizes are reported in Table S5.
- <sup>2</sup> Descriptive statistics for the outcome as well as for all the independent variables are reported in Table S2.
- <sup>3</sup> Average marginal effects from these models are in line with those from the pooled analysis.

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