GENDER POLICY AND GENDER EQUALITY IN A PUBLIC HEALTH PERSPECTIVE

INVESTIGATING MORBIDITY AND MORTALITY IN SWEDEN AND 22 OECD COUNTRIES

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Stockholm 2011
It does not matter how slowly you go so long as you do not stop.

Confucius
ABSTRACT

The aim of this thesis is to investigate gender policy and gender equality as determinants of health. Data at individual, municipal and country level were employed, and the settings were Sweden and 22 OECD countries. The studies span the time period 1973-2008.

In Study I, gender equality at municipal level (N=289) was measured using indicators of political participation, division of labour in the private and public spheres, and the distribution of economic resources. The outcomes were life expectancy and number of days of compensation for sickness absence and disability. The data were cross-sectional (2000-2004) and linear regression was used. Gender equality was correlated with lower life expectancy and higher levels of sickness and disability for both men and women. In Study II, a cohort of parents (N of approx. 75,000) were followed from 1980 to 1999. The aim was to assess possible interaction between gender equality at couple (between partners) and local level. For this purpose, a combinatorial index was constructed. The outcome was number of days compensated from sickness insurance during 1986-1999, with a cut-off point at the 85% percentile. Logistic regression was used. Among fathers, those who were traditionally unequal with their partner and lived in an equal municipality had higher levels of sick-leave. Mothers who earned less and/or had a lower occupational position than their partner had lower levels of sick-leave, especially when they lived in a traditional municipality.

Study III aimed to classify 22 OECD countries into homogenous clusters, using hierarchical cluster analysis for 1979, 1989, 1999 and 2004. Included were indicators of taxes, parental leave, pensions, social insurances and social services in kind to reflect Sainsbury’s three gender policy regimes. The empirical classification did not completely correspond to Sainsbury’s theoretical typology. Rather than an emerging separate gender roles regime, there was a compensatory breadwinner cluster, distinguished by compensatory measures in the pension system directed at carers and extended childcare leave following maternity leave. A male breadwinner cluster was found, with the core feature of having a tax system that supports single (as opposed to dual) earner families. From 1989 there was an earner-carer cluster, characterised by generous parental leave, high social services expenditure, and universal basic pensions. In Study IV, the cluster solution for 2004 and specific policy indicators for 1973-2008 were used as predictors, and the outcomes were mortality from external causes and circulatory disease. For this repeated measures model, hierarchical linear regression was used. Both the earner-carer cluster and specific policies, i.e. generous parental leave, high social services expenditure and universal basic pensions, were associated with a smaller gender gap in external cause mortality, primarily due to increased female mortality. For circulatory disease mortality, both the earner-carer and the compensatory breadwinner cluster experienced a larger decrease in male mortality over time.

In conclusion, the relationship between gender equality and health differed according to the unit of analysis and the outcome studied, and also varied between men and women. Based on these results, hypotheses for future studies are formulated.
LIST OF PUBLICATIONS

I. Backhans MC, Lundberg M, Månsdotter A. Does increased gender equality lead to a convergence of health outcomes for men and women? A study of Swedish municipalities. Social Science & Medicine. 2007. 64(9):1892-1903


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1 INTRODUCTION

It would be fair to say that increased gender equality represents one of the biggest societal changes of the 20th century. For example, the share of parliamentary seats in Sweden occupied by women increased from 7% in 1949 to 45% in 2010. In 1975, women’s average income from work was 44% that of men. In 2009, women’s average income had increased to 73%. However, the labour market is strongly sex-segregated. For example, the proportion of men in the health and social care sector was only 17% in 2007 (Source: Statistics Sweden). The variation in gender equality between countries is huge. The Gender Empowerment Measure (GEM), an index consisting of three dimensions – economic participation, political participation, and power over economic resources – varies between 0.91 (with 1 indicating absolute equality) in Sweden and 0.55 in Korea, the lowest scoring OECD country (source: HDR 2009).

It is this change and variation that makes possible the study of gender policy, which in this thesis is regarded as representing equality of opportunity, and gender equality, which represents equality of outcome, as health determinants. In this thesis, differences between men and women, whether in health, wealth or type of work, have been investigated in terms of degree of difference or similarity. We have not made any attempt to distinguish fair from unfair, or natural from unnatural. Thus, the terms inequality, difference or gap have been used rather than equity, which implies taking a normative stance (1).

This project began when I was employed at the Swedish National Institute of Public Health. While working on the first Public Health Policy Report, it was suggested that the gender equality index (as it was then measured by Statistics Sweden) be included as a health determinant at municipal level. Kawachi and colleagues had shown that gender equality at state level (in the United States) was beneficial for both male and female health (2). However, there were no Swedish studies corroborating this finding, and – based on an on-going thesis project run by my colleague, Anna Månsdotter (3) – we both suspected that results in a Swedish context might not be as favourable. We were also aware that research investigating the income-inequality hypothesis has often failed to find an association at local level (4, 5).

The second focus, gender policy, was inspired by research investigating country differences in social inequalities in health. While it may seem obvious that egalitarian policies would promote smaller social inequalities in health, the Nordic welfare states have often been found to experience inequalities on a par with or even worse than welfare states with less egalitarian agendas (6). This has inspired a debate on both methodological issues (e.g. whether absolute or relative level of inequality is the outcome of interest) and substantial issues (e.g. whether explanations lie in politics, welfare typologies, or welfare policies) (7-11). I hope to have taken on board at least some of the lessons learned when turning the lens on the gender dimension.
2 BACKGROUND

2.1 THE GENDER SYSTEM

Both gender policy and gender equality are expressions of the gender system. By using the term gender system rather than simply gender, I wish to emphasise gender as an institution (12) and as a societal characteristic, not solely as a characteristic of individuals. The term gender system was first coined by the anthropologist Gayle Rubin in 1975 in her essay The traffic in women: notes on the ‘political economy’ of sex (13). Here, she uses the works of Freud and Lévi-Strauss to analyse the sex/gender system, which she tacitly defines as ‘the set of arrangements by which a society transforms biological sexuality into products of human activity, and in which these transformed sexual needs are satisfied’. The basic dimensions of this system according to Rubin are the rules of gender division, obligatory heterosexuality and the constraint of female sexuality.

Different scholars partition the gender system into different dimensions or levels. Ridgeway and Correll distinguish between gender beliefs (the cultural rules or schemas for enacting gender) and distribution of resources at macro level, patterns of behaviour and organisational practices at interactional level, and selves and identities at individual level (14). Harding makes different distinctions, and focuses on the relationships between gender symbolism, division of labour, and individual gender (masculine/feminine identity and behaviour) (15).

Connell, who has been highly influential in health research with a gender focus, uses the term gender order (16, 17). Connell has analysed the gender order using four dimensions: power, production, emotion and symbolism. While masculine domination is almost never total, power relations are present both between men and women, and among men, with hegemonic masculinity on top (see 2.2). Power is both organised and institutionalised (as in a country’s legal code) and diffuse and discursive (as in prescriptive gender beliefs). Production refers to the division of labour by sex, i.e. what is women’s work and men’s work. Emotional relations or cathexis (a term from psychoanalysis) refers to the social patterning of desire, which forms a joint system of prohibition and incitement. In western society today, the distinction between heterosexual and homosexual relations is the main axis of sexuality, and sexual attachment is the basis of household formation. Symbolic relations, finally, refer to that whole universe of ‘understandings, implications, overtones and allusions’ (17, p. 65), which goes into the words man and woman. Gender symbolism operates in language, dress, makeup, gesture, and in the arts. The different dimensions are not, of course, separate, but in practice often intermingled and may be both mutually reinforcing and contradictory.

Despite the differences between them, all the scholars above would agree that the gender system is a system with two fundamental dimensions: difference/dichotomy, and inequality/asymmetry (see also (18)), and both dimensions should be included in any operationalisation of the concepts gender equality/inequality. For the purposes of this thesis, the following definition of the gender system is proposed: a system of differentiation and stratification based on, but not determined by, sex. The latter
distinction is an attempt to steer clear of either crude biological reductionism, or free-floating social constructivism. That is, if the human race did not reproduce sexually, there would be no men and women, and no gender system. If we were to change sex during the course of our lives, as some animals do, it is likely that the gender system would operate very differently. However, the manifold ways and varieties of the gender system, as documented by historians and anthropologists, also point to constant change, and the possibility of a range of societies regarding both dimensions.

2.2 GENDER AND HEALTH

The idea of gender as relevant to health emerged with the second wave of the feminist movement in the 1970s as a concern for women’s health (19, 20). Among the issues raised were a critique of the androcentric medical profession and how definitions of health and disease were based on a male norm, a focus on reproductive health and the medicalisation of reproductive health, and on the improvement of health services for women. In the early 1980s, social background factors underlying women’s ill-health were explored. There was an emerging interest in gender differences in health, and also in differences among women based on conflicts between their different roles as mother, spouse and worker. The latter perspective, more common in the American tradition, tends to neglect structural context and material circumstances, with female gender being interpreted in individualistic terms (20).

During this time, there was also some research on men’s health from a sex-role perspective, founded in the assertion that aspects of traditional masculinity were potentially lethal (21). Some of the issues being explored were differences in how men and women perceive and experience illness and death, men’s violence against women, homophobia, bisexuality and gay rights. In the 1990s, there was a critique of sex-role theory’s focus on individual gender, socialisation and conformity to role expectations. A new view on gender identity as actively constructed and performed (‘doing gender’) was launched, alongside a focus on the way power shapes relationships between women and men and among men. This development has gradually shifted the research focus from women’s health and men’s health to gender and health (19).

Arber and Thomas present a gender analysis of health as based on gender imbalances in power, status and financial resources, the division of labour (both paid and unpaid), and male and/or institutionalised violence against women (19). Doyal investigates gender equity in health (which she defines as ‘equal access to the resources needed to realise the potential for health’) and suggests three basic policies to achieve it: universal access to high quality reproductive healthcare, gender equality in access to resources, and relaxing or removing constraining gender roles (22). Schofield and colleagues present a gender-relations approach to health, where men’s and women’s interactions and the circumstances under which they interact contribute to health opportunities and constraints (23). They use Connell’s gender order theory as a basis and point to factors like the gendered organisation of paid and unpaid work, of emotions and sexuality, differences in social power within different spheres, and symbolic representation, i.e. how men and women are portrayed to each other in language, fashion, print and the electronic media.
A key area of research within men’s studies is gender relations among men, and their implications for health. Connell distinguishes between hegemonic (marked by a successful claim to authority), complicit (benefits from supporting the hegemonic ideal), marginalised, and subordinate masculinities (24). The latter is most readily identified with homosexual/effeminate men, whilst marginalised masculinity may be defined as a position that picks up themes of hegemonic masculinity but reworks them in a context of poverty. What is accepted as hegemonic masculinity will differ across cultures, and is continuously contested and subject to change (25). According to Courtenay, health behaviours may be seen as assets in the construction of gender, where men who endorse hegemonic or traditional norms of masculinity take greater health risks than others (26, 27). While healthcare use and behaviours are socially constructed as feminine, unhealthy behaviours serve as cultural signifiers of ‘true’ masculinity, and as instruments used by men in the negotiation of social power and status. Some researchers point to the different practices of masculinity according to socioeconomic status, race and ethnicity (28, 29). For example, the extreme ‘hypermasculine’ high-risk practices of lower-status, marginalised men may be seen as ways in which they challenge their subordinated status (30).

2.2.1 The sex/gender distinction in health research

I agree with Bird and Rieker (31) that gender differences in health are seldom either purely biological or purely social. The physiological body is always implicated in the production of health or illness, but it needs to be said that biological differences are acquired as well as inherent; that is, our biology and our health change with us (otherwise, all health interventions would be futile). The interrelated nature of biology and gender relations in some outcomes is exemplified by Krieger, e.g. by the earlier age of human immunodeficiency virus (HIV) infection among women than men, the greater likelihood of referral of men than women for acute coronary symptoms, and the higher mortality among women than men from intimate partner violence (32). Bird and Rieker make a distinction between practices that either amplify or suppress biological differences. An example of amplification is societal emphasis on strength and physical activity in boys, and either a lack of emphasis or active discouragement (even banning) of similar activity in girls. An example of suppression might lie in women’s low-status and high-stress multiple roles (see 2.2.3.2), which diminishes some of their biological advantage regarding cardiovascular disease (CVD).

When it comes to trends and differences in morbidity and mortality between larger entities, such as municipalities or countries (studies I and IV), or even to differences between groups defined according to their level of equality with their partner (Study II), biological difference is unlikely to be a main predictor, since it should vary little between entities.

2.2.2 The gender gap in morbidity and mortality

When investigating gender differences in health, two important points should be kept in mind. First, one should be aware that quite small differences among a minority can produce statistically significant differences on average (23), and the studies in this thesis primarily deal in averages. Second, as stated by Kunitz regarding associations between sex, race, social stratification and mortality: ‘Even relationships that are
widely assumed and asserted to be universal are very likely to be historically and culturally specific’ (33). The variation in gender inequalities across time and between countries is a case in point.

2.2.2.1 Morbidity

As shown by Annandale (34), the view of women as particularly frail and defective has a long history in western thought. With the exception of women’s greater risk of autoimmune disorders, the physiological processes related to women’s child-bearing potential should not increase their rates of morbidity relative to men (31). However, men’s on average greater size, higher percentage of muscle mass, and better aerobic capacity should imply an advantage when being similarly exposed (e.g. to tobacco smoke or strenuous work). Also, regarding sexually transmitted diseases, women have a greatly increased risk of infection as a result of unsafe sex (35).

Even though gender differences in overall health (using global self-rated health measures) in high-income countries are small, there are major differences in women’s and men’s mental health (19). Women are more likely to report a range of neurotic disorders, but if dependency diagnoses are included, the gender gap diminishes considerably. While women are more often diagnosed with depression, many more men commit suicide, a fact that has made some argue that men more often remain undiagnosed (36). Others point to the devaluation of women as an obstacle to developing a positive sense of self, which is required for good mental health (22). Women suffer more from chronic illnesses, pain and functional impairment in old age (19), but this could in part be due to a healthy-survivor effect among men. The well-known gender paradox of greater longevity for women coupled with higher levels of illness has come into question since gender similarities in disease is a common finding (37). However, artefactual explanations, such as differential reporting or differences in help-seeking behaviours, have received only limited support (38-40).

Regarding sickness absence and disability, which is the illness measure used in this thesis, a review of the literature 1998-2008 concluded that women’s higher rate of absenteeism is not evident in all countries or age groups, and seems to be restricted to short-term absence (41). A range of factors have been shown to be related to gender differences in sickness absence, including pregnancy-related health problems and dysmenorrhea, women’s poorer psychosocial work environment, the use of absenteeism as a preventive health behaviour, being in a minority in the workplace, and having an organisational culture that favours absenteeism. Swedish data show that there were fewer cases of sickness absence among women up until 1980, after which there has been an increasing difference to women’s disadvantage (42). Women’s disadvantage is especially high for mental disorders, and female-dominated occupations have overall higher levels of sickness absence. This is also true for men in these occupations.

2.2.2.2 Mortality

In countries where very long time-series data are available, it has been shown that from the early 17th to the early 20th century male and female mortality differed only slightly, with absolute differences ranging from 0 to 2 years in terms of life expectancy at birth.
In some age groups, a male advantage has been found, due to gender-unequal resource allocation and high maternal mortality (45). Biological explanations for the gender mortality gap emphasise the health advantages that result from the physiological systems that facilitate pregnancy and childbirth (31, 46). Apart from the challenges faced by women when realising their reproductive potential, research indicates that men are the weaker sex, which is reflected in higher numbers of male deaths in utero and around the time of birth (22). Women’s immune system also seems to be stronger and somewhat different, which has been linked to demands during pregnancy (31). Men’s apparently greater susceptibility to cardiovascular disease (CVD) is only of relevance in affluent societies where life expectancy is high, and where lifestyles favour the development of the metabolic syndrome. Thus presupposing a natural female advantage of as much as five years, as in the Gender-related Development Index (GDI)\(^1\) seems unwarranted, although it would be difficult, perhaps impossible, to establish the magnitude of the natural gap.

According to Arber and Thomas (19), the following patterns in the gender gap in mortality can be found across countries:

- Very little difference – countries where women’s status is extremely low. Maternal mortality is high and resource allocation is very unequal, leading to excess female deaths due to malnourishment and infectious disease and to low access to healthcare. In these low-income countries, many women are exposed to violence.
- Women outlive men by 2-4 yrs – transitional societies with falling maternal mortality but still large gender inequalities in society, putting women more at risk of poverty.
- Women outlive men by 5-7 years – high-income countries where the combined effect of women’s biological advantage and men’s higher rate of mortality from occupational hazards and risky behaviours (including smoking) produces a large gender gap.\(^2\)

Since 1950 the male/female mortality gap in high-income countries has increased and then decreased, peaking from the early 1970s to the 1990s in most countries (48). The causes of death that have contributed most to the decline are heart disease, accidents and violence (excluding suicide), lung cancer and breast cancer (49). Smoking is strongly associated with the gender gaps in mortality (50, 51). Data regarding the mortality gap for deaths from external causes show that, since 1940, there has been a faster mortality decline among women than men, followed by larger improvements among young men (44, 49). Gender differences have decreased regarding fatal motor-vehicle and occupational accidents, but not as consistently for accidental falls or poisonings (52). It is probable that both changes in the division of labour and in behavioural risk factors are implicated in these trends.

\(^1\) The Human Development Index (life expectancy, gross enrolment ratio in education, literacy rate, earned income) adjusted for gender inequality on each dimension (47).

\(^2\) They also discuss a ‘special case’, where women outlive men by 8 years or more. This is found in societies or subgroups in crisis, as exemplified by post-communist Russia or by black men in the USA.
2.2.3 Previous empirical studies

2.2.3.1 Unequal resources

The gender system fundamentally fixes the social determinants of health along gender lines. Resources with which an individual can choose and direct his/her own life, such as participation in political and economic decision-making, work opportunities and income, and also time constraints, are unequally distributed between men and women (53-56). Overall, it is fair to say that, in socioeconomic terms, men as a group derive major benefits from the gender system (22). As stated by the Commission on Social Determinants of Health, these imbalances influence health through ‘discriminatory feeding patterns, violence against women, lack of access to resources and opportunities, and lack of decision-making power over one’s own health’ (53).

According to one study, if women had the same levels of paid work, household income, economic hardship, work rewards, and distress as men, their health would equal that of men and surpass it by age 59 (57). This finding has been supported by some studies (58), but in others differences in exposure have not been found to contribute to gender differences in morbidity (59). Other social statuses may be more important; for example, black women in the United States who hold a college degree report worse self-rated health than white men, white women, and black men with only a high school diploma (60). One way of examining differences is to do the opposite – to compare like with like. This was the approach taken by Emslie and colleagues, who investigated men and women in similar positions working for the same employers (a bank, university, and the civil service) (61, 62). They found that, after controlling for marital and parental status, car and house ownership, and job grade, significant gender differences in mental health still remained in the civil service but not in the other two organisations. Regarding minor physical morbidity, the most powerful predictor for both men and women was working conditions, and after controlling for these no gender differences remained.

Ecological and multilevel studies from the USA have examined gender equality at state level as a determinant of health. These studies have used indices of women’s political participation, economic autonomy, employment and earnings, and reproductive rights as indicators. Investigated outcomes were mortality and reported days of activity limitation (2), women’s self-rated health (63), depressive symptoms (64), and child well-being (65). These studies have found that states that perform poorly on the gender equality indicators also have worse health outcomes – for men, women and children. An international study of adolescents’ health have shown that health complaints in both boys and girls are lower in countries with a high score on the United Nations Development Programme’s (UNDP) GEM, and that the gender gap in complaints is larger in countries with low scores on the GDI (66). A Swedish time-series analysis of data between 1945 and 1992 showed that economic growth favoured women’s mortality decline more than men’s, and associations between the male/female wage ratio and men’s excess mortality showed that a relative decline in male resources benefited women relative to men (67).
2.2.3.2 Role theory

Since Goode first introduced role strain theory in 1960 (68), there has been an abundance of studies of the health effects of women’s multiple roles. This should be seen in the context of the increase in married women’s/mothers’ employment since then. According to Waldron, the hypothesis that has received the most support is the role substitution hypothesis, which posits that employment and marriage may be substitutes for each other (providing both financial and social support), while there is little support for the idea that combining roles has harmful effects (69). Another review of 50 years of research shows that employment per se has no adverse effects, and that there are no consistent interactions between the roles of spouse and mother (70). Employed women also seem to be at a health advantage (71), although particularly stressful, demanding or time-consuming work may modify that picture (72). The beneficial health effects of multiple roles may be due to greater economic independence and negotiating power within the family, increased opportunities for social interaction, skills enhancement, and personal growth. Although there is probably health selection into multiple-role occupancy, longitudinal studies suggest that this does not account for the association (73, 74). Another line of research focuses on the quality of the roles that a woman occupies, providing support for the hypothesis that role quality is a stronger predictor of health than number of roles or time spent in any particular role (71, 75).

Since the roles of spouse and mother are frequently seen as being in conflict with the work role, whereas those of spouse and father are seen as being in concordance with the same, the (possibly) changing roles of men have seldom been investigated. Studies examining both men and women have found age differences, such that primarily older men benefit from multiple roles (76, 77), that men in couples with a traditional labour division have higher mortality than more equal men but that the opposite is true for women (78), that both men and women perceive marital problems as created by the wife combining employment and parenthood (79), and that caring for children may have a buffering effect on psychosocial symptoms for men working long hours, whereas women are more vulnerable to double exposure (80).

2.2.3.3 Masculinities and health behaviours

Behavioural factors play a major role in explaining men’s disadvantage on some health outcomes, such as mortality through external causes and CVD, where we find the largest gender gaps (67, 81-83). Adhering to hegemonic masculinity has been linked to refusal to adopt a healthy lifestyle, reluctance to seek help, a desire to be seen to endure physical pain and discomfort, and lack of preventive healthcare (84-86). Even men pursuing health-promoting lifestyles have been found to reject a direct interest in health (87). However, there is also research pointing to a more diverse relationship between masculinity and health. For example, aspects of masculinity have been shown to be health-enhancing in terms of psychological well-being (88). High masculinity rank, based primarily on leisure-time activities, has also been shown to correlate with lower mortality (89).

Correspondingly, women’s advantage on some health outcomes may be due to embracing the feminine ideals of caring and caution; and greater opportunities for women due to enhanced resources may go hand-in-hand with the idea of the
emancipated woman as one who embraces risky masculine practices, thus coupling opportunity to motive. For example, one study found that women working full-time while having small children were more likely to have received an alcohol diagnosis at follow-up (90), and studies show that both men and women with high masculinity scores smoke more and drink more heavily (91). Studies of women have, however, also found that lack of leadership confidence (with leadership coded as a masculine trait) is associated with problem drinking (92). Regarding socioeconomic and ethnic differences, it has been shown that among college students, alcohol use symbolises the embodiment of hegemonic masculinity only among white men (93), and that working class masculinities interact with men’s vulnerable social position to create potentially injurious practices at work (94).

2.3 GENDER POLICY AND POLICY REGIMES

The concept of welfare regimes – clusters of relatively homogenous countries defined according to their welfare production mix – was first introduced by Esping-Andersen (95) (although there are a number of precursors to welfare modelling, see (96)). The concept has had a huge following, but also undergone poignant criticism, a number of expansions, and the consideration of additional aspects (97-99). As outlined by Esping-Andersen (95), the main dimensions of welfare regimes are social rights in terms of decommodification (relative economic autonomy from the market), the redistributive effect of welfare states, and state-market relations in welfare production and distribution. The three original clusters were designated as social democratic, liberal and corporatist.

According to Powell, the main attraction of the regime concept is its potential for an understanding of welfare production as a whole, but the utility of the concept may be lost due to a focus on counting worlds and debating the classification of specific countries, while the core concepts are seldom scrutinised (96). However, even as the welfare-regime typology has been rightly criticised, it is still often used indiscriminately within health research (100). One of the first, and most influential, critiques came from feminist scholars, who maintained that the welfare-regime approach ignored sex as a dimension of stratification, and that a gendered analysis would produce different clusters from the ones found. According to this critique, states are core institutions of the gender system, involved in shaping gendered divisions of labour and the preferences, needs, and desires that sustain them (101).

Lewis (102, 103) was among the first to develop a gender-focused (or rather, women-focused) alternative typology. She has studied how women are treated as wives, mothers and workers in different welfare states, with an emphasis on measures of paid work, unpaid work, and welfare (social insurance/assistance). She has investigated (married) women’s labour-market position, social security and tax position, and the provision of childcare in a few countries, providing a basis on which to distinguish

Masculinity and femininity were measured by the Bem Sex Role Inventory. Qualities judged as masculine are: defend my own beliefs, independent, assertive, strong personality, forceful, have leadership abilities, willing to take risks, dominant, willing to take a stand, aggressive. Qualities judged as feminine are: affectionate, sympathetic, sensitive to the needs of others, understanding, compassionate, eager to soothe hurt feelings, warm, tender, loves children, gentle.
between strong, modified, and weak breadwinner states. Lewis, together with Ostner, has used this typology to predict policymakers’ support for or resistance to EU policies that encourage universal breadwinning (104). In later work, she presents the adult-worker model and one-and-a-half earner model to describe household patterns of male and female paid work and arrangements for care (105, 106). Lewis’s typology rests on measures of both policy and outcome (see figure 1), and her analyses never incorporate more than a handful of countries.

**Figure 1.** Main focus of different gender regime typologies

Both O’Connor and Orloff have added gender relations to Esping-Andersen’s typology (107, 108). One key aspect is an expansion of the term decommodification to include personal autonomy or ‘the capacity to form an autonomous household’ (108). This was later taken up by Esping-Andersen as defamilialisation, which he defines as ‘an individual’s command of economic resources independently of familial or conjugal reciprocities’ (109, p. 45). Another important dimension is the full spectrum of political, civil, and social rights, including reproductive body rights, and a broadening of the political to include social movements, client representative groups, and the exercise of power through femocrats (feminist bureaucracies) (110, 111). Their and Shaver’s case studies of some liberal countries – Canada, the United States, Great Britain, and Australia – have revealed important ideological differences related to the degree of gender-difference or gender-sameness of policies (111).

Korpi has chosen to focus on the structure of gendered policy institutions in an analysis of 18 OECD countries (56). He emphasises the degree to which policies support women’s labour force participation, using indicators based on child allowances, family tax benefits, day care, parental leave, and services directed at the elderly, to construct two indices of dual-earner support (policies encouraging women’s labour force participation and the redistribution of care work) and general family support.
(encompasses both more neutral family support and support for the traditional male-breadwinner model). A third type of welfare state according to Korpi is characterised by a lack of any kind of support (market-oriented). Using data from 1985-90, all Nordic countries were classified as providing dual-earner support, the English-speaking countries, with the exception of Ireland but with the inclusion of Switzerland and Japan, as market-oriented, and the rest as having a general family-support model. In later writings, the number of indicators has grown, reflecting also a dual-carer dimension (parental and reserved paternity leave) and the models have been renamed earner-carer and traditional family model, bringing them closer to Sainsbury’s framework (112).

### 2.3.1 Sainsbury’s gender policy regimes

This thesis has used Sainsbury’s gender policy regime framework. Among the advantages of this framework is that it distinguishes between policy and outcome, and pays equal attention to the social rights of women and men. Moreover, Sainsbury has proposed emerging aspects of a separate gender roles model, representing a ‘different but equal’ strategy – policies we were eager to explore. Sainsbury defines the concept of a gender policy regime as ‘a given organisation of gender relations associated with a policy logic (…) ideologies that describe actual or preferred relations between women and men, principles of entitlement, and policy construction’ (113). From previous feminist scholarship, she identifies gender-relevant dimensions of variation: whether rights are attached to the individual or based on family relationships and marital status, the degree of gender differentiation in entitlements, the scope of state responsibility for caring tasks, and the degree of equality of access to paid work (114). According to Sainsbury, entitlements based on citizenship/residence are of particular importance, since they have a stronger defamilialising potential than other principles of eligibility.

Sainsbury originally proposed two ideal types of regimes: the male breadwinner and the individual earner-carer (hereafter abbreviated to earner-carer) (115). The male breadwinner regime is characterised by a gender ideology of male privilege based on a gendered division of labour (see Table 1, Study III). As family providers, men have entitlements that stem from the principle of maintenance. Women receive derived rights as wives, and are obliged to care for their husband and children through unpaid work. In the earner-carer regime, the preferred relations between women and men entail shared roles and obligations, leading to equal rights; there is strong state involvement in the care of children, the sick, and the elderly through services that facilitate employment for all, while temporary caring activities are remunerated. In later writings, Sainsbury (113) claimed that the policies of specific countries were moving toward a separate gender roles regime, with social rights attached to the role of either male family provider or female caregiver. Within this framework, Sainsbury has examined gender inequalities in access to social insurance programs, women’s derived entitlements (as wives), solo mothers’ entitlements and redistributive outcomes in the United Kingdom, the Netherlands, the United States and Sweden (116). She has also performed a case study of the social democratic states, finding both convergence and persistent variation, much of the latter being due to differences in the gender ideology of women’s organisations in the different countries (117). Korpi’s and Sainsbury’s models are rather similar, the main difference being Sainsbury’s addition of the
separate gender roles model, and Korpi’s conflation of general family support and support directed at the male breadwinner. Sainsbury’s framework is also broader, since it incorporates the full range of social insurances, and also labour-market regulation.

There are also other types of typologies, which emphasise the importance of cultural norms. Pfau-Effinger asserts that to explain cross-national variation and change in gender arrangements, institutional, economic and cultural factors within the same framework should be combined (118, 119). Later, she expands her typology to include the whole welfare system, not just gender relations (in what becomes a complex and rather cumbersome model) (120). Although Sainsbury explicitly incorporates gender ideology (clearly a cultural concept) in her framework, it is not measured but rather seen as a driving force that explains the current regime type.

2.3.2 Previous empirical studies

The gender regime literature tends to deal with a limited number of countries in the form of case studies, while empirical studies based on a larger sample and quantitative analyses are rare; further, we have found few which explicitly use a theoretical framework. Ferrarini has studied parental leave generosity during the child’s first year in 18 OECD countries between 1950 and 2000 within Korpi’s framework (121). His analysis mainly supported Korpi’s classification of countries, although he also found a movement toward a ‘contradictory’ family policy model in some countries with both dual-earner and general family support, notably the Nordic countries. He also found that, over time, parental leave generosity, while expanding in most countries, has diverged, since the increased generosity in dual-earner countries clearly exceeds that in the other countries. In a later paper, including more indicators, Ireland joins the market-oriented countries, but otherwise the early typology is supported (122).

Bambra tested an index of defamilisation (measured by the indicators female/male labour force participation rate, gender wage gap, and maternity leave compensation and duration) against index scores for decommodification in 18 OECD countries in 1997 (123). Using the same method as in Esping-Andersen’s original work (which will always result in three clusters), the study found that four countries moved from one group to another depending on what index was used. Since three of these countries were originally liberal, this meant that half of the liberal countries – Canada, Ireland, and the United Kingdom – changed groups, joining the medium performers. In a later study using hierarchical cluster analysis, Bambra found five clusters based on the same defamilisation indicators, except for relative wages (124). The five-cluster solution consisted of one large cluster of mainly European continental countries, three clusters of just two countries each (Norway and Sweden, Australia and the United States, Italy and Japan), and one cluster of three (Canada, Finland and the United Kingdom). Several countries were set aside as ‘unclear cases’. Finally, Pankratz has investigated how family policy reinforces class stratification in 12 OECD countries (125). With Southern European countries and Japan excluded, his classification primarily supports Esping-Andersen’s original typology, with the United Kingdom and Belgium being mixed cases. Thus far, few studies have looked at male breadwinner support or policies that support carers in the home, and no study has investigated clustering over time.
2.4 WELFARE POLICY AND HEALTH

Since welfare policies have clear effects on income distribution and poverty outcomes (126-128), it seems likely that they should have effects on the health of the population, and on health disparities. According to a framework developed by Diderichsen and colleagues (129), policy may influence the characteristics and number of people in a certain social position, differential exposure, and differential vulnerability among people in varying social positions. For example, policy may influence the number of women outside the labour force or in precarious employment, their risk of living in poverty due to these circumstances, and the risk that being poor is associated with other exposures, such as crime or unhealthy housing. As shown in a review by Ferrarini and Duvander, earner-carer policies have been related to high female labour force participation, in particular among working-class women, relatively high fertility rates, high male participation in caring for children, and low levels of child poverty (130). Others have found that, while family benefits and childcare for young children reduce poverty rates, maternity leave does not, and very long periods of leave may even increase poverty (131).

Studies using the welfare regime framework tend to find no differences favouring social democratic welfare regimes in terms of health inequalities defined according to education, social class or income (6, 9, 132-134), although there are exceptions (135, 136). Instead, the corporatist countries often show the smallest (relative) differences. However, some studies have found cluster differences in absolute levels of health that favour the Nordic countries, and there are indications that the Nordic welfare state may buffer the detrimental effects of economic recession (6). The outcomes most consistently related to the strength of redistributive policies concern infant mortality and birth weight (137, 138). A different analytic strategy is to investigate specific policies and their impacts on population health. Factors identified as important for health improvements are total social spending, universal access to social insurance, and the generosity of basic security pensions (139). A recent review of 73 comparative studies has shown that the factors that most consistently benefit health is the strength of democracy and egalitarian political traditions, whereas studies using a welfare regime framework more often has found mixed results (140).

Research on the health effects of gender policy, or the effect of policy on gender differences in health, is rare. A group of researchers, however, have examined the association between US state-level policies and health outcomes for women. In these studies, access to health insurance and services, gun control, and policies on violence against women were related to female mental health and cause-specific mortality (141), and access to healthcare, policies on violence against women and antidiscrimination policies were associated with blood pressure, smoking and obesity (142). Aspects of earner-carer policies (e.g. paid parental leave) have been shown to be related to lower infant mortality (143, 144). Bambra and colleagues (145) examined the relationship between gender and self-assessed health in 13 countries categorised within an expanded welfare regime framework (146). The study showed that, while women in the social democratic and Southern European welfare states were more likely to report worse health than men, there were no gender differences in the corporatist countries. Possible causes of the poor performance of the social democratic countries were, according to
the authors, women’s dual roles in countries with high female labour force participation, combined with a sex-segregated labour market offering worse jobs for women. Research regarding work-family conflict and well-being in different countries has found that women living in countries applying a traditional family policy model (according to Korpi’s typology) benefit from more hours of both paid work and unpaid work, which may be due to the polarisation of women into either, but not both (147).

2.5 A FRAMEWORK FOR STUDying GENDER POLICY AND GENDER EQUALITY AS DETERMINANTS OF HEALTH

The factors listed here are based on previous theoretical and empirical research. However, they do not cover the full range of factors presented above, but refer more specifically to the studies at hand, which primarily compare high-income nations and smaller areas within a relatively gender-equal nation, and are based on statistical registers and policy data (see Figure 2).

![Figure 2. Overarching study design](image)

2.5.1 Policy

Current policies tend to reflect a particular society’s gender ideology and commonly shared practices. However, new policies may also reflect the gender ideology of the political party in power and are introduced to change current gender relations. Alternatively, they may have been introduced to deal with ‘new’ gender relations that have been in place for some time. When policies are poorly constructed or not acceptable according to current gender norms, take-up will be low. As discussed by Pfau-Effinger, there may be either a cultural or a policy lag when these two dimensions are not fully in tune (119). This lag will make it more difficult to find evidence of a policy effect on health.

Gender policy may be seen as an opportunity structure, which facilitates or impedes certain gender relations. Earner-carer policies are designed to enhance opportunities for
employment among women and especially mothers, while also supporting men as fathers, whereas male breadwinner policies support traditional family forms through tax credits and benefits directed at a single breadwinner with dependents. Separate gender role policies may, on the other hand, support female emancipation within a traditional division of labour through social rights based on a status as carer. As argued by Sainsbury, entitlements based on residency are especially empowering (and equalising), since they are granted to all regardless of labour market or family status. Within studies III and IV, we have attempted to include indicators reflecting all three gender policy regimes.

2.5.2 Division of labour

Division of labour may be divided into the gender segregation of paid and unpaid work, and the horizontal and vertical segregation of paid work. Men are more often managers, work in the manufacturing sector, and work full-time, whereas women more often have service jobs, work in the public sector, and work part-time (148). Unpaid caring work, and other domestic work, is mostly women’s work (149). Such gender segregation may have health effects through differential exposure to stressful, physically arduous, precarious, emotionally taxing or deeply rewarding work, and is related to differences in earnings, status, total work load, and societal recognition, and also to individuals’ bargaining position vis à vis partners, and worker collectives’ bargaining position vis à vis employers. Gender division of labour covers more than ‘roles’, since it encompasses also the content of these roles. Division of labour was included most fully in studies I and II.

2.5.3 Resources

Women are systematically disadvantaged socioeconomically by the gender system. In the tradition of the Swedish approach to individual welfare, we may refer to an individual’s welfare resources – the resources with which an individual can control and consciously direct his/her living conditions (150). While gender equality of resources should primarily benefit women’s health, greater resources may also enhance the opportunity for health-endangering practices, ranging from driving the kids to school to extreme sports. Resources, as we have included them in this thesis (political participation, earned income and poverty) reflect the power dimension in Connell’s gender order framework – both power over one’s own life (empowerment), and ‘voice’ (the possibilities of being heard and influencing others). Gender equality regarding resources is considered in studies I, II and IV.

2.5.4 Health behaviours

As has been shown in masculinities research, health-relevant practices are strongly gender-marked. But just as risky health behaviours may be used to demonstrate masculinity, they may also be used by women to demonstrate independence and the rejection of traditional gender norms. Equating hegemonic masculinity with risk-taking may also be more or less true in different social contexts, and the prevalence of marginalised masculinities will also differ depending on the magnitude of a society’s socioeconomic inequality. The strength of prescriptive ideals regarding femininity as risk-aversive and health-conscious will also differ across time and place. Due to the
aggregate nature of much of the data (with indicators not being divided by sex) and the shortcomings of registry data, it has not generally been possible to include health behaviours, apart from in Study IV, and it remains a pathway that is not fully investigated.

2.5.5 Gender ideology

In this thesis, gender ideology refers to prevailing gender norms and prescriptions in society at large, rather than the gender ideology held by a particular individual. Although gender ideology has not been measured per se, it may be expressed through a country’s gender policy, or through structural features (level of gender equality) in the local community. For example, the community may be more or less supportive of traditional or gender-equal family forms. It is probable that it is more beneficial for health to live in congruence with the prevailing gender ideology. There may also be inherent differences between people who adopt the ‘innovation’ gender equality early or late (151). The possible effect of gender ideology is primarily investigated in Study II, which combines data at local and individual level.

2.5.6 Outcomes

Since this thesis relies on time-series and administrative data, we have included registered morbidity and mortality outcomes, and also the gender gaps in these. However, this also means that we lack measures of self-assessed health. Research has shown, for example, that masculinity rank is associated with a lesser likelihood of reporting suicidal thoughts among both men and women (152), and perceived gender inequality in a partner relationship has been shown to be related to psychological distress for both sexes (153, 154). It is possible that the associations between our predictors and health are dependent on the health measure employed. Thus, for example, not including mental health is a limitation. For a discussion of the included outcomes, see 6.5.3.
3 OVERARCHING AIM

The overarching aim of this thesis is to investigate gender policy and gender equality as determinants of health. The settings are Sweden and 22 OECD countries, and the studies span the time period 1973-2008.

3.1 RESEARCH QUESTIONS

Within the two main domains, gender policy and gender equality, four specific research questions were formulated. These are:

1. Are there associations between gender equality and measures of mortality and morbidity, and does gender equality lead to convergence of the chosen outcomes? (Study I and Study IV)
2. Is the association between equality at couple level and individual morbidity dependent on the level of gender equality in the local environment? (Study II)
3. Can the 22 countries considered be classified according to Sainsbury’s gender policy regimes typology, and how stable is the clustering of countries over time? (Study III)
4. Does gender policy have an impact on the gender gap in cause-specific mortality, and is gender equality a mediator between gender policy and mortality? (Study IV)
4 MATERIALS AND METHODS

The relationships between the research questions, individual studies, materials and methods are shown in Figure 3.

4.1 MATERIALS

4.1.1 Local level (Study I and Study II)

In studies I and II, both aggregate and global data (155) regarding the situation at municipality level were used. Data were taken from Statistics Sweden (www.scb.se) for both studies, and also from the Swedish National Institute of Public Health’s website (http://www.fhi.se/Statistik-uppföljning/Kommunala-basfakta-KBF/Databas/) for Study I. For Study II, which measures the situation around 1980, only a subset of indicators were available (see Table 1). All data were publicly available except for information on parental leave and temporary childcare for 1980, which was procured from the national social-insurance agency (Försäkringskassan). In both studies, all Swedish municipalities were included, 289 for 2001-02 (Study I) and 279 for 1980 (Study II).

4.1.1.1 Predictors (Study I)

In Study I, gender equality was measured using nine indicators, and one additive index (see Table 1). All indicators were transformed using the formula \( I = \frac{\text{female}}{\text{female} + \text{male}} \times 100 \). 50 represents perfect equality, 0-49 male dominance, and 51-100 female dominance. As an increase sometimes indicates increasing equality (values below 50), and sometimes decreasing equality (values over 50), all values over 50 were converted by subtracting each value from 100, so that the scales run from 0-50, with 50 representing absolute equality. An additive index was also constructed by adding all indicators and dividing by the total number of indicators.

Table 1. Dimensions and indicators of gender equality at local level

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Indicator</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Political participation</td>
<td>Female vs. male share on municipal councils</td>
<td>1980 and 2002</td>
</tr>
<tr>
<td></td>
<td>Female vs. male share on municipal executive committees</td>
<td>2002</td>
</tr>
<tr>
<td>2. Division of labour</td>
<td>Female vs. male share in temporary childcare leave (days)</td>
<td>1980 and 2002</td>
</tr>
<tr>
<td></td>
<td>Female vs. male part-time employment in the age group 25-44 years</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>Female vs. male employment in healthcare and social services</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>Female vs. male employment in manufacturing</td>
<td>1980 and 2001</td>
</tr>
<tr>
<td></td>
<td>Female vs. male share in managerial positions</td>
<td>2002</td>
</tr>
<tr>
<td>3. Economic resources</td>
<td>Female vs. male average income</td>
<td>1980 and 2001</td>
</tr>
<tr>
<td></td>
<td>Female vs. male relative poverty</td>
<td>2001</td>
</tr>
</tbody>
</table>
### Research questions and study summary

**Gender equality**

1. Are there associations between gender equality and measures of mortality and morbidity, and does gender equality lead to convergence of the chosen outcomes?

2. Is the association between equality at couple level and individual morbidity dependent on the level of gender equality in the local environment?

**Gender policy**

3. Can the 22 countries considered be classified according to Sainsbury’s gender policy regimes typology, and how stable is the clustering of countries over time?

4. Does gender policy have an impact on the gender gap in cause-specific mortality, and is gender equality a mediator between gender policy and mortality?

---

**Study**

- **Local level**
  - Research: Gender equality indicators and clusters
  - Predictor(s): Gender equality at municipal level
  - Outcome(s): Life expectancy, and sickness and disability

- **Individual level**
  - Research: Gender policy clusters and indicators
  - Predictor(s): Gender equality at couple and municipal level
  - Outcome(s): High level of sick-leave

- **Country level**
  - Research: Gender policy clusters and indicators
  - Predictor(s): Gender policy clusters
  - Outcome(s): External cause and circulatory disease mortality

---

**Material**

- Local level: 289 municipalities, 2000-04
- Individual level: 37,423 fathers and 37,616 mothers in 279 municipalities, 1980-1999
- Country level: 22 countries, 1979-2004

---

**Method**

- Linear regression
- Logistic regression
- Hierarchical cluster analysis
- Hierarchical linear regression

---

**Figure 3.** Research questions and summary of study materials and methods
4.1.1.2 Local-level index construction (Study II)

In Study II, there were only four indicators, which were combined into one index. A different approach was taken in Study II. As the number of indicators on two of the three dimensions is only one due to lack of data from 1980 (see Table 1), we chose to exclude some of the division of labour indicators to balance the index between dimensions. The indicators chosen for inclusion are those that showed reasonable variance between municipalities – temporary childcare and employment in manufacturing.

Since the aim of Study II was to combine equality at local and individual level (see 4.1.3), we chose to use an index rather than individual indicators (which would have complicated the picture considerably). We also wanted to pick out the municipalities that were especially equal or unequal, and to do so in a transparent manner. As Study I had shown, the additive index tends to compress the range, giving a span of 23.7-36.4, which compares, for example, with the score for municipal councils (27.0-49.0), or with employment in manufacturing (8.9-39.1). The reason is that gender equality in a particular municipality tends to be high on some indicators and low for others. Thus, we decided first to categorise the indicators into five groups of (in)equality, according to the following logic (as applied to average income):

1. Pronounced traditional – men >80%, women <20%
2. Moderately traditional – men 60-80%, women 20-40%
3. Equal – either sex 40–60%
4. Moderately untraditional – men 20-40%, women 60-80%
5. Pronounced untraditional – men <20%, women >80%

Based on the dispersion of the four indicators (see Table 3, Study II), municipalities that were equal or untraditional regarding temporary childcare leave and on any other indicator were coded as equal (13.8 % of the studied population). Those that were traditional regarding political participation or employment in manufacturing were coded as pronounced traditional (7.7 %). That leaves a moderately traditional group of 78.5 %.

4.1.1.3 Outcomes

For Study I, there were two main outcomes, life expectancy at birth (based on the average mortality rate in 2000-2004), and number of days of compensation per insured person for sickness absence and disability (data for 2002). Both measures were aggregated at municipal level. Absolute levels for men and women, and a measure of the relative gender gap, constructed in the same way as the gender equality indicators in Study I, were included as outcomes.

4.1.1.4 Confounders

For Study I, seven confounders were included; three measured the municipality’s economic situation4, three measured the population’s socioeconomic composition, and there were two dummy variables (15-29 and 30-49 year-olds) to take account of age

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4 Tax rates are generally higher in poor municipalities, and poor municipalities receive a net transfer from the state, to which the rich municipalities contribute.
structure (see Table 2). All confounders were significantly related to the outcomes. For Study II, data on few confounders were available for 1980, and only two were finally included. Based on their previously demonstrated importance, these were total employment rate and the proportion of the population with only mandatory education (see Table 2, 1980). The latter was replaced to reflect the lower educational level in the population in 1980. In this material, it also had a stronger relationship to health.

Table 2. Confounders at local level

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Indicator</th>
<th>Year(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic factors</td>
<td>Municipal tax rate (%)</td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>Redistribution between municipalities (SEK/inhabitant)</td>
<td>2003</td>
</tr>
<tr>
<td></td>
<td>Employment rate (%)</td>
<td>1980 and 2001</td>
</tr>
<tr>
<td>Socioeconomic</td>
<td>Post-secondary education (%)</td>
<td>2001</td>
</tr>
<tr>
<td>Composition</td>
<td>Mandatory education (%)</td>
<td>1980</td>
</tr>
<tr>
<td></td>
<td>Students (%)</td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>Foreign-born (%)</td>
<td>2001</td>
</tr>
<tr>
<td>Age structure</td>
<td>15-29, 30-49 and 50-64 (%)</td>
<td>2002</td>
</tr>
</tbody>
</table>

4.1.2 Individual/couple level (Study II)

Individual-level data came from a cohort consisting of all Swedish couples (N=49,120) who had their first mutual child in 1978. The cohort was extracted from the Multigenerational Register (Statistics Sweden). 3,475 men and 3,152 women could not be assigned to a municipality and were excluded. In the analyses, parents whose child was born abroad and where neither parent took parental leave were also excluded, since they were most likely not resident in Sweden at the time of the child’s birth, and did not have the choice of taking parental leave or not. (This information was used in the coding of couples into equal/traditional). Also excluded were individuals who had another child in 1980, since the 10 so-called ‘daddy-days’, which are reserved for the father following the birth of a child, is included in the indicator of temporary childcare leave. This left 37,423 men and 37,616 women.

4.1.2.1 Couple-level index construction

Based on a previous study of this cohort (78), gender equality at couple level (i.e. between partners) was measured using earned income and occupational position as indicators in the public sphere (classified in a ranking order of dominance as suggested by Erikson (156)), and parental leave and temporary childcare leave as indicators in the private sphere. In all the analyses, the two spheres were kept separate, as it has previously been found that associations with health differ between the two. Data were taken from the 1980 census.

On each indicator, the couples were classified into five categories, by analogy with the categorisation of the local-level indicators (see 4.1.1.2), after which the two indicators within each sphere were combined to form the equal, traditional and untraditional groups (see Table 1, Study II). Where one indicator was missing, the couples were coded on the basis of the remaining indicator.
To be coded as equal in the public or private sphere, the couples could be equal on one indicator and equal, moderately traditional or moderately untraditional on the other. Those that were moderately untraditional on one indicator and moderately traditional on the other were also coded as equal. 55% were coded as equal in the public sphere, and 3% in the private sphere. Some couples had a contradictory combination of pronounced traditional and pronounced untraditional positions. In the private sphere, the contradictory couples were all pronounced traditional in their usage of parental leave and pronounced untraditional regarding temporary childcare leave. Over 40% of the women in this group were non-employed, and thus could not take temporary childcare leave. These cases were coded as traditional. The rest (8.4%) were excluded from the regression analyses. In the public sphere, only 32 couples were contradictory and were excluded. In the public sphere, 41% were coded as traditional and 4% as untraditional. In the private sphere, 96% were coded as traditional and 2% as untraditional.

4.1.2.2 Outcomes

For Study II, the outcome was number of compensated days from sickness insurance during 1986–1999, with a cut-off point for the number of sick-leave days at the 85% percentile. For the full period, the limits were >170 days for men and >230 days for women.

4.1.2.3 Confounders

At individual level, confounders were chosen on the basis of their importance, as found in previous and on-going analyses (78, 90). As well as the absolute levels of the gender equality indicators for each individual (income, occupational position, number of compensated days for parental leave and temporary childcare leave), we also adjusted for type of work (based on the Nordic Occupational Classification, NYK) and whether the person was Swedish or foreign born.

4.1.3 Combining local and couple-level data (Study II)

4.1.3.1 Predictor

For Study II, gender equality at the couple and local level were combined into an index. The main possible combinations can be found in schematic form in Figure 4. Since there were three local-level categories, not two (equal, moderately traditional, and pronounced traditional) and three individual-level categories (equal, traditional and untraditional), there are also hybrid forms. These we have called modest pioneer and modest laggard (see Table 4, Study II). Moreover, categorisations were performed separately for the public sphere (with the individual-level indicators earned income and occupational position) and the private sphere (with the individual-level indicators parental leave and temporary childcare leave).
Figure 4. Combinations of gender equality at couple and local level

**Pioneers** – equal couples living in a pronounced traditional municipality, and untraditional couples in any municipality. These could also, in accordance with Rogers’ adopter categories (151), be called innovators. The pioneers are few, constituting 2 % in the private sphere, and 8 % in the public sphere.

**Modest pioneers** – equal couples in a moderately traditional municipality. These correspond to the group of early adopters (151). They are few in the private sphere (2 %), but the largest group in the public sphere (43 %).

**Equal in congruence** – equal couples living in an equal municipality. This combination is rare. In the private sphere, this group constitutes only 0.5 %, and in the public sphere, 8 %.

**Traditional in congruence** – traditional couples in a pronounced traditional municipality. These are as yet untouched by the ‘innovation’ gender equality, and they are also rare, constituting 7 % in the private sphere and 3 % in the public sphere.

**Modest laggards** – traditional couples in a moderately traditional municipality. These may or may not become late adopters. A majority in the private sphere are modest laggards (75 %), and they are the second largest group (32 %) in the public sphere.

**Laggards** – traditional couples in an equal municipality. These are unlikely to become adopters. They constitute 13 % in the private sphere, and 6 % in the public sphere.

### 4.1.4 Country level (Study III and Study IV)

Both Study III and Study IV concern policy data, collected and coded for 22 OECD countries 1973-2008. They represent all the countries that were OECD members in 1973. The main data source was the International Social Security Association’s publication *Social security programs throughout the world* (SSPTW) with information on pensions, disability and sickness, maternity and unemployment benefits, and family allowances. For data on social services, we used the OECD’s Social Expenditure Database (1980-2005). Information on marriage subsidy was taken from the Social Citizenship Indicator Program (SCIP) database (1970-2000). These data were complemented by the OECD’s *Taxing wages* for countries that were not included in the SCIP and for the latest time points (2005 and 2008). For the Nordic countries, SSPTW data were complemented with information from the Nordic Social Statistical Committee’s (NOSOSCO) publication *Social protection in the Nordic countries*. From
1998, data from the Mutual Information System on Social Protection in the Member States of the European Union (MISSOC) were also used. When information in the publications differed, NOSOSCO and MISSOC were preferred, since they are more detailed and closer to the source.

4.1.4.1 Predictors

The predictors for Study IV were the gender policy indicators and the 2004 cluster solution found in Study III. Included policy indicators concerned taxes, parental leave, pensions, social insurances and social services in kind to reflect Sainsbury’s three gender policy regimes: male breadwinner, earner-carer and separate gender roles (see Table 3). For a detailed account of all the indicators, see Study III. The male breadwinner indicators were monetary support to a sole breadwinner through tax allowances/credits or benefit supplements for a dependent wife, and low pension universality. The earner-carer indicators were generous parental leave, high social services expenditure, and separate taxation. The separate gender roles indicators were compensatory measures in the pension system and paid compensation for caregivers in the home. Benefits for caring, apart from extended childcare leave, were poorly recorded in the SSPTW, and could not be included. However, we used the available information and coded a summed indicator for 2004, combining the replacement rate for benefits for home care of a disabled person, single-parent supplements, and allowances for a sick or disabled child, all as a percentage of family or single person take-home pay (as appropriate).

Replacement rates (for maternity leave, extended childcare leave and caring) were expressed as a percentage of an average production worker’s wage (APW), also taken from Taxing Wages (and NOSOSCO for the Nordic countries). Prior to 1979, we used the replacement rates given in the SSPTW (only relevant for maternity leave). For parental leave and pension supplements, different rules sometimes apply depending on the number of children. We coded all rates for a family with two children. Sometimes, rules differ between employees in the public and private sector. Here, only the mandatory minimum is considered. All policies are coded from the year they were first introduced. Additional information directly from the countries concerned was retrieved when sources were unclear or conflicting, but in some cases we did not manage to reach a satisfactory solution. In these cases, observations were coded as missing.

The main reason for the selection of the 2004 cluster solution is that for this year, information on confounders was available for all countries. The 2004 cluster is summarised in Table 4, see 5.3 for a detailed presentation.
<table>
<thead>
<tr>
<th>Gender policy indicator</th>
<th>Measurement</th>
<th>Source</th>
<th>Year</th>
<th>Missing data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental leave</td>
<td>1. Maternity score (weeks*replacement rate)</td>
<td>SSPTW</td>
<td>1973-2008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Reserved and paid paternity leave (weeks)</td>
<td>=</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>Social services expenditure</td>
<td>3. Benefits in kind to families and in old age (expenditure as % of GDP)</td>
<td>Social Expenditure Database</td>
<td>1979-2005</td>
<td>Iceland 1979-89</td>
</tr>
<tr>
<td>Monetary support to breadwinner</td>
<td>5. Marriage subsidy (% of couple take-home pay)</td>
<td>SCIP, Taxing Wages</td>
<td>1970-2008</td>
<td>Portugal and Iceland, all years</td>
</tr>
<tr>
<td></td>
<td>6. Dependent-wife supplement (0-5)</td>
<td>SSPTW</td>
<td>1973-2008</td>
<td></td>
</tr>
<tr>
<td>Pension universality</td>
<td>7. Minimum pension requirement (years)</td>
<td>=</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Maximum pension requirement (years)</td>
<td>=</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>Gendered compensatory measures in pension system</td>
<td>9. Retirement-age gender gap (years)</td>
<td>=</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. Child credits (years for two children)</td>
<td>=</td>
<td>=</td>
<td>Italy and Portugal 1994-2008</td>
</tr>
<tr>
<td>Paid component to caregiver in the home</td>
<td>11. Extended leave score (weeks*replacement rate)</td>
<td>=</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12. Benefits for caring (replacement rate)</td>
<td>SSPTW, MISSOC</td>
<td>2004</td>
<td>Italy</td>
</tr>
</tbody>
</table>
Table 4. Country clusters in 2004: Included countries and defining features

<table>
<thead>
<tr>
<th></th>
<th>Male breadwinner</th>
<th>Compensatory breadwinner</th>
<th>Universal citizen</th>
<th>Earner-carer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generous parental leaves</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>High social services</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Separate taxation</td>
<td></td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>High pension universality</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>High monetary support to breadwinner</td>
<td>√</td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Compensatory measures in pension system</td>
<td>(√)</td>
<td></td>
<td></td>
<td>(√)</td>
</tr>
<tr>
<td>Generous extended childcare leaves</td>
<td>(√)</td>
<td></td>
<td></td>
<td>(√)</td>
</tr>
</tbody>
</table>

Male breadwinner: USA, Greece, Portugal, Spain, Switzerland, Japan, Germany, Ireland, France. Compensatory breadwinner: UK, Italy, Austria, Belgium, Canada. Universal citizen: Australia & New Zealand. Earner-carer: Norway, Iceland, Sweden, Denmark, Finland, Netherlands.

4.1.4.2 Outcomes

The outcomes for Study III were the country clustering for 1979, 1989, 1999 and 2004 (presented in the Results section, 5.3).

The outcomes for Study IV were mortality from external causes and circulatory disease. They were expressed as age-standardised (to the European standard population) mortality rates per 100 000. For absolute levels, outcomes were logged to meet the assumption of normality. The gender gap was calculated as a standardised measure, defined as the absolute difference divided by the male mortality level * 100. The values can theoretically run from minus 100 to plus 100. While external causes of death include deaths in all age groups, circulatory disease mortality extends only to those aged 64 years or less. Additional analyses were performed to include deaths at all ages. Descriptive results showed that for this outcome the standardised gender gap does not follow a normal distribution, and converting data using the natural logarithm did not improve this. Recalculating the gender gap by raising it to the power of two produces a near normal distribution, but it is skewed to the right. Given this departure from normality, the results must be interpreted with caution.

Mortality data comes from WHO Europe's Health for All database, except for the five non-European countries, where data were collected from WHO’s mortality database, and standardised by the authors. Data run from 1973-2008, with 2003 as the last year for which all countries have data. The few missing observations were imputed using linear interpolation.
4.1.4.3 Confounders and mediators

For Study IV, GDP/capita expressed in USD adjusted for the price level (purchasing power parity, PPP) was included as an indicator of the level of economic development. The data were taken from The OECD Factbook 2009, and run from 1973 to 2007. The Gini coefficient is included as an indicator of income inequality. The source is OECD’s Social and Welfare Statistics. A Gini coefficient is available since the mid-1970s, but only for eight of the 22 countries. It is updated every 5-10 years, but it is only since the mid-2000s that all countries have had data; therefore, it was included as a time-invariant variable, reflecting the situation around 2005.

The Gini coefficient is a measure of the inequality of a distribution, a value of 0 expressing total equality and a value of 1 maximal inequality.

The GEM was used as a measure of gender equality. It was included both as a predictor and as a mediator between gender policy and outcome. The GEM consists of the following indicators: female and male shares of parliamentary seats, female and male shares of positions as legislators, senior officials and managers, and female and male shares of professional and technical positions (all in relation to the male and female population size), and female and male estimated earned income in relation to a predefined goalpost (PPP: US $ 40,000). The first appearance of the GEM was in The 1995 Human development report and it is not updated annually. Therefore, the GEM was also only included as time-invariant, reflecting the situation around 2004.

Some health behaviours, which could be regarded either as confounders or mediators, since they are likely to be related to gender equality, were also included. These were, for external causes, alcohol consumption based on sales and measured as litres per capita per year, and for circulatory disease, alcohol consumption, total calorie intake per day (also based on sales), and male and female smoking prevalence (based on surveys). Information on smoking prevalence was not available for all years, with different starting points for different countries (ranging from 1973 to 1997). Missing data on smoking (in between end points) was imputed using linear interpolation. Information on all health behaviours come from OECD Health Data.

4.2 METHODS

4.2.1 Study I

The aim of Study I was to investigate the associations between gender equality at local level and measures of morbidity and mortality. The outcome, and also all predictors and confounders, were continuous, and linear regression analysis could be applied. Plots of indicators versus outcomes did not suggest thresholds or curvilinear associations, and linear regression was therefore suitable. Both the predictors and outcomes had approximately normal distributions. Assumptions of equal variances were checked using scatterplots.

In the analyses, the predictors were included first, then the absolute levels of the gender equality variables, i.e. the total proportion of part-time employment, employment in healthcare/social services and in manufacturing, average income, and the total proportion in relative poverty. Information on the number of temporary childcare leave days was not available, only the proportions taken by men and women in each
municipality. In the final model, confounders were added. Confounders and predictors were tested for multicollinearity to confirm relative independence. SPSS 17.0 was used for the analyses.

4.2.2 Study II

In Study II, the aim was to assess whether the level of gender equality in the local environment influenced the association between gender equality at couple level and individual morbidity. Sickness absence, the outcome variable, was dichotomised and logistic regression analysis was suitable (157). The cut-off point for being coded as a case was set at the 85th percentile, which should mean that the outcome is rare enough for odds ratios to be similar to relative risks, especially when they are relatively low. According to Davies (158), as the prevalence in either group rises above 20%, the gap between the odds ratio and the relative risk will widen. In this material, no group has a higher proportion of cases than 18%. Another aspect is that small sample sizes tend to bias results away from 1 (159). Due to the small size of some groups (smallest n=134), confidence intervals were large, and significance was highly dependent on choice of reference group. After trying all the different categories as reference group, a decision was made to use the overall odds as reference, since this was likely to produce the least biased result.

In these analyses, the combinatorial index was included first, alongside age (individual level), and then absolute levels of the gender-equality variables. In Model 3 confounders at local level were added, and in Model 4 confounders at individual level. Since choice of index for the local level made a big difference to the combinatorial index, additional analyses were made with an alternative index. Analyses were performed using SAS 9.2.

4.2.3 Study III

The aim of study III was empirically to test Sainsbury’s gender policy regimes framework. Hierarchical cluster analysis was used to group the countries, with the intent of finding sets of homogeneous cases (160-164). As Kangas has shown, using either regression analysis, qualitative comparative analysis (QCA) or cluster analysis gives results that are fairly compatible, and the three can be seen as parallel research options (165). Analyses were performed for four time points: 1979, 1989, 1999, and 2004. 1979 was the first year, and 2004/05 was the last year for which all data were available.

The distance measure chosen was squared Euclidian, and all indicators were first standardised into Z-scores. Ward’s method was used since it was less affected by outliers. The number of clusters was decided upon by scrutinising the dendrogram, and by investigating cluster differences on all indicators. A dendrogram is a tree diagram of the clustering process, where one can see at which points countries and initial clusters have been joined (see 5.3). The distance between clusters is standardised on a 0-25 scale (see Figure 5), and the longer the distances before two clusters are joined, the greater are the differences between these clusters. ANOVA was used to find significant cluster differences for specific policy indicators.
Data at different scaling levels should ideally not be combined in the same analysis. In order to include taxation (bivariate), we calculated Gower’s general coefficient of (dis)similarity in SAS PROC DISTANCE before clustering (166). The resulting cluster solutions, however, gave too much weight to this single bivariate indicator, and the clusters did not differentiate well between the other indicators. Therefore, a choice was made to mix indicators at different levels. As Romesburg states: ‘this simplistic solution may appear absurd, but in fact, it often works’ (166). The option of making all indicators bivariate was not pursued, since only a few indicators were suitable for dichotomisation. Analyses were performed using SPSS 18.0. In the cluster analyses, missing data (see Table 3) were imputed using the mean value for that year. As a sensitivity test, all cluster analyses were also performed excluding countries with missing values (Iceland and Portugal for all years, Italy for 1999-2004).

4.2.4 Study IV

In Study IV, the aim was to investigate whether gender policy was associated with the gender gap in cause-specific mortality. Analyses were also performed for male and female absolute levels (not shown). The data set consisted of 22 countries measured over a time period of 36 years (1973-2008). Data were analysed using hierarchical linear regression6 (167, 168). In this repeated measures model, years were the level-1 units, and countries were the level-2 units. As secular time trends are often strongly (but not necessarily causally) related, time trends were included, using a parametric cubic spline centred at 1990. To avoid over-fitting the data, only the effect of the linear term was allowed to vary between countries. When time was introduced into the model, the intraclass correlation (the correlation between the outcomes for two time-points within the same country) increased from 65 % to 85 % for external cause mortality, and from 58 % to 86 % for circulatory disease mortality. This implies that most of the remaining variability in the gender mortality gap was at level 2 (country level).

To account for the fact that yearly fluctuations depend on the size of a country’s population, average population size was included in the random part of the model. Autocorrelation, i.e. the correlation between level-1 residuals proximate in time, was accounted for by including an autocorrelation function (169, 170). This requires balanced data (no missing observations), and was therefore included on only a subset of the data (1973-2003), which for policy indicators with missing observations for more years/countries became even more limited. Average population size could not be included in models with the autocorrelation function due to problems with convergence. All analyses were performed using MLwiN 2.22.

The base model contained only time-trend terms. Model 1 included the 2004 cluster solution, with male breadwinner countries as reference group; Model 2 was adjusted for GDP/capita and the Gini coefficient for 2005; for Model 3, the GEM for 2004 was added as a possible mediator; and for Model 4, health-behaviour indicators were also added. The second part of the analyses investigated policy indicators characteristic of clusters that were significantly different from the reference group.

6 Note that hierarchical cluster analysis creates a hierarchy of clusters from individual cases through to a single cluster containing all observations. Hierarchical linear regression is applied when data are nested. In our case, the time points are nested within the countries.
5 RESULTS

5.1 GENDER EQUALITY, MORBIDITY AND MORTALITY

To reiterate, the first research question was formulated as: Are there associations between gender equality and measures of mortality and morbidity, and does gender equality lead to convergence of the chosen outcomes? In Study I, this was investigated at municipal level, and in Study IV at country level.

5.1.1 Study I

In Study I, there were two outcomes, the per capita number of days of compensation for sickness and disability, and life expectancy. For the gender gap in sickness and disability, four out of the nine indicators were related to convergence after full adjustment; equality of part-time employment, managerial positions (weak association), average income and relative poverty. Most of the indicators, and also the additive index, were associated with a higher level of sickness and disability for both men and women (see Table 3, Study I). In the fully adjusted model, equality of part-time employment (for men) and the additive index (for women) had the strongest associations with this outcome. When part-time employment increased by one unit (1/50), sickness and disability increased by on average 3.2 days for men; and when the additive index increased by one unit, sickness and disability increased by 1.3 days for women.

For the gender gap in life expectancy, the only significant indicators were the two economic resources indicators (showing divergence) and temporary parental leave (showing convergence). For life expectancy, four indicators, including the additive index, were associated with the outcome in the full model (see Table 4, Study I). Both in the unadjusted and fully adjusted model, equality of average income was most strongly associated with poorer health for both men and women, corresponding to a decrease of 0.21 years for women (2.6 months) and a decrease of 0.33 years (3.9 months) for men for each unit increase in that indicator.

5.1.2 Study IV

In Study IV, the two outcomes were morality due to external causes and circulatory disease. Gender equality as measured by the GEM was associated with a smaller gender gap in external cause mortality, which became insignificant after addition of GDP (see Table 5). For absolute levels, the GEM was associated with a higher level of female external cause mortality, also insignificant after addition of GDP. For circulatory disease mortality, the GEM was related to a larger gender gap in 1990 and a decrease over time so that for each 1 unit increase (with values running from 0 to 10) the gender gap decreased by 8.5 points across the whole period. This finding was related to a high level of male mortality in 1990 and a decrease over time, while it was unrelated to female mortality. The addition of health behaviours attenuated the association only slightly.
Table 5. Associations between the GEM 2004 and the mortality outcomes. Hierarchical linear regression estimates (standard error).

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External causes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men (logged)</td>
<td>0.04 (0.05)</td>
<td>0.03 (0.06)</td>
<td>0.04 (0.06)</td>
</tr>
<tr>
<td>Women (logged)</td>
<td>0.08 (0.04)</td>
<td>0.03 (0.05)</td>
<td>0.04 (0.04)</td>
</tr>
<tr>
<td>Gender gap</td>
<td>-2.52 (1.07)</td>
<td>-0.55 (1.12)</td>
<td>-0.59 (1.19)</td>
</tr>
<tr>
<td><strong>Circulatory disease 0-64 years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men (logged)</td>
<td>0.07 (0.05)</td>
<td>0.15 (0.05)</td>
<td>0.18 (0.05)</td>
</tr>
<tr>
<td>* time</td>
<td>-0.19 (0.06)</td>
<td>-0.16 (0.06)</td>
<td>-0.18 (0.06)</td>
</tr>
<tr>
<td>Women (logged)</td>
<td>-0.01 (0.05)</td>
<td>0.11 (0.05)</td>
<td>0.10 (0.05)</td>
</tr>
<tr>
<td>* time</td>
<td>0.03 (0.07)</td>
<td>0.05 (0.07)</td>
<td>0.08 (0.07)</td>
</tr>
<tr>
<td>Gender gap</td>
<td>2.72 (0.84)</td>
<td>1.77 (0.92)</td>
<td>0.87 (0.98)</td>
</tr>
<tr>
<td>* time</td>
<td>-8.45 (1.49)</td>
<td>-7.83 (1.48)</td>
<td>-7.20 (1.45)</td>
</tr>
<tr>
<td><strong>Circulatory disease all ages</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men (logged)</td>
<td>0.06 (0.03)</td>
<td>0.12 (0.04)</td>
<td>0.14 (0.04)</td>
</tr>
<tr>
<td>* time</td>
<td>-0.03 (0.06)</td>
<td>0.00 (0.06)</td>
<td>0.00 (0.06)</td>
</tr>
<tr>
<td>Women (logged)</td>
<td>-0.00 (0.04)</td>
<td>0.05 (0.04)</td>
<td>0.05 (0.04)</td>
</tr>
<tr>
<td>* time</td>
<td>0.02 (0.06)</td>
<td>0.05 (0.06)</td>
<td>0.08 (0.05)</td>
</tr>
<tr>
<td>Gender gap$^2$</td>
<td>278.19 (61.41)</td>
<td>277.98 (76.83)</td>
<td>174.80 (78.73)</td>
</tr>
<tr>
<td>* time</td>
<td>-229.90 (93.39)</td>
<td>-185.88 (98.54)</td>
<td>-167.31 (110.43)</td>
</tr>
</tbody>
</table>


For circulatory disease mortality at all ages, higher GEM scores were again associated with a larger gender gap in 1990, and with a decrease over time. The GEM was related to a high male level in 1990, which became higher after adjustment. After adjustment, the relationship between the GEM and a decreased gender gap became insignificant, but the association with the gender gap in 1990 remained.

5.2 Interaction between couple and local level

The second research question concerned the interaction between the local and couple levels. It was formulated as: Is the association between equality at couple level and individual morbidity (in this case, sickness absence) dependent on the level of gender equality in the local environment? This question was explored in Study II.

For fathers, those who were relatively equal with their partner regarding parental leave and temporary childcare (private sphere) and lived in a gender-equal municipality had an OR of 0.56 in the fully adjusted model, while those who were traditional in an equal municipality (laggards and modest laggards) had the highest levels of sick-leave (ORs of 1.28 and 1.25 respectively) compared with the overall odds. For mothers, no associations for the private sphere were significant in the full model.

Fathers who were equal regarding income and occupational position (public sphere) in a traditional municipality (pioneers) had an OR of 0.74, while laggards and modest laggards again showed a slightly increased risk (significant for modest laggards, OR
1.17). For mothers, both groups of pioneers (OR’s 1.15 and 1.17) and equal in congruence (OR 1.23) had slightly higher risks, while traditional in congruence and modest laggards had lower risks (ORs 0.72 and 0.89).

Since all equal groups (based on the couple data) in the private sphere were very small (2-3 %), sensitivity analyses were performed. The criteria of relative equality were relaxed for parental leave and temporary childcare leave, placing the moderately unequal into the equal category, and thus collapsing the number of categories into four on this indicator. However, even though cases where the mother has taken up to 79 % of leave days were coded as equal, not many more couples were equal on the alternative index (4 %).

An index can be constructed in many ways, and decisions have to be made in a sometimes arbitrary manner – inter alia regarding cut-off points. In order to investigate the importance of choice of index, an additive index (based on municipal data) for Study II was also constructed and then combined with the two individual indices (public/private) to produce an alternative combinatorial index. The additive index was constructed in the same way as for Study I, based on the four indicators gender equality of representation on municipal councils, temporary childcare leave days, employment in manufacturing, and average income. Scores on the resulting index ranged from 31.0 to 45.8. With three groups (with arbitrary cut-offs) 25 % were in the most equal group (originally 14 %), 51 % in the moderately traditional group (originally 79 %), and 24 % in the pronounced traditional group (originally 8 %). Only 36 % of those coded equal according to the original (categorical) index were equal according to the alternative (additive) index, and only 20 % of those coded equal according to the additive index were equal according to the categorical index (not shown), so the overlap is not great.

For the alternative combinatorial index applied in the private sphere, pioneers were 2.5 %, modest pioneers 1 %, and equal in congruence were 1 % (see Table 6), which is rather similar to the original index (see Table 4, Study II). Many more were coded as laggards (24 % compared with 13 %) and traditional in congruence (22 % compared with 7 %) in comparison with the original. The alternative specification applied in the public sphere led to even larger changes. Pioneers were as many as 17 %, instead of 8 %, but modest pioneers were only 28 %, compared with 43 %, the reason being that the local-level additive index had a much larger group coded as pronounced traditional (as well as equal). Laggards were 10 %, compared with 6 % on the original index, and modest laggards were 21 %, instead of 32 %.
Table 6. Combinations of gender equality at individual/couple and municipal level. Alternative specifications.

<table>
<thead>
<tr>
<th>Local level (new)</th>
<th>Couple level – Private sphere</th>
<th>Equal</th>
<th>Traditional</th>
<th>Untraditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal</td>
<td>Equal in congruence</td>
<td>272 (0.9 %)</td>
<td>7,204 (23.6 %)</td>
<td>172 (0.6 %)</td>
</tr>
<tr>
<td></td>
<td>Laggard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately traditional</td>
<td>Modest pioneer</td>
<td>382 (1.3 %)</td>
<td>15,017 (49.2 %)</td>
<td>263 (0.9 %)</td>
</tr>
<tr>
<td></td>
<td>Modest laggard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronounced traditional</td>
<td>Pioneer</td>
<td>195 (0.6 %)</td>
<td>6,892 (22.3 %)</td>
<td>126 (0.4 %)</td>
</tr>
<tr>
<td></td>
<td>Traditional in congruence</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N=30,523

<table>
<thead>
<tr>
<th>Local level (new)</th>
<th>Couple level – Public sphere</th>
<th>Equal</th>
<th>Traditional</th>
<th>Untraditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal</td>
<td>Equal in congruence</td>
<td>4,485 (13.6 %)</td>
<td>3,311 (10.0 %)</td>
<td>415 (1.3 %)</td>
</tr>
<tr>
<td></td>
<td>Laggard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately traditional</td>
<td>Modest pioneer</td>
<td>9,315 (28.3 %)</td>
<td>6,980 (21.2 %)</td>
<td>644 (2.0 %)</td>
</tr>
<tr>
<td></td>
<td>Modest laggard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronounced traditional</td>
<td>Pioneer</td>
<td>4,358 (13.2 %)</td>
<td>3,168 (9.6 %)</td>
<td>274 (0.8 %)</td>
</tr>
<tr>
<td></td>
<td>Traditional in congruence</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N=32,950

The findings from the analyses using the alternative index can be found in Table 7. Fathers who were equal in congruence in the private sphere still had a health advantage, but it was attenuated. In the public sphere, pioneers still diverged from the overall odds, but again the difference was attenuated. Results for laggards were almost unchanged.

For mothers, some associations in the private sphere now became statistically significant, so that pioneers had lower risks and laggards had higher risks. In the public sphere, results were similar to those in the original study. Traditional in congruence again had the lowest risk, and equal in congruence the highest.
Table 7. Associations between gender equality (alternative combinatorial index) and high levels of sick-leave. Number of cases in the base model and odds ratios (95% confidence intervals). Reference is the overall odds.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Base model inc. age</th>
<th>Full model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private sphere</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal in congruence</td>
<td>263</td>
<td>0.78 (0.55-1.08)</td>
<td>0.71 (0.47-1.04)</td>
</tr>
<tr>
<td>Modest pioneer</td>
<td>933</td>
<td>0.98 (0.81-1.18)</td>
<td>0.99 (0.78-1.24)</td>
</tr>
<tr>
<td>Pioneer</td>
<td>193</td>
<td>0.67 (0.43-0.99)</td>
<td>0.86 (0.54-1.31)</td>
</tr>
<tr>
<td>Traditional in congruence</td>
<td>6,853</td>
<td>1.12 (0.99-1.27)</td>
<td>1.13 (0.96-1.32)</td>
</tr>
<tr>
<td>Modest laggard</td>
<td>14,897</td>
<td>1.32 (1.18-1.48)</td>
<td>1.17 (1.01-1.36)</td>
</tr>
<tr>
<td>Laggard</td>
<td>7,123</td>
<td>1.33 (1.18-1.50)</td>
<td>1.26 (1.08-1.48)</td>
</tr>
<tr>
<td>Public sphere</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal in congruence</td>
<td>4,485</td>
<td>1.00 (0.93-1.08)</td>
<td>0.95 (0.87-1.03)</td>
</tr>
<tr>
<td>Modest pioneer</td>
<td>9,313</td>
<td>1.03 (0.98-1.09)</td>
<td>0.92 (0.86-0.98)</td>
</tr>
<tr>
<td>Pioneer</td>
<td>5,685</td>
<td>0.96 (0.89-1.02)</td>
<td>0.85 (0.78-0.92)</td>
</tr>
<tr>
<td>Traditional in congruence</td>
<td>3,168</td>
<td>0.93 (0.85-1.01)</td>
<td>1.09 (0.99-1.20)</td>
</tr>
<tr>
<td>Modest laggard</td>
<td>6,978</td>
<td>1.05 (0.99-1.11)</td>
<td>1.09 (1.01-1.17)</td>
</tr>
<tr>
<td>Laggard</td>
<td>3,311</td>
<td>1.04 (0.96-1.13)</td>
<td>1.14 (1.04-1.25)</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private sphere</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal in congruence</td>
<td>272</td>
<td>0.84 (0.59-1.16)</td>
<td>1.04 (0.69-1.51)</td>
</tr>
<tr>
<td>Modest pioneer</td>
<td>943</td>
<td>1.20 (0.99-1.45)</td>
<td>1.22 (0.95-1.56)</td>
</tr>
<tr>
<td>Pioneer</td>
<td>195</td>
<td>0.50 (0.30-0.77)</td>
<td>0.51 (0.27-0.86)</td>
</tr>
<tr>
<td>Traditional in congruence</td>
<td>6,892</td>
<td>1.13 (1.00-1.29)</td>
<td>1.08 (0.92-1.28)</td>
</tr>
<tr>
<td>Modest laggard</td>
<td>15,017</td>
<td>1.36 (1.21-1.55)</td>
<td>1.18 (1.01-1.39)</td>
</tr>
<tr>
<td>Laggard</td>
<td>7,204</td>
<td>1.30 (1.15-1.49)</td>
<td>1.22 (1.04-1.45)</td>
</tr>
<tr>
<td>Public sphere</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal in congruence</td>
<td>4,485</td>
<td>0.93 (0.87-1.00)</td>
<td>1.24 (1.13-1.36)</td>
</tr>
<tr>
<td>Modest pioneer</td>
<td>9,315</td>
<td>0.95 (0.90-1.01)</td>
<td>1.14 (1.06-1.23)</td>
</tr>
<tr>
<td>Pioneer</td>
<td>5,691</td>
<td>0.89 (0.83-0.95)</td>
<td>1.11 (1.02-1.22)</td>
</tr>
<tr>
<td>Traditional in congruence</td>
<td>3,168</td>
<td>0.98 (0.90-1.06)</td>
<td>0.82 (0.72-0.94)</td>
</tr>
<tr>
<td>Modest laggard</td>
<td>6,980</td>
<td>1.19 (1.12-1.26)</td>
<td>0.89 (0.81-0.98)</td>
</tr>
<tr>
<td>Laggard</td>
<td>3,311</td>
<td>1.10 (1.01-1.19)</td>
<td>0.87 (0.76-0.99)</td>
</tr>
</tbody>
</table>

5.3 COUNTRY CLUSTERING

The third research question concerned gender policy and the clustering of OECD countries. It was addressed in Study III, and reads: Can the 22 countries considered be classified according to Sainsbury’s gender policy regimes typology, and how stable is the clustering of countries over time?

Results of the cluster analyses showed that the largest group of countries could be classified as *male breadwinner* (see figures 2 and 3, Study III). The exact demarcation
between this cluster and the others, and also the number of countries included, has changed over time, as both the earner-carer and separate gender roles indicators have increased. The core feature of this cluster was joint taxation (family-based) and higher marriage subsidies, and the countries tended to score low on most of the other indicators (see Table 4, Study III). From 1999, this cluster also had the highest minimum pension requirements. From 1979, there was a cluster distinguished by a large retirement age gap, the highest extended leave score, and high pension child credits. We have called this cluster *compensatory breadwinner* rather than separate gender roles, since the replacement rate given to carers/mothers tends to be quite low (with the gender ideology of separate gender roles interpreted as ‘separate but equal’, with carers maintaining individual autonomy).

Although the Nordic countries clustered together from the start, only in 1989 and 2004 did we find a genuine *earner-carer* cluster, with paid paternity leave, a high maternity score, high social services expenditure, and universal basic pensions. In 1979, they clustered with Australia and New Zealand, while, in 1999, the two-cluster solution put them together with some countries that normally were found in the male breadwinner cluster (Belgium, Germany, France and Canada). The Netherlands was also included in the earner-carer cluster in 2004. Australia and New Zealand were always joined early, and formed their own *universal citizen* cluster in 2004. They had low scores throughout, but they also lacked male breadwinner support, they had individual taxation and universal basic pensions.

As a sensitivity test, all the cluster analyses were repeated excluding countries with missing values. In 1999, the cluster solution differed according to whether imputed data were used for missing observations, or whether countries with missing observations were excluded. Accordingly, a choice was made to exclude these countries (Iceland, Portugal and Italy) for 1999. The solution with imputed values is shown in Figure 5. Compared with the solution chosen in Study III, which produced two equally large clusters, the universal citizen countries formed their own cluster (together with Iceland), and the male breadwinner cluster split into two equally large groups, where Ireland and Switzerland (for the only time) joined the compensatory breadwinner countries.
5.4 GENDER POLICY AND CAUSE-SPECIFIC MORTALITY

In Study IV, two research questions were investigated. The first one read: Does gender policy have an impact on the gender gap in cause-specific mortality? The two causes of death considered in Study IV were external cause mortality (all ages) and circulatory disease mortality in the age groups 0-64 years. Gender policy was considered, first, as the cluster solution for 2004 from Study III, and second, as specific policy indicators.

The second research question in Study IV was: Is gender equality a mediator between gender policy and mortality? This was addressed by including the GEM as a time-invariant factor (measured around 2004).

5.4.1 Cluster differences

Significant cluster differences for external cause mortality were found only for the earner-carer cluster, which showed a gender gap in 1990 that was 6.5 units smaller than that of the reference group, i.e. the male breadwinner cluster (see Table 3, Study IV). There were no significant differences in the pace of change over time. Introducing GDP/capita led to a large attenuation of cluster differences, which were no longer significant.

Cluster differences for circulatory disease mortality (0-64 years) can be found for the earner-carer cluster, which had a 6.2 unit larger gender gap in 1990, and a decrease
across the whole period that was 17.1 units steeper than that of the reference group (Table 4, Study IV). The compensatory breadwinner cluster also showed a steeper decrease (-9.0) Underlying this was a larger relative mortality decrease among men in these clusters compared with the reference group. Adding economic factors led to a substantial reduction in the cluster difference in 1990, but scarcely affected cluster differences in slope.

To establish whether the results were dependent on the age distribution of circulatory disease mortality, additional analyses were performed for mortality at all ages. The only cluster with a significantly decreasing gender gap over time, compared with the reference group, was the universal citizen cluster (Table 8). This was due to a larger relative decrease in male mortality. The earner-carer cluster had a larger gender gap in 1990 than the other clusters, due to slightly (and insignificantly) higher male and lower female mortality compared with the reference group. The findings were attenuated but stable after full adjustment.

Table 8. Gender differences in circulatory disease mortality (all ages) with the 2004 cluster as main predictor (reference group: male breadwinner). Hierarchical linear regression estimates (standard errors). Only cluster estimates are shown.

<table>
<thead>
<tr>
<th>Gender gap</th>
<th>Model 1</th>
<th>Full model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal citizen</td>
<td>106.13 (212.50)</td>
<td>-142.39 (212.26)</td>
</tr>
<tr>
<td>*time</td>
<td>-899.61 (316.45)</td>
<td>-816.54 (325.89)</td>
</tr>
<tr>
<td>Compensatory breadwinner</td>
<td>194.42 (151.52)</td>
<td>89.64 (146.58)</td>
</tr>
<tr>
<td>*time</td>
<td>-278.55 (224.41)</td>
<td>-248.41 (223.26)</td>
</tr>
<tr>
<td>Earner-carer</td>
<td>655.23 (143.21)</td>
<td>281.65 (196.70)</td>
</tr>
<tr>
<td>*time</td>
<td>-264.30 (212.20)</td>
<td>167.97 (271.27)</td>
</tr>
</tbody>
</table>


5.4.2 Policy indicators

For the second part of our analysis, we investigated earner-carer indicators, and for circulatory disease mortality also the indicators that distinguish the compensatory breadwinner cluster from the male breadwinner cluster (see Table 5, Study IV). Some indicators were highly skewed due to a large number of zero scores, and therefore a linear relationship could not be assumed. Accordingly, scores on these indicators were dichotomised.

For external cause mortality, the maternity score, reserved paternity leave (dichotomised), social services expenditure and universal basic pensions (dichotomised) were significantly related to the gender gap, both in Model 1 and in the full model. This was primarily due to an association with increased mortality among women. The maternity score was associated with decreased mortality, but it was only significant for men.

For circulatory disease mortality (0-64 years), none of the earner-carer indicators were significantly related to the outcome. The only significant indicators were pension child
credits (dichotomised). In terms of absolute levels, high child credits were related to a decrease among men and an increase among women (both insignificant).

Additional analyses for circulatory disease mortality at all ages showed that social services expenditure was initially associated with an increasing gender gap (Table 9). This became insignificant after adjustment for GDP and the Gini coefficient. For the compensatory breadwinner indicators, high pension child credits were strongly associated with a decreasing gender gap, due to an association with increased female mortality.

Table 9. Associations between policy indicators and gender differences in circulatory disease mortality (all ages). Hierarchical linear regression estimates (standard errors).

<table>
<thead>
<tr>
<th>Gender gap</th>
<th>Model 1</th>
<th>Full model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Earner-carer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternity score (weeks*RR)</td>
<td>1.57 (1.46)</td>
<td>-2.59 (1.54)</td>
</tr>
<tr>
<td>Reserved paternity leave &gt;=2 wks</td>
<td>19.19 (22.25)</td>
<td>-6.38 (19.56)</td>
</tr>
<tr>
<td>Social services (% of GDP)</td>
<td>42.45 (14.95)</td>
<td>13.01 (16.98)</td>
</tr>
<tr>
<td>Separate taxation</td>
<td>27.53 (166.45)</td>
<td>17.18 (134.96)</td>
</tr>
<tr>
<td>Min. pension requirement &lt;=1 yr</td>
<td>-123.41 (70.03)</td>
<td>313.88 (159.46)</td>
</tr>
<tr>
<td><strong>Compensatory breadwinner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child credits &gt;= 4 yrs/child)</td>
<td>-141.37 (24.46)</td>
<td>-94.28 (17.38)</td>
</tr>
<tr>
<td>Retiregap&gt;=1 yr</td>
<td>-45.21 (35.09)</td>
<td>-17.22 (30.33)</td>
</tr>
<tr>
<td>Extended leave score &gt;= 10</td>
<td>17.31 (24.31)</td>
<td>-3.86 (23.61)</td>
</tr>
</tbody>
</table>


5.4.3 Gender equality as a mediator

Gender equality measured by the GEM was associated with external cause mortality, but it did not serve as a mediator, since it became insignificant when policy indicators/clusters were included in the model. For circulatory disease mortality, it explained much of the association for the earner-carer cluster, and part of the association for the compensatory breadwinner cluster. This was due to an association of gender equality with decreased mortality from circulatory disease among males but not among females. For the only (significant) specific policy indicator, pension child credits, it partly served as a mediator.
6 DISCUSSION

6.1 GENDER EQUALITY, MORBIDITY AND MORTALITY

Convergence, i.e. decreased health gaps due to increased gender equality, was supported in the country-level study for both external cause and circulatory disease mortality, but – after adjustment – only for circulatory disease. In the local-level study the associations were similar for both men and women, and convergence was only found on a few indicators. Since convergence is a product of results at absolute female and male levels, I shall not discuss it further per se.

Gender equality in Swedish municipalities was generally correlated with lower life expectancy and higher levels of sickness and disability for both men and women. The results of Study I contradict earlier US research (2, 64), and also the findings of an international study of adolescent subjective health (66). They also partly differ from the results of Study II and Study IV in this thesis, where beneficial effects for men were found.

Part of this discrepancy may be attributed to the unit of analysis. By analogy with studies of income inequality and health, which tend to find the strongest negative health effects of income inequality at regional or national level, effects at the local level often appear to be non-existent (4, 5, 171). When it comes to gender equality, apparently negative effects at lower levels may be related, for example, to a compressed wage structure due to few highly skilled jobs and a restricted labour market, which means that also men are found in public sector and part-time jobs. This reasoning is supported by the fact that the strongest predictors were found to be related to possible, but neglected, confounders and mediators. For example, gender equality in part-time employment was related to a higher proportion of singles with children (r=0.41) and a higher male poverty rate (r=0.52), and gender equality in average income was related to a high unemployment rate (male r=0.63, female r=0.50) and to the male poverty rate (r=0.36). Such omitted-variable bias may be especially important at local level, whereas the opposite may be the case at country level; that is, gender equality is associated with factors that are independently positive for health. Additional analyses showed that adjusting for the proportion on social welfare and the proportion of singles with children attenuated the associations between the index and sickness and disability for both women (beta 0.90) and men (beta 0.56).

Another difference between the country-level and local-level studies concerns the level of gender equality. In many countries, women’s levels of political participation, employment and earnings are much lower, and any move towards gender equality might be beneficial for all, since it is also associated with economic growth and a more equal society in general (even though individual men lose out). Perhaps the association between gender equality and health is primarily due to women’s absolute status, and assumes a curvilinear shape, much like the one between individual income and health (reflecting diminishing returns). As the number of international studies is very limited, this is as yet a hypothesis.
However, all this does not explain why the curve would actually bend downwards (albeit weakly so) rather than just flatten out. People living in gender-equal municipalities regarding political participation and average income experience large gender inequalities in terms of the division of labour (see Table 1, Study I). On these indicators, we can only measure relative inequality, which is always present regardless of the relative equality suggested by other indicators. Whether Sweden and other earner-carer countries experience higher levels of gender segregation in paid work than others and whether the public sector provides good or poor jobs for women are matters of some debate (122, 172, 173), however an imbalance between the dimensions may be related to poorer health. If women in our society are particularly burdened (through equal breadwinning), while men have yet to reap the benefits (as shown in Study II), by taking up female caring activities this might provide a tentative explanation for the findings of Study I. As has been shown by Strandh and Nordenmark, it is also possible that expectations of gender equality in a situation that does not fulfil those expectations have led to high levels of perceived work-household conflict among Swedish women (174). Others have found that the polarisation of women into either breadwinners or carers can lead to low fertility levels but higher well-being (147). An alternative interpretation regarding sickness and disability is that norms regarding using the sickness insurance are more lenient in gender-equal municipalities, for both men and women.

In Study IV, a country-level study, an association was found between a high GEM score and decreased male mortality from circulatory disease at ages 0-64 years. For circulatory disease mortality at all ages, the patterns were similar, but the estimates were insignificant. For external causes, the GEM was associated with a higher level of mortality among females, which became insignificant after addition of GDP. These results point to the importance of specifying outcomes in order to move closer to the mechanisms underlying the associations. It is well-known that mortality, especially from traffic accidents, is related to the economic cycle, i.e. is higher during boom years (175, 176), and – since high GEM scores are associated with higher employment rates among women – it seems that GDP is a mediator rather than a confounder in the relationship between gender equality and external cause mortality (see also 6.4).

In the case of circulatory disease, the results are in accordance with individual-level studies suggesting that it is men who primarily benefit from gender equality as we know it, due to a lessened breadwinning burden. Shared breadwinning may be stress-reducing for men, lead to shorter working hours, and be accompanied by a more health-enhancing and less competitive type of masculinity, which is expressed more through leisure-time activities than through the male career. It is likely that health-related behaviours are important, both as mediators (since they are affected by changing gender norms) and confounders (secular trends unrelated to gender norms). Inclusion of alcohol consumption and smoking scarcely changed the estimates, but this should not be taken to imply that they are unimportant, since both were far from perfectly measured. As argued by Hitchman and Fong (177), female emancipation may be seen as a prerequisite for female take-up of smoking. But is male smoking decline related to changing gender norms, or is it merely coincidental with the natural progression of the smoking epidemic?
6.2 INTERACTION BETWEEN COUPLE AND LOCAL LEVEL

For fathers, being a laggard was found to be detrimental to health. For mothers, those who were traditional and in congruence (public sphere) had especially low levels of sickness absence. Additional analyses, based on an alternative combinatorial index, showed similar results for fathers. For mothers, some associations in the private sphere became significant, indicating that pioneers had lower, and laggards higher risks.

The results partly support the supposition that living in congruence with your environment can be particularly health-enhancing. This was found for equal fathers in the private sphere and traditional mothers in the public sphere. Thus, making an untraditional lifestyle choice by moving into female caring spheres was found to be beneficial for men, but only if it was made in the context of a supportive (gender-equal) environment. This group of fathers was small, 134 out of some 30,000, and insufficient in number to make an impact at aggregate level. However, it is likely that this group has risen considerably in number since around 1980. Likewise, making a traditional lifestyle choice by taking the back seat in occupational terms was beneficial for women, especially, but not exclusively in the context of a supportive (traditional) environment. This group was also small (N=1,114).

There may also be health-related selection into the position of pioneer (innovator/early adopter) or laggard (late/never adopter). As put by Rogers, ‘the salient value of innovators is venturesomeness. He or she desires the hazardous, the rash, the daring and the risky’ (151, p. 248). Breaking away from traditional gender norms may well be seen as risky business. Compared with innovators, early adopters are more integrated into the local social system and serve as role models for many other members; they are respected by their peers. Laggards, on the other hand, ‘possess almost no opinion leadership’ (151, p. 250); they are the most localite, and their point of reference is the past. Given these different orientations, it would be expected that (modest) pioneers have the best health, and laggards the worst. This was found for laggards, for fathers in both spheres and for mothers in the private sphere (for the alternative index). Even though we have adjusted for individual-level confounders (income and occupational position, type of work, and country of origin), there may be many health-related characteristics of people who take on a more traditional position than others in their surrounding milieu. The same study design, with additional adjustment for earlier body mass index score, previous inpatient care and sickness absence, showed that adjustment did not alter the association between gender equality and mortality (sickness absence not included) (Månsdotter et al., work in progress). This strengthens the case for a causal interpretation of the relationship between adopting a traditional position and mortality.

There were indications that a position as main breadwinner (equal in the case of women) is detrimental to health. This may be related to stressors at work, working hours, having dual roles, and/or the psychological pressure imposed by being responsible for the support of others as well as oneself. For men, the negative side of being the main breadwinner only emerges after adjustment for social position; that is, if they had had the same social position as more equal groups, their level of sickness
absence would have been higher, but – due to their high social position – it is actually the same as for other groups.

A final note regarding the method used: in Study II, we considered the data using what is often referred to as ‘contextual’ analysis (178); that is, ecological data were incorporated into an individual-level study, without taking account of dependence within groups (municipalities). This tends to give estimated variances that are too narrow, leading to more associations becoming significant, although point estimates should not be affected. A better way of handling such data is to use hierarchical regression analysis, as in Study IV. This would also have given us a way of assessing local-level and couple-level associations separately, as well as interactions between them.

6.3 COUNTRY CLUSTERING

Scores on both earner-carer and separate gender roles indicators have been increasing, while those on male breadwinner indicators are in decline. The empirical classification did not completely correspond to Sainsbury’s theoretical typology.

A male breadwinner regime was found at the beginning of the study period. But, apart from the six core countries (Japan, Spain, USA, Portugal, Ireland, Switzerland), the composition of the cluster has shifted much over time. In 1989, these countries were mixed with, for example, both Iceland and Norway, whereas in 1999, they were mixed with the compensatory breadwinner countries. The shifting frontiers reflect the rapid policy changes taking place in some Nordic countries in the 1980s, while others lagged behind. They also attest to the difficulties encountered in cluster analysis when individual countries have extreme values on one indicator (with Austria having 26 weeks of reserved paternity leave in 1996-2004), and point to the presence of borderline cases.

Aspects of the separate gender roles regime have gradually become more prominent over time, but no country could be classified as fully belonging to this regime type; the two aspects of the model – compensatory measures in the pension system, and high benefits for caring activities – were never present simultaneously. The compensatory breadwinner cluster was present in most years (even in 1999 in the solution including countries with imputed values, see Figure 5). In 2001 the European Council urged member states to review pensions so as to ensure equal treatment between women and men (179). Since countries are dismantling the gender retirement gap, while both child credits and extended leave have become more widespread across clusters, it is possible that this cluster will become incorporated into the large male breadwinner cluster rather than develop into a separate gender roles cluster.

As in Bambra’s study (123), the liberal English-speaking countries were not grouped together. Whereas the United States and Ireland were found in the male breadwinner cluster, the United Kingdom was always located in the compensatory breadwinner cluster. Australia and New Zealand had their own profile, and Canada was variously found in the male breadwinner, the mixed earner-carer and the compensatory breadwinner clusters. Like in most typologies, there was a core of Nordic earner-carer countries. While their scores on the earner-carer indicators have increased considerably
over time, several countries have also introduced both pension child credits and extended childcare leave (taken after maternity leave). This has led to a ‘contradictory’ policy model for some, as remarked by Ferrarini (121). According to Morgan and Zippel (180), extended periods of leave are a product of centre-right political forces, and they have often emerged as a short-term solution at times of high unemployment. Once introduced, it may be difficult to terminate such benefits, regardless of the party in power. The normal progression seems to consist in a gradual erosion of benefit levels, and their empowering potential continues to be low.

The two antipodean countries were located in their own cluster in 2004 (and also in 1999 in the solution including countries with imputed values). Their special profile of generally low scores and universal pensions support the claim that Australia and New Zealand (together with Finland and the UK) belong to a fourth world of radical welfare capitalism, characterised by low expenditure but high benefit equality and redistribution through taxation (181). The research underlying this claim was based on data from the 1980s, and Castles later claimed that policy changes have effectively undermined the distinctive aspects of the Australian welfare state (182). There were some decisive differences between the two countries regarding the universality of basic pensions. In Australia the basic Age pension was both income (including capital gains) and assets tested, whereas in New Zealand it was only income tested. Most importantly, in Australia, the income test was assessed on the joint income of both spouses, which means that women’s pension rights were affected by their husband’s typically higher income (183).

Given obvious heterogeneity within clusters, one may question the validity and importance of cluster solutions. Do the policy differences indicate anything about the relative positions of men and women in society? As Figure 6 shows, at least the 2004 solution is clearly related to the GEM, and to the World Economic Forum’s Global Gender Gap Index. As shown in 1999, excluding one or two countries can make a big difference to cluster solutions. However, for the three remaining time points, such exclusion only marginally changed the clusters. The difficulties in finding more distinct clusters in 1989 and 1999 show that many countries are hybrid cases (notably Belgium, Germany, France, Canada, and the Netherlands), and their inclusion may dilute cluster differences. Including only core countries may enhance the explanatory potential of the regimes approach.
Figure 6. The relationship between gender policy regimes in 2004 and gender equality outcomes in 2007

6.4 GENDER POLICY AND CAUSE-SPECIFIC MORTALITY

For external cause mortality, cluster differences seem to be directly related to several of the policies characteristic of the earner-carer cluster; those that support maternal employment and lessen the caring burden of families, support fathering, and decrease the effect of previous employment on economic conditions in old age. Apart from maternity leave, which was protective for both men and women (but most for men), the effect on gender gaps was due to a positive association with female mortality. Increased exposure to both accidents and violence for women could be a side effect from their increased participation in public life, which might increase the risk of accidents. Also the effect of universal basic pensions could be seen as hinging on increased opportunities for social participation. This is consistent with research showing that some causes of death, notably due to traffic accidents, are higher during boom years (175). For specific policies associations remained also after adjustment for GDP/capita, which means that economic growth is not the only pathway. Here, it would be beneficial to investigate more specific causes of death to determine the mechanisms leading to higher female mortality.

For circulatory disease mortality in the age range 0-64 years, both the earner-carer and the compensatory breadwinner clusters experienced a larger decrease in male mortality over time, leading to a shrinking gender gap. For circulatory disease mortality at all ages, the same was found for the universal citizen cluster. Thus, the decrease in male circulatory mortality achieved in the earner-carer and compensatory breadwinner clusters is primarily due to a decrease in premature deaths. These results point to both

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7 This could however also lead to problems with reliability between ICD-versions and between countries.
decreased smoking prevalence and the possible effects of social policies favouring deprived groups as explanatory factors. However, the Gini coefficient was not a confounder for the association between either the GEM or cluster differences and male circulatory mortality. As previously mentioned (see 6.1), women’s inroads into politics and career jobs may well lead to health benefits for men, as indicated in individual-level studies. After adjustment for the GEM, the decreased gender gap, which initially was almost twice as large for the earner-carer cluster, was similar between the earner-carer and the compensatory breadwinner clusters. The remaining part of the difference may be related to secular trends in smoking and other health behaviours.

Earner-carer indicators were generally not related to circulatory disease mortality. This is in contrast to the results for cluster differences, and may either be interpreted as cluster differences being unrelated to policy, or related to policies that were not included here. Alternatively, they might be the result of the combination of policies in the full policy packages. High pension child credits were associated with a decreasing gender gap in circulatory disease mortality in both age bands, due to an association with increased female mortality. Child credits have been introduced as a compensatory measure so that women with long absences from the labour market due to caring demands should also be granted an individual pension, and they should enhance the living standard of this group. However, if the existence of such a policy encourages women not to (re-)enter the labour market, the net effect on poverty rates may still be positive, and thus have a negative effect on health.

In Study IV, several factors had to be treated as time-invariant due to a lack of time-series data. These time-invariant variables (the GEM and the Gini coefficient) were set at their levels in 2004-05, since all countries had data for this time; this meant that a country’s value at the end of the period is set as a predictor of differences in 1990 (the centre) and of change over time. Also the cluster solution in this study mirrors only the situation in 2004. It is not clear that this is the best model, especially if values have changed a lot over time. However, if the time-invariant factors capture enduring aspects, the existence of time lags (see 6.5.5.1) should be less of a problem.

Gender equality, as measured by the GEM, did not serve as a mediator between policy and external cause mortality. The GEM was, on the other hand, quite a strong mediator for cluster differences in circulatory disease mortality, due to its relationship with decreased male mortality. This discrepancy may be related to the measure itself. For example, if earner-carer policies primarily affect women, perhaps they are mediated more by indicators measuring women’s absolute status (184), or by gender equality in terms of more basic welfare resources (56), in addition to gender equality according to certain (mostly top-level) political and occupational indicators.

6.5 METHODOLOGICAL CONSIDERATIONS

6.5.1 Measuring gender policy

The policy indicators included in studies III and IV were chosen on the basis of Sainsbury’s gender regimes framework. There are 11 indicators across most years, and one that was only measured for 2004. The indicators cover maternity and paternity leave, social services in kind, tax credits and allowances supporting a male
breadwinner, dependent-spouse supplements in social insurance programs, the universality of pensions, extended childcare leave, and benefits for caring in 2004. Much effort was made to ensure the validity of the data. For example, additional information was retrieved through direct personal contacts with seven countries, where there were uncertainties about the main data source.

Coding difficulties were often present. One example is whether the term ‘dependents’ includes the spouse or just children (or sometimes parents or other relatives). If the term had been specified for most social insurances, we assumed that the same rule applied across the board. Entitlements based on residency are important in a gender perspective. We have chosen to include pension universality, basically because becoming old and frail is a social risk that affects most people, whereas work injury, sickness and unemployment benefits insure against loss of income and are relevant only for those in employment. In retrospect, it would have been advantageous to incorporate the qualifying conditions for access to these insurances, since these are important for gender-based inequalities given women’s higher prevalence of part-time and precarious employment. However, it would have required considerable time and effort to go through and code these additional programs, and it was not possible within the scope of the project.

Moreover, labour-market policies, such as anti-discrimination and/or affirmative action, were not covered. When examining the ILO data on the introduction of legislation against discrimination in employment, it was clear that there was no consistency at all between otherwise similar countries. For example, although Japan endorsed such legislation as early as in 1972, the gender wage gap among full-time employees was almost twice that of the OECD average in 2003 (see http://www.oecd.org/dataoecd/20/20/39696303.pdf). To be able to include these policies, additional information on actual praxis is required. The inclusion of caring benefits, benefit universality and labour-market policies may well have offered other cluster solutions from the ones found.

### 6.5.2 Measuring gender equality

The indicators of gender equality were chosen to reflect equality in both the public and the private spheres (185), and we also sought to include the two dimensions dichotomy and asymmetry (see 2.1). Another consideration was that the dimensions should cover the main aspects of Swedish gender-equality policy, which are formulated in four subgoals: equal distribution of power and influence, the same opportunities and conditions regarding education and paid work, equal distribution of unpaid care and household work, and equal rights and opportunities in terms of physical integrity (violence against women) (186). The final sub-goal was not incorporated into the index, since we primarily considered violence as an outcome in public health terms. Also, we aimed to stay close to international indices, like the GEM.

In Study IV, the GEM was used as an index of gender equality. Compared with the index above, it lacks indicators reflecting division of labour in the private sphere. It also lacks a poverty indicator, and can be criticised for its bias towards elite-level equality (in administrative and technical positions) at the expense of indicators of ‘agency
poverty’ (voter turnout, labour-force participation, marginal job attachment, poverty) (56). In a highly stratified society, it is quite possible for relative gender equality to be an aspect of the upper middle class, whereas the mass of men and women live under highly gender unequal conditions.

A clear limitation in these studies is that gender equality is measured only through administrative data. No indicator of either perceived gender equality (at any level) or of time in unpaid work has been included. It has been shown that measures of perceived and achieved gender equality may not have a strong correlation, and also that associations with health are dependent on the choice of measure (187).

The advantage of using indices is naturally, that they are parsimonious, since many indicators and dimensions can be combined into one, but this is also their main weakness. Because we may be combining apples and oranges, it can be difficult to tease out what causes a given association. As observed in Study I, an additive index may have the further disadvantage of compressing the overall variance. As a middle way, I would recommend using both an overall index and dividing indices into separate dimensions.

The partly divergent results of Study I and Study IV give rise to questions regarding the proper unit of analysis. Gender equality at municipal level was found to be related to a number of factors associated with poor health (poverty, the proportion of people on social welfare, and the proportion of singles with children); gender integration in manufacturing (positive for health), however, was unrelated to these factors and instead associated with a low unemployment rate. It would appear that gender equality at municipal level basically represents a ‘race to the bottom’, i.e. poor prospects for both men and women. This type of situation is not likely to benefit anyone. Another question is whether the municipality is the correct local area, being basically an administrative unit. Municipalities can be both very small and homogeneous, and very large and heterogeneous. Labour-market regions (A-regioner) might be an alternative worth investigating. For the individual perhaps, the family and the workplace (which may be located in a different municipality from the place of residence) are especially important (187).

6.5.3 Measuring health

This thesis covers both outcomes where men have an advantage and outcomes where women have an advantage. For Study I, life expectancy at birth was used. This is a straightforward age-adjusted mortality measure, and as such, primarily reflects the most common causes of death (circulatory disease and cancer). In Study IV, we investigated two specific causes of death (circulatory disease and external causes). For these outcomes, there is a female advantage.

For two of the studies, we used registered sickness absence or sickness absence plus disability compensation. These measure morbidity for which compensation is made; that is, only people who have a taxable income and are 16-64 years of age are covered. In Study I, only sick-leave that lasts two weeks or more is registered, since the period prior to that is paid for by employers. Sickness absence and disability compensation do
not equate with illness, although individuals with long-term sickness absence report more symptoms and lower self-rated health than others (188), and being on disability benefits may predict mortality (189). For these measures, there is an element of illness behaviour, which may be related both to individual characteristics and to specific working conditions, like attendance requirements and the possibility to adjust work when ill (190, 191). A study that investigated the three concepts illness (defined as experienced symptoms), disease (medically diagnosed) and sickness absence (>14 days) found that the overlap between categories was low (192). Among people who had any sickness absence, 14 % had neither illness nor disease. More importantly, of those who had a diagnosed disease, 62 % had no sickness absence. These factors imply that those who have registered sickness and disability can be regarded as a sub-group of those with either illness or disease.

An additional problem with sickness absence lies in the possibility of systematic regional differences, based, for example, on labour-market considerations, which until 1991 (until 1997 in combination with health problems) provided legitimate grounds for granting a disability pension (193). For women, it has been shown that around 1/5 of sickness absence in fertile age groups is pregnancy-related (194); thus, the fertility rate in a municipality may contribute to a higher level of sickness absence among women. Differences between municipalities, and also gender differences, may be attributable to health, but also to differences in working and living conditions, including family responsibilities; that is, sickness absence and disability compensation may also be associated with gender equality directly, since they impact on the risk of being sick-listed when ill.

It would have been of advantage to include either more positive measures of health, other measures of morbidity, such as diagnosed disease, or summary measures of health such as disability-free life expectancy. For the cohort used in Study II, healthcare data have been used, e.g. in analyses of alcohol-related care, and the results support earlier findings (90). For municipalities, there is no national health study large enough for it to be broken down into such small units. One problem with using self-reported health measures cross-nationally is related to comparability issues (195). For countries, there is also a lack of time-series survey data. Using cross-sectional data (in a multilevel design) for the countries included here would have meant that the number of level 2 units would have been very small (N=22), and the ability to make statistical inferences would have been low.

### 6.5.4 Omitted variables

As shown in Study I, increasing the number of confounders leads to attenuated associations. This shows that, even when central confounders are included, the problem of omitted variables (or unmeasured confounding) may persist. One problem is that area-level confounders may not be immediately deduced from individual-level studies (178). Some factors may, however, be better described as mediators rather than confounders – one example could be the male poverty rate, which is related to gender equality in part-time work. In Study IV, there were a smaller number of confounders than in Study I. The ones chosen were those most often found in country-level studies – GDP and income distribution (139, 196, 197) – but many other factors may have
affected the results. Since other possible confounders, such as unemployment and poverty rates, should be strongly related to the above, their omission may not be very serious.

Even though the inclusion of health behaviours did not change the estimates in Study IV (possibly due to lagged effects, see 6.5.5.1), including health-related behaviours in Study II prior to exposure would have strengthened our results (given that they remained). For Study I, both alcohol consumption and dietary habits are known to differ between regions, and are probably important as confounders. However, comparable survey data are not available at municipal level. Alcohol sales could have been incorporated, but this measure is highly dependent on the location of retail outlets.

6.5.5 Ecological studies

Study I and Study IV are ecological studies. Since these have been heavily criticised, a methodological note is required. (Note that Study III is not an ecological study, since countries are the indivisible [policy-making] entities under study.) First, gender policy and gender equality are not merely aggregate characteristics that serve as substitutes for individual-level data – which is the study design normally identified with the ecological fallacy (198). Rather, they can be said to meaningfully exist at different levels. Gender equality is always relational, and thus can never be an attribute of an individual per se, and policy is naturally a global (155) concept. In this case, ecological studies hold their place although, as health and illness are always realised at individual level, absence of individual-level data entails certain limitations in finding the mechanisms by which policy or gender equality ultimately affects health (155). We cannot assume that the risk found at higher levels pertains to all community members; nor can we assume that effects at higher levels even run in the same direction as those at lower levels. An obvious example is GDP and motor-vehicle mortality, which are positively associated by country, whereas individual income and motor-vehicle mortality tend to be negatively related (155). These associations are, however, both meaningful and entirely plausible.

Another problem when investigating larger entities is that of limited variability, which means that the counterfactual case (all else being equal apart from the exposure) may not exist in the real world, and may not even be presumed to exist in the real world. For example, highly gender-equal countries tend to have lower income inequality, and statistically adjusting one for the other brings us into the realm of the imagined (unobserved cases). Still, it is my belief that pragmatism should not be allowed to give way to scientific inertia; rather, we should be aware of limitations, and strive to overcome these whenever possible. Being more specific regarding exposure, age group and outcome (as in Study IV) is one way of moving closer to the purported mechanisms, even in cases where individual-level data are missing.

6.5.5.1 Lagged effects

The existence of lagged effects in policy studies may concern both policy uptake (cultural lags) and policy lags (societal change comes first) (119). Indeed, time lags are likely between all our predictors (and confounders) and health outcomes. An empirical difficulty relates to the availability of data further back in time, which will differ
between factors. A theoretical difficulty relates to finding the proper lag, which will depend on the health outcome studied, with some outcomes (like external cause mortality) being more immediate and others (like circulatory disease mortality) requiring decades of exposure. When the lag is expected to be very long, incorporating a proper lag structure may be difficult, since we lose a fair amount of data. If the ecological exposure is stable over time, specifying a lag time may not be necessary (155), but as we know policies have changed drastically over time.
7 CONCLUSION

The overarching aim of this thesis was to investigate gender policy and gender equality as determinants of health. This has been studied using data at individual, municipal and country level, and the settings were Sweden and 22 OECD countries.

At individual level, results both support the presence of health-related selection of people with different characteristics into the different adopter categories of pioneer and laggard, and point to the buffering effects of living in congruence with the local environment. It also seems that being the breadwinner is detrimental to health (measured as sick-leave), especially among women.

Higher levels of gender equality were associated with higher levels of morbidity and mortality in a comparison of Swedish municipalities. These results differ from previous international studies, and may relate to the unit of analysis; that is, gender equality at municipal level was generally associated with factors linked to poor health. Alternatively, the results relate to the level and configuration of gender equality in Swedish society.

At country level, higher levels of gender equality and earner-carer policies were found to be related to higher female external cause mortality. This was interpreted as partly due to their relationships with female labour-market participation and economic emancipation, leading to higher risks of (especially) traffic accidents. Cluster differences in male circulatory disease mortality, favouring the earner-carer cluster, were strongly mediated by gender equality (GEM), after adjustment for which the remaining divergence from the reference male breadwinner cluster was equal to that for the compensatory breadwinner cluster. While cluster differences explained by the GEM may relate to male benefits from shared breadwinning, remaining cluster differences can at least partly be ascribed to secular trends in smoking, which were included but imperfectly measured.

7.1 FUTURE STUDIES

Based on the results of this thesis, the following hypotheses can be formulated:

- Health effects of gender equality depend on the unit of analysis. In order to investigate the importance of the unit of analysis, future studies should incorporate several levels simultaneously, from the individual to families, workplaces, regions and countries.
- The higher the level of gender equality, the lower the health benefits per unit increase (diminishing returns). The possibility of a curvilinear relationship between gender equality and health outcomes should be studied by including more countries with a wider range of achieved gender equality.
- The less balance there is between dimensions of gender equality, the lower the health benefits. This should be studied by separating the dimensions division of labour, political participation and economic resources, and investigating possible interaction effects.
• Gender policies work both in conjunction and separately.
  A better way of capturing this might be to create indices out of those indicators that have been shown to distinguish the clusters. Indices, unlike clusters, preserve the time dimension. This may be especially important given the speed of policy changes.
• Gender policies work in conjunction with other welfare policies.
  In future studies, a wider range of social policies that have previously been shown to be important determinants of population health should be included to enhance understanding of cluster differences.

Further, aspects not considered in this thesis that are likely to be important as mediators between gender equality and health should be incorporated into further studies. These include factors taken from survey data, such as gender ideology/social norms regarding gender equality, perceived as well as achieved gender equality, and better measures of the domestic division of labour. Wherever possible, incorporating a lag structure might enhance the precision of estimates and better account for the effects of confounders and mediators. Future studies should also expand the number of outcomes studied, and for ecological studies, specific rather than global measures should be preferred.
8 ACKNOWLEDGEMENTS

It is a rare privilege to be able to devote so much time to a single project. Therefore, I would like to express my gratitude to the funders of this work, the Swedish National Institute of Public Health (FHI), which was also my workplace for many years, and the Swedish Research Council, which funded the last half of the project.

I have met with numerous individuals during my time as a PhD student – colleagues, lecturers, referees and fellow students – who have helped me become a better researcher. Among those, some deserve a special mention:

Christer Hogstedt, my manager at FHI, for placing high demands on me and for supporting my initial PhD application (in 2005) in the face of growing opposition to research taking place outside universities.

Bo Burström, my main supervisor, a man of few words and a hands-off approach. It would be an easy mistake to overlook your unassuming yet poignant remarks. Bo’s comments are the ones that I believe have improved the study design most.

Staffan Marklund, my second supervisor, for unbridled enthusiasm and faith in the importance of the results and the research project, even when I have faltered. Staffan is never at a loss for new ideas and manages to criticise and still be encouraging.

Anna Månsdotter, a long-time colleague, co-author and friend, who initially opened my eyes to the fruitfulness of studying gender and health at the population level.

Antonio Ponce de Leon, in whose statistical ability and competence I have complete trust, for being a rock to come to whenever I am at a loss.

Michael Lundberg for methodological and statistical help, and Lars Lindholm for valuable theoretical contributions at the early stages of the project.

My colleagues at the department and in my two research groups at the Division of Social Medicine and the Division of Occupational and Environmental Health, for friendship, interest and opposition. Among these, Sara Sjölund, Sara Fritzell, Anneli Marttila and Andreas Lundin have been especially close peers in the long and winding road towards the PhD.

Lucie Laflamme and her colleagues at IHCAR for organising and chairing the fantastic ‘cover story’ seminar. Without their help, producing a coherent and structured cover story would have been a very different ‘story’.

Andreas, for help with data management, and for being the primary carer of our beloved daughter Tyra on all the weekends when I have been stuck at work. You and all the dads at Södermalm’s open day care have shown me that equal parenting works, at least in a self-selected sample of ageing hipsters.
9 REFERENCES


