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Health, Gender and Job Quality : an analysis on microeconomic data

Lexane Weber-Baghdiguian

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THÈSE DE DOCTORAT

de l'Université de recherche Paris Sciences et Lettres
PSL Research University

Préparée à l'Université Paris-Dauphine

Santé, genre et qualité de l'emploi :
une analyse sur données microéconomiques

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*A Axelle, Nicolle et Etienne,
la vie est pleine de bons rebondissements.*

*“Nada hay absoluto, todo se cambia, todo se mueve, todo revoluciona, todo vuela y se va”
- Frida Khalo.*

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Introduction

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Introduction générale

Pour Aristote, le bien suprême est le bonheur, que ce soit pour la cité ou l'individu lui-même. L'Homme essaie au moyen de ses capacités d'en atteindre le plus haut niveau. Depuis près de quatre siècles, la pensée utilitariste a traversé les écrits économiques, philosophiques et sociologiques plaçant l'utilité et le bonheur au centre de l'attention. En économie cette notion liée au bien-être, a longtemps été réduite à la simple fonction d'utilité permettant de représenter la satisfaction individuelle procurée par la consommation de paniers de biens. Cette fonction est utilisée pour modéliser les préférences des agents et au-delà appréhender leurs comportements. L'individu, figure centrale de la société, est alors placé au cœur de l'analyse des comportements observables résultant de ses préférences et donc de la maximisation de sa fonction d'utilité. Néanmoins, la notion de "comportement social" (empruntée à la psychologie), qui englobe l'ensemble des émotions et humeurs mais aussi la perception et les sentiments relatifs aux individus, est un point d'ouverture pour améliorer la compréhension des choix économiques individuels. Depuis quelques années, le domaine du déclaratif est reconnu comme légitime par les économistes. L'utilité est alors souvent associée à la satisfaction subjective vue comme un synonyme du bien-être. Nous parlerons ici du bien-être au sens large puisqu'il a une structure extrêmement proche de la notion de satisfaction (Clark et Senik, 2011; Senik, 2014). Il englobe les dimensions concernant la satisfaction vis-à-vis de son existence, de sa santé et au travail.

Aujourd'hui, plus que jamais, le travail occupe une place centrale dans le quotidien des agents économiques et le bien-être sur les lieux du travail apparaît comme un défi pour la politique sociale et de l'emploi en Europe. La commission européenne a adopté un nouveau cadre stratégique en matière de santé et de sécurité au travail (2014 à 2020) soulignant la nécessité d'investir dans des environnements de travail de haute qualité pour favoriser la croissance économique, augmenter la productivité des travailleurs et créer de l'activité économique. Le travail est une notion polysémique, qui englobe à la fois une activité rémunératrice, un aspect de l'existence sociale mais aussi un lieu de construction identitaire. Il a donc de manière évidente plusieurs visages différents. D'un côté, il est le lieu de l'aliénation (Marx, 1844)¹ qui génère des souffrances, des incompréhensions et condamne le travailleur à la servitude de l'emploi dans le seul but de subvenir à ses besoins ; de l'autre, il est à la fois un lieu de sociabilisation, de réalisation de soi et une source de bien-être.

Le travail source de souffrances et de mal-être

Il est vrai que certains aspects du travail peuvent mettre en danger le bien-être des travailleurs et particulièrement leur santé physique et mentale. Dans ce contexte, il est difficile de ne pas évoquer les vagues de suicides sur les lieux de travail (France Télécom, Renault, Peugeot, EDF, et plus récemment à La Poste, dans les hôpitaux et à la SNCF) auxquelles nous assistons depuis les années 2000. Malgré le caractère clairement multidimensionnel des déterminants du suicide, de tels actes mettent en exergue la dureté des conditions de travail et leur impact sur la santé voire la mort des travailleurs. Par ailleurs, la perte d'emploi et les périodes de chômage ont aussi des conséquences néfastes sur la santé, le bien-être (Clark *et al.*, 2010) et la qualité de l'emploi retrouvé. Browning et Heinesen (2012) ont montré que la perte d'emploi suite à la fermeture d'un établissement conduisait, chez les hommes danois, à une augmentation du risque de mortalité causé par les maladies circulatoires, les suicides ou les tentatives de suicides. Ils constatent aussi

1. Marx entend par aliénation " l'objet que le travail produit, son produit, se dresse devant lui comme un étranger, comme une puissance indépendante du producteur[. . .] ; cette réalisation du travail apparaît comme la perte pour l'ouvrier de sa réalité, l'objectivation comme perte de l'objet, l'appropriation comme aliénation, le dessaisissement " dans les Manuscrits de 1844 cité par Renault (2002).

une forte augmentation du nombre d'hospitalisations suite à des accidents de la route, des maladies liées à l'alcool et des troubles mentaux. Ces résultats sont similaires à ceux trouvés par Kuhn *et al.* (2009). Ces derniers montrent qu'en Australie les troubles mentaux et les accidents vasculaires cérébraux résultant de la perte d'emploi suite à la fermeture d'un établissement augmentent la consommation de psychotropes et le nombre d'hospitalisation chez les hommes. Eliason (2014) et Marcus (2014) mettent également en évidence une augmentation des comportements à risque tels que la consommation excessive d'alcool et de tabac à la suite d'un choc dans la carrière des travailleurs. Enfin, Sullivan et von Wachter (2009) ont montré que les hommes avec beaucoup d'ancienneté et ayant perdu leur emploi ont des risques de mortalité qui augmentent de 50 à 100% après cette perte, et de 10-15% sur le long terme. Les hommes sont globalement plus touchés par les chocs de carrière professionnelle (Clark *et al.*, 2008) - licenciement, chômage, fermeture d'établissement - que les femmes qui sont moins présentes sur le marché du travail. Les conséquences de la perte d'emploi sont d'autant plus importantes que le réemploi n'en élimine pas l'ensemble des effets négatifs (Brand, 2015). En effet, le licenciement touche non seulement la santé mais aussi la moindre qualité des emplois retrouvés notamment au niveau des salaires. Il convient de noter que la qualité de l'emploi est l'un des marqueurs du bien-être sur les lieux du travail. Pour mesurer cette qualité, un large pan de la littérature en économie du travail n'a pris en considération que l'aspect monétaire et montre que, aux Etats-Unis et en Europe, le salaire est impacté négativement par le licenciement (Bender *et al.*, 2002; Eliason et Storrie, 2006; Jacobson *et al.*, 1993; Ruhm, 1991). La durée de l'effet n'est cependant pas homogène entre les pays européens. D'autres auteurs tels que Hamermesh (2001), Green et Tsitsianis (2005), Clark (2015) utilisent, pour approximer la qualité de l'emploi, la mesure subjective de la satisfaction au travail. Néanmoins, Clark (2005) souligne que les variations salariales et d'heures travaillées faisant suite à un choc de carrière professionnelle ne sont pas suffisantes pour rendre compte de l'impact réel de cette situation sur les individus. L'OCDE (2016) a ainsi montré qu'il était nécessaire de prendre en considération à la fois la dimension monétaire du travail (salaire, revenu, primes) mais également la qualité de l'emploi dans son ensemble et en particulier l'insécurité de l'emploi et les différentes dimensions de l'environnement de travail (temps de

travail, distance à l'emploi, conciliation entre vie professionnelle et vie familiale, intensité du travail), afin d'évaluer les risques auxquels les travailleurs sont confrontés au quotidien.

Des changements organisationnels du travail inquiétants pour la qualité de vie au travail et la santé des travailleurs

Au cours des deux dernières décennies, le travail a été traversé par un ensemble de mutations profondes et structurelles (De Gaulejac, 2011) avec notamment l'apparition de nouvelles technologies, d'automatisation et de nouvelles formes de management, qui n'ont pas toujours été au service du bien-être des travailleurs. L'intensification de la charge de travail apparaît être une raison majeure de la dégradation de la qualité de vie au travail. De plus, comme le soulignent les sociologues Michel Gollac et Loup Wolff ainsi que l'ergonome Serge Volkoff :

“ Les formes modernes d'organisation rendent au travailleur une certaine autonomie mais à d'autre égards elles diminuent la maîtrise qu'il a de son travail et de sa vie. L'intensification du travail diminue la maîtrise instantanée de l'activité. La “ flexibilisation ” du temps de travail diminue la maîtrise du temps quotidien. La précarisation diminue la maîtrise de la trajectoire professionnelle. Chacune de ces formes de dépossession tend à aggraver les autres. ” *Gollac et al. (2010)*

Il est évident que les changements organisationnels et le gain de temps ont permis un accroissement de la productivité. Cependant, l'intensification du travail, la pression et le stress causés par les nouvelles formes d'organisation ont des effets pernicieux sur la santé psychique des travailleurs pouvant même devenir pathogènes (Barnay, 2016; Clot et Gollac, 2014). En Europe, lorsque l'on demande aux enquêtés dans quelle mesure le travail influence leur santé, 25% le déclarent pathogène tandis que seulement 7% trouvent qu'il a une influence positive sur leur santé (EWCS 2010 cité dans Barnay (2016)). L'intensité du travail constitue un des déterminant de la qualité de vie au travail dont les effets sur la santé sont considérables – voir Ferrie *et al.* (1998); Askenazy *et al.* (2006). Cela souligne l'importance du maintien de cette qualité afin d'atténuer les conséquences néfastes sur la santé physique et psychique. Les risques psychosociaux résultant de mauvaises conditions de travail et par conséquent d'une qualité de vie au travail médiocre

ont été initialement étudiés par Karasek (1979) et Siegrist (1996). Ces deux auteurs ont respectivement développé deux modèles qui mettent en évidence des déséquilibres entre la demande psychologique et la latitude décisionnelle² ou entre les efforts consentis et les récompenses obtenues³. Ces déséquilibres exposent le travailleur à un risque de stress et à plus long terme à des troubles mentaux, cardiovasculaires ou musculosquelettiques. Cottini et Lucifora (2013) ont également mis en évidence le rôle de mauvaises conditions de travail sur la santé mentale dans 15 pays européens. Il semble alors qu'investir dans un environnement de travail de qualité, qui permet aux travailleurs d'avoir à la fois un salaire suffisamment élevé, des conditions de travail favorables et l'absence de sentiment d'insécurité de l'emploi, permet d'améliorer considérablement la santé déclarée des travailleurs (Borg et Kristensen, 2000; Gupta et Kristensen, 2008; Llena-Nozal, 2009).

Le travail comme réalisation et construction identitaire

Pour beaucoup, l'emploi est la principale source financière permettant de subvenir aux besoins primaires. Toutefois, il constitue également un lieu fondamental d'insertion dans la société. Dans une société régie par le travail, ce dernier est perçu comme une norme qui permet aux individus d'acquérir un rôle, un statut social et de s'identifier à un groupe. Les individus " hors-norme ", sans travail, ne bénéficient pas du salaire ni du temps de sociabilisation qui s'opère sur les lieux du travail et souffrent de cette mise à l'écart (Méda, 2010). Le travail apparaît alors comme le lieu permettant à chaque travailleur de s'identifier à un groupe d'individu, de prendre conscience de soi. Ce concept d'identité a été largement étudié en psychologie et en sociologie et depuis les années 2000, les économistes lui portent une attention particulière pour mieux comprendre les comportements individuels et leurs interactions (Akerlof et Kranton, 2000; Davis, 2006). On peut citer le modèle économique d'Akerlof et Kranton (2000) qui se base sur les différences sociales pour introduire le concept d'identité. Les auteurs expliquent que " a

2. La demande psychologique définie par Karasek est un score établi sur la base de neuf questions qui concernent la quantité de travail, la rapidité à laquelle le travail doit être effectué, la complexité de celui-ci, son intensité et le morcellement des tâches. Quant à la latitude décisionnelle, elle est définie par les marges de manœuvre, la répétitivité des tâches et le développement des compétences.

3. Siegrist définit l'effort consenti par l'effort extrinsèque - lié aux contraintes de temps et à la charge de travail - et l'effort intrinsèque - lié aux motivations du travailleur. Quant aux récompenses, elles concernent les gains monétaires et l'estime reçue de la part des collègues et de l'employeur.

person's sense of self is associated with different social categories and how people in these categories should behave". Dans leur modèle, les attentes de chaque catégorie sociale en termes de comportements, donc les normes sociales, sont intégrées dans la fonction d'utilité des agents. Ils montrent que le genre - qui est un aspect important de l'identité - affecte les comportements économiques : les femmes travaillant dans un environnement masculin souffrent d'une baisse de leur utilité. Ainsi, les normes sociales et culturelles conditionnent les individus dans leurs manières de penser et d'agir (Layton *et al.*, 2006), lesquelles peuvent influencer la distribution du temps passé aux tâches ménagères, au soin des enfants ainsi que les préférences en termes d'emploi (temps partiel, temps plein etc.). Booth et Van Ours (2009), reprennent la même approche qu'Akerlof et Kranton (2000) et montrent que les femmes à temps partiel sont plus satisfaites de leurs heures travaillées que les femmes à temps plein. Nous observons aussi des écarts entre les conditions de travail des femmes et des hommes qui sont le reflet de positions sociales différentes (Gollac *et al.*, 2010). En effet, les femmes doivent aujourd'hui en plus de leur emploi assurer leur rôle familial traditionnel - celui d'effectuer une grande partie des tâches domestiques - et s'occupent davantage de personnes qui nécessitent une prise en charge. Par ailleurs, bien qu'il y ait de grandes différences entre les femmes et les hommes sur le marché du travail, les femmes sont de plus en plus nombreuses à être actives et elles s'identifient de plus en plus à leur travail (Booth et Van Ours, 2009; Goldin, 2006). Cette importante transformation du marché du travail a dans une certaine mesure redéfini la répartition des tâches et les décisions prises par les ménages. Ces décisions sont déterminées par la perception qu'ont les hommes et les femmes du statut de la femme - voir Goldin (2006).

Différence de genre dans le domaine de la santé

Les différences entre les genres sont aussi très présentes dans le champ de la santé et du bien-être. A revenu égal, les femmes sont plus satisfaites que les hommes (Frey et Stutzer, 2002). En ce qui concerne la santé, l'Organisation Mondiale de la Santé (OMS), les Nations Unies et l'Union Européenne ont défini des objectifs visant à améliorer l'équité et à réduire les inégalités entre les genres. Dans l'UE-28, l'espérance de vie s'est améliorée à la fois pour les hommes et les femmes grâce au développement économique, à l'amélioration

des conditions de vie à tous les âges et à l'avancée de la médecine et des soins apportés à l'ensemble de la population européenne. En 2014, l'espérance de vie à la naissance en Europe (UE-28) était de 80,9 ans pour l'ensemble de la population (Source : Eurostat). Si on enregistre une augmentation de l'espérance de vie dans l'ensemble des Etats membres, des écarts majeurs persistent entre les femmes et les hommes. Cet écart est de 10,5 ans en faveur des femmes, pour lesquelles on estime que l'espérance de vie s'élève à 83,6 ans contre 73,1 ans pour les hommes (en 2014)⁴. Toutefois, si les femmes ont une espérance de vie plus grande, elles se déclarent paradoxalement en moins bonne santé (Cambois *et al.*, 2011; Lahelma *et al.*, 1999). Cette contradiction soulève de nombreuses questions quant à la cohérence de l'objectif d'égalité en termes de santé. Celui-ci ne peut pas être entièrement atteint dans la mesure où il existe des différences anatomiques et physiologiques influençant la santé. Il est donc essentiel de faire la différence entre le "genre" et le "sexe". Nous retiendrons que le genre désigne les comportements différenciés, déterminés culturellement et socialement par l'influence de la société qui estime que certains comportements sont davantage appropriés pour une femme ou un homme (Layton, 2004; Payne et Doyal, 2015). Les analyses biomédicales étudiant les disparités biologiques entre les hommes et les femmes se concentrent essentiellement sur les dissemblances de systèmes de reproduction, de variations hormonales et génétiques (Doyal, 2000, 2001; Payne, 2009; Payne et Doyal, 2015) lesquelles peuvent alors protéger ou au contraire augmenter le risque de contracter certaines maladies suivant le sexe. L'appareillage chromosomique, par exemple, à l'origine des organes qui caractérisent les individus est aussi celui qui régit un grand nombre de différences. Ainsi, si les hommes peuvent avoir autant d'enfants qu'ils le souhaitent, l'impact sur leur santé n'est certainement pas le même que pour la femme. Cependant, ces facteurs biologiques sont loin d'être les seuls responsables des disparités de santé déclarée, les représentations liées au genre, l'environnement de travail, la qualité de vie ainsi que les déterminants socio-économiques et démographiques étant tout autant responsables de ces différences. La littérature en économie de la santé, a longuement étudié les biais de déclarations liés à la santé. Il en ressort qu'ils varient en fonction de l'éducation (Bago d'Uva *et al.*, 2011; Schneider *et al.*, 2012), des revenus (Etilé et Milcent, 2006; Johnston *et al.*,

4. Ces chiffres ont été calculés par Eurostat.

2009; Schneider *et al.*, 2012), de l'âge (Bago d'Uva *et al.*, 2008; Lindeboom et Van Doorslaer, 2004) et du genre (Bago d'Uva *et al.*, 2008; Lindeboom et Van Doorslaer, 2004). Dans l'ensemble des pays européens, les femmes souffrent davantage de dépression et d'anxiété. Si les statistiques européennes révèlent que les femmes sont plus vulnérables à ces maladies, il n'en demeure pas moins vrai qu'aucune étude n'a démontré qu'elles l'étaient pour des raisons physiologiques ou anatomiques. Metzl et Angel (2004) montrent qu'après la seconde guerre mondiale la médication par les psychotropes pour soigner les symptômes assimilés à la dépression chez la femme a été utilisé préférentiellement à l'analyse des situations de vie qui aurait permis de conclure à une absence de pathologie. Les auteurs concluent que l'élargissement des critères de diagnostics concernant la dépression ont légitimé l'usage de psychotropes pour les femmes. Cependant, ces diagnostics médicaux reposent certainement sur un mal-être des femmes et il est bon de préciser que la dépression – comme l'ensemble des troubles mentaux – entraîne de la souffrance, de l'exclusion sociale et professionnelle, de l'invalidité, une augmentation des risques de cancer et des maladies cardiovasculaires voire même de la mortalité.

Problématique de la thèse

Objectif de la thèse

En s'intéressant à la qualité de vie, cette thèse s'interroge sur le rôle du travail vis-à-vis de la qualité de l'emploi et la qualité de l'existence, cette dernière étant appréhendée à travers la perception que les femmes et les hommes ont de leur santé. Nous nous intéressons dans le premier chapitre de cette thèse aux conséquences des épisodes de chocs massifs que représentent les pertes d'emplois sur l'ensemble des dimensions de la qualité de l'emploi retrouvé. Le traumatisme que constitue la perte involontaire d'un emploi suite à la fermeture d'un établissement impacte également le bien-être du travailleur. Nous analysons l'impact de ces situations sur les différentes dimensions de la qualité de l'emploi retrouvé ainsi que sur la satisfaction des individus et ceci sur le long terme.

Dans la plupart des analyses, le genre émerge en tant qu'élément constitutif de la person-

nalité permettant de mieux comprendre les perceptions que les individus ont d’eux-mêmes et de leur santé. Dans le deuxième chapitre de cette thèse nous analysons les différences de santé perçue par les femmes et les hommes à travers le prisme de la dépression. A cette dernière est attachée une forte dimension subjective permettant de souligner les différences de perception entre les genres. En outre, si les perceptions de santé sont différentes suivant le genre, nous pouvons alors nous demander si le collectif de travail n’affecte pas également la santé perçue. C’est ce que nous étudions dans le troisième chapitre. Nous nous intéressons dans ce chapitre aux rapports sociaux, et plus particulièrement à la composition genrée de l’environnement de travail afin de déterminer si la perception de la santé varie suivant le collectif de travail. Les analyses conduites dans ces trois chapitres ont nécessité l’usage de différentes bases de données. Pour le premier chapitre, nous avons utilisé le “ German Socio-Economic Panel” (G-SOEP) de 1984 à 2012. L’enquête sur la santé, le vieillissement et la retraite en Europe (SHARE) et l’enquête sur la santé et la protection sociale (ESPS) ont conjointement été utilisées pour réaliser le deuxième chapitre de cette thèse. Enfin pour le dernier chapitre, nous avons utilisé la cinquième vague de l’enquête européenne sur les conditions de travail (EWCS).

Chapitre I

Le premier chapitre s’inscrit dans une vaste littérature portant sur les conséquences de la perte d’emploi. Il examine la qualité de l’emploi retrouvé et la satisfaction des travailleurs suite à une perte d’emploi involontaire liée à la fermeture d’un établissement. Ce chapitre contribue de deux manières à la littérature existante. Premièrement, la cause de la perte d’emploi analysée dans ce chapitre est bien exogène : la fermeture d’un établissement est subie par les travailleurs, ils ne peuvent par conséquent pas influencer cette situation. Dans un deuxième temps, nous sommes en mesure de suivre sur une longue période les individus et donc d’estimer l’impact causal de long terme de ce type de perte d’emploi. Par ailleurs, les indicateurs de la qualité de l’emploi que nous utilisons dans ce chapitre sont ceux décrit par l’OCDE (2016). Grâce à la richesse des données de panel issues du “ German Socio-Economic Panel (SOEP) ”, nous utilisons les facteurs monétaires (salaires), la perception de la sécurité de l’emploi, la qualité de l’environnement de travail

(la probabilité de travailler à temps plein, plus de 48 heures par semaine, la distance au travail, l'écart entre les heures travaillées et les heures désirées) et la satisfaction. Afin de mieux estimer les effets de long terme de la perte d'emploi nous utilisons la méthode d'appariement exact par tranche appelée aussi le Coarsened Exact Matching. L'appariement est effectué à la fois sur les variables de contrôles et sur les valeurs passées des variables d'intérêt (la qualité de l'emploi) afin de comparer les effets jusqu'à 10 ans après la perte d'emploi. Notre stratégie d'identification repose sur la comparaison des travailleurs ayant perdu leur emploi involontairement (groupe traité) et ceux qui sont toujours en emploi (groupe contrôle). Une fois l'appariement effectué, ces deux groupes possèdent des caractéristiques similaires trois ans avant la date du licenciement. Nos résultats révèlent que la perte d'emploi a un impact de long terme sur la probabilité d'être en emploi et détériore plusieurs dimensions de la qualité de l'emploi. De même, quand les travailleurs licenciés retrouvent un emploi, leurs salaires sont inférieurs à ceux du groupe de contrôle. Les indicateurs de la qualité de l'environnement de travail sont également affectés par la perte d'emploi sur le long terme, à l'exception de la probabilité de travailler à temps plein. Le coût de la perte d'emploi pour les travailleurs suite à une fermeture d'établissement est donc plus important lorsque la qualité de l'emploi est considérée comme un facteur multidimensionnel et pas uniquement monétaire.

Chapitre II

Le deuxième chapitre contribue à la littérature en économie de la santé cherchant à expliquer les différences de santé suivant le genre. Cette littérature soulève le paradoxe suivant : les femmes ont une espérance de vie à la naissance plus élevée que celle des hommes ; néanmoins elles déclarent toujours une plus mauvaise santé. C'est dans ce cadre que nous proposons ici d'analyser la relation existante entre la santé perçue, le genre et la santé mentale. L'originalité de ce chapitre repose sur l'introduction dans l'analyse de la santé mentale – la dépression et les souffrances affectives – pour mieux comprendre les différences de perceptions de santé entre les genres. Pour ce faire nous utilisons à la fois un échantillon représentatif de la population européenne âgée de 50 à 75 ans – provenant

des vagues de 2004 à 2012⁵ de l'enquête sur la santé, le vieillissement et la retraite en Europe (SHARE) et un échantillon représentatif de la population française âgée de 25 à 75 ans – provenant des vagues 2010 et 2012 de l'Enquête sur la Santé et la Protection Sociale (ESPS). Ces deux bases de données nous permettent d'avoir des variables de santé diagnostiquées par des médecins et déclarées par la suite par les enquêtés. De plus, grâce à la richesse des données de santé que contiennent ces deux bases et afin de mesurer le rôle de la santé mentale dans les différences de santé auto-déclarées, nous identifions les individus atteints de plusieurs pathologies physiques et mentales. Nos résultats montrent que, à santé physique égale, les femmes déclarent avoir un moins bon état de santé que les hommes. Cet écart entre les déclarations persiste lorsque nous prenons en considération les poly-pathologies physiques. En revanche, l'écart s'inverse lorsque nous prenons en considération la dépression et les souffrances affectives. Les femmes déclarent alors être en meilleur état de santé que les hommes, toutes choses égales par ailleurs. Ces facteurs sont des déterminants essentiels dans les différences de perception de santé entre les genres. Nos résultats sont similaires pour l'ensemble des échantillons. Dans ce chapitre, la santé mentale - capturée par la dépression et les souffrances affectives - apparaît en partie comme un indicateur du mal-être des femmes européennes et françaises. En effet, elle capture une forte dimension subjective pouvant également être influencée par comportements de déclarations différents suivant les genres. Afin de prendre en considération ces différences de perception entre les genres, nous analysons dans le chapitre suivant l'influence que l'environnement de travail a sur les déclarations de santé.

Chapitre III

Le dernier chapitre met en évidence le rôle des normes sociales dans le milieu professionnel – approximées par la composition genrée de l'environnement de travail – pour appréhender les différences de santé déclarée entre femmes et hommes. Dans la littérature, la question des normes sociales pour comprendre les différences de santé perçues reste toujours ouverte. Les normes sociales sont habituellement mesurées par une caractéristique moyenne étudiée dans un groupe de référence. Par exemple, la littérature sur

5. Nous n'utilisons pas la vague de 2008 (SHARElife).

l'obésité mesure la norme sociale par le poids idéal moyen du groupe de référence. Dans ce chapitre, le groupe de référence est le collectif de travail. L'enquête européenne sur les conditions de travail (EWCS), que nous utilisons, nous permet d'approximer les normes sociales par la composition genrée du collectif de travail, à savoir majoritairement féminin, majoritairement masculin ou mixte. Après avoir, dans une première partie, montré que les femmes tendent à déclarer une moins bonne santé et plus de problèmes de santé spécifiques que les hommes, nous montrons que les femmes dans des collectifs de travail féminins déclarent davantage de problèmes de santé spécifiques - tels que les problèmes de peau, de dos, de douleurs musculaires et de fatigue - que celles insérées dans des collectifs de travail masculin. Les résultats concernant les déclarations des hommes sont similaires : ils déclarent également plus de problèmes de peau et de douleurs musculaires lorsqu'ils travaillent dans des collectifs féminins. Nos résultats sont robustes au fait de contrôler par une large gamme d'indicateurs des conditions de travail. Les déclarations de santé sont davantage influencées par la présence majoritaire de femmes dans un environnement professionnel que par la mauvaise qualité de l'emploi. Ces résultats suggèrent que peuvent exister des normes sociales, associées à la composition genrée de l'environnement de travail, et qu'elles sont susceptibles d'expliquer en partie les différences de comportements de déclaration de santé, tout au moins sur le lieu de travail.

Plan

Cette thèse est organisée comme suit. Le chapitre I étudie les conséquences à long terme d'une perte d'emploi exogène sur la qualité de l'emploi retrouvé et la satisfaction. Le chapitre II décrit le lien existant entre le genre, la santé déclarée et la santé mentale pour mieux comprendre les différences de santé auto-déclarée entre femmes et hommes. Enfin le dernier chapitre (chapitre III) met en évidence l'influence de la composition genrée de l'environnement de travail dans l'explication des comportements de déclaration de santé.

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Chapitre I

Long-term Impact of Job Displacement on Job Quality and Satisfaction : Evidence from Germany

“ Une entreprise ferme, et tout est soudainement remis en cause pour ses salariés. Tout, c’est-à-dire les moyens d’existence évidemment. ”

Danièle Linhart, *Perte d’emploi, perte de soi* (2009).

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This chapter has been submitted and co-authored with Léa Toulemon.

1 Introduction

Job loss is a major shock on an individual's career and it often has devastating consequences on workers' life trajectories. Research has shown that it entails subsequent unemployment, long-term earnings losses, and declines in psychological and physical well-being. Moreover, as underlined by Brand (2015), "while reemployment mitigates some of the negative effects of job loss, it does not eliminate them". In this chapter, we investigate the effects of displacement due to plant closure that carry over to new jobs, when individuals are reemployed. More specifically, we investigate the effects of job loss on the quality of the new jobs, as measured by earnings, labour market security and the quality of the working environment, from one to ten years after displacement. We focus on displacement due to plant closure and we match workers based on their observed characteristics and time-invariant unobservables three years before treatment. Our findings indicate a large and long-lasting impact of displacement on employment probability. We also find a deterioration of all the dimensions of job quality in the long run and the most affected ones are the probability to work more than forty eight hours a week and distance to work, which both increase.

Since the 90's, the costs of displacement have been studied in terms of earnings, hourly wages and hours worked in the United States (Jacobson *et al.* (1993); Fallick (1996); Couch et Placzek (2010)) and Europe (Eliason et Storrie (2009); Hijzen *et al.* (2010)). More recently, researchers have focused on the impact on health and well-being. They found that losing one's job increases not only the risk of mortality in the United States (Sullivan et von Wachter, 2009), Sweden (Eliason, 2014) and Denmark (Browning et Heinesen, 2012) but also unhealthy behaviours (Marcus, 2014) and mental health problems (Marcus, 2013). As for satisfaction, Clark *et al.* (2008) show that a shock in a career path, such as an unemployment spell, deteriorates subjective well-being - as measured by life satisfaction.

Another strand of the recent literature focuses on labour market outcomes and more precisely earnings, hourly wages, unemployment or self-employment status. These papers try to assess whether the impact of displacement is a long run one or whether recovery occurs shortly after displacement. They found an increase in the probability of being re-

tired (Tatsiramos, 2010) or self-employed following job loss (Von Greiff, 2009). Among displaced workers, those who find a new job often experience a large and long-lasting drop of earnings until six years after displacement in the United States (Ruhm (1991); Jacobson *et al.* (1993)). Since the 2000's, similar papers studied the impact of job loss on earnings in Europe but results are more heterogeneous.

Wage losses are much smaller in European countries than in the United-States as demonstrated for the first time by Kuhn (2002).¹ Eliason et Storrie (2006) find a large and long-run impact of job displacement on earnings in Sweden - until twelve years after displacement. Schwerdt *et al.* (2010) also show long-run effects in Austria, especially for white-collars. In Germany the impact seems to be smaller : displacement induces a loss of earnings until only two years after displacement (Couch, 2001). The duration of income losses depends on how long it takes to find a new job after displacement, on the definition of displaced workers, and on whether downsizing due to plant closure or layoffs are considered (Hijzen *et al.*, 2010). Couch et Placzek (2010) revisit the impact in the United-States using matching estimators, and find lower impacts than previous studies (for instance Fallick (1996), Jacobson *et al.* (1993)). The impact also varies when using alternative definitions of displaced workers (Hijzen *et al.*, 2010).

All these papers focus on earnings and/or hourly wages as the unique dimension of job quality. However, job quality is a multi-dimensional concept and all dimensions contribute to the well-being of workers. Beyond wages and unemployment, other indicators must be taken into account to properly capture the overall impact of job displacement.

The European Foundation for the Improvement of Living and Working Conditions selects four indicators of job quality which are of greatest importance to workers : earnings, career prospects, working-time quality and the quality of the working environment (Eurofound (2015); Eurofound (2012)). The OECD (2014) develops a framework including three key dimensions of job quality which partly overlap with the previous ones : earnings quality, labour market security and quality of the working environment.

1. Bender *et al.* (2002), Borland *et al.* (2002) and Albæk *et al.* (2002) provide respectively evidence for France, Germany, United Kingdom, Australia, Belgium and Denmark.

In this chapter, we estimate the impact of displacement on monetary outcomes - earnings, hourly wages -, self-reported labour market security and the quality of the working environment as measured by the probability to work full-time and to work long hours, distance to work, the gap between desired and actual hours worked, job satisfaction and life satisfaction. The data we use come from the German Socio-Economic Panel (SOEP) which contains a large array of subjective and objective variables measuring job quality. Given the potential endogeneity of displacement, we consider only displacement due to plant closure, which is not directly linked with unobserved individual characteristics. We implement a matching method to identify non-displaced workers who have similar characteristics as displaced workers three years before displacement and then analyse the effects of job loss until ten years after displacement. Our results suggest that job loss induces a deterioration of several aspects of job quality. We find a large and long-lasting impact of displacement on the probability to be employed. For displaced workers who find a new job, we find a deterioration of job quality. Our results on monetary outcomes (earnings and hourly wages) are consistent with those found by Kuhn (2002) and Couch (2001) : the impact of displacement lasts for three or four years. As regards job security, displaced workers report to be more likely to lose their job again. Indicators of quality of the working environment (long hours, the gap between hours worked and desired hours, distance to work, job and life satisfaction), are all affected by displacement except the probability of working full time. In the long run the most affected dimensions are the probability to work more than forty eight hours a week and distance to work, which both increase.

To our knowledge, this work is the first measuring the impact of job loss due to plant closure on all dimensions² of job quality. The only other articles studying the links between job loss and job quality we are aware of are Lehmann *et al.* (2013) and Seim *et al.* (2012). They both estimate the impact of job loss - due to plant closure and lay off - on hourly wages, earnings and hours worked in Russia and Sweden. Not only do they find large and persistent earning losses but also a decrease in hours worked.

2. Dimensions defined by OECD (2014), Cazes *et al.* (2015) and the European Foundation for the Improvement of Living and Working Conditions.

Our contribution to the existing literature is twofold. First, we restrict the definition of displaced workers to plant closure - excluding individuals who are laid off in order to make sure that displacement is truly exogenous - and we implement a matching method to identify a relevant control group in order to measure the causal impact of job loss. Additionally, we are able to follow individuals over a long time-period, and thus to estimate long-term effects. Second, this chapter contributes to the literature focusing on job quality. In this literature, indicators are more numerous than ours - see for example Osterman (2013), Green *et al.* (2013), Rubery et Grimshaw (2001), Crespo *et al.* (2013). Green *et al.* (2013) use four indices of non-wage job quality (work quality, working time, work intensity and physical environment) from the Fifth European Working Conditions Survey. With the same database, Cottini et Lucifora (2013) measure job quality with working conditions - such as shifts, job intensity, repetitive work and physical hazards. Contrary to these studies, we do not have a dataset specifically focusing on job quality. Therefore, as suggested by the OECD (2014) and Cazes *et al.* (2015), we approximate each dimension of the latter by earnings, hourly wages, self-reported labour market security, the probability to work full-time and to work long hours, distance to work, the gap between desired and actual hours worked, job satisfaction and life satisfaction.

The chapter is organised as follows. Section 2 presents the empirical strategy. Section 3 provides a detailed description of the data. Section 4 begins with a presentation of the estimated effects of job displacement on the main dimensions measuring job quality. Then, the results of various robustness checks and a presentation of heterogeneous impact follow. Finally, section 5 provides some concluding remarks.

2 Empirical strategy

We aim at estimating the long-term impact of job displacement on job quality indicators and individuals' satisfaction. Our strategy is based on Coarsened Exact Matching (CEM) with treated and control individuals being matched not only on their pre-treatment covariates but also on their pre-treatment outcomes. Thus doing, we control for the impact of time-invariant unobservables on outcomes - see Imbens et Wooldridge (2008), Lechner

(2011).

Matching is a valid method as long as potential outcomes - i.e. outcomes that each group would have had if they had been respectively treated (Y_1) and untreated (Y_0) - do not depend on treatment status given covariates and pre-treatment outcomes. This assumption is called ignorability of treatment, or unconfoundedness, or conditional independence assumption (CIA). The richer the information available for matching, the more credible this assumption (Chabé-Ferret (2015)). The *ignorability of treatment* assumption is violated if individuals choose to be treated based on their return to treatment. In our framework, individuals in the treated group do not choose to lose their job, they lose it due to an exogenous shock : plant closure. In such a case, it is unlikely that the selection into treatment be based on expected gains. The existing literature usually focuses on workers who lose their job because of dismissal - whatever the reason - (Marcus (2014), Clark *et al.* (2008)), while few papers only use administrative data (Browning *et al.* (2006), Eliason et Storrie (2009)) and restrict the treatment to job loss due to plant closure. If not restricted to plant closure, dismissals are likely to be correlated with worker's characteristics since, even when downsizing, employers are likely to choose which employee to dismiss. Here, we focus on workers losing their job because of plant closure, so there is no such selection. We do not control for post-treatment characteristics such as marital status, income or the number of children because job loss could affect post-treatment characteristics, so that the ignorability-of-treatment condition would be violated - i.e. potential outcomes given such variables would be correlated with treatment status.

To estimate the impact of job loss on job quality and satisfaction outcomes over a time span of ten years after job loss, we first define which individuals belong to the treatment and control groups, and then match subjects from the treatment group to subjects from the control group. Figure A1, in Appendix Section A presents how groups are constructed. Treatment -i.e. job loss - can occur at different periods so that we have time varying treatment and control groups.³ Hereafter, we will call the treated group either “displaced workers” or “treated individuals”. We start with a sample of 2,121 individuals who lose

3. In our framework, displaced individuals are matched with individuals who have not been displaced the same year but who can be displaced before or after. The matching is thus dynamic. Results are similar when we exclude individuals who have been displaced once from the control group.

their job at least once, in a panel of 27,267 individuals. We define treatment at a given year k as losing one's job due to plant closure at year k . Similarly, subjects from the control group are individuals with similar characteristics - see below - but who did not lose their job at year k .

The closing process takes time. German employers are required to inform works councils⁴ and to provide at least a 30-day notice before the final shutdown (Couch, 2001). For this reason, matching on workers' characteristics just before treatment is likely to yield biased estimates, as it would violate the ignorability-of-treatment condition. For instance, a worker who is aware that he is about to be displaced could have a lower job satisfaction before displacement, meaning that pre-treatment characteristics (here job satisfaction) would be impacted by treatment status. When we match on five or six years before displacement we have suggestive evidence that the effects of plant closure are anticipated up to two years before displacement. Therefore, in order to match treated individuals with subjects from the control group, we use pre-treatment covariates and outcomes as measured three years before the treatment year (k). In our setting, the ignorability-of-treatment is therefore :

$$\mathbb{E}(Y_{i,k+m}|X_{k-3}, Y_{k-3}, D = 0) = \mathbb{E}(Y_{i,k+m}|X_{k-3}, Y_{k-3}, D = 1)$$

for $i = 0, 1, m = 1, \dots, 10$, and $k = 1984, \dots, 2012$

where $(Y_{0,k+m}, Y_{1,k+m})$ are vectors of potential outcomes of treated ($Y_{1,k+m}$) or untreated ($Y_{0,k+m}$) individuals, m years after a displacement which occurred at year k for the treated group.

We then estimate differences in job quality and job satisfaction across both groups, by comparing the average outcomes in the treatment and control groups one to ten years after treatment.

To do so, we use coarsened exact matching (CEM) rather than exact matching or propensity score matching. While Exact Matching provides perfect balance - a treated unit

4. "Works councils were established by the Works Constitution Act of 1952, and additional powers were delegated to them by the Works Constitution Act of 1972. In general, works councils have powers regarding local personnel issues such as the scheduling of work, the hiring of new workers, and conditions for dismissal" (Couch, 2001)

is matched to control units with the same covariate values - it produces too few matches due to the richness of covariates in our data, and even no match when some variables are continuous. Given this problem, we implement a coarsened exact matching (CEM) method, which performs exact matching on coarsened variables. It is a Monotonic Imbalance Bounding matching method. The maximum imbalance between treated and control groups is chosen *ex ante* - see Iacus *et al.* (2009) and Iacus *et al.* (2011) -, in contrast to propensity score matching.

Then, the number of matched individuals has to be checked. All forms of imbalance - nonlinearities or interactions - are controlled for because we only match individuals if they have exactly the same characteristics for all coarsened variables. The critical point of CEM is the coarsening level for each variable : categories have to be small enough to make sense, and large enough to have enough matched individuals. Given the discrepancy between the number of individuals that could belong to the control group (26, 802) and the treatment group (at most 1, 543 persons), we choose which variables to include and how to coarsen them checking which proportion of the treated individuals are matched. Treated and control individuals are eventually matched on gender, age (five classes), diploma (three classes), region (West Germany - East Germany), and industry (nine classes) - See Appendix B. These variables are measured three years before job loss due to plant closure. For each regression, we also match individuals on the value of the outcome three years before displacement. This enables us to take into account the impact of any time-invariant unobservable variable. Among outcomes, continuous variables are coarsened : wage is coarsened in twenty categories, and distance to work in ten categories. Initially, we have 1,543 individuals in the treatment group (1,692 job-loss spells), and 26,802 individuals in the control group. Restricting our sample to individuals having non-missing values three years before treatment for each variable used for the matching, we end up with 959 individuals in the treatment group (corresponding to 1,041 job-loss spells) and 18,534 individuals in the control group. Overall, 474 to 1,026 job loss spells have been matched, depending on the outcome considered, i.e. they are in a stratum where there is at least one control and one treated individual. Then, we measure the difference in mean outcomes between the two groups from four years before treatment to ten years afterwards,

with a separate regression for each time-distance to job loss m . We use the comparison of outcomes four years before treatment to assess the validity of our method. Matched control and treated individuals are similar in term of outcomes three years before displacement, because they are matched based on the outcome at year $k - 3$. Comparing outcomes at year $k - 4$ provides evidence that both groups are similar before being matched.

We use weights (μ) that equalize the number of treated and control individuals in each stratum. The average impact of treatment on outcome Y is then given by :

$$\beta_m = \frac{1}{n_1 + n_2} \left(\sum_{i=1}^{n_1} \mu_i \mathbb{E}(Y_{i,k+m} | D = 1) - \sum_{j=1}^{n_2} \mu_j \mathbb{E}(Y_{j,k+m} | D = 0) \right)$$

for $m = -4, \dots, 10$,

where n_1 is the number of treated individuals, n_2 the number of control individuals, D is an indicator of treatment status, k is the year of job displacement, and m is the time-distance to job displacement.

3 Data and descriptive statistics

3.1 Data

The German Socio-Economic Panel

The data used in this chapter are drawn from the German Socio-Economic Panel (SOEP) which includes about 46,600 individuals from German private households. The SOEP questionnaires cover several issues such as health, education and changes in the composition of the household. Spanning from 1984 to 2012, the historical period includes key events of German history, such as the reunification in 1989/1990, the implementation of the Hartz laws between 2003 and 2005 and the economic crisis in 2008/2009. Our analysis focuses on the long-term impact of job loss due to plant closure on labour market outcomes, job quality and self-reported satisfaction. Only individuals aged between eigh-

teen and sixty years old are included in our study. Our final sample consists of 37,408 individuals.

Outcomes and control variables

Because we want to identify the long-term consequences of job loss on labour market outcomes, job quality indicators and individuals' satisfaction, we use plant closure as an exogenous source of job loss.

The job loss variable is constructed using the following question asked yearly from 1990 to 1998 and from 2000 to 2012 to individuals who report a change in their labour market situation : "How was this job terminated?". Respondents may choose one of the following answers : dismissal, mutual agreement, place of work or office has closed, resignation, temporary job or apprenticeship, retirement, sabbatical or, "if you are self-employed, your business closed down". Individuals are considered to have lost their job due to plant closure when they select "place of work or office has closed". These displaced workers do not necessarily experience an unemployment spell.

Taking advantage of the abundance of information in the GSOEP survey, we use job quality indicators capturing each of the dimensions put forward by the OECD - see above -, i.e. earnings quality, labour market security and quality of the working environment. As recommended by the literature on job quality - see OECD (2014) and Green *et al.* (2013), for example - we consider as objective indicators of job quality the probability of being employed, distance to work, earnings, hourly wages, the probability of having a full-time job, the probability of working more than forty-eight hours a week, and as subjective indicators the fear of losing one's job (job insecurity) and the gap between hours worked and desired hours.

Even if these job quality indicators capture several dimensions of the well-being of workers, we also use self-reported satisfaction indicators to get a more comprehensive picture of how job displacement affects well-being. We consider two satisfaction variables : job satisfaction and life satisfaction, rated on the same 1 to 10 scale where 0 means completely dissatisfied with one's job (resp. life) and 10 means completely satisfied. This question is asked every year in the SOEP data.

Our specifications also include individual characteristics - age and education⁵ - and industry dummies. We use the NACE 1-digit standard industrial classification. We also include region and year dummies as control variables.

3.2 Descriptive statistics

Descriptive statistics are provided in Appendix Figure C1, Tables C1, C2, C3 and C4.

In our sample, individuals may lose their job between 1990 and 2012.⁶ On the whole period, layoffs are the main reason for job losses : among job losers, 48% are laid off. Additionally, over the period, one-sixth of the job losses is due to plant closure, which represents 2,396 individuals - see Appendix Figure C1. In 1991, on year after the German reunification, we observe the largest number of involuntary job losses and more particularly due to plant closure and layoffs. These results are consistent with the German socio-economic situation, at this time : the East-German productive system was obsolete and the transition to the market economy led to many plant closure and mass layoffs. We also notice that the number of involuntary job losers decreases just when the Hartz reforms were implemented - in 2003, 2004 and 2005. Three years later, we observe with the economic crisis (2008/2009) a slight increase of the number of job losers due to plant closure and layoffs. Moreover, the structure of the panel is such that only few job losers due to plant closure are found in 1998 and 2012. This is due to the fact that job loss variable is constructed on the basis of a question about job changes between the date of the interview and January of the previous year and when individuals report having lost their job they are then asked the precise month and year of job loss. The problem comes from the fact that the answer “Because of plant closure” is not available in 1999 and 2013. Therefore, individuals considered as displaced in 1998 and 2012 are only those who have been displaced between the month of interview (often during the first term) and the first of January of the same year. We will check that our results are robust to removing years 1998 and 2012.

5. Age and education are coarsened into 3 classes - See Appendix B

6. The question “How was this job terminated?” is asked every year, but the answer “Because of plant closure” is only available from 1990 to 1998 and from 2000 to 2012

Among those who lose their job at least once (2,151 individuals), the vast majority (1,895 persons) have lost their job only once but 233 have lost their job twice, 21 three times and 2 four times - see Appendix Table C1. Workers who are displaced several times are considered as treated each time. We also restrict our sample to workers who are displaced only once as a robustness check.

Appendix Tables C2, C3 and C4 describe individual characteristics of displaced workers for all years before treatment whereas for the untreated they are computed over the whole period. On average, there are fewer women in the treatment group than in the rest of the population. In our sample, treated individuals are slightly older, live more often in East Germany - see Appendix Table C2 - and they are less likely to hold a higher education diploma than the non-treated individuals. Treated individuals are also slightly more often employed in manufacturing industries, trade and construction sectors and less so in services and banks and insurance - see Appendix Table C3.

When considering job quality indicators and individuals' satisfaction, the treated group appears to report lower job and life satisfaction, lower job security and longer hours worked as well as poorer overall job quality before displacement, compared to the control group - see Table C4. Treated individuals are also more likely to have a full-time job but they work more often more than forty eight hours a week, they live further away from their job, earn less money and are less often in employment.

In addition, descriptive statistics for each category of individuals we consider - women/men, blue/white collars, workers with a short/long tenure and younger/older individuals - are provided in Appendix D, Tables D1 to D12. We first notice that the differences between treated and non-treated are almost always significant within each categories - see columns (6) of each tables in Appendix D. Whatever the categories, treated and non-treated individuals are different in many aspects. We observe the same distribution of treated women and men for each individuals characteristics : location, age and education - see Table D1. However, treated women are slightly more often employed in trade and services industries whereas in manufacturing and construction industries there are more treated men - see Table D2. When considering outcomes variables, on average, treated men

are more often in employment and are more likely to have a full-time job - see Table D3. They live also further away from their job and earn slightly more money than women. Among treated individuals who belong to the white collars, 59% are women whereas men represent 65% of the treated blue collars - see Table D4. We then observe almost the same distribution of treated individuals by industries and by outcomes for men and women as for white and blue collars workers - See Tables D5 and D6. Unsurprisingly, short tenure workers who have been at least displaced once are younger. The distributions of treated short tenure workers are quite similar to those of younger workers⁷ - See Tables D7 to D12.

4 Results

4.1 Main results

We interpret the coefficients on years $k - 2$ and $k - 1$ (two years before to one year before treatment) as the impact of anticipating a displacement. We have matched our treated and control individuals based on their outcomes three years before displacement. We first investigate the impact of job loss due to plant closure on earnings, job security, quality-of-working environment⁸ and satisfaction indicators. The main results presented in Figures 1 to 10 (pages 42-46) suggest that job loss induces a deterioration of several aspects of job quality and satisfaction. Each point of those graphs represents an estimate of the effect of displacement ($\beta_{Y,m}$) for a given outcome Y , and a given time-distance to job loss m , presented with 95% confidence intervals. The formula for $\beta_{Y,m}$ is provided in Section 3.

In order to assess the validity of our method, we check whether the coefficients on the outcomes four years before displacement (Y_{k-4}) are different from zero. This can be seen as a placebo test : year $k - 4$ is long before displacement, so there should be no difference between the treatment and control groups at that time. For our ten outcomes, there is no significant effect of being displaced four years before displacement - see Figures 1 to 10.

7. Same patterns hold for long tenure workers and older individuals

8. We use the nearest categories of job quality developed by OECD (2014)

Overall, treated and control individuals are similar four years before job loss, and our matching method is therefore reliable.

Individuals who will lose their job at year k anticipate their displacement and are more concerned about their job security two to one years before job loss - see Figure 4 (page 43). When considering the results in Figure 9 and Figure 10 (page 46), it is interesting to notice that job and life satisfaction are also affected by anticipations and tend to decrease before displacement. In order to tackle this issue of anticipations, we do not match individuals on years $k - 2$ and $k - 1$ but rather on year $k - 3$. Furthermore, we cannot interpret the coefficient on the year of displacement, because some treated individuals are already displaced and some are not at the time of the survey.

During the whole period, the impact of displacement on the probability of being employed is negative and significant - see Figure 1. One year after displacement, 30% of displaced workers are not employed (they are either unemployed or inactive) and they are still 5% less likely to have a job ten years after displacement. Displaced individuals who have found a new job after displacement earn less than others, but this effect is only significant three and four years after displacement. It represents at most a 10% decrease in monthly earnings - see Figure 2. Concerning hourly wages, the impact is significant until six years after displacement and represents a 10% decrease as well - see Figure 3. These results are close to those found by Eliason et Storrie (2006) although we find a much larger impact on employment probability (30% to 10% as compared to 7% to 3%), and less long-lasting effects on earnings (until 4 years instead of 12 years).

As regards job security, workers who have been displaced report to be more likely to lose their job again. This effect is significant until four years after displacement - see Figure 4. Our indicators of quality of the working environment are all affected by displacement, except the probability of working full-time, for which the impact is small and not significant. Displaced workers are more likely to work long hours (more than forty-eight) and to work far away from home, until ten years after job displacement. Overall, displaced workers with a new job are 30% more likely to work long hours, and to commute 8 to 12 kilometres further away - see Figures 6 and 8. They are more dissatisfied with their

hours worked than the control group until nine years after displacement. These results are consistent with a negative impact of job loss on job satisfaction - until seven years after displacement, only for those who have a job - and life satisfaction - until eight years after displacement, for all displaced workers (Figures 9 and 10).

To summarize, displacement worsens all aspects of job quality - i.e. the probability of being employed, earnings, hourly wages, job security and the quality of the working environment. Even when they find a new job, displaced workers have lower-quality jobs than non-displaced workers. In the long run, the most affected dimensions are hours worked and distance to work. In addition, our results are robust when we remove years 1998 and 2012.

Robustness check

Our main results show that there are long-term impacts of displacement on several aspects of job quality. For some dimensions there is a recovery while for some others - long hours, dissatisfaction with hours worked and distance to work - there is no evidence of a decrease in the effect of displacement over time. Each point estimate is obtained considering individuals who are currently working that year. The further away from the year of displacement the more displaced workers find a new job and thus contribute to the estimates. Therefore, individuals who have been out of employment for a long period could explain the long-term effects.

In this paragraph, we estimate the effects of displacement on the subgroup of workers who were back to employment the year after displacement. Thus doing, we can see how the impact varies over time for a more stable pool of displaced workers and we have a clearer idea of the pattern of recovery in each dimension. On average, displaced workers in this subsample are younger, have lower tenure, are more often white collars and more often men than displaced workers who did not find a job right after displacement - see Appendix F, Table F1. They are as likely as non-displaced workers to be employed both in the short and long run following displacement.

Overall, our main results do not vary at all when we focus on individuals who do not experience a significant period out of employment, except for life satisfaction - see

Appendix F, Figures F1 to Figures F10. Job displacement has no significant impact on life satisfaction for this new sample. This finding suggests that the drop in life satisfaction is driven by individuals who are out of employment for more than one year after displacement. Concerning job quality, several dimensions are impacted by job loss even when individuals find a new job quickly after displacement. Therefore, displacement is not only about being out of employment, it is also a shock on the career path for displaced workers who find a job right after displacement.

4.2 Heterogeneous effects

So far, we have presented the average effects of job loss computed on the whole sample. However the impact of displacement is likely to vary, among others, across gender, age, tenure and occupation of the displaced workers. This is what we want to investigate in this section.

We estimate the same model separately for women and men and interpret the impact of job loss on each dimension of job quality and satisfaction indicator - see Appendix E. For each category we consider, we use the same selection criteria for both treatment and control groups, i.e., male (resp. female) workers can only be matched with male (resp. female) workers.

When considering the sample of men - see Appendix E - we find that they are affected by a deterioration of some dimensions of job quality over a longer period of time - between six and ten years after displacement - than women even if the difference is not always significant. Displaced men are less likely to have a job, have lower earnings and have a higher probability to work more than forty-eight hours a week than their female counterparts⁹ - see Appendix E, Figures E1.1, E1.2, E1.3 and E1.6. The impact of job loss due to plant closure on commuting time is particularly long-lasting for men - see Appendix E, Figure E1.7. It increases until ten years after displacement and the difference between both genders remains significant from two to nine years after displacement. For

9. The differences are almost never significant for employment probability and earnings. However, the differences are significant from six to eight years after displacement for the probability to work more than forty-eight hours a week.

men, we also find a short-run negative effect of job loss on job security, the satisfaction with hours worked and job satisfaction - see Appendix E, Figures E1.4, E1.8, E1.9.¹⁰

The corresponding pattern of results is different for women except for the probability of being in employment. Fewer dimensions are impacted and the effects are less long-lasting. Displaced women do not experience a significant decrease in earnings, hourly wages or the probability to work full-time¹¹ - see Appendix E, Figures E1.2, E1.3 and E1.5. The effects are short-term or mid-term for a couple of outcomes - job security, probability to work long hours, satisfaction with hours worked, job satisfaction and life satisfaction (see Appendix E, Figures E1.4, E1.6, E1.8, E1.9 and E1.10).¹²

Finally, the impact of displacement on our two indicators of the quality of the working environment - full-time and distance to work - is more severe for men. Interestingly, this differentiated impact on job quality is not due to the fact that women exit the labour force after displacement, because the effects on employment probability are similar. However, women also suffer from displacement - their probability to be employed decreases, they perceive lower job security and their satisfaction with hours worked, with their job and with their life decreases.

Displacement is likely to impact differently older and younger workers, as they are impacted at different moments of their career. Figures E2.1 to E2.10, in Appendix E, show how our results vary across the age of displaced workers. We define as “young” those workers younger than 45 years old at the time of displacement. The other workers are considered to be “old”.

Most of our job quality indicators are impacted in a similar way for older and younger workers, but the magnitude of the coefficients is generally larger for older workers. First, older workers are more impacted than younger ones in terms of employment probability - see Appendix E, Figure E2.1. One year after displacement, the difference between displaced and non-displaced workers is twice as high for older workers than for younger ones,

10. The differences of effects are not significant for job security and dissatisfaction with hours worked, except for two years. They are never significant for job satisfaction.

11. The differences between the coefficients for men and women are almost never significant for hourly wage and earnings, and significant for half of the years for full-time

12. The differences between the coefficients for men and women are significant only for a few years for most of the outcomes, and significant for distance to work.

and the difference of impact for younger and older workers is significant until six years after displacement. Concerning earnings, hourly wages and job security, the effects are very close and the differences are not significant - see Appendix E, Figures E2.2, E2.3 and E2.4. Older workers are more affected in some dimensions of the quality of the working environment, such as the distance to work and job satisfaction¹³, whereas the impact on life satisfaction is similar across ages. Senior workers also seem to be more impacted in terms of hours worked - the probability to work long hours and the gap between actual and desired hours worked -, but the difference of impact with younger workers is often not significant.

Overall, the difference in the impact of job loss across age mainly concerns the probability of employment. Older workers are less likely to find a new job if displaced. Once they have found a new job, they suffer from a greater deterioration of job quality. However, the overall impact that we find is not entirely driven by older displaced workers, as the results also hold to a lesser extent, for younger workers.

In our sample, older displaced workers have on average fifteen years of tenure as compared to seven years for younger workers. This could explain part of the difference between older and younger workers. Accumulating firm-specific human capital implies higher losses in case of displacement. If, instead of age, we distinguish workers according to their years of tenure before displacement, we find that more tenured workers (more than ten years of tenure) are more impacted in terms of employment probability¹⁴ - see Appendix E, Figures E2.11 to E2.20. Once they have found a new job, the impact of job loss on job quality is very similar whatever the length of tenure : the difference across tenure is almost never significant - except for the distance to work in the long run. Similar results are found when we use a threshold of three years of tenure instead of ten years.

In this paragraph, we consider potential heterogeneity across type of occupation. We divide our sample into white and blue collars in order to compare each type of displaced workers with their control counterparts. Displacement deteriorates job quality more

13. The effects are significantly different.

14. The differences in employment probability across tenure are significant.

for blue-collar workers than for white-collar workers, in almost all the dimensions¹⁵ we consider. The overview of the results indicates that a major shock on the career path such as job loss has a negative impact on all outcomes for blue-collar workers, except the probability to work full-time - see Appendix E, Figures E3.1 to E3.10. Some dimensions of job quality are impacted only in a short-run - job security and earnings - whereas the effects on commuting distance and satisfaction with hours worked are still significant from four to ten years after displacement. Long-term effects - until nine years after displacement - can be observed for hourly wages and the probability of working long hours. The difference with white collars is significant in the long-run (after six years), when there is full recovery for white collars, while blue collars are still impacted.

Overall, we find that blue collars are more impacted than white collars for employment probability and distance to work over the whole period - see Appendix E, Figures E3.1 and E3.7 - with the difference in impact across both groups being significant. The effects of displacement on job quality and satisfaction are generally concentrated among blue collars. White collars are impacted in the same way, but the effects are smaller, and often non significant.

To conclude, displacement induces a long-lasting deterioration of at least one indicator of job quality for all groups considered. The effects seem more pronounced for men, blue collars, older and more tenured workers.

15. The differences across occupation are almost never significant for earnings, hourly wages, perceived job security, full-time work, the probability to work long hours, dissatisfaction with hours worked, job and life, but are significant for employment probability and distance to work.

5 Conclusion

In this chapter, we provide evidence that job loss due to plant closure has a long lasting causal impact on a wide range of indicators of job quality. As for monetary outcomes, our results are close to what we found in the literature on Europe (Eliason et Storrie (2009); Hijzen *et al.* (2010)) : we find long-lasting effects of displacement on the probability to be employed, on hourly wages¹⁶ and only a middle-run impact on earnings contrary to the United-States (Jacobson *et al.* (1993); Fallick (1996); Couch et Placzek (2010)) where the impact is smaller on employment and larger on earnings. Beyond earnings or hourly wages, job loss due to plant closure also induces a deterioration of several dimensions of job quality and satisfaction. The most affected indicators of quality of the working environment are the probability to work more than forty-eight hours a week and distance to work which both increase after displacement. Even workers who find a new job within one year after displacement experience a worsening of job quality.

We also assess which workers are the most affected by displacement. We find that job loss induces a deterioration of job quality particularly for men, blue-collar workers and older¹⁷ individuals with high tenure. This chapter focuses on Germany, in the period 1990-2012. The labour market conditions are heterogeneous both geographically - East Germany versus West Germany - and over time - before versus after the Hartz reforms. While we are not able to distinguish effects before and after the Hartz reform, we can distinguish how the impact varies across regions (West Germany - East Germany). Our results suggest that both western and eastern displaced workers experience a deterioration of job quality in the long run in some dimension.

We now discuss further the implications of our results. According to human capital models(Becker, 1975), workers acquire specific skills through their professional life. Some of these job-specific skills are not transferable across employers, which increases the cost of displacement. If having job-specific skills enables workers to access better-quality jobs, then displacement is likely to have long and negative effects on the various dimension of job quality indicators. In this setup, tenure should be an important as determinant of the cost

16. The impact of displacement on hourly wages represents a 10% decrease on the whole period until six years after displacement

17. An older individual is more than 45 years old.

of displacement since the longer the tenure the greater the accumulation of job-specific skills. However, the differences across groups are often non significant, which suggests that job quality deterioration following displacement affects all groups considered. So, when taking job quality into account the cost of displacement turns out to be much higher than when considering only monetary aspects of job loss.

Those results may have potentially important implications in terms of economic policy. This chapter underlines that costs associated to being displaced are higher than previously measured, and that the loss in terms of human capital could be sizeable. This implies that policies addressing temporary labour market shocks and enabling workers to keep their job - by reducing the number of hours worked for instance - may prevent long term deteriorations of career paths. Besides, this work helps to assess which dimension of job quality should draw policy makers' attention when designing return-to-work policies. For instance, public programs should consider that distance to work increases in the long run after displacement. Implementing housing policy, developing mobility assistance could help in particular younger workers to cope with this deterioration.

Most people spend a large part of their time at work and job quality is a key component of individual well-being. In this chapter, we find that some aspects of job quality are impacted by job loss. Further investigations of changes in individual's labour market situations should definitely consider the multidimensional aspect of job quality.

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Figures

FIGURE 1 – Impact of job displacement on employment

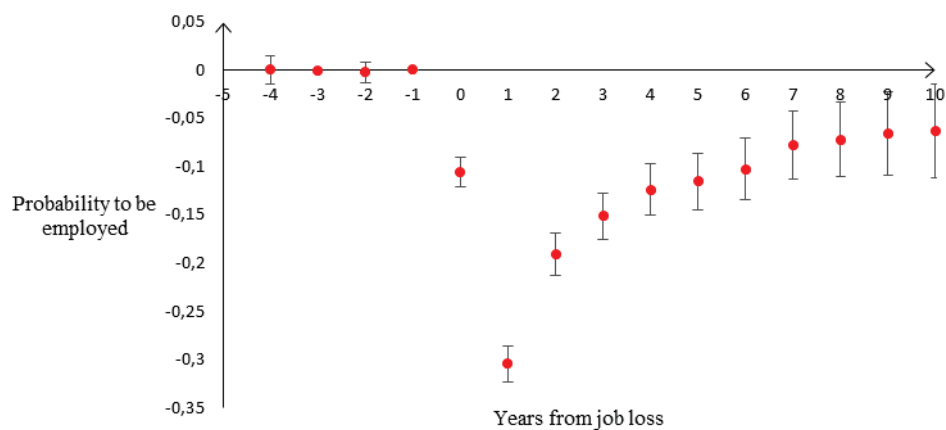


FIGURE 2 – Impact of job displacement on earnings

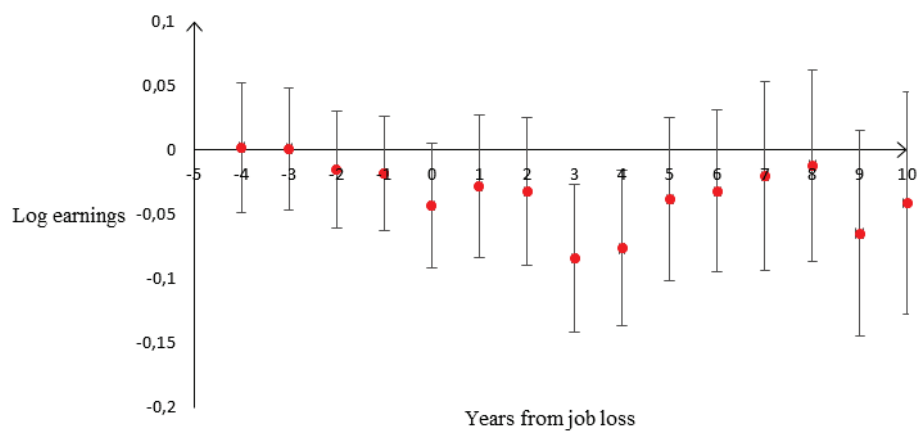


FIGURE 3 – Impact of job displacement on hourly wage

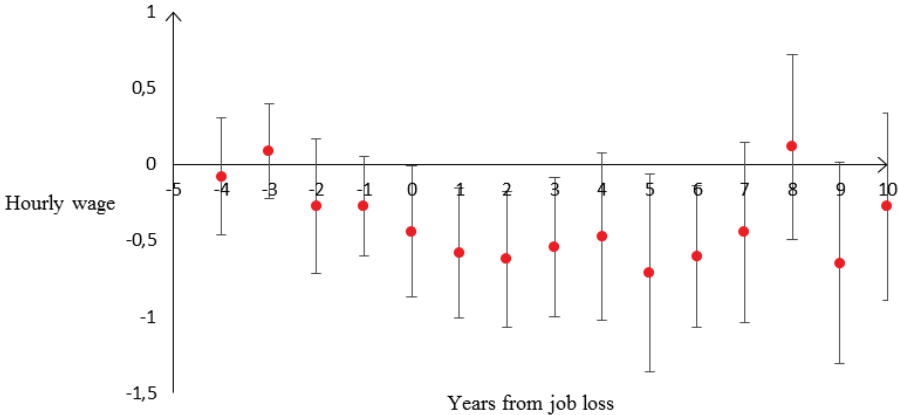


FIGURE 4 – Impact of job displacement on job security

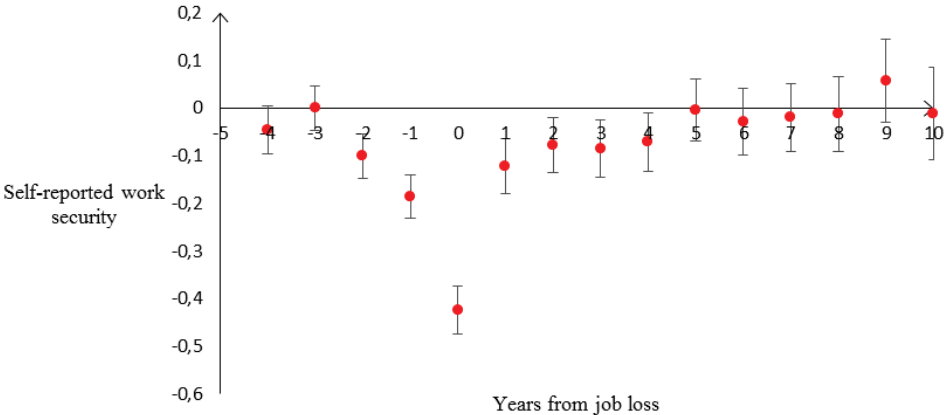


FIGURE 5 – Impact of job displacement on probability to work full-time

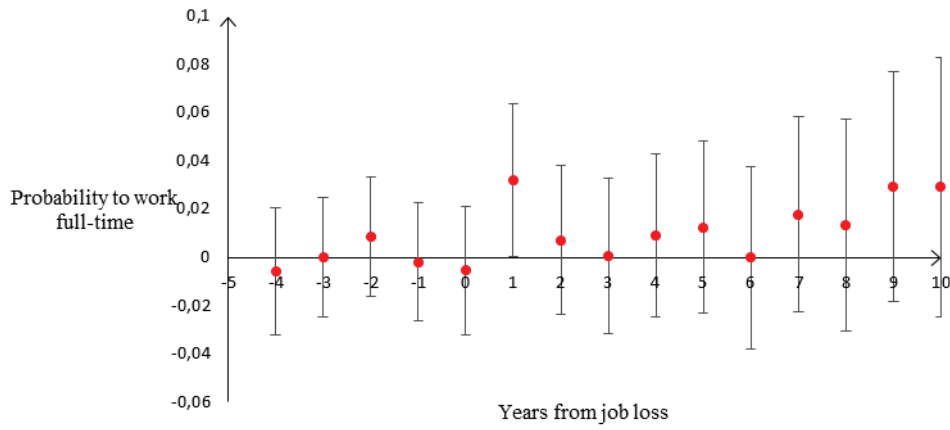


FIGURE 6 – Impact of job displacement on probability to work more than 48 hours a week

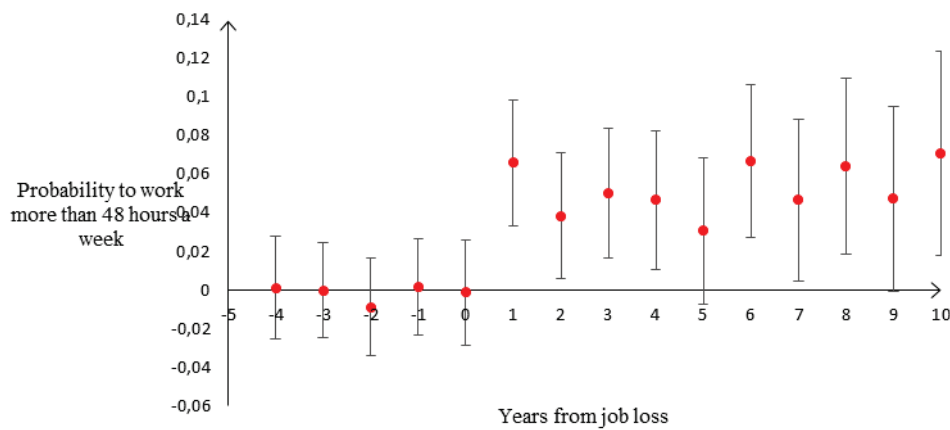


FIGURE 7 – Impact of job displacement on the gap between actual and desired hours worked

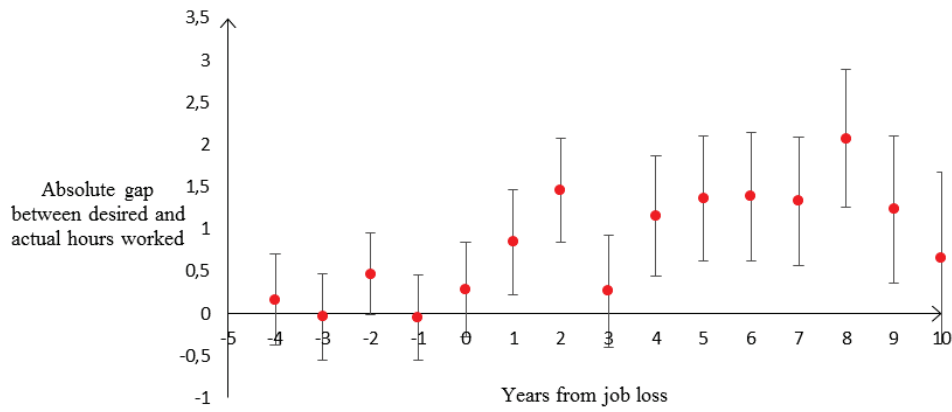


FIGURE 8 – Impact of job displacement on distance to work

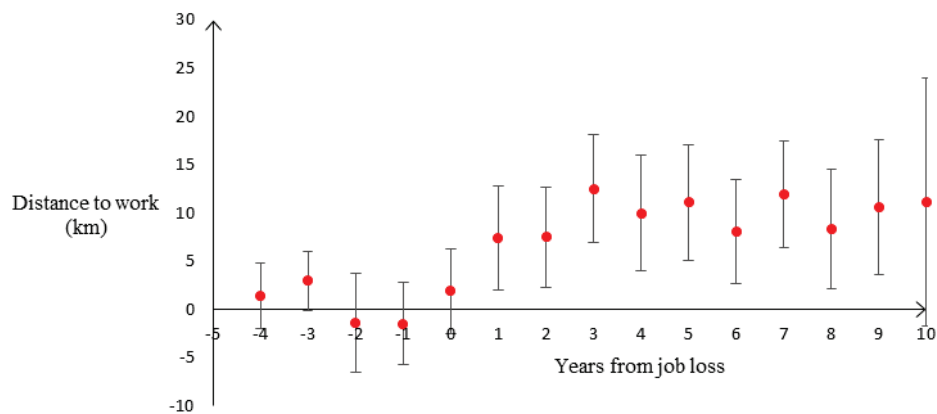


FIGURE 9 – Impact of job displacement on job satisfaction

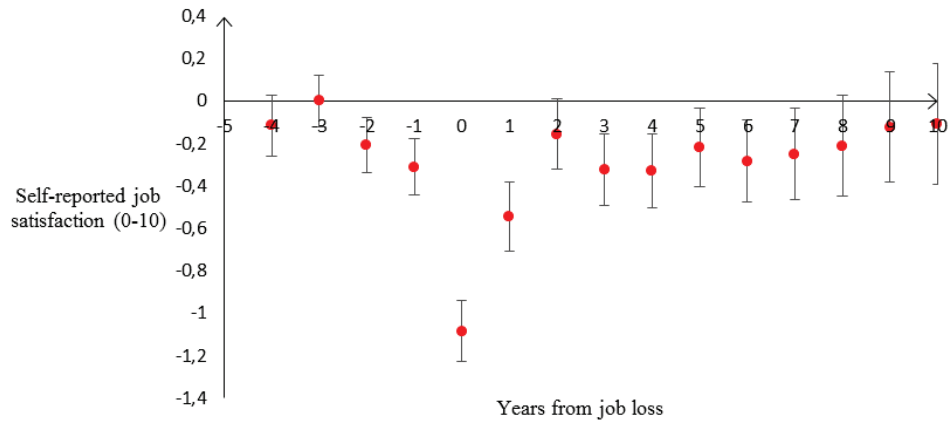
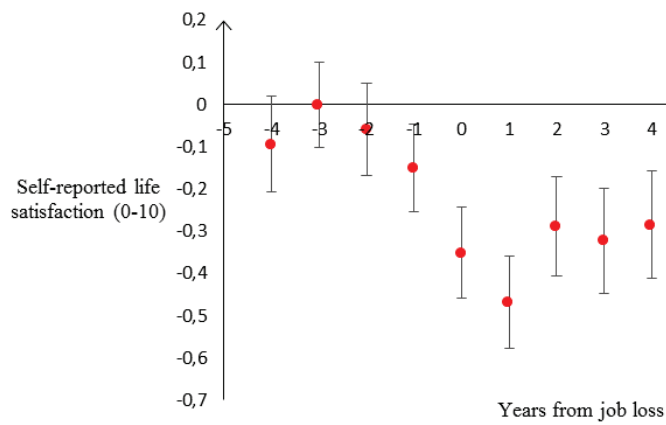


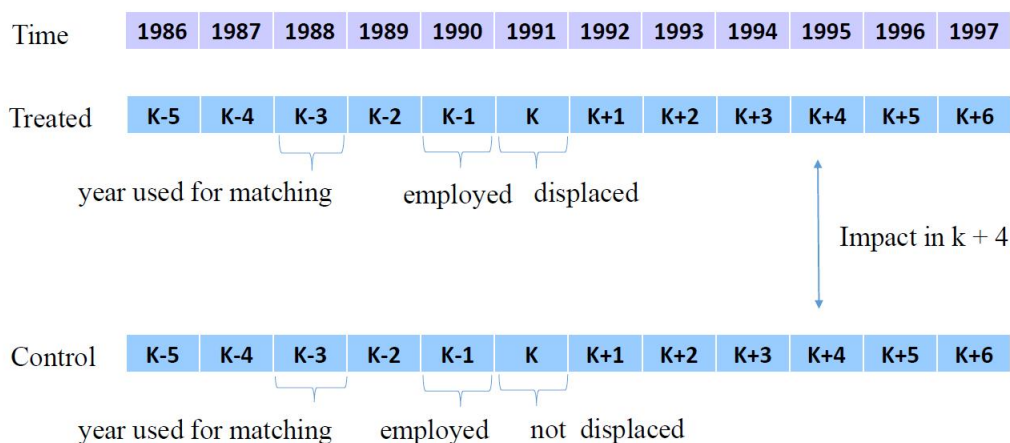
FIGURE 10 – Impact of job displacement on life satisfaction



Appendix

A Empirical strategy

FIGURE A1 – Treatment and control groups



B Coarsened variables

Age is coarsened into five equal categories :

- (1) 18-32 years old
- (2) 33-39 years old
- (3) 40-45 years old
- (4) 46-51 years old
- (5) 51-65 years old.

Education (diploma) is coarsened into three classes :

- (1) less than high school
- (2) high school
- (3) more than high school.

Industry is coarsened into nine categories :

- (1) Agriculture
- (2) Energy
- (3) Mining
- (4) Manufacturing
- (5) Construction
- (6) Trade
- (7) Transport

- (8) Bank, Insurance
- (9) Services.

C Descriptive statistics

FIGURE C1 – Number of involuntary job losers per year

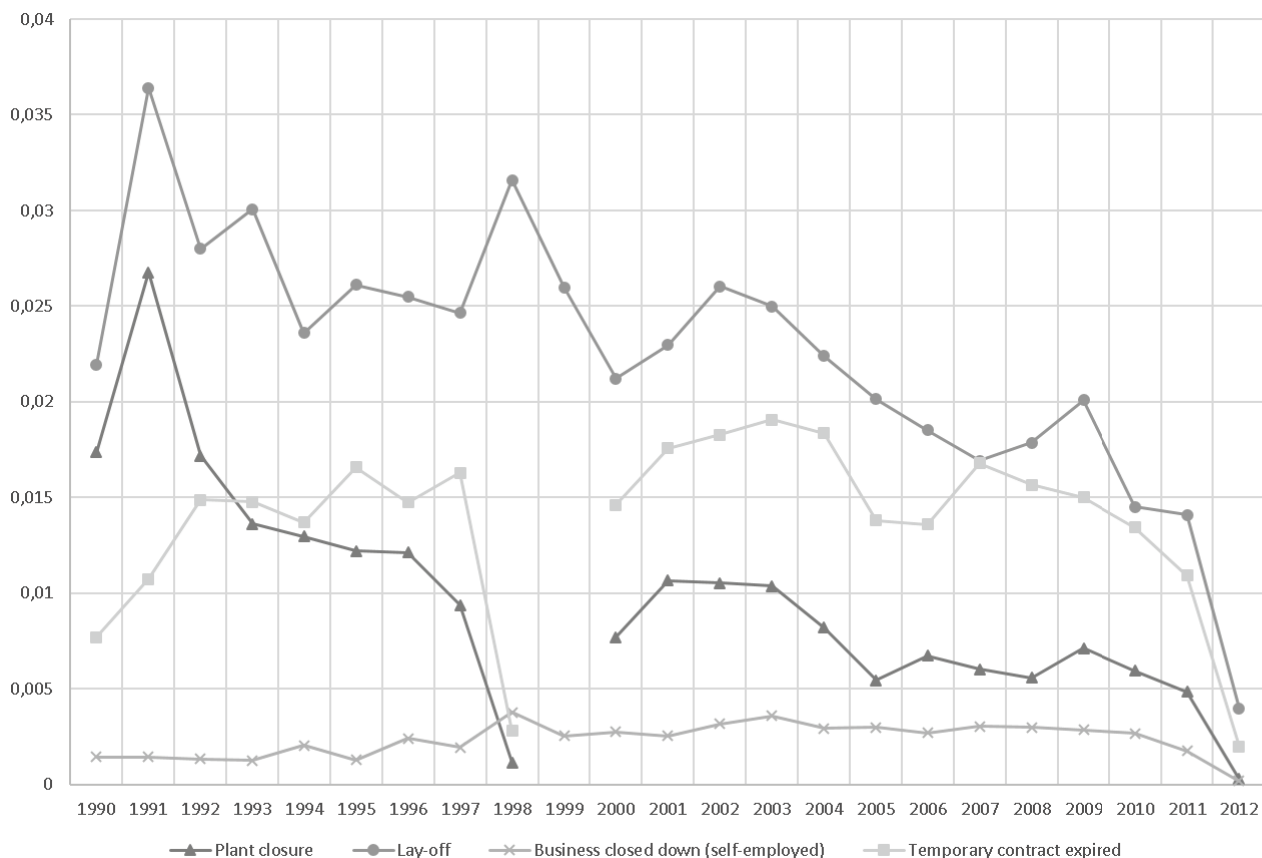


TABLE C1 – Number of job loss due to plant closure per individual

Number of job displacements	Freq
At least 1	2,151
1	1,895
2	233
3	21
4	2

TABLE C2 – Descriptive statistics : individual characteristics

	(1)		(2)		(3)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
Women	0.46	0.50	0.49	0.50	0.02
<i>Location</i>					
East Germany	0.42	0.49	0.22	0.41	0.00
West Germany	0.58	0.49	0.78	0.41	0.00
<i>Age</i>					
16 to 30	0.18	0.30	0.27	0.39	0.00
31 to 38	0.21	0.23	0.19	0.28	0.04
39 to 45	0.23	0.23	0.19	0.29	0.00
46 to 54	0.20	0.22	0.17	0.28	0.00
55 to 69	0.19	0.30	0.17	0.32	0.01
<i>Education</i>					
7 to 11 years	0.39	0.45	0.39	0.46	0.98
11 to 12 years	0.39	0.45	0.34	0.45	0.00
13 to 18 years	0.22	0.40	0.27	0.43	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE C3 – Descriptive statistics : Industries

	(1)		(2)		(3)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
Agriculture	0.02	0.11	0.02	0.11	0.00
Energy	0.01	0.06	0.01	0.09	0.05
Mining	0.01	0.07	0.01	0.07	0.08
Manufacturing	0.24	0.33	0.22	0.37	0.02
Construction	0.18	0.31	0.15	0.31	0.00
Trade	0.21	0.33	0.16	0.32	0.00
Transport	0.05	0.17	0.05	0.20	0.46
Bank,Insurance	0.02	0.12	0.04	0.18	0.00
Services	0.26	0.35	0.35	0.44	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE C4 – Descriptive statistics : outcomes variables

	(1) Treated		(2) Non-Treated		(3) Difference
	Mean	SD	Mean	SD	P-value
Employed	0.74	0.25	0.81	0.26	0.00
Labor income	6.76	0.60	6.84	0.70	0.00
Full-time	0.77	0.35	0.74	0.39	0.00
Hourly wages	6.57	3.29	7.64	4.69	0.00
Long hours	0.21	0.28	0.16	0.29	0.00
Distance to work	22.13	47.65	19.50	41.76	0.01
Job security	2.03	0.51	2.29	0.55	0.00
Hours gap	7.16	5.24	6.41	5.60	0.00
Job satisfaction	6.57	1.46	7.03	1.56	0.00
Life satisfaction	6.59	1.27	7.09	1.29	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

D Additional descriptive statistics for sub-groups

TABLE D1 – Descriptive statistics : women and men characteristics

	Women					Men				
	(1) Treated		(2) Non-Treated		(3) Difference	(4) Treated		(5) Non-Treated		(6) Difference
	Mean	SD	Mean	SD	P-value	Mean	SD	Mean	SD	P-value
<i>Location</i>										
East Germany	0.44	0.49	0.22	0.41	0.00	0.41	0.49	0.21	0.40	0.00
West Germany	0.56	0.49	0.78	0.41	0.00	0.59	0.49	0.79	0.40	0.00
<i>Age</i>										
16 to 30	0.18	0.29	0.28	0.39	0.00	0.19	0.31	0.27	0.39	0.00
31 to 38	0.20	0.23	0.19	0.28	0.31	0.21	0.24	0.19	0.29	0.06
39 to 45	0.24	0.23	0.20	0.29	0.00	0.22	0.23	0.19	0.29	0.00
46 to 54	0.20	0.22	0.17	0.28	0.00	0.19	0.22	0.17	0.28	0.02
55 to 69	0.18	0.29	0.16	0.31	0.02	0.19	0.31	0.17	0.33	0.17
<i>Education</i>										
7 to 11 years	0.38	0.45	0.37	0.46	0.38	0.40	0.45	0.42	0.47	0.32
11 to 12 years	0.39	0.45	0.36	0.45	0.13	0.39	0.45	0.32	0.44	0.00
13 to 18 years	0.23	0.41	0.27	0.43	0.01	0.21	0.40	0.26	0.43	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D2 – Descriptive statistics : Industries for women and men workers

	Women					Men				
	(1) Treated		(2) Non-Treated		(3) Difference	(4) Treated		(5) Non-Treated		(6) Difference
	Mean	SD	Mean	SD	P-value	Mean	SD	Mean	SD	P-value
Agriculture	0.02	0.09	0.01	0.09	0.10	0.03	0.13	0.02	0.13	0.01
Energy	0.01	0.05	0.01	0.07	0.72	0.01	0.06	0.02	0.11	0.03
Mining	0.00	0.04	0.00	0.03	0.09	0.01	0.09	0.01	0.09	0.27
Manufacturing	0.20	0.31	0.15	0.32	0.00	0.27	0.34	0.28	0.39	0.36
Construction	0.07	0.18	0.05	0.19	0.01	0.28	0.35	0.24	0.37	0.00
Trade	0.29	0.37	0.21	0.36	0.00	0.14	0.27	0.11	0.27	0.00
Transport	0.03	0.14	0.04	0.17	0.54	0.06	0.19	0.07	0.22	0.48
Bank,Insurance	0.02	0.12	0.04	0.19	0.00	0.02	0.12	0.03	0.17	0.01
Services	0.36	0.39	0.49	0.46	0.00	0.17	0.29	0.22	0.38	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D3 – Descriptive statistics : outcomes variables for women and men

	Women					Men				
	(1) Treated		(2) Non-Treated		(3) Difference	(4) Treated		(5) Non-Treated		(6) Difference
	Mean	SD	Mean	SD	P-value	Mean	SD	Mean	SD	P-value
Employed	0.70	0.26	0.77	0.28	0.00	0.77	0.24	0.85	0.23	0.00
Labor income	6.45	0.56	6.53	0.66	0.00	7.03	0.50	7.13	0.61	0.00
Full-time	0.56	0.39	0.54	0.43	0.11	0.94	0.17	0.93	0.22	0.04
Hourly wages	5.74	2.77	6.65	3.52	0.00	7.28	3.53	8.59	5.43	0.00
Long hours	0.10	0.19	0.08	0.19	0.00	0.31	0.31	0.25	0.33	0.00
Distance to work	12.70	20.04	14.13	27.81	0.12	30.24	61.12	24.66	51.20	0.00
Job security	2.06	0.52	2.32	0.56	0.00	2.01	0.49	2.26	0.55	0.00
Hours gap	7.03	5.00	6.23	5.25	0.00	7.27	5.44	6.57	5.90	0.00
Job satisfaction	6.62	1.47	7.00	1.59	0.00	6.54	1.45	7.05	1.53	0.00
Life satisfaction	6.64	1.26	7.09	1.30	0.00	6.55	1.28	7.08	1.27	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D4 – Descriptive statistics : individuals characteristics by occupations

	White collars					Blue collars				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
<i>Gender</i>										
Women	0.59	0.49	0.59	0.49	0.92	0.35	0.48	0.37	0.48	0.15
Men	0.41	0.49	0.41	0.49	0.92	0.65	0.48	0.63	0.48	0.15
<i>Location</i>										
East Germany	0.38	0.48	0.21	0.41	0.00	0.37	0.48	0.22	0.41	0.00
West Germany	0.62	0.48	0.79	0.41	0.00	0.63	0.48	0.78	0.41	0.00
<i>Age</i>										
16 to 30	0.13	0.27	0.22	0.38	0.00	0.18	0.32	0.29	0.42	0.00
31 to 38	0.21	0.29	0.21	0.34	0.87	0.23	0.30	0.19	0.32	0.00
39 to 45	0.26	0.29	0.21	0.33	0.00	0.24	0.28	0.19	0.32	0.00
46 to 54	0.24	0.29	0.19	0.32	0.00	0.22	0.28	0.18	0.31	0.00
55 to 69	0.16	0.29	0.16	0.33	0.88	0.12	0.25	0.16	0.33	0.00
<i>Education</i>										
7 to 11 years	0.27	0.43	0.25	0.42	0.11	0.54	0.47	0.58	0.48	0.03
11 to 12 years	0.39	0.47	0.38	0.48	0.40	0.39	0.46	0.33	0.46	0.00
13 to 18 years	0.34	0.47	0.38	0.48	0.02	0.07	0.25	0.09	0.28	0.06

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D5 – Descriptive statistics : Industries by occupations

	White collars					Blue collars				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
Agriculture	0.01	0.08	0.01	0.08	0.43	0.02	0.11	0.02	0.14	0.49
Energy	0.01	0.07	0.01	0.10	0.11	0.01	0.07	0.01	0.09	0.63
Mining	0.00	0.06	0.00	0.05	0.38	0.01	0.08	0.01	0.09	0.36
Manufacturing	0.20	0.33	0.15	0.33	0.00	0.33	0.39	0.32	0.42	0.60
Construction	0.12	0.27	0.09	0.26	0.00	0.25	0.37	0.22	0.37	0.00
Trade	0.27	0.39	0.18	0.36	0.00	0.18	0.32	0.15	0.33	0.02
Transport	0.04	0.18	0.05	0.21	0.33	0.05	0.19	0.07	0.23	0.11
Bank,Insurance	0.04	0.18	0.06	0.22	0.02	0.00	0.04	0.00	0.06	0.86
Services	0.31	0.40	0.45	0.47	0.00	0.14	0.29	0.20	0.38	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D6 – Descriptive statistics : outcomes variables for white and blue collars

	White collars					Blue collars				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
Employed	0.84	0.23	0.88	0.25	0.00	0.82	0.23	0.83	0.31	0.44
Labor income	6.88	0.65	7.02	0.70	0.00	6.76	0.55	6.77	0.64	0.78
Full-time	0.74	0.38	0.72	0.42	0.11	0.82	0.35	0.78	0.39	0.01
Hourly wages	7.42	3.87	8.75	5.34	0.00	6.23	2.70	6.68	3.57	0.00
Long hours	0.20	0.32	0.18	0.33	0.02	0.18	0.28	0.13	0.28	0.00
Distance to work	22.39	50.76	20.17	42.95	0.14	22.82	54.73	17.61	45.90	0.00
Job security	2.10	0.56	2.38	0.58	0.00	2.01	0.56	2.19	0.62	0.00
Hours gap	7.18	5.72	6.63	6.23	0.01	6.53	5.51	5.81	6.03	0.00
Job satisfaction	6.63	1.64	7.10	1.70	0.00	6.39	1.76	6.81	1.87	0.00
Life satisfaction	6.74	1.37	7.17	1.42	0.00	6.52	1.46	6.85	1.56	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D7 – Descriptive statistics : individuals characteristics by seniority

	Less than 10 years of tenure					More than 10 years of tenure				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
<i>Gender</i>										
Women	0.48	0.50	0.51	0.50	0.02	0.46	0.50	0.49	0.50	0.02
Men	0.52	0.50	0.49	0.50	0.02	0.54	0.50	0.51	0.50	0.02
<i>Location</i>										
East Germany	0.33	0.47	0.21	0.41	0.00	0.43	0.49	0.22	0.41	0.00
West Germany	0.67	0.47	0.79	0.41	0.00	0.57	0.49	0.78	0.41	0.00
<i>Age</i>										
16 to 30	0.23	0.33	0.34	0.43	0.00	0.22	0.35	0.29	0.42	0.00
31 to 38	0.25	0.27	0.23	0.33	0.15	0.21	0.29	0.18	0.31	0.00
39 to 45	0.24	0.26	0.19	0.32	0.00	0.22	0.28	0.19	0.31	0.00
46 to 54	0.19	0.26	0.14	0.29	0.00	0.18	0.25	0.17	0.29	0.29
55 to 69	0.09	0.22	0.09	0.26	0.44	0.18	0.31	0.17	0.33	0.08
<i>Education</i>										
7 to 11 years	0.39	0.46	0.38	0.47	0.40	0.40	0.46	0.41	0.47	0.69
11 to 12 years	0.39	0.45	0.34	0.45	0.00	0.38	0.45	0.33	0.45	0.00
13 to 18 years	0.23	0.41	0.29	0.45	0.00	0.21	0.40	0.26	0.43	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D8 – Descriptive statistics : Industries by seniority

	Less than 10 years of tenure					More than 10 years of tenure				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
Agriculture	0.02	0.10	0.01	0.10	0.37	0.03	0.14	0.02	0.12	0.00
Energy	0.01	0.05	0.01	0.08	0.36	0.01	0.07	0.01	0.10	0.14
Mining	0.00	0.04	0.00	0.05	0.67	0.01	0.09	0.01	0.07	0.01
Manufacturing	0.23	0.33	0.21	0.36	0.01	0.25	0.37	0.22	0.38	0.00
Construction	0.19	0.32	0.14	0.31	0.00	0.18	0.33	0.15	0.33	0.00
Trade	0.23	0.34	0.17	0.34	0.00	0.20	0.34	0.16	0.34	0.00
Transport	0.05	0.18	0.05	0.19	0.17	0.04	0.17	0.05	0.21	0.07
Bank,Insurance	0.03	0.14	0.03	0.17	0.17	0.02	0.12	0.04	0.18	0.00
Services	0.25	0.35	0.37	0.45	0.00	0.26	0.37	0.35	0.45	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D9 – Descriptive statistics : outcomes variables by seniority

	Less than 10 years of tenure					More than 10 years of tenure				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
Employed	0.84	0.20	0.86	0.26	0.00	0.68	0.31	0.77	0.31	0.00
Labor income	6.80	0.60	6.81	0.67	0.38	6.62	0.65	6.74	0.77	0.00
Full-time	0.77	0.36	0.74	0.40	0.02	0.74	0.38	0.71	0.42	0.00
Hourly wages	6.73	3.08	7.30	4.56	0.00	6.11	3.82	7.37	5.46	0.00
Long hours	0.21	0.29	0.17	0.31	0.00	0.21	0.32	0.16	0.31	0.00
Distance to work	23.10	48.68	20.29	45.44	0.03	21.84	50.54	19.91	45.77	0.10
Job security	2.11	0.52	2.30	0.58	0.00	1.99	0.60	2.26	0.64	0.00
Hours gap	6.79	5.15	6.55	6.03	0.14	7.04	6.58	6.33	6.57	0.00
Job satisfaction	6.60	1.56	7.03	1.68	0.00	6.61	1.81	7.07	1.83	0.00
Life satisfaction	6.67	1.31	7.04	1.42	0.00	6.62	1.44	7.12	1.44	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D10 – Descriptive statistics : individual characteristics for younger and older individuals

	Young (≤ 45 years old)					Old (≥ 46 years old)				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value	Treated Mean	SD	Non-Treated Mean	SD	Difference P-value
<i>Gender</i>										
Women	0.47	0.50	0.50	0.50	0.04	0.45	0.50	0.49	0.50	0.06
Men	0.53	0.50	0.50	0.50	0.04	0.55	0.50	0.51	0.50	0.06
<i>Location</i>										
East Germany	0.40	0.48	0.21	0.40	0.00	0.41	0.49	0.23	0.42	0.00
West Germany	0.60	0.48	0.79	0.40	0.00	0.59	0.49	0.77	0.42	0.00
<i>Education</i>										
7 to 11 years	0.37	0.46	0.37	0.46	0.77	0.51	0.48	0.42	0.48	0.00
11 to 12 years	0.41	0.46	0.35	0.45	0.00	0.30	0.43	0.34	0.46	0.03
13 to 18 years	0.22	0.41	0.28	0.44	0.00	0.19	0.39	0.24	0.42	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D11 – Descriptive statistics : Industries for younger and older individuals

	Young (≤ 45 years old)					Old (≥ 46 years old)				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated		Non-Treated		Difference	Treated		Non-Treated		Difference
	Mean	SD	Mean	SD	P-value	Mean	SD	Mean	SD	P-value
Agriculture	0.03	0.12	0.02	0.11	0.00	0.02	0.12	0.02	0.12	0.21
Energy	0.01	0.05	0.01	0.09	0.05	0.01	0.08	0.01	0.11	0.24
Mining	0.01	0.06	0.00	0.06	0.19	0.01	0.10	0.01	0.08	0.04
Manufacturing	0.25	0.35	0.22	0.36	0.00	0.26	0.37	0.23	0.39	0.02
Construction	0.19	0.32	0.15	0.31	0.00	0.17	0.32	0.14	0.32	0.01
Trade	0.21	0.33	0.17	0.33	0.00	0.21	0.35	0.13	0.31	0.00
Transport	0.05	0.17	0.05	0.19	0.56	0.04	0.17	0.06	0.22	0.04
Bank,Insurance	0.02	0.12	0.04	0.18	0.00	0.02	0.12	0.04	0.19	0.00
Services	0.24	0.35	0.35	0.44	0.00	0.26	0.37	0.37	0.46	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

TABLE D12 – Descriptive statistics : outcomes variables for younger and older individuals

	Young (≤ 45 years old)					Old (≥ 46 years old)				
	(1)		(2)		(3)	(4)		(5)		(6)
	Treated		Non-Treated		Difference	Treated		Non-Treated		Difference
	Mean	SD	Mean	SD	P-value	Mean	SD	Mean	SD	P-value
Employed	0.81	0.23	0.84	0.24	0.00	0.63	0.28	0.79	0.30	0.00
Labor income	6.73	0.58	6.79	0.67	0.00	6.79	0.69	7.01	0.75	0.00
Full-time	0.78	0.35	0.75	0.38	0.00	0.74	0.38	0.72	0.42	0.24
Hourly wages	6.33	3.23	7.20	4.35	0.00	7.02	4.17	8.93	5.78	0.00
Long hours	0.22	0.30	0.16	0.29	0.00	0.22	0.31	0.17	0.32	0.00
Distance to work	21.10	42.18	19.93	41.21	0.28	22.90	60.54	18.07	43.97	0.01
Job security	2.05	0.53	2.28	0.55	0.00	1.97	0.56	2.29	0.60	0.00
Hours gap	7.25	5.78	6.48	5.66	0.00	7.14	5.76	6.32	6.02	0.00
Job satisfaction	6.70	1.51	7.10	1.56	0.00	6.41	1.64	6.86	1.73	0.00
Life satisfaction	6.71	1.31	7.14	1.29	0.00	6.47	1.38	6.92	1.44	0.00

Note : SD stands for standard deviation and column 3 reports two-sided p-value of a t-test comparing averages of variables for treated individuals before displacement and non-treated individuals.

E Heterogeneous results

Job loss and gender differences

FIGURE E1.1 – Impact of job displacement on employment

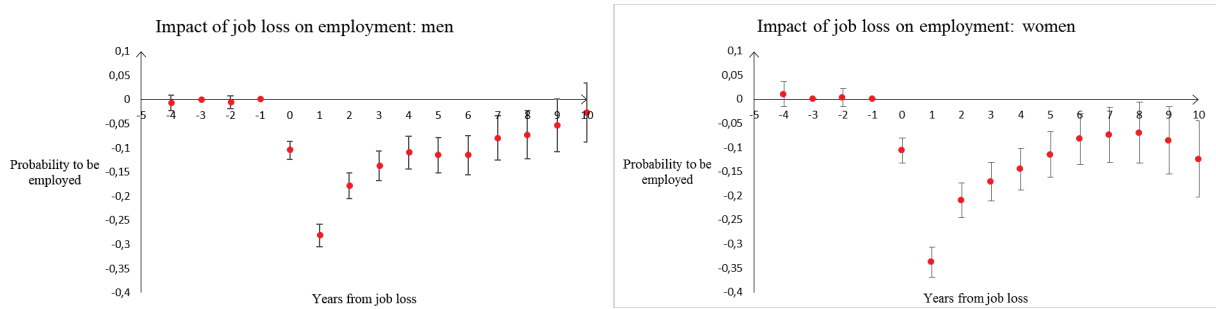


FIGURE E1.2 – Impact of job displacement on earnings

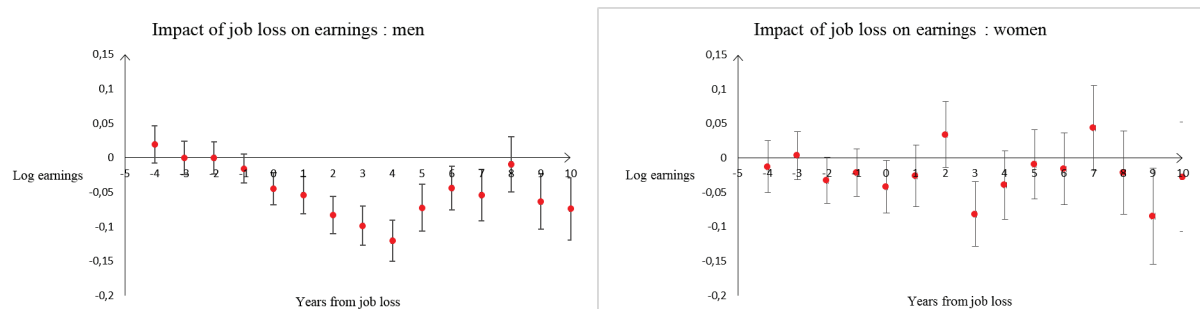


FIGURE E1.3 – Impact of job displacement on hourly wage

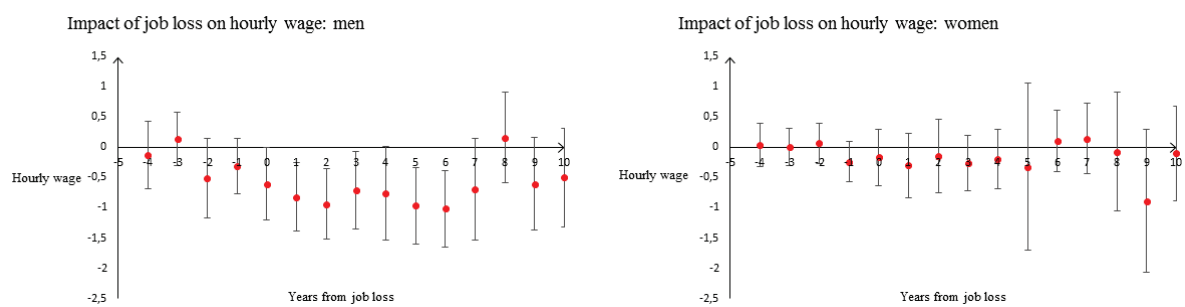


FIGURE E1.4 – Impact of job displacement on job security

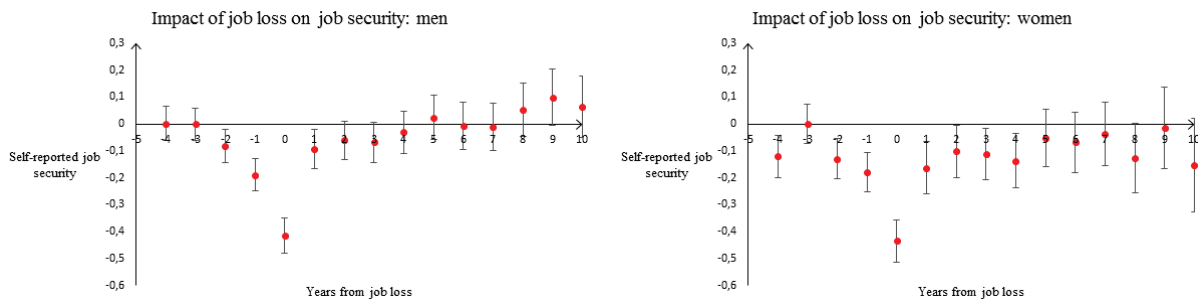


FIGURE E1.5 – Impact of job displacement on probability to work full-time

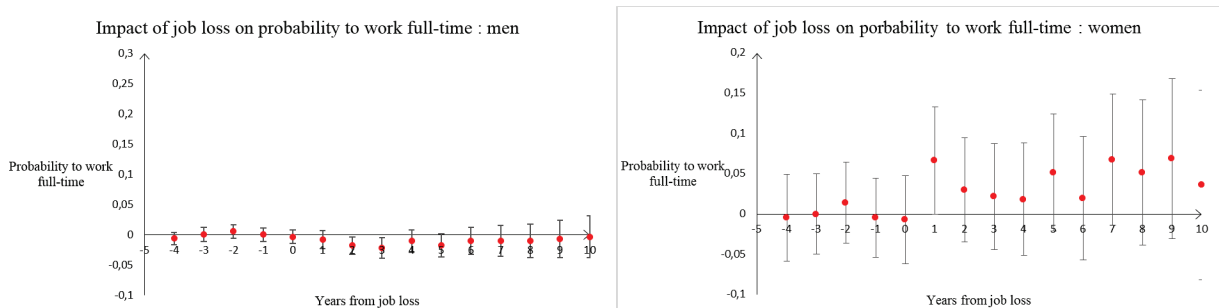


FIGURE E1.6 – Impact of job displacement on probability to work more than 48 hours a week

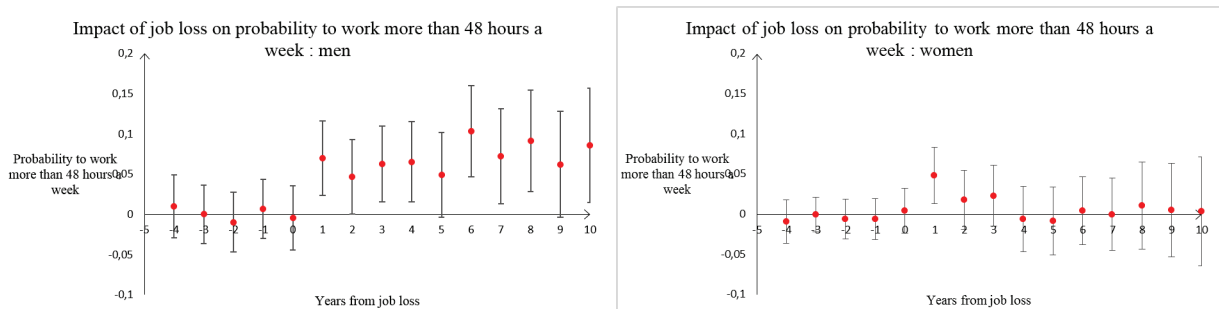


FIGURE E1.7 – Impact of job displacement on distance to work

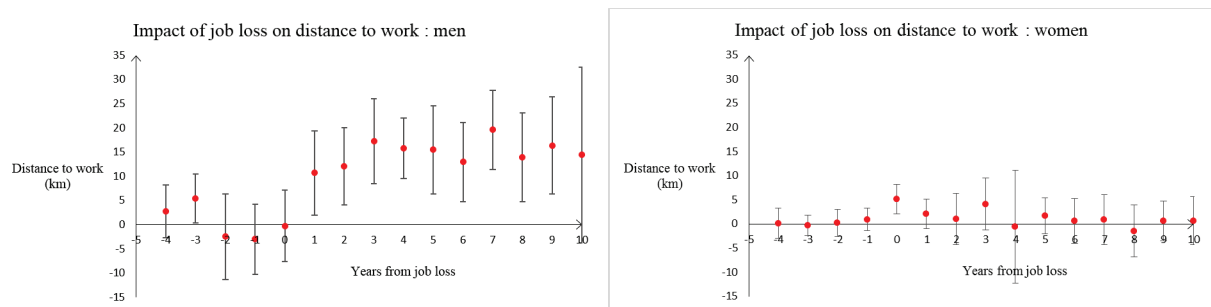


FIGURE E1.8 – Impact of job displacement on the gap between actual and desired hours worked

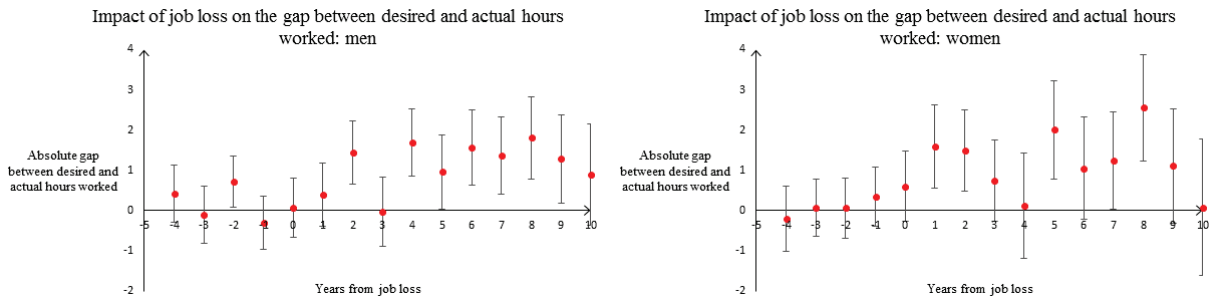


FIGURE E1.9 – Impact of job displacement on job satisfaction

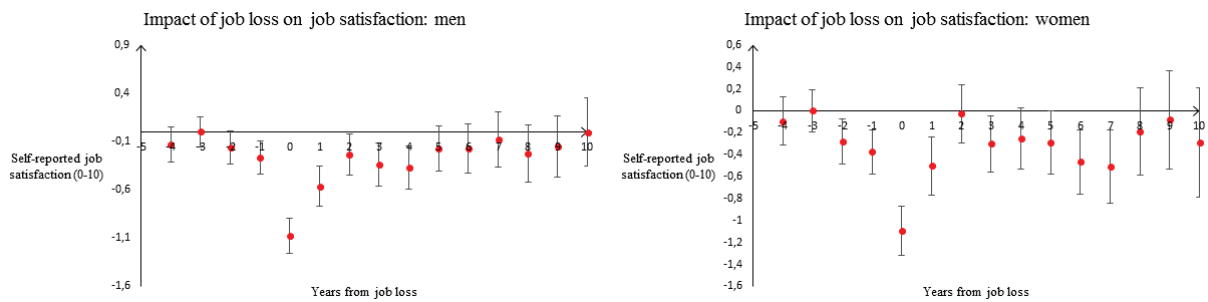
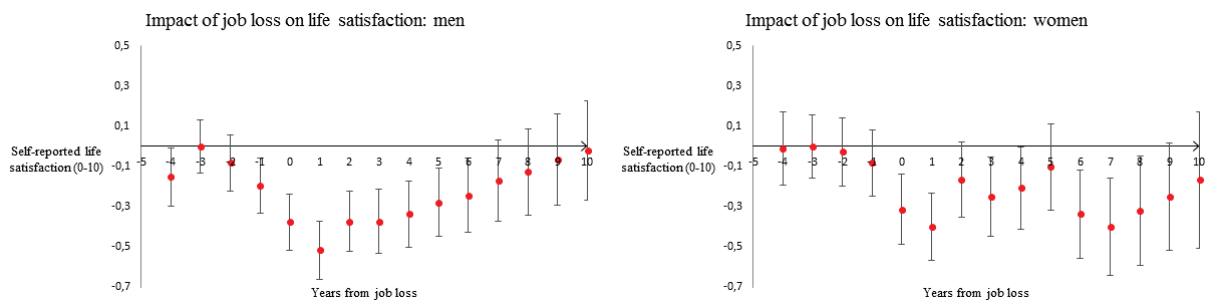


FIGURE E1.10 – Impact of job displacement on life satisfaction



Age and tenure

FIGURE E2.1 – Impact of job displacement on employment

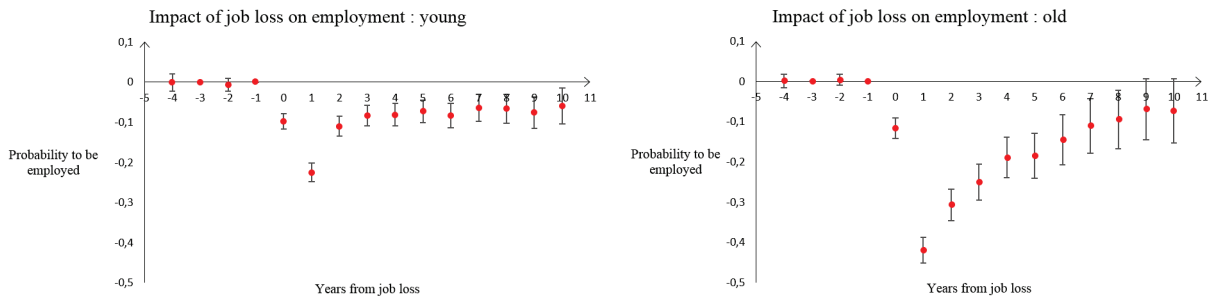


FIGURE E2.2 – Impact of job displacement on earnings

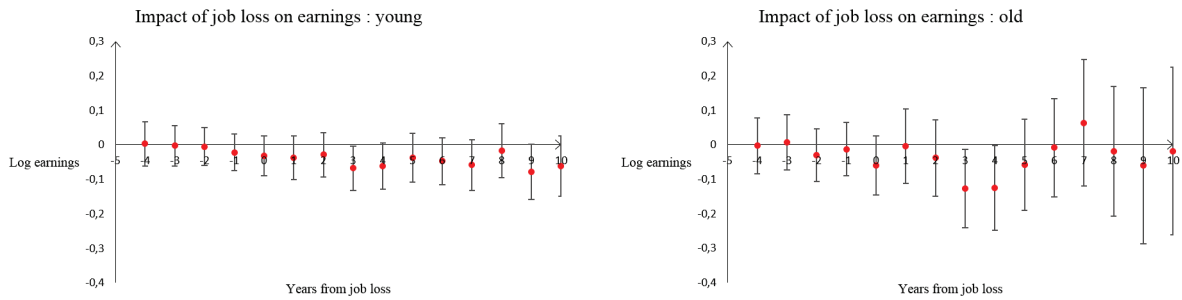


FIGURE E2.3 – Impact of job displacement on hourly wage

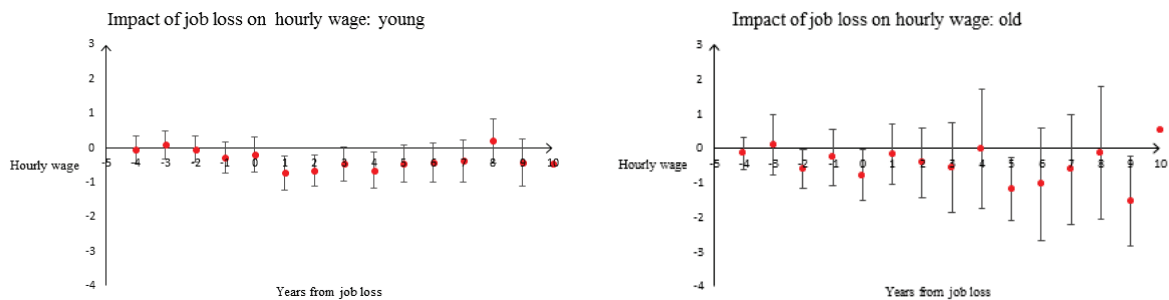


FIGURE E2.4 – Impact of job displacement on job security

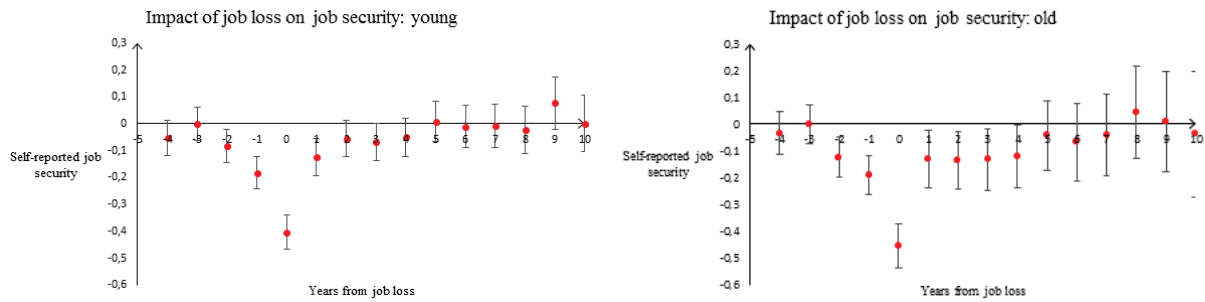


FIGURE E2.5 – Impact of job displacement on probability to work full-time

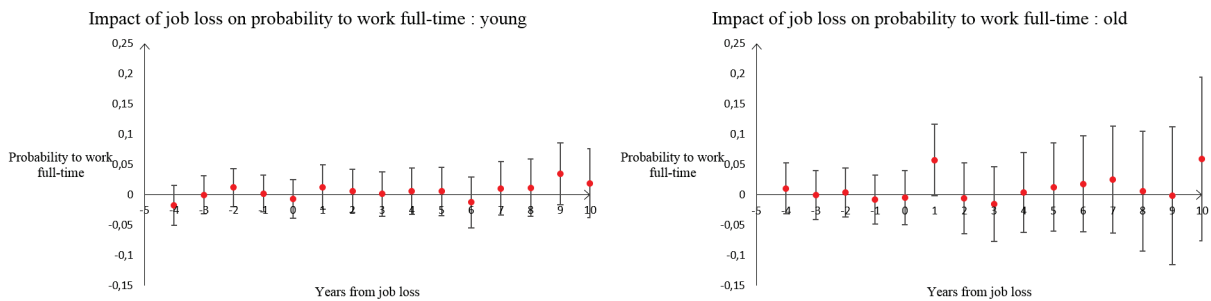


FIGURE E2.6 – Impact of job displacement on probability to work more than 48 hours a week

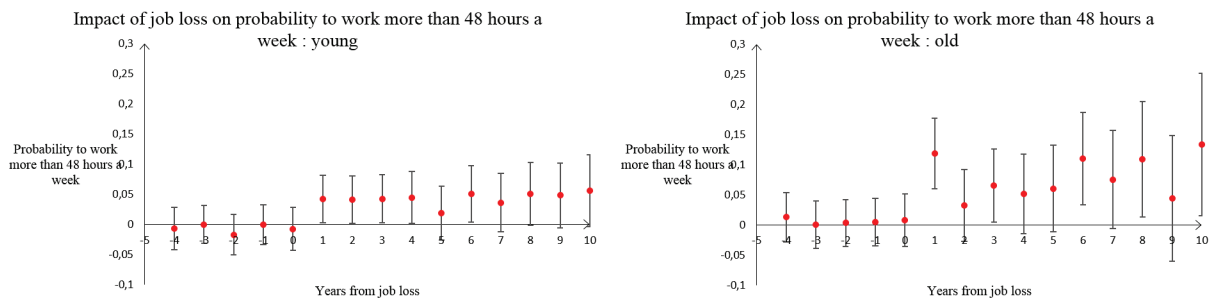


FIGURE E2.7 – Impact of job displacement on distance to work

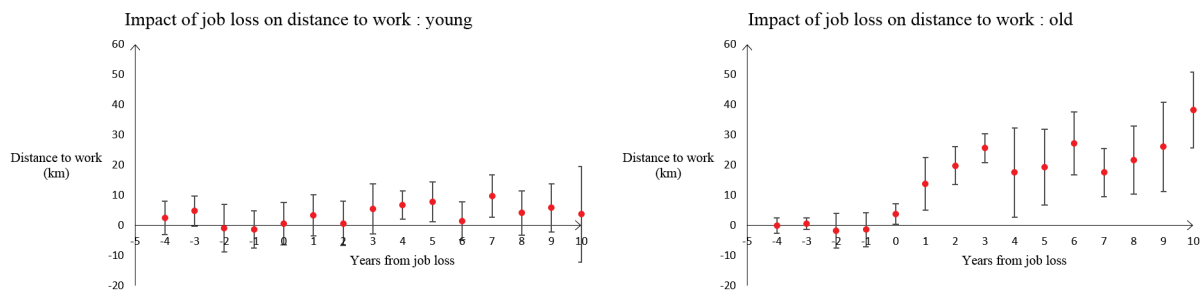


FIGURE E2.8 – Impact of job displacement on the gap between actual and desired hours worked

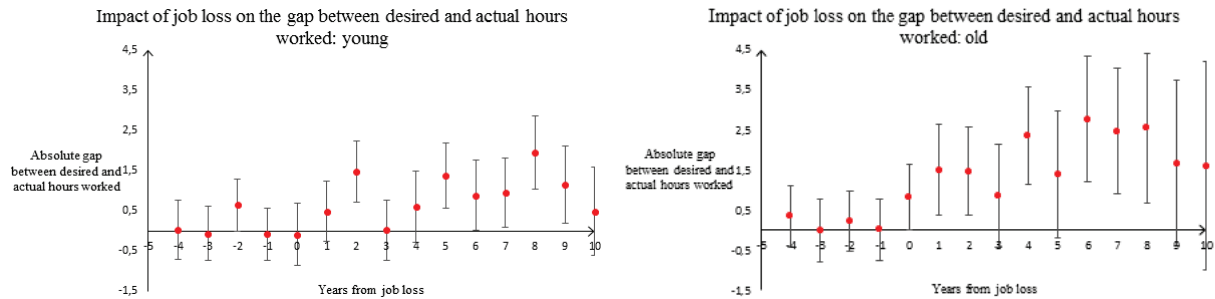


FIGURE E2.9 – Impact of job displacement on job satisfaction

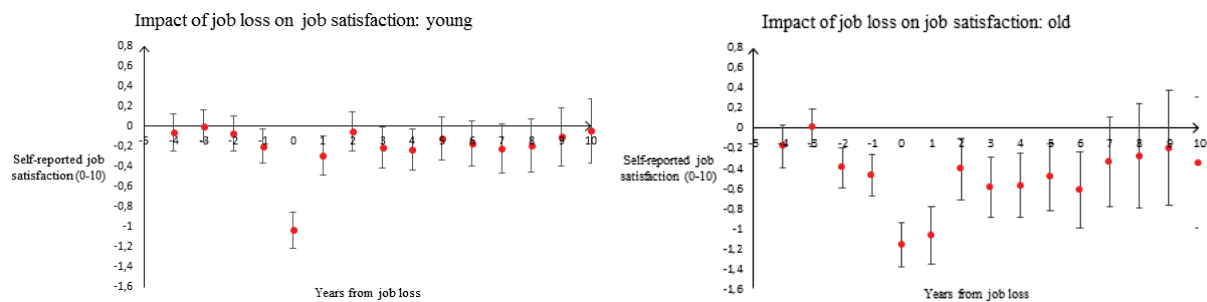


FIGURE E2.10 – Impact of job displacement on life satisfaction

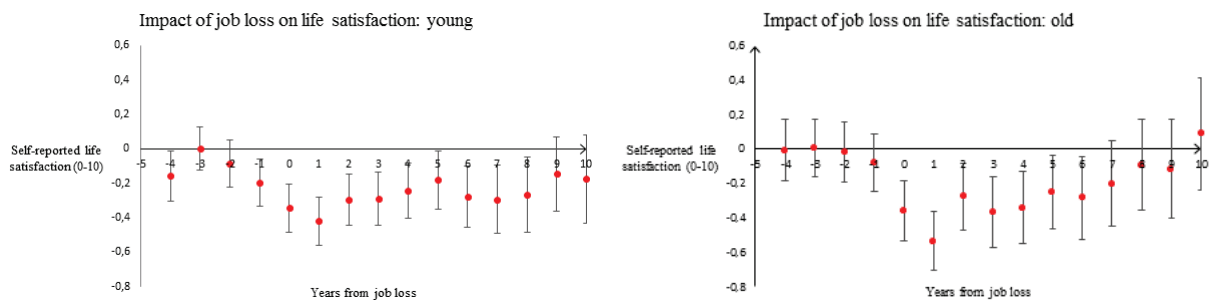


FIGURE E2.11 – Impact of job displacement on employment

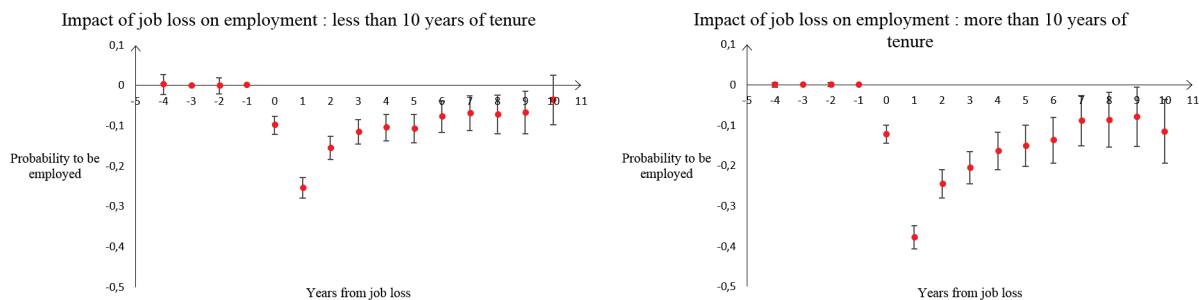


FIGURE E2.12 – Impact of job displacement on earnings

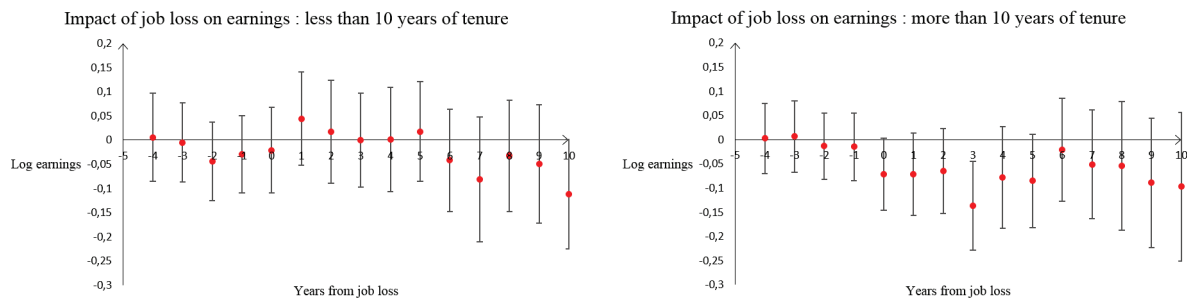


FIGURE E2.13 – Impact of job displacement on hourly wage

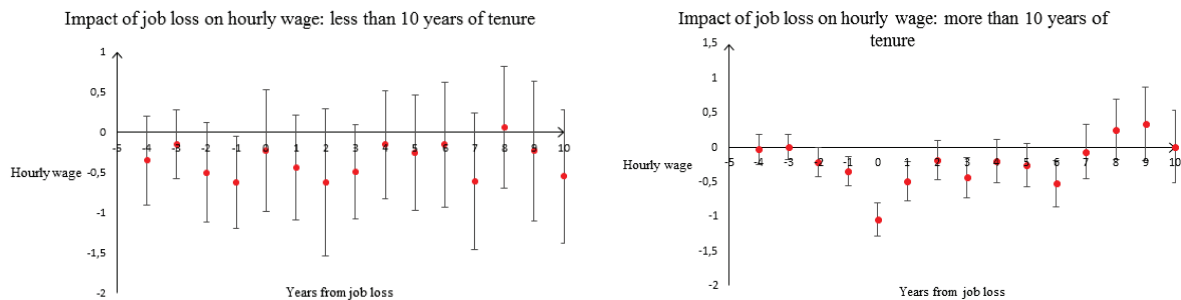


FIGURE E2.14 – Impact of job displacement on job security

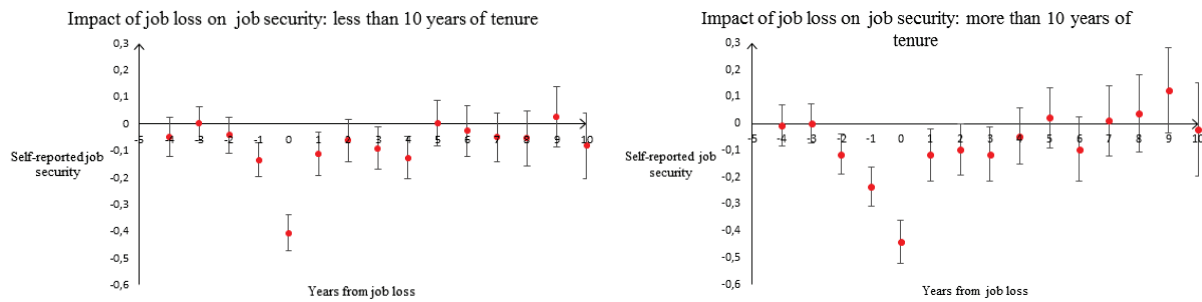


FIGURE E2.15 – Impact of job displacement on probability to work full-time

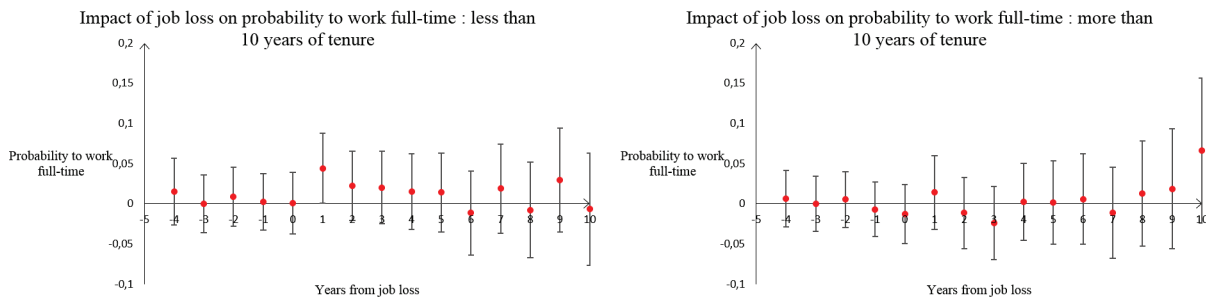


FIGURE E2.16 – Impact of job displacement on probability to work more than 48 hours a week

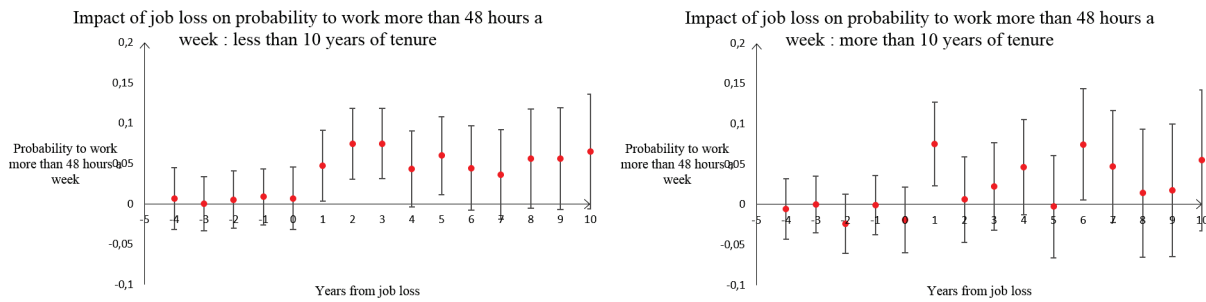


FIGURE E2.17 – Impact of job displacement on distance to work

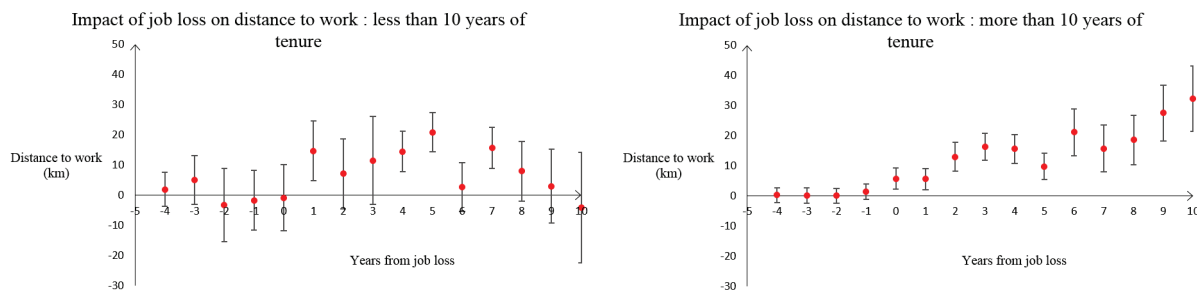


FIGURE E2.18 – Impact of job displacement on the gap between actual and desired hours worked

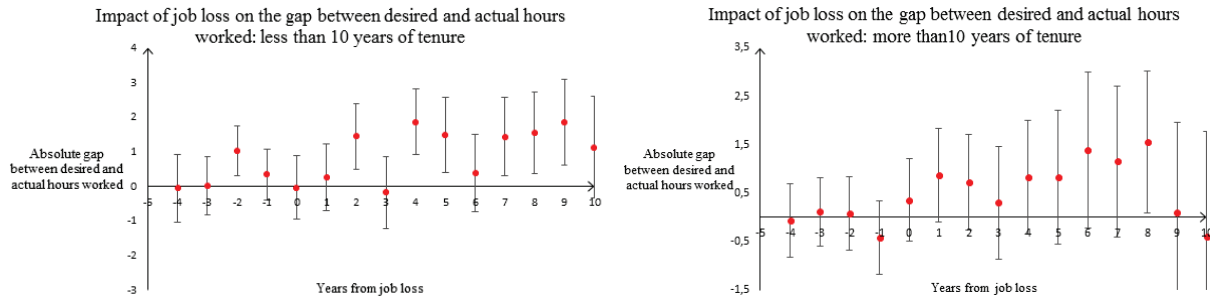


FIGURE E2.19 – Impact of job displacement on job satisfaction

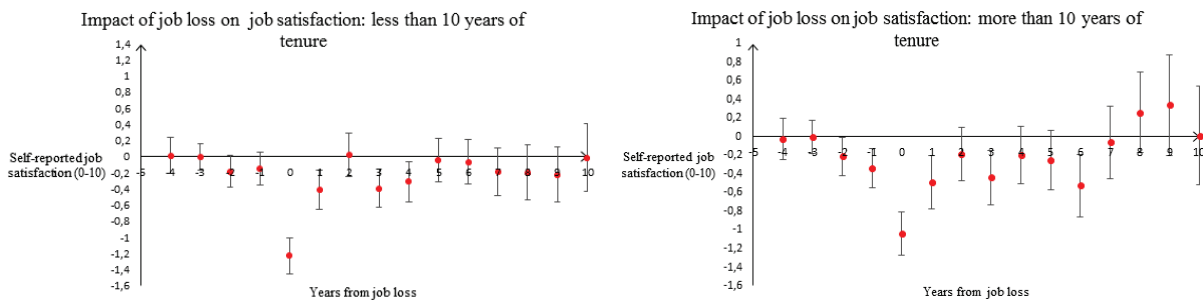
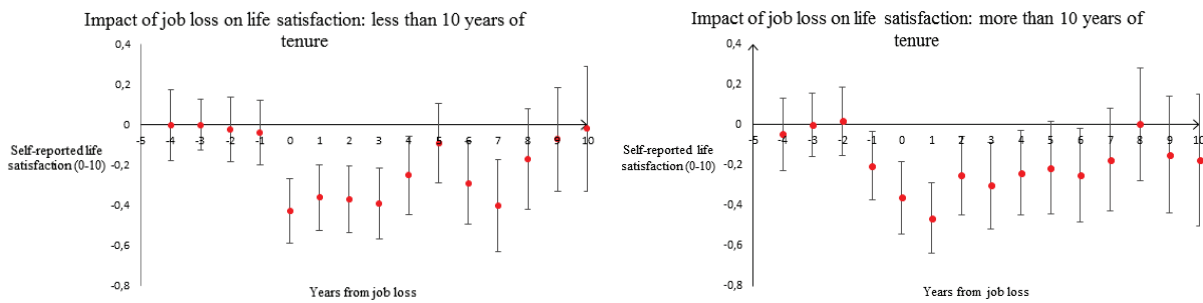


FIGURE E2.20 – Impact of job displacement on life satisfaction



White and blue-collar

FIGURE E3.1 – Impact of job displacement on employment

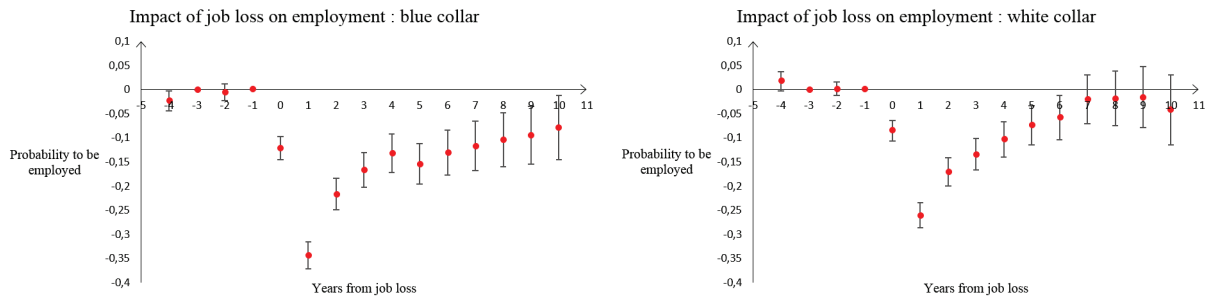


FIGURE E3.2 – Impact of job displacement on earnings

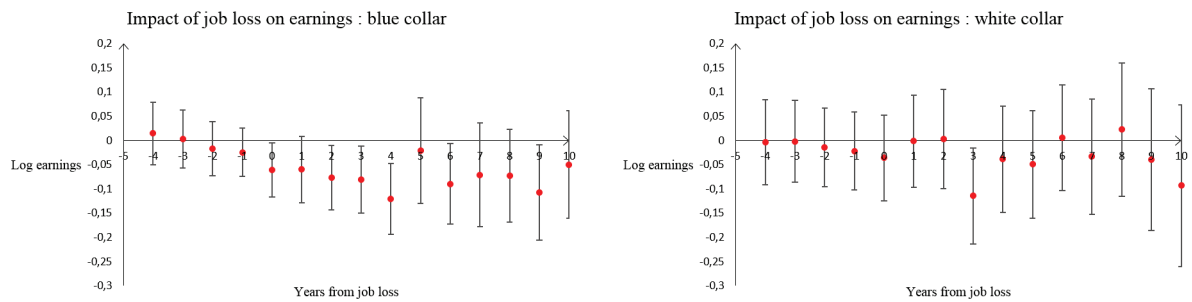


FIGURE E3.3 – Impact of job displacement on hourly wage

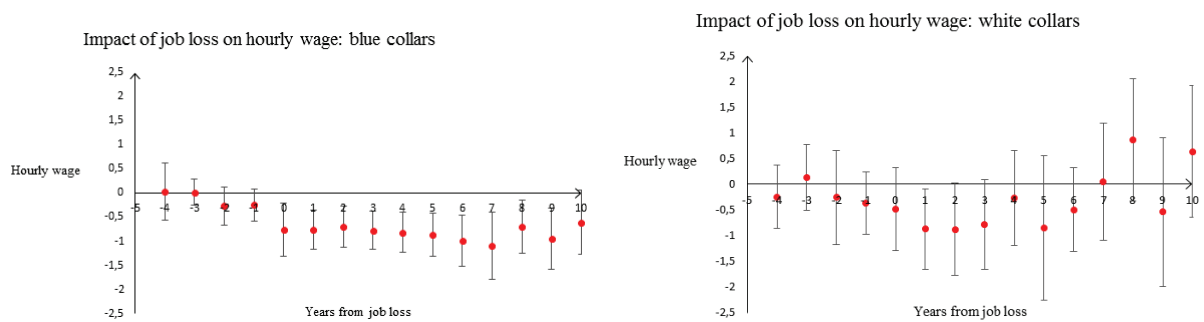


FIGURE E3.4 – Impact of job displacement on job security

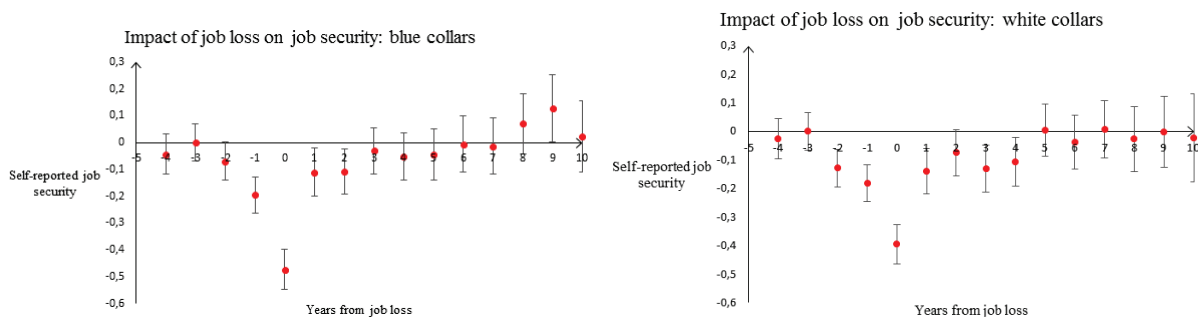


FIGURE E3.5 – Impact of job displacement on probability to work full-time

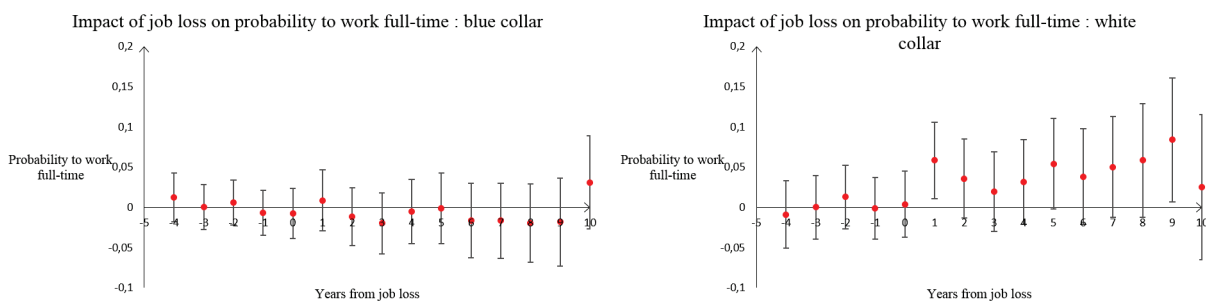


FIGURE E3.6 – Impact of job displacement on probability to work more than 48 hours a week

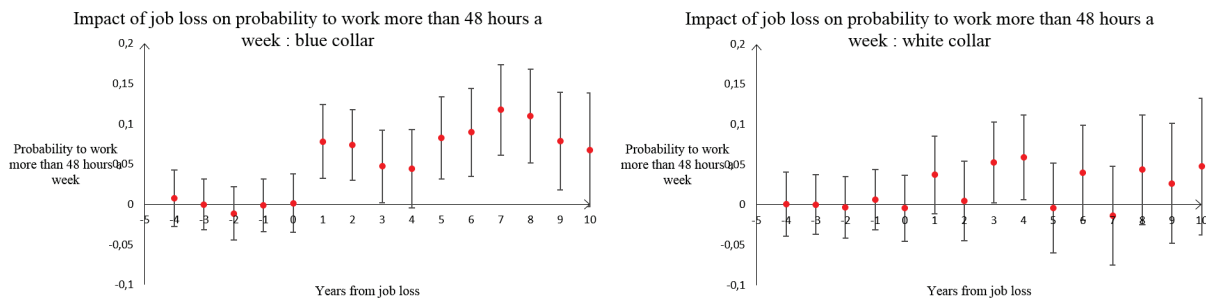


FIGURE E3.7 – Impact of job displacement on distance to work

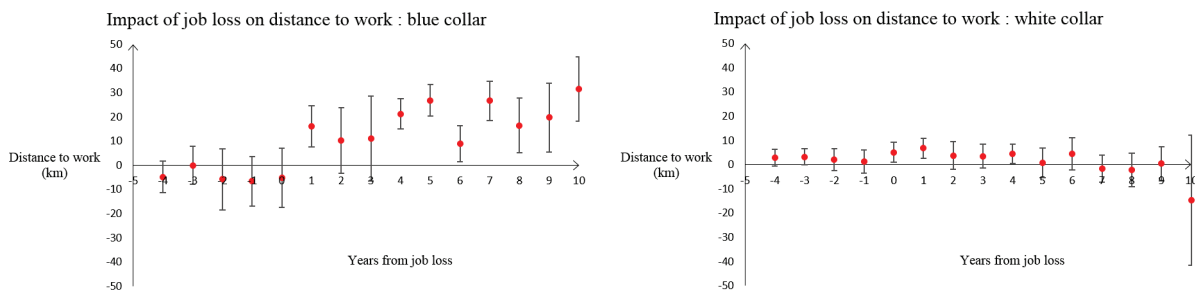


FIGURE E3.8 – Impact of job displacement on the gap between actual and desired hours worked

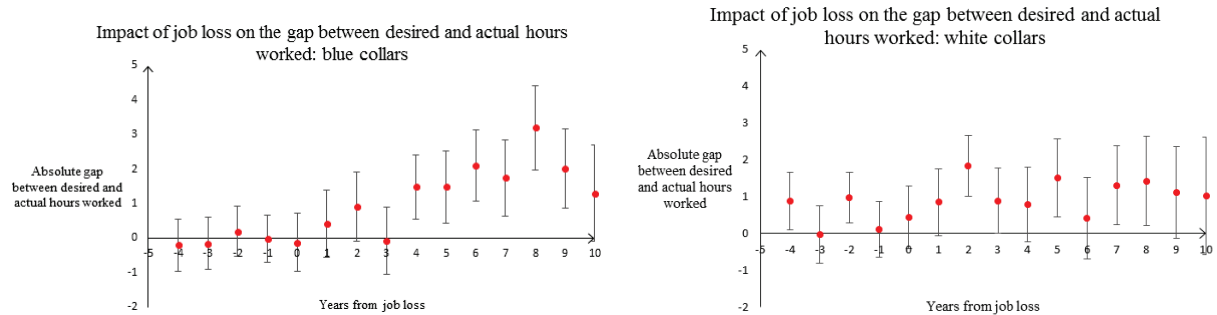


FIGURE E3.9 – Impact of job displacement on job satisfaction

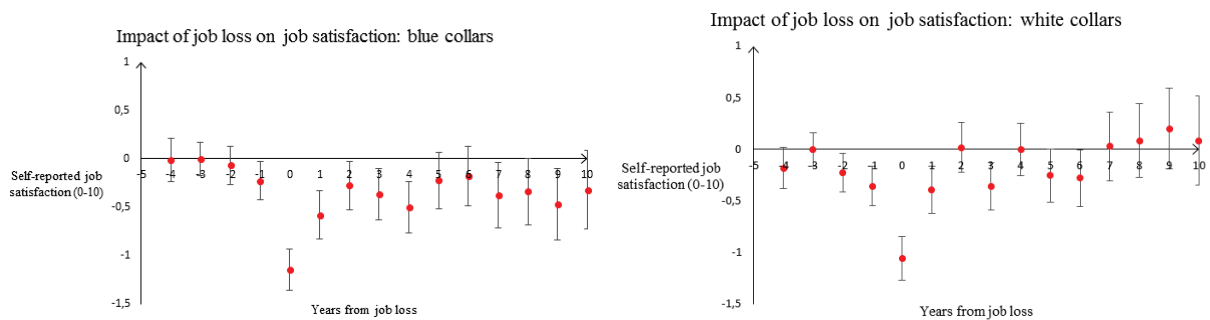
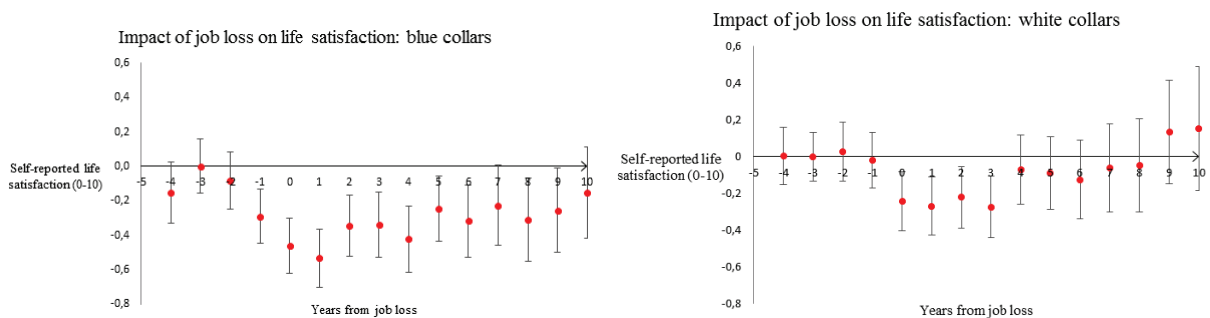


FIGURE E3.10 – Impact of job displacement on life satisfaction



F Robustness check

TABLE F1 – Short and long-term unemployed : individual characteristics

Time not employed	Number	Female	Age	East	Tenure	Blue-Collars
Less than one year	621	0.38	40.96	0.30	9.32	0.45
More than one year	420	0.46	45.56	0.32	12.04	0.55

FIGURE F1 – Impact of job displacement on employment

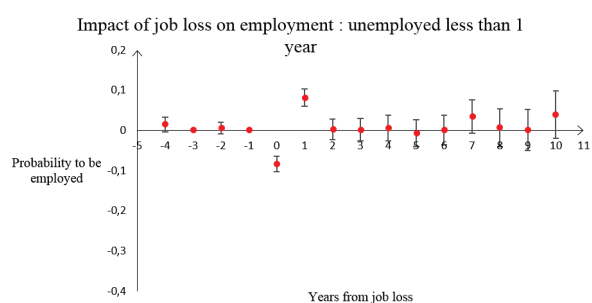


FIGURE F2 – Impact of job displacement on earnings



FIGURE F3 – Impact of job displacement on hourly wage

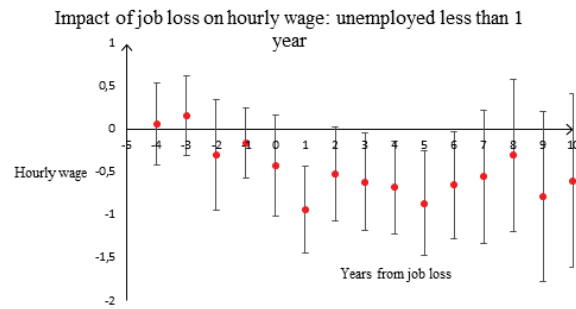


FIGURE F4 – Impact of job displacement on job security

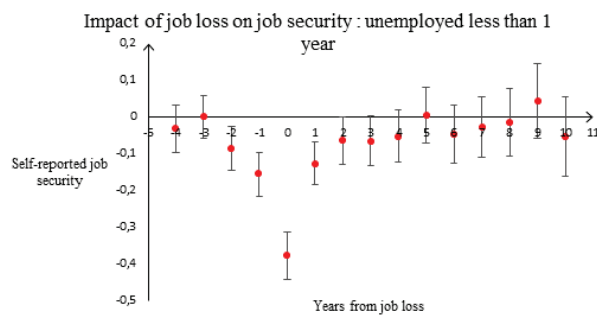


FIGURE F5 – Impact of job displacement on probability to work full-time

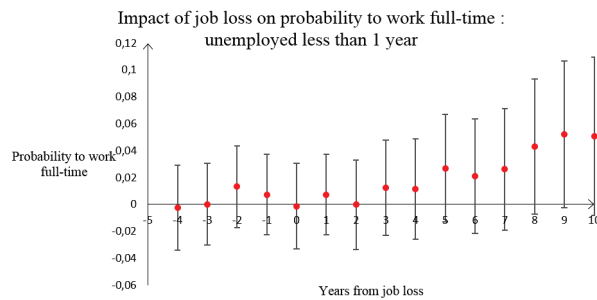


FIGURE F6 – Impact of job displacement on probability to work more than 48 hours a week

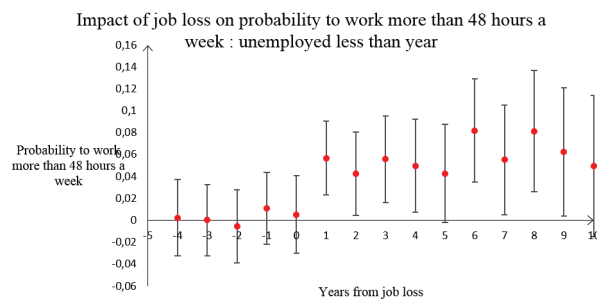


FIGURE F7 – Impact of job displacement on distance to work

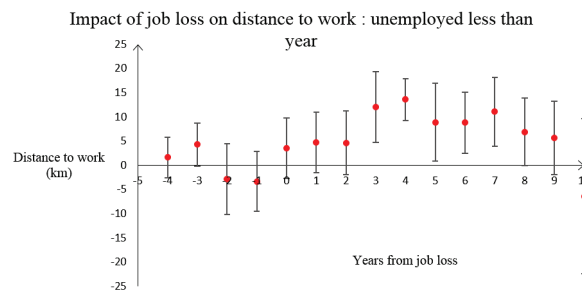


FIGURE F8 – Impact of job displacement on the gap between actual and desired hours worked

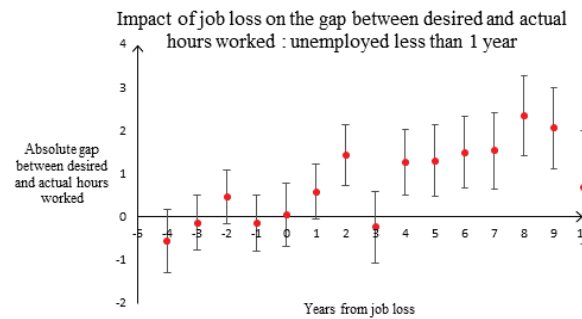


FIGURE F9 – Impact of job displacement on job satisfaction

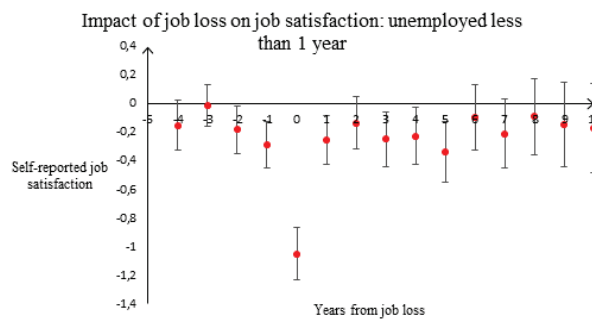
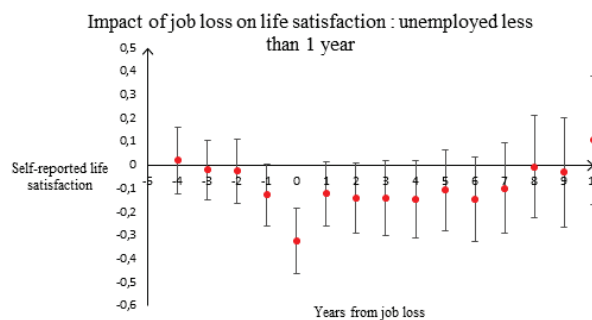


FIGURE F10 – Impact of job displacement on life satisfaction



Chapitre II

Gender Differences : The Role of Mental Health and Diagnosed Diseases

*“ The silence depressed me. It
wasn't the silence of silence. It
was my own silence. ”*

Sylvia Plath, *The Bell Jar*
(1963).

Sommaire

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1 Introduction

A striking and persistent paradox has been pointed out by the literature on health and gender : women are more likely to report poorer health than men while their probability of living longer is higher - see Lahelma *et al.* (1999) and Cambois *et al.* (2011). It raises an important question : to what extent can this paradox be explained by “true health” differences across gender.

Many explanations can be put forward to account for the gender gap in self-reported health.

Since the early 2000s, a large strand of literature has studied the role of health-reporting biases in self-reported health differences. They have been shown to be large and to vary with a number of dimensions such as education (Bago d’Uva *et al.* (2011); Schneider *et al.* (2012)), income (Etilé et Milcent (2006); Johnston *et al.* (2009); Schneider *et al.* (2012)) and gender (Bago d’Uva *et al.* (2008); Lindeboom et Van Doorslaer (2004)). Perceived health may also vary across ages : older respondents tend to report better health status than younger ones (Groot (2000); Van Doorslaer et Gerdtham (2003)). We observe that health status decreases with age which may impact the scale of reference leading to a new definition of what means to being in “good or very good” health for older respondents. Case et Deaton (2003) find that sex differences in self-rated health either disappear or tend to become smaller at old ages.

One explanation of this paradox relies on “true” health differences. The poorer self-assessed health of women may be due to the fact that they are more likely to suffer from chronic diseases. To our knowledge, only Case et Paxson (2005) have investigated the role of chronic diseases in accounting for differences in self-reported health. Using the National Health Interview Survey from US census, they have shown that differences in reported health can entirely be explained by differences in the distribution of conditions : women suffer more than men from chronic diseases leading to real limitations in their life. The authors also find an opposite pattern for hospital stays and mortality : men are more likely to die or to experience hospital stays than women with the same health conditions. The fact that men and women with the same health conditions report the same self-assessed

health casts doubts on the idea that women and men use different standards for assessing health.

Nevertheless, the authors disregard mental health disorders in their analysis which is one of the most pervasive illness in the United States, as well as in Europe. According to the report of WHO (2002), “depression accounts for the largest proportion of the burden associated with all the mental and neurological disorders[...]. It is predicted to be the second leading cause of global burden of disease by 2020.” As far as we know, there is no paper who examines the role of mental health to explain self-assessed health differences between men and women. One may wonder whether, at least in Europe, the gender gap in health-reporting behaviour still exists when more objective measures of physical health and mental health problems such as depression are considered.

There is evidence in the literature that mental health, and more particularly depression, has damaging effects on individual labour market situations (Zimmerman et Katon (2005) ; Chatterji *et al.* (2007) ; Banerjee *et al.* (2015) ; Peng *et al.* (2015)) and on the quality of life (Graham *et al.* (2011) ; WHO (2002)) but only a few papers analyse the link between gender and mental health in order to assess gender reporting bias. Tubeuf *et al.* (2008) found that, for a given latent health status, French women over-report chronic diseases and mental health illness with respect to men. Similar results are found for Israel (Shmueli (2003)).

In this chapter, we provide descriptive evidence on the relationships between self-assessed health, gender and mental health problems, i.e. depression and/or affective pains. The data we use come from the Survey of Health, Ageing and Retirement (SHARE) in Europe and the Health, Health Care and Insurance Survey (ESPS) in France, which contain detailed information on demographic and socio-economic characteristics. These surveys also provide data on more objective measures of health capturing specific diseases diagnosed by a doctor and mental health problems such as depression. More specifically, we use the 2004 to 2012 waves of the SHARE database and the 2010 and 2012 waves of the ESPS database. We implement a pooled ordered probit model and find that physical

health diseases¹ do not explain self-assessed health differences across gender. Conditional on more objective physical health diseases (heart attack, hypertension, cholesterol, stroke, diabetes, lung diseases, cancer, stomach disease, Parkinson disease, cataract, femoral fracture, BMI), women still report poorer health than men do. It is common to observe individuals with several illnesses and we can easily imagine that combinations of them may influence self-assessed health. However, our results are unchanged, even when we control for these combinations. In contrast, when mental health and interactions between physical and mental health are accounted for, the pattern reverses : women tend to report better health than men do, *ceteris paribus*. These results suggest that depression plays a major role in women's poor self-assessed health. It thus appears to be an important determinant of health differences across genders.

To our knowledge, this work is the first to provide descriptive evidence of the impact of depression on self-assessed health across gender and, more particularly, to show that depression explains a large part of the gender gap in self-assessed health.

The rest of the chapter is organised as follows. Section 2 presents the empirical strategy. Section 3 provides a detailed description of the data and variables. Section 4 begins with a presentation of the estimated effects of gender on self-assessed health in Europe. Then, the results from French samples follow. Finally, section 5 provides some concluding remarks.

2 Empirical strategy

As a first step, we pool the observations from the 2004, 2006, 2010 and 2012 waves of the SHARE survey and estimate the effect of gender on self-assessed health by a pooled ordered probit model : $Health_{ijt}^* = \alpha + \beta Female_{ij} + X_{ijt}\gamma + D_j + D_t + v_{ijt}$ (1)

where $Health_{ijt}^*$ denotes the latent health status of individual i in country j at time t :

1. Physical health diseases - heart attack, hypertension, cholesterol, stroke, diabetes, lung diseases, cancer, stomach disease, Parkinson disease, cataract, femoral fracture, BMI - used in this chapter are self-reported after being diagnosed by a doctor.

$$\left\{ \begin{array}{l} Health_{ijt} = 1 \text{ if } Health_{ijt}^* \leq \theta_1 \\ Health_{ijt} = 2 \text{ if } \theta_1 < Health_{ijt}^* \leq \theta_2 \\ Health_{ijt} = 3 \text{ if } \theta_2 < Health_{ijt}^* \leq \theta_3 \\ Health_{ijt} = 4 \text{ if } \theta_3 < Health_{ijt}^* \leq \theta_4 \\ Health_{ijt} = 5 \text{ if } \theta_4 < Health_{ijt}^* \leq \theta_5 \end{array} \right.$$

Where $\theta_1, \theta_2, \theta_3, \theta_4$ and θ_5 are the cut points of the ordered probit model. $Female_{ij}$ is an indicator of gender, X_{ijt} is a vector of individual characteristics including age, marital status, the number of children, education, job situation and household income. D_j and D_t denote country and wave dummies respectively and ν_{ijt} is the error term.

Once established that women systematically report poorer self-assessed health than men, we investigate the potential role of objective physical diseases in explaining this pattern of results. To do so, we estimate the following pooled ordered probit model :

$$Health_{ijt}^* = \alpha + \beta Female_{ij} + \varphi PhysHealth_{ijt} + X_{ijt}\gamma + D_j + D_t + \nu_{ijt} \quad (2)$$

where $PhysHealth_{ijt}$ is a vector of physical diseases. We interpret the marginal effects on the Female variable as capturing the impact of gender on the probability of reporting an excellent health status, all other things equal. We estimate an other variant of equation (2) that differs in the measures of physical diseases. This estimate does account for the fact that self-assessed health may be influenced by specific combinations of diseases. As 80% (resp. 95%) of the SHARE sample (resp. ESPS sample) suffer from at least two physical diseases, we only include the first-order interactions between physical diseases which represent 105 (resp. 120) pairs of combination. For example, an individual who suffers from heart attack and diabetes has value one for each of these diseases and for the associated interaction term "heart attack-diabetes". We then estimate the following equation (2') :

$$Health_{ijt}^* = \alpha + \beta Female_{ij} + \varphi PhysHealth_{ijt} + InterPH_{ijt}\eta + X_{ijt}\gamma + D_j + D_t + \nu_{ijt} \quad (2')$$

where $InterPH_{ijt}$ is a vector of the first-order interactions between physical diseases. Should the differences in self-assessed health persist across gender once conditioning on physical health, we will investigate the potential role of mental health in accounting for this gap.

We then estimate the following equation :

$$Health_{ijt}^* = \alpha + \beta Female_{ij} + \varphi PhysHealth_{ijt} + InterPH_{ijt}\eta + \psi MentalHealth_{ijt} + X_{ijt}\gamma + D_j + D_t + \omega_{ijt} \quad (3)$$

where $MentalHealth_{ijt}$ is an index of mental health capturing the level of depression² on a 12-point scale - see Section 3. An other variant of equation (3) is estimated - see equation (3') below - since individuals may suffer from depression as well as chronic diseases. As in equation (2'), these combinations can lead to poorer health status. So we add to equation (3) the first-order interactions between physical diseases and mental health which represent 15 (resp. 32) pairs of combinations for the SHARE sample (resp. ESPS sample).

$$Health_{ijt}^* = \alpha + \beta Female_{ij} + \varphi PhysHealth_{ijt} + InterPH_{ijt}\eta + \psi MentalHealth_{ijt} + InterPHMH_{ijt}\mu + X_{ijt}\gamma + D_j + D_t + \omega_{ijt} \quad (3')$$

where $InterPHMH_{ijt}$ is a vector of the 15 pairs of combinations between physical and mental health.

3 Data and descriptive statistics

We exploit two databases - a European one and a French one - which we describe in turn.

3.1 Presentation of the samples

The Survey of Health, Ageing and Retirement in Europe

The main data we use come from the Survey of Health, Ageing and Retirement in Europe (SHARE), a multidisciplinary and cross-national database. We use the 2004, 2006, 2010 and 2012 SHARE waves³ containing detailed information on individual health, demographic and socio-economic characteristics. Face-to-face interviews were conducted with approximately 137,000 individuals over 50 years old and their spouses/partners from 19

2. Two measures of mental health - depression and affective pain - are used when we use the ESPS sample (see Section 3).

3. The third wave (2008-2009) is a retrospective survey that focuses on individual's histories. We do not use it for our study.

European countries and Israel⁴. Our final sample consists of 97,058 individuals aged 50 to 75 years from the ten countries which took part in the 2004 SHARE baseline survey and participated in the 2006, 2010 and 2012 waves, i.e., Austria, Belgium, Switzerland, Germany, Denmark, Spain, France, Italy and the Netherlands. Mean age in this sample is about 62 years old and 97.43% of individuals in the sample are aged 50 and above - See Table A1. The same figures from the French SHARE subsample are 61 years old and 96.32%.

The Health, Health Care and Insurance Survey (ESPS : “Enquête sur la Santé et la Protection Sociale”)

In order to check to what extent the results obtained with the SHARE sample may be due to its specific age composition⁵, we re-run the same analysis using the French ESPS survey. These data come from the Health, Health Care and Insurance Survey (ESPS) a national household survey conducted by the Institute for Research and Information in Health Economics (IRDES) and the National Health Insurance Fund for Salaried Workers. Eighteen waves have been conducted every two years from 1988 until 2012. They contain information on individuals and households, including demographic and socio-economic characteristics, health status and medical care utilisation. We use data from the 2010 and 2012 waves - for which we have very similar information to that contained in SHARE. Approximately 13, 000 individuals have been interviewed⁶ in 2010 and 2012. Our full sample contains 7, 541 individuals aged 25 to 75 years old. Its age composition is much younger than SHARE’s : mean age is about 46 and the proportion of individuals above 50 is only 38.06% - See Table A5.

4. The 19 European countries are Austria, Belgium, Switzerland, Germany, Denmark, Spain, France, Greece, Italy, Netherlands, Sweden, the Czech-Republic, Ireland, Poland, Estonia, Hungary, Portugal, Slovenia and Luxembourg. For further details - see Börsch-Supan et al. (2013) and www.share-project.org.

5. The SHARE sample consists of 97% of individuals aged more than 50 years old.

6. The information is collected by a combination of face-to-face and telephone interviews and self-administered questionnaires. For further details, see www.irdes.fr/esps.

3.2 Variables

Health variables

We measure general individual health by self-assessed health (SAH) which is rated on a 1 to 5 scale : poor, fair, good, very good and excellent. In the literature, there is evidence that self-assessed health is a good indicator of individual overall health (Ferrie *et al.* (1995)). However, the probability of reporting good or bad health may suffer from individual reporting heterogeneity (Etilé et Milcent (2006); Tubeuf *et al.* (2008)) or from different response styles across countries (Jürges (2007)). Because we want to investigate the role of physical and mental health in accounting for potential gender-based differences in self-assessed health, we also use more objective and precise measures of physical health diagnosed by a doctor and available for each wave⁷. In the SHARE database, respondents are asked whether a doctor ever told them that they suffered or were currently suffering from either a heart attack, hypertension, cholesterol, stroke, diabetes, lung disease, cancer, stomach disease, parkinson disease, cataract or femoral fracture. For each of these physical diseases, we build a corresponding dummy variable taking value 1 if the individual has ever been diagnosed with it, 0 otherwise. In the French (ESPS) survey, respondents are asked at each wave whether they have suffered or are currently suffering from either a heart attack, hypertension, stroke, diabetes, lung disease, genito-urinary problems, lumbago (lower-back pain), coronary artery disease (or ischemic heart disease), cirrhosis, allergy, asthma and arthrosis⁸. For each of these diseases if the individual reports suffering (or having suffered) from it, the corresponding variable takes value 1, 0 otherwise. We also use - in both the SHARE and ESPS databases and for each wave - the body mass index (BMI) defined as the self-reported weight in kilograms divided by the self-reported height in square meters. We then derive clinical weight categories : underweight (BMI less than $18.5\text{kg}/\text{m}^2$), normal (BMI from 18.5 to $24.9\text{kg}/\text{m}^2$), overweight (BMI from 25 to $29.9\text{kg}/\text{m}^2$) and obese (BMI more than $30\text{kg}/\text{m}^2$).

As regards mental health, the SHARE database has information on the EURO-D de-

7. We do not use information concerning asthma, osteoporosis and arthrosis which are not available in 2012 (SHARE data).

8. We only use the eleven variables of specific health diseases which are available in 2010 and 2012 in the ESPS database.

pression scale. This composite index has been specifically developed and validated as a standardised measure of depression across European countries (Prince *et al.* (1999); Prince (2002); Guerra *et al.* (2015)) and ranges from 0 to 12, counting whether individual reports the following feelings : being depressed, pessimistic and tired, feeling suicidal and guilty, having sleeping disorders and a lack of interest, being irritated, tearful, losing one's appetite, concentration and enjoyment. The index sums these twelve binary variables of feelings to obtain a global score of depression (EURO-D score) rated on a 0 to 12 scale where 12 is highly depressed. As the ESPS database does not provide the same measure of mental health, we consider an indicator with two main dimensions : affective pain and depression. The first dimension - affective pain - is constructed using the following question : *"In the past four weeks, how often have you experienced the following feelings : fretfulness, not feeling relaxed, sadness, unhappiness, disheartened feeling ?"* Respondents may choose one of the following answers : never, rarely, sometimes, most of the time or always. We aggregate them into a normalised index taking value 0 to 10, where 10 is highly affected. The second dimension - depression - takes value 1 if individuals report suffering or having recently suffered from depression, 0 otherwise.

Individual characteristics

Our baseline specification always includes individual characteristics. More specifically, we control for age (5 classes), education (no education, primary education, lower secondary education, upper secondary education and tertiary education), job situation (employed/self-employed, inactive, unemployed and permanently sick⁹), household income (5 classes), marital status (presence of a spouse or partner), the number of children (entered as a continuous variable for specifications using the SHARE database or the number of children under age 18 living in the household for specifications using data from the ESPS) as well as wave and country dummies when using the cross-country SHARE data.

Descriptive statistics

9. The ESPS database has no information on permanent sickness.

Tables A1 and A2 provide summary statistics for the whole SHARE sample over the 2004-2012 period and for men and women, separately. Descriptive statistics of the French SHARE subsample are provided in Tables A3 and A4.

In all our samples, women are slightly younger than men and a smaller proportion of them lives in couple. They have marginally more children than men but in the ESPS sample, they have fewer children under age 18¹⁰ living in the household - see Tables A1, A3 and A5. The French SHARE subsample consists of older and less educated individuals than in the ESPS sample. However, in each sample, there are no major differences between men and women in terms of education and employment situation. The proportion of employed individuals is higher (80%) in the ESPS sample - due to its age composition - than in the French SHARE subsample where employed individuals represent only 34% and the inactive represent 59% of the sample. On average, French women have lower household income than men. When considering health variables, women report higher levels of depression and appear to report slightly lower self-assessed health. Surprisingly, they have been diagnosed less frequently than men with specific health diseases, at least in the SHARE data - see Tables A2 and A4. In the ESPS sample, women suffer more from hypertension, arthrosis, allergy and asthma - see Table A6. In all our samples, individuals are either overweight either normal - see Tables A2, A4 and A6.

Gender differences in self-assessed health, Body Mass Index and depression by exact age

In this subsection, both databases, SHARE and ESPS, are used to illustrate the paradox found by the literature on health and gender discussed in the section 1.

Figure B1 presents the average of self-assessed health, Body Mass Index and depression and the proportions of men and women by exact age.

Unsurprisingly, for both genders, the average self-assessed health decreases with age - see Appendix B Figure B1. Women report poorer health status than men at all ages. The gender gap in self-assessed health status is greatest after age 65. As shown on Figure B1 across all ages, European men appear to be more in overweight than women. Women are overweight in the oldest age, i.e. after age 50. We also observe that the gender gap in BMI

10. The ESPS database only has information on children living in the household or in shared custody situation. We build a variable ranging from 0 to 7 counting the number of children under 18.

decreases with age : women tend to have higher weight with old age whereas men weight decreases from age 70. When considering the score of depression : for all our samples, depression scores for both men and women are roughly constant but reach a peak around age 75. In the SHARE samples, it is clear that women have higher score of depression than men at all ages. Overall, the pattern for depression score mirrors what we observe for self-assessed health status.

Gender differences in the six more frequent chronic diseases by exact age

We select six of the most frequent chronic diseases - heart attack, hypertension, cholesterol, diabetes, lung disease and cancer for the SHARE samples and hypertension, diabetes, genito-urinary problems, arthrosis, allergy and asthma for the ESPS sample - reported by about 50% of the samples. Figures B2 and B3 (see Appendix B) present their prevalence by age for men and women. Women are not more likely to report having all chronic diseases. Heart attacks and diabetes are more prevalent for men at all ages. For other diseases such as cholesterol there is a higher prevalence among men than women in middle age but not at older ages where the prevalence is reversed. Cancers appear to be more prevalent for women in middle age but become more prevalent among men at oldest ages. The opposite pattern holds for lung diseases : they are, to some extent, equally prevalent until age 58 and become more prevalent among men than women. Hypertension is equally prevalent for men and women at all ages - see Appendix B, Figure B2.

To summarize, these different patterns underline once again the paradox found in the health and gender literature. Although women report worse health status, they are not more likely to suffer more from the whole series of chronic diseases. European women are also more likely than men to suffer from cancers the middle age, cholesterol at oldest ages and depression in all ages -at least in the SHARE sample- which could lead to poorer health status.

4 Results

In this section, we first present the results from the pooled ordered probit model and before checking to what extent the results obtained with the SHARE sample may be

due to its specific age composition. To do so, we re-run the same analysis on the French samples (SHARE-France and ESPS).

4.1 The elderly gender gap in self-assessed health : evidence from SHARE

We first estimate the impact of gender on self-assessed health controlling for individual characteristics - see equation (1). We also find that, without any controls, the correlation between self-assessed health and being a woman is negative and significant at the 1% level (Table 1, column 1). The results suggest that European women report poorer health than men even when we control for individual characteristics - such as marital status, the number of children, age, education, employment situation and household income. The marginal effects are negative and significant at the 5% level (Table 1, columns 1 and 2). As expected, age turns out to have a negative impact on self-assessed health do the various forms of non employment. The more educated individuals are, the better their self-reported health. Health is also better in higher income quartiles. These results are consistent with those found by the literature on gender and health (Lahelma *et al.* (1999); Cambois *et al.* (2011)) : women report systematically poorer health than men do while their life expectancy is higher.

As regards the results found once conditioning on physical health - Table 1, column (3) - the differences in self-assessed health persist across gender. The point estimate greatly increases between columns (2) and (3) : *ceteris paribus*, women have better physical health than men. In the same way, the effect of being a woman remains negative and significant at the 1% level : physical health diseases only explain part of the differences in reported health status. Estimates of the second variant of equation (2), which include 15 physical health variables and 105 pairs of combinations of physical health, yield similar results - see column (3bis). Although some of the individual coefficients on combinations are imprecisely estimated, because these are rare, they improve the fit of the model. At this stage, one could think that self-assessed health is still prone to gender reporting heterogeneity. However, being a woman appears to be positively correlated with self-assessed health at the 1% level when the mental health score is taken into account - Table 1, column (4).

As in column (3bis), in column (4bis) we consider that interaction terms between mental health disorders and physical diseases may also affect self-assessed health and lead to poorer health status. However, the effect of being a woman remains low - close to zero - and significantly positive at the 1% level. These results underline the importance of mental health, and more particularly depression, in accounting for differences in self-assessed health across men and women. European women aged 50 to 75 suffer more from depression than men do and, when this difference is accounted for, they appear to report better health than men do, *ceteris paribus*.

To summarize, elderly women systematically report lower self-assessed health than men even once controlling for a series of individual characteristics and physical health diseases diagnosed by a doctor. Depression appears to play a major role in accounting for women's self-assessed health : it comes out as one of the key determinants explaining differences between men and women. The gender gap in self-reported health seems to be explained by the depression score : women suffer more from depression and it strongly impacts their self-assessed health.

In order to exclude the possibility that our results may be driven by the specific age composition of the SHARE sample - which is a representative sample of the elderly aged over 50 in Europe - we conduct the same analysis on representative data of the French population from the Health, Health Care and Insurance Survey (ESPS sample).

4.2 Extending the analysis : evidence from French samples

In this section, we first present comparable results from the French SHARE subsample. As SHARE is a representative sample of Europeans aged over 50 and ESPS is a representative sample of French, in order to compare results found with the ESPS sample, we briefly present results from the French SHARE subsample. As shown in Table 2, the results provided from the French SHARE subsample are quite similar to our main results. Overall, the average marginal effect of being a woman is slightly less significant. Once considering physical health diseases, elderly women report poorer health when we estimate equation (2) only for France - see Table 2, column (3). Similar results are found when interactions

between physical diseases are included in the model - see column (3bis). Moreover, as in the main sample, the point estimate on gender becomes positive although insignificant when we control for the mental health indicator (EURO-D score) and interaction terms between mental and physical health - see columns (4) and (4bis).

The results found with the French ESPS sample are comparable to those provided by the French SHARE subsample. Notice that the SHARE sample is representative of individuals aged over 50 in Europe while the ESPS sample is representative of the entire French population. The specific age composition of the SHARE sample does not seem to drive the overall results - see Tables 2 and 3. When running our estimates on the ESPS sample, our results suggest that, conditional on physical health, French women report a lower self-assessed health and that women's self-assessed health is largely accounted for depression and affective pains. The marginal effect of being a woman is still negative and significant when we control for individual characteristics and more objective physical health diseases (Table 3, columns 1, 2, 3 and 3(bis)). In contrast, it becomes positive and significant at the 10% level once conditioning on depression, affective pains and the additional pairs of combinations between mental and physical health (Table 3, columns (4) and (4bis)). In both French samples, depression and affective pains explain almost entirely the self-assessed health differences between men and women. Results on the impact of mental health are similar when we consider the ESPS subsample of French individuals aged between 50 and 75.

As French elderly women, younger¹¹ ones also systematically report lower self-assessed health. This seems to be due to poorer mental health : French women suffer more from depression and affective pains than men do in the ESPS sample. Once taking this into account, French women tend to report better health than men. Anew, only a part of the reported health differences across gender is explained by physical health and mental health once again appears to be one of the main determinants relevant to understand why women report poorer self-assessed health than men do.

11. We also re-run the estimation on the sample of individuals aged under 49 and on the sample of individuals aged over 50. The results are qualitatively similar.

5 Conclusion

In this chapter we investigate the role of depression in accounting for differences in health-reporting behaviours across men and women. Depression is a common mental health disorder characterised by many feelings - such as being pessimistic, tired, feeling suicidal, guilty, having sleeping disorders, a lack of interest etc. It affects women more often than men and can lead them to report poorer health. As a first step, we provide evidence that elderly women, as younger ones, report poorer general health than men do. This result contributes to the existing literature showing significant differences across gender - see Lahelma *et al.* (1999) ; Cambois *et al.* (2011).

As second and third steps, we investigate to what extent health reporting behaviour may be explained by physical health and depression scores as measured by self-reported diagnosed physical diseases and a score of depression. Our results suggest that women over-report poor health when more objective physical health problems are taken into account. This contrasts with Case and Paxson's (2005) results who conclude that health-reporting behaviours, in the United States, do not differ across genders based on the observation that men and women with the same chronic conditions report the same self-rated health. Our results also contrast with those found by Lindeboom et Van Doorslaer (2004) who conclude that conditional on similar objective health limitations, Canadian women as older individuals are more likely to report better health than their counterparts. However, none of them investigate the role of mental health problems as a determinant of self-assessed health. We find that depression plays a major role explaining a large part of the differences in self-assessed health between men and women in Europe as well as in France. Results are robust controlling for a large array of combinations of health conditions (interactions terms between health variables). When depression is considered, women tend to report better health than men do, all other things equal. So, it appears to be an important determinant of health-reporting differences. Results found for elderly European women are similar to those found for French women of all ages in both French samples - from ESPS and SHARE-France. Mental health is to be one of the most pervasive disorders in our society. According to our results, which underline that the gender gap in reported health is largely explained by mental health, it is very important to understand the real burden

of mental health in order to promote mental well-being and to prevent poor well-being, particularly among women.

In this chapter we use a score of depression calculated from the EURO-D scale considered as the “more” objective measure of depression among elderly individuals by epidemiologists and psychiatrists. However, limitation of our study lies in the fact that mental health scores may suffer from the same reporting bias as self-assessed health. Thus, women may overestimate their mental health disorders as they may underestimate their overall health status. Some papers in the literature suggest that, social influences may impact reporting health behaviour such as back pain(Raspe *et al.* (2008))or body mass index (Etilé (2007)). In the following chapter (Chapter III), we examine the role of social norms in accounting for the different attitudes of men and women with respect to health.

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Tables

TABLE 1 – SHARE Survey - Self-assessed health (pooled ordered probit)- average marginal effects on gender and all control variables-Sample of individuals aged between 50 and 75 years old

	(1)	(2)	(3)	(3bis)	(4)	(4bis)
Women	-0.011*** (0.002)	-0.003** (0.002)	-0.017*** (0.001)	-0.018*** (0.001)	0.004*** (0.001)	0.004*** (0.001)
<i>Age classes (Ref.Between 50 and 56)</i>						
Between 57 and 62		-0.011*** (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.007*** (0.002)	-0.007*** (0.002)
Between 63 and 68		-0.010*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	-0.003 (0.002)	-0.003 (0.002)
Between 69 and 75		-0.039*** (0.003)	-0.009*** (0.002)	-0.008*** (0.002)	-0.017*** (0.002)	-0.017*** (0.002)
<i>Marital status (Ref.Does not live with a spouse/partner)</i>						
Lives with a spouse/partner		0.006*** (0.002)	0.003 (0.002)	0.003 (0.002)	-0.005*** (0.002)	-0.005*** (0.002)
Number of children		-0.002*** (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)	0.001 (0.000)
<i>Education (Ref.No education)</i>						
Primary education		0.023*** (0.004)	0.020*** (0.004)	0.021*** (0.004)	0.012*** (0.004)	0.012*** (0.004)
Lower secondary education		0.053*** (0.004)	0.042*** (0.004)	0.042*** (0.004)	0.029*** (0.004)	0.030*** (0.004)
Upper secondary education		0.067*** (0.004)	0.053*** (0.004)	0.052*** (0.004)	0.037*** (0.004)	0.038*** (0.004)
Tertiary education		0.100*** (0.005)	0.080*** (0.004)	0.079*** (0.004)	0.064*** (0.004)	0.064*** (0.004)
<i>Employment status classes (Ref.Employed or Self-employed)</i>						
Inactive individuals		-0.047*** (0.002)	-0.032*** (0.002)	-0.032*** (0.002)	-0.028*** (0.002)	-0.028*** (0.002)
Unemployed		-0.062*** (0.004)	-0.053*** (0.004)	-0.052*** (0.004)	-0.036*** (0.003)	-0.036*** (0.003)
Permanently sick		-0.254*** (0.004)	-0.205*** (0.004)	-0.202*** (0.004)	-0.172*** (0.004)	-0.171*** (0.004)
<i>Quartiles of total household income(Ref.First quartile)</i>						
Second quartile of household income		0.014*** (0.002)	0.013*** (0.002)	0.013*** (0.002)	0.011*** (0.002)	0.011*** (0.002)
Third quartile of household income		0.027*** (0.002)	0.024*** (0.002)	0.024*** (0.002)	0.021*** (0.002)	0.021*** (0.002)
Fourth quartile of household income		0.042*** (0.002)	0.037*** (0.002)	0.037*** (0.002)	0.033*** (0.002)	0.033*** (0.002)
<i>Physical health diseases</i>						
Heart attack			-0.100*** (0.002)	-0.124*** (0.005)	-0.114*** (0.005)	-0.114*** (0.005)
Hypertension			-0.041*** (0.001)	-0.044*** (0.002)	-0.041*** (0.002)	-0.045*** (0.002)
Cholesterol			-0.021*** (0.002)	-0.027*** (0.002)	-0.022*** (0.002)	-0.028*** (0.002)
Stroke			-0.106*** (0.004)	-0.139*** (0.010)	-0.112*** (0.009)	-0.095*** (0.011)
Diabetes			-0.073*** (0.002)	-0.080*** (0.003)	-0.074*** (0.002)	-0.078*** (0.003)
Lung diseases			-0.115*** (0.003)	-0.125*** (0.006)	-0.114*** (0.007)	-0.126*** (0.007)
Cancer			-0.098*** (0.003)	-0.121*** (0.007)	-0.107*** (0.007)	-0.093*** (0.008)
Stomach diseases			-0.073*** (0.003)	-0.086*** (0.004)	-0.064*** (0.004)	-0.063*** (0.005)
Parkinson			-0.228*** (0.011)	-0.264*** (0.020)	-0.226*** (0.020)	-0.261*** (0.024)
Cataract			-0.033*** (0.003)	-0.037*** (0.003)	-0.028*** (0.003)	-0.029*** (0.004)
Femoral fracture			-0.080*** (0.006)	-0.069*** (0.013)	-0.053*** (0.013)	-0.039*** (0.014)
<i>Body Mass Index</i>						
Underweight			-0.040*** (0.009)	-0.029*** (0.010)	-0.022** (0.009)	-0.017 (0.013)
Overweight			-0.019*** (0.002)	-0.022*** (0.002)	-0.022*** (0.002)	-0.023*** (0.002)
Obesity			-0.052*** (0.002)	-0.056*** (0.002)	-0.053*** (0.002)	-0.055*** (0.003)
<i>Mental health indicator</i>						
Depression scale EURO-D					-0.028*** (0.000)	-0.030*** (0.001)
Interactions : chronic diseases	No	No	No	Yes	Yes	Yes
Interactions : chronic diseases and mental health	No	No	No	No	No	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R ²	0.020	0.066	0.120	0.123	0.157	0.157
N	97 058	97 058	97 058	97 058	97 058	97 058

Note : (1) Standard errors in parenthesis are clustered at the individual level. (2) Column 1 represents the effect of being a women on self-assessed health. Column 2 is the baseline including demographic and socio-economic variables. Columns 3 and 3bis are estimated including respectively physical variables and interactions between physical health. Columns 4 and 4bis are estimated including respectively mental health variable and interaction terms between mental and physical health. (3) *** Significant at 1 %level, ** Significant at 5 %level,* Significant at 10 %level.

TABLE 2 – France, SHARE Survey - Self-assessed health (pooled ordered probit)- average marginal effects on gender and all control variables-Sample of individuals aged between 50 and 75 years old

	(1)	(2)	(3)	(3bis)	(4)	(4bis)
Women	-0.011*** (0.004)	-0.005 (0.004)	-0.017*** (0.004)	-0.018*** (0.004)	0.002 (0.003)	0.002 (0.003)
<i>Age classes (Ref. Between 50 and 56)</i>						
Between 57 and 62		-0.006 (0.004)	0.002 (0.004)	0.003 (0.004)	-0.002 (0.004)	-0.002 (0.004)
Between 63 and 68		-0.025*** (0.006)	-0.009 (0.006)	-0.009 (0.006)	-0.015** (0.005)	-0.014*** (0.005)
Between 69 and 75		-0.056*** (0.007)	-0.030*** (0.006)	-0.030*** (0.006)	-0.037*** (0.006)	-0.037*** (0.006)
<i>Marital status (Ref. Does not live with a spouse/partner)</i>						
Lives with a spouse/partner		-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.007* (0.004)	-0.006* (0.004)
Number of children		-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)
<i>Education (Ref. No education)</i>						
Primary education		0.029*** (0.007)	0.028*** (0.007)	0.028*** (0.007)	0.025*** (0.006)	0.025*** (0.006)
Lower secondary education		0.052*** (0.009)	0.047*** (0.008)	0.047*** (0.008)	0.044*** (0.008)	0.044*** (0.008)
Upper secondary education		0.049*** (0.007)	0.044*** (0.007)	0.044*** (0.007)	0.040*** (0.006)	0.039*** (0.006)
Tertiary education		0.086*** (0.008)	0.077*** (0.007)	0.077*** (0.007)	0.070*** (0.007)	0.069*** (0.007)
<i>Employment status classes (Ref. Employed or Self-employed)</i>						
Inactive individuals		-0.019*** (0.005)	-0.005 (0.005)	-0.005 (0.005)	-0.004 (0.005)	-0.004 (0.005)
Unemployed		-0.023** (0.009)	-0.020** (0.009)	-0.020** (0.009)	-0.009 (0.008)	-0.010 (0.008)
Permanently sick		-0.204*** (0.011)	-0.159*** (0.011)	-0.159*** (0.011)	-0.136*** (0.011)	-0.136*** (0.011)
<i>Quartiles of total household income(Ref. Less than 18 964 euros)</i>						
Between 18 964 and 31 026 euros		0.018*** (0.005)	0.019*** (0.004)	0.020*** (0.004)	0.018*** (0.004)	0.018*** (0.004)
Between 31 026 and 49 470 euros		0.030*** (0.005)	0.028*** (0.005)	0.028*** (0.005)	0.025*** (0.005)	0.025*** (0.005)
More than 49 470 euros		0.044*** (0.005)	0.039*** (0.005)	0.039*** (0.005)	0.036*** (0.005)	0.037*** (0.005)
<i>Physical health diseases</i>						
Heart attack			-0.093*** (0.006)	-0.109*** (0.012)	-0.106*** (0.012)	-0.105*** (0.013)
Hypertension			-0.032*** (0.004)	-0.032*** (0.004)	-0.029*** (0.004)	-0.033*** (0.005)
Cholesterol			-0.014*** (0.004)	-0.019*** (0.004)	-0.016*** (0.004)	-0.029*** (0.005)
Stroke			-0.086*** (0.011)	-0.104*** (0.022)	-0.094*** (0.021)	-0.091*** (0.025)
Diabetes			-0.067*** (0.006)	-0.074*** (0.007)	-0.070*** (0.006)	-0.066*** (0.008)
Lung diseases			-0.098*** (0.008)	-0.090*** (0.016)	-0.079*** (0.017)	-0.099*** (0.018)
Cancer			-0.105*** (0.008)	-0.143*** (0.021)	-0.129*** (0.020)	-0.121*** (0.022)
Stomach diseases			-0.064*** (0.009)	-0.081*** (0.010)	-0.063*** (0.010)	-0.071*** (0.015)
Parkinson			-0.207*** (0.026)	-0.216*** (0.054)	-0.206*** (0.042)	-0.177*** (0.047)
Cataract			-0.027*** (0.007)	-0.032*** (0.008)	-0.023*** (0.008)	-0.030*** (0.012)
Femoral fracture			-0.069*** (0.017)	-0.054 (0.041)	-0.040 (0.038)	-0.006 (0.041)
<i>Body Mass Index</i>						
Underweight			-0.005 (0.018)	0.003 (0.019)	-0.001 (0.017)	-0.005 (0.026)
Overweight			-0.014*** (0.004)	-0.015*** (0.004)	-0.017*** (0.004)	-0.022*** (0.005)
Obesity			-0.032*** (0.005)	-0.034*** (0.005)	-0.035*** (0.005)	-0.038*** (0.007)
<i>Mental health indicator</i>						
Depression scale EURO-D					-0.021*** (0.001)	-0.024*** (0.001)
Interactions : chronic diseases	No	No	No	Yes	Yes	Yes
Interactions : chronic diseases and mental health	No	No	No	No	No	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R ²	0.001	0.053	0.114	0.117	0.150	0.151
N	11 260	11 260	11 260	11 260	11 260	11 260

Note : (1) Standard errors in parenthesis are clustered at the individual level. (2) Column 1 represents the effect of being a women on self-assessed health. Column 2 is the baseline including demographic and socio-economic variables. Columns 3 and 3bis are estimated including respectively physical variables and interactions between physical health. Columns 4 and 4bis are estimated including respectively mental health variable and interaction terms between mental and physical health. (3) *** Significant at 1 %level, ** Significant at 5 %level,* Significant at 10 %level.

TABLE 3 – France, ESPS Survey - Self-assessed health (pooled ordered probit)- average marginal effects on gender and all control variables-Sample of individuals aged between 25 and 75 years old

	(1)	(2)	(3)	(3bis)	(4)	(4bis)
Women	-0.014*	-0.015**	-0.014*	-0.014*	0.012*	0.011*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
<i>Age classes (Ref.Between 25 and 34)</i>						
Between 35 and 45		-0.074***	-0.066***	-0.065***	-0.060***	-0.060***
		(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
Between 46 and 54		-0.120***	-0.097***	-0.095***	-0.092***	-0.092***
		(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Between 55 and 75		-0.181***	-0.125***	-0.121***	-0.137***	-0.135***
		(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
<i>Marital status (Ref.Does not live with a spouse/partner)</i>						
Lives with a spouse/partner		-0.012	-0.010	-0.008	-0.020**	-0.020**
		(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Number of children		0.010**	0.008**	0.007*	0.009**	0.008**
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
<i>Education (Ref.No education)</i>						
Primary education		0.030	0.042**	0.035*	0.034*	0.035*
		(0.020)	(0.020)	(0.020)	(0.019)	(0.019)
Lower secondary education		0.050***	0.037***	0.036**	0.029**	0.031**
		(0.014)	(0.014)	(0.014)	(0.013)	(0.013)
Upper secondary education		0.059***	0.044***	0.041***	0.043***	0.047***
		(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Tertiary education		0.118***	0.098***	0.096***	0.089***	0.093***
		(0.015)	(0.015)	(0.015)	(0.014)	(0.014)
<i>Employment status classes (Ref.Employed or Self-employed)</i>						
Inactive individuals		-0.025*	0.009	0.009	-0.011	-0.011
		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Unemployed		-0.024	-0.018	-0.014	-0.004	-0.009
		(0.020)	(0.020)	(0.020)	(0.019)	(0.019)
<i>Quartiles of total household income(Ref.Less than 1700 euros)</i>						
Between 1701 and 2608 euros		0.051***	0.044***	0.043***	0.036***	0.037***
		(0.011)	(0.011)	(0.011)	(0.011)	(0.010)
Between 2609 and 3600 euros		0.077***	0.066***	0.065***	0.052***	0.052***
		(0.011)	(0.011)	(0.011)	(0.011)	(0.010)
More than 3601 euros		0.119***	0.105***	0.104***	0.089***	0.089***
		(0.012)	(0.012)	(0.012)	(0.012)	(0.011)
<i>Physical health diseases</i>						
Heart attack			-0.101**	-0.088	-0.098	0.003
			(0.050)	(0.082)	(0.092)	(0.115)
Hypertension			-0.110***	-0.117***	-0.092***	-0.107***
			(0.011)	(0.025)	(0.025)	(0.038)
Stroke			-0.140***	-0.112	-0.115	-0.452***
			(0.047)	(0.104)	(0.111)	(0.179)
Diabetes			-0.121***	-0.199***	-0.165***	-0.156***
			(0.016)	(0.039)	(0.037)	(0.057)
Lung diseases			-0.121***	-0.059	0.008	-0.033
			(0.019)	(0.062)	(0.058)	(0.077)
Coronary artery diseases			-0.200***	-0.247***	-0.205**	-0.394***
			(0.036)	(0.072)	(0.081)	(0.139)
Genito-urinary problems			-0.082***	-0.104***	-0.060	-0.120*
			(0.018)	(0.043)	(0.046)	(0.067)
Arthrosis			-0.135***	-0.164***	-0.131***	-0.151***
			(0.013)	(0.030)	(0.029)	(0.048)
Lumbago			-0.165***	-0.144*	-0.116	-0.338***
			(0.027)	(0.086)	(0.085)	(0.110)
Allergy			-0.046***	-0.057*	-0.048	-0.049
			(0.010)	(0.031)	(0.030)	(0.044)
Asthma			-0.072***	-0.117***	-0.103***	-0.233***
			(0.015)	(0.038)	(0.038)	(0.056)
Cirrhosis			0.338	0.006	-0.089	-0.473
			(0.217)	(0.070)	(0.100)	(0.304)
<i>Body Mass Index</i>						
Underweight			-0.014	-0.028	-0.011	-0.043
			(0.023)	(0.026)	(0.025)	(0.069)
Overweight			-0.019**	-0.017*	-0.009	-0.032
			(0.008)	(0.010)	(0.009)	(0.023)
Obesity			-0.061***	-0.069***	-0.062***	-0.073**
			(0.010)	(0.013)	(0.012)	(0.031)
<i>Mental health indicator</i>						
Affective pain					-0.063***	-0.069***
					(0.003)	(0.007)
Depression					-0.114***	-0.066*
					(0.016)	(0.039)
Interactions : chronic diseases	No	No	No	Yes	Yes	Yes
Interactions : chronic diseases and mental health	No	No	No	No	No	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R ²	0.009	0.059	0.098	0.103	0.155	0.157
N	7 541	7 541	7 541	7 541	7 541	7 541

Note : (1) Standard errors in parenthesis are clustered at the individual level. (2) Column 1 represents the effect of being a women on self-assessed health. Column 2 is the baseline including demographic and socio-economic variables. Columns 3 and 3bis are estimated including respectively physical variables and interactions between physical health. Columns 4 and 4bis are estimated including respectively mental health variable and interaction terms between mental and physical health. (3) *** Significant at 1 %level, ** Significant at 5 %level, * Significant at 10 %level.

Appendix

A Descriptive statistics : individual and health characteristics

TABLE A1 – Descriptive statistics (SHARE sample) : individual characteristics for individuals aged between 50 and 75 years old

	(1) Whole			(2) Women			(3) Men		
	Mean	SD	Observations	Mean	SD	Observations	Mean	SD	Observations
Women	0.53	0.50	97 058	1.00	0.00	51 825	0.00	0.00	45 233
<i>Age</i>									
Age (continuous variable)	62.31	6.97	97 058	62.05	7.01	51 825	62.61	6.91	45 233
Between 50 and 56	0.25	0.43	97 058	0.27	0.44	51 825	0.23	0.42	45 233
Between 57 and 62	0.27	0.44	97 058	0.26	0.44	51 825	0.27	0.44	45 233
Between 63 and 68	0.25	0.43	97 058	0.25	0.43	51 825	0.26	0.44	45 233
Between 69 and 75	0.23	0.42	97 058	0.22	0.42	51 825	0.24	0.43	45 233
<i>Marital status</i>									
Live with a spouse/partner	0.76	0.42	97 058	0.72	0.45	51 825	0.81	0.39	45 233
Number of children	2.16	1.34	97 058	2.18	1.34	51 825	2.13	1.35	45 233
<i>Education</i>									
No education	0.03	0.18	97 058	0.04	0.19	51 825	0.03	0.18	45 233
Primary education	0.18	0.38	97 058	0.19	0.39	51 825	0.16	0.37	45 233
Lower secondary education	0.18	0.39	97 058	0.20	0.40	51 825	0.16	0.37	45 233
Upper secondary education	0.33	0.47	97 058	0.31	0.46	51 825	0.35	0.48	45 233
Tertiary education	0.28	0.45	97 058	0.26	0.44	51 825	0.30	0.46	45 233
<i>Employment situation</i>									
Employed or self-employed	0.35	0.48	97 058	0.32	0.47	51 825	0.39	0.49	45 233
Inactive : Retired, homemaker or other	0.57	0.49	97 058	0.61	0.49	51 825	0.53	0.50	45 233
Unemployed	0.04	0.19	97 058	0.03	0.18	51 825	0.04	0.20	45 233
Permanently sick	0.04	0.19	97 058	0.04	0.19	51 825	0.04	0.20	45 233
<i>Household Income</i>									
1st quartile of hh income	0.25	0.43	97 058	0.28	0.45	51 825	0.21	0.41	45 233
2nd quartile of hh income	0.25	0.43	97 058	0.25	0.44	51 825	0.24	0.43	45 233
3rd quartile of hh income	0.25	0.43	97 058	0.24	0.43	51 825	0.27	0.44	45 233
4th quartile of hh income	0.25	0.43	97 058	0.23	0.42	51 825	0.28	0.45	45 233

Note : SD stands for standard deviation.

TABLE A2 – Descriptive statistics (SHARE sample) : health characteristics for individuals aged between 50 and 75 years old

	(1) Whole			(2) Women			(3) Men		
	Mean	SD	Observations	Mean	SD	Observations	Mean	SD	Observations
<i>Self-assessed health</i>									
Poor	0.06	0.24	97 058	0.06	0.24	51 825	0.06	0.24	45 233
Fair	0.21	0.41	97 058	0.22	0.42	51 825	0.20	0.40	45 233
Good	0.39	0.49	97 058	0.39	0.49	51 825	0.40	0.49	45 233
Very good	0.22	0.41	97 058	0.21	0.41	51 825	0.23	0.42	45 233
Excellent	0.11	0.32	97 058	0.11	0.31	51 825	0.12	0.32	45 233
<i>Body Mass Index</i>									
BMI (continuous variable)	26.65	4.45	97 058	26.33	4.82	51 825	27.01	3.96	45 233
Underweight	0.01	0.07	97 058	0.01	0.09	51 825	0.00	0.05	45 233
Normal	0.38	0.49	97 058	0.44	0.50	51 825	0.31	0.46	45 233
Overweight	0.42	0.49	97 058	0.36	0.48	51 825	0.49	0.50	45 233
Obese	0.19	0.39	97 058	0.19	0.39	51 825	0.19	0.39	45 233
<i>Specific diseases</i>									
Heart attack	0.09	0.28	97 058	0.06	0.24	51 825	0.11	0.32	45 233
Hypertension	0.32	0.47	97 058	0.32	0.47	51 825	0.33	0.47	45 233
Cholesterol	0.22	0.41	97 058	0.21	0.41	51 825	0.23	0.42	45 233
Stroke	0.03	0.16	97 058	0.02	0.14	51 825	0.03	0.18	45 233
Diabetes	0.10	0.30	97 058	0.08	0.28	51 825	0.11	0.32	45 233
Lung disease	0.05	0.22	97 058	0.05	0.22	51 825	0.06	0.23	45 233
Cancer	0.05	0.22	97 058	0.05	0.23	51 825	0.04	0.21	45 233
Stomach disease	0.04	0.19	97 058	0.04	0.19	51 825	0.04	0.20	45 233
Parkinson	0.00	0.07	97 058	0.00	0.06	51 825	0.01	0.07	45 233
Cataract	0.05	0.22	97 058	0.06	0.23	51 825	0.04	0.20	45 233
Femoral fracture	0.01	0.11	97 058	0.01	0.11	51 825	0.01	0.11	45 233
<i>Mental health</i>									
Euro depression scale	2.16	2.13	97 058	2.53	2.24	51 825	1.74	1.90	45 233

Note : SD stands for standard deviation.

TABLE A3 – Descriptive statistics (French SHARE subsample) : individual characteristics for individuals aged between 50 and 75 years old

	(1) Whole			(2) Women			(3) Men		
	Mean	SD	Observations	Mean	SD	Observations	Mean	SD	Observations
Women	0.53	0.50	11 260	1.00	0.00	6 017	0.00	0.00	5 243
<i>Age</i>									
Age (continuous variable)	61.74	6.98	11 260	61.73	7.04	6 017	61.75	6.91	5 243
Between 50 and 56	0.28	0.45	11 260	0.28	0.45	6 017	0.27	0.45	5 243
Between 57 and 62	0.24	0.43	11 260	0.23	0.42	6 017	0.24	0.43	5 243
Between 63 and 68	0.25	0.43	11 260	0.24	0.43	6 017	0.25	0.43	5 243
Between 69 and 75	0.24	0.43	11 260	0.24	0.43	6 017	0.24	0.43	5 243
<i>Marital status</i>									
Live with a spouse/partner	0.71	0.45	11 260	0.65	0.48	6 017	0.77	0.42	5 243
Number of children	2.27	1.43	11 260	2.30	1.43	6 017	2.24	1.43	5 243
<i>Education</i>									
No education	0.11	0.31	11 260	0.12	0.33	6 017	0.09	0.29	5 243
Primary education	0.20	0.40	11 260	0.22	0.41	6 017	0.18	0.39	5 243
Lower secondary education	0.08	0.28	11 260	0.10	0.30	6 017	0.07	0.25	5 243
Upper secondary education	0.38	0.48	11 260	0.34	0.47	6 017	0.41	0.49	5 243
Tertiary education	0.23	0.42	11 260	0.22	0.41	6 017	0.25	0.43	5 243
<i>Employment situation</i>									
Employed or self-employed	0.34	0.47	11 260	0.33	0.47	6 017	0.36	0.48	5 243
Inactive : Retired, homemaker or other	0.59	0.49	11 260	0.61	0.49	6 017	0.57	0.50	5 243
Unemployed	0.04	0.19	11 260	0.03	0.18	6 017	0.04	0.20	5 243
Permanently sick	0.03	0.18	11 260	0.03	0.18	6 017	0.03	0.18	5 243
<i>Household Income (annual)</i>									
Less than 18 964 euros	0.25	0.43	11 260	0.28	0.45	6 017	0.21	0.41	5 243
Between 18 964 and 31 026 euros	0.25	0.43	11 260	0.26	0.44	6 017	0.24	0.43	5 243
Between 31 026 and 49 470 euros	0.25	0.43	11 260	0.24	0.43	6 017	0.27	0.44	5 243
More than 49 470 euros	0.25	0.43	11 260	0.22	0.41	6 017	0.28	0.45	5 243

Note : SD stands for standard deviation.

TABLE A4 – Descriptive statistics (French SHARE subsample) : health characteristics for individuals aged between 50 and 75 years old

	(1) Whole			(2) Women			(3) Men		
	Mean	SD	Observations	Mean	SD	Observations	Mean	SD	Observations
<i>Self-assessed health</i>									
Poor	0.08	0.27	11 260	0.08	0.27	6 017	0.08	0.27	5 243
Fair	0.22	0.42	11 260	0.23	0.42	6 017	0.21	0.41	5 243
Good	0.45	0.50	11 260	0.46	0.50	6 017	0.45	0.50	5 243
Very good	0.17	0.37	11 260	0.16	0.37	6 017	0.17	0.38	5 243
Excellent	0.08	0.27	11 260	0.07	0.26	6 017	0.09	0.29	5 243
<i>Body Mass Index</i>									
BMI (continuous variable)	26.52	4.62	11 260	26.23	5.16	6 017	26.85	3.89	5 243
Underweight	0.01	0.08	11 260	0.01	0.10	6 017	0.00	0.05	5 243
Normal	0.40	0.49	11 260	0.47	0.50	6 017	0.33	0.47	5 243
Overweight	0.40	0.49	11 260	0.33	0.47	6 017	0.48	0.50	5 243
Obese	0.19	0.40	11 260	0.19	0.40	6 017	0.19	0.40	5 243
<i>Specific diseases</i>									
Heart attack	0.10	0.29	11 260	0.06	0.24	6 017	0.13	0.34	5 243
Hypertension	0.29	0.45	11 260	0.30	0.46	6 017	0.28	0.45	5 243
Cholesterol	0.24	0.43	11 260	0.23	0.42	6 017	0.25	0.43	5 243
Stroke	0.02	0.15	11 260	0.02	0.14	6 017	0.03	0.16	5 243
Diabetes	0.10	0.30	11 260	0.09	0.28	6 017	0.12	0.32	5 243
Lung disease	0.05	0.21	11 260	0.04	0.21	6 017	0.05	0.23	5 243
Cancer	0.05	0.22	11 260	0.06	0.23	6 017	0.05	0.21	5 243
Stomach disease	0.03	0.18	11 260	0.03	0.17	6 017	0.04	0.19	5 243
Parkinson	0.00	0.07	11 260	0.00	0.07	6 017	0.01	0.07	5 243
Cataract	0.04	0.20	11 260	0.05	0.21	6 017	0.03	0.18	5 243
Femoral fracture	0.01	0.10	11 260	0.01	0.09	6 017	0.01	0.10	5 243
<i>Mental health</i>									
Euro depression scale	2.67	2.23	11 260	3.13	2.34	6 017	2.14	1.98	5 243

Note : SD stands for standard deviation.

TABLE A5 – Descriptive statistics (French ESPS sample) : individual characteristics for individuals aged between 25 and 75 years old

	(1) Whole			(2) Women			(3) Men		
	Mean	SD	Observations	Mean	SD	Observations	Mean	SD	Observations
Women	0.54	0.50	7 541	1.00	0.00	4 077	0.00	0.00	3 464
<i>Age</i>									
Age (continuous variable)	45.80	11.88	7 541	45.68	11.95	4 077	45.93	11.79	3 464
Between 25 and 34	0.28	0.45	7 541	0.29	0.45	4 077	0.27	0.44	3 464
Between 35 and 45	0.25	0.43	7 541	0.25	0.43	4 077	0.26	0.44	3 464
Between 46 and 54	0.25	0.43	7 541	0.25	0.43	4 077	0.26	0.44	3 464
Between 55 and 75	0.22	0.41	7 541	0.22	0.41	4 077	0.22	0.41	3 464
<i>Marital status</i>									
Live with a spouse/partner	0.79	0.41	7 541	0.77	0.42	4 077	0.82	0.39	3 464
Number of children	0.91	1.09	7 541	0.89	1.06	4 077	0.94	1.12	3 464
<i>Education</i>									
No education	0.09	0.29	7 541	0.09	0.29	4 077	0.09	0.29	3 464
Primary education	0.05	0.22	7 541	0.06	0.24	4 077	0.04	0.19	3 464
Lower secondary education	0.34	0.47	7 541	0.31	0.46	4 077	0.38	0.49	3 464
Upper secondary education	0.17	0.38	7 541	0.18	0.39	4 077	0.16	0.37	3 464
Tertiary education	0.34	0.47	7 541	0.35	0.48	4 077	0.33	0.47	3 464
<i>Employment situation</i>									
Employed or self-employed	0.80	0.40	7 541	0.76	0.43	4 077	0.85	0.36	3 464
Inactive individuals	0.16	0.37	7 541	0.19	0.39	4 077	0.13	0.33	3 464
Unemployed	0.04	0.19	7 541	0.05	0.22	4 077	0.02	0.15	3 464
<i>Household Income (monthly)</i>									
Less than 1700 euros	0.24	0.43	7 541	0.27	0.44	4 077	0.22	0.41	3 464
Between 1701 and 2608 euros	0.24	0.43	7 541	0.24	0.43	4 077	0.24	0.43	3 464
Between 2609 and 3600 euros	0.26	0.44	7 541	0.26	0.44	4 077	0.26	0.44	3 464
More than 3600 euros	0.25	0.44	7 541	0.23	0.42	4 077	0.28	0.45	3 464

Note : SD stands for standard deviation.

TABLE A6 – Descriptive statistics(France sample-ESPS) : Health characteristics for individuals aged between 25 and 75 years old

	(1) Whole			(2) Women			(3) Men		
	Mean	SD	Observations	Mean	SD	Observations	Mean	SD	Observations
<i>Self-assessed health</i>									
Poor	0.00	0.07	7 541	0.00	0.07	4 077	0.00	0.06	3 464
Fair	0.04	0.19	7 541	0.04	0.19	4 077	0.04	0.19	3 464
Good	0.22	0.42	7 541	0.24	0.42	4 077	0.21	0.41	3 464
Very good	0.51	0.50	7 541	0.51	0.50	4 077	0.51	0.50	3 464
Excellent	0.23	0.42	7 541	0.22	0.41	4 077	0.24	0.43	3 464
<i>Specific diseases</i>									
Heart attack	0.00	0.07	7 541	0.00	0.04	4 077	0.01	0.10	3 464
Hypertension	0.12	0.32	7 541	0.12	0.33	4 077	0.12	0.32	3 464
Stroke	0.00	0.07	7 541	0.00	0.06	4 077	0.01	0.08	3 464
Diabetes	0.05	0.23	7 541	0.05	0.21	4 077	0.06	0.24	3 464
Lung disease	0.03	0.17	7 541	0.03	0.18	4 077	0.03	0.16	3 464
Coronary artery diseases	0.01	0.09	7 541	0.01	0.07	4 077	0.01	0.11	3 464
Genito-urinary problems	0.04	0.19	7 541	0.04	0.21	4 077	0.03	0.16	3 464
Arthrosis	0.08	0.28	7 541	0.09	0.29	4 077	0.07	0.26	3 464
Lumbago	0.01	0.11	7 541	0.02	0.13	4 077	0.01	0.08	3 464
Allergy	0.13	0.34	7 541	0.16	0.36	4 077	0.11	0.31	3 464
Asthma	0.05	0.23	7 541	0.06	0.24	4 077	0.04	0.20	3 464
Cirrhosis	0.00	0.02	7 541	0.00	0.02	4 077	0.00	0.03	3 464
<i>Body Mass Index</i>									
Body Mass Index (continuous variable)	25.25	5.43	7 541	24.66	5.86	4 077	25.95	4.79	3 464
Underweight	0.03	0.16	7 541	0.04	0.20	4 077	0.01	0.10	3 464
Normal	0.52	0.50	7 541	0.58	0.49	4 077	0.46	0.50	3 464
Overweight	0.30	0.46	7 541	0.23	0.42	4 077	0.38	0.49	3 464
Obese	0.14	0.35	7 541	0.14	0.35	4 077	0.15	0.35	3 464
<i>Mental health</i>									
Affective pain	3.99	1.50	7 541	4.16	1.55	4 077	3.78	1.41	3 464
Depression	0.06	0.24	7 541	0.08	0.28	4 077	0.04	0.19	3 464

Note : SD stands for standard deviation.

B Descriptive statistics (SHARE) : physical health and depression for men and women by age

FIGURE B1 – Self-assessed health, Body Mass Index and Score of depression for Men and Women by age : SHARE sample

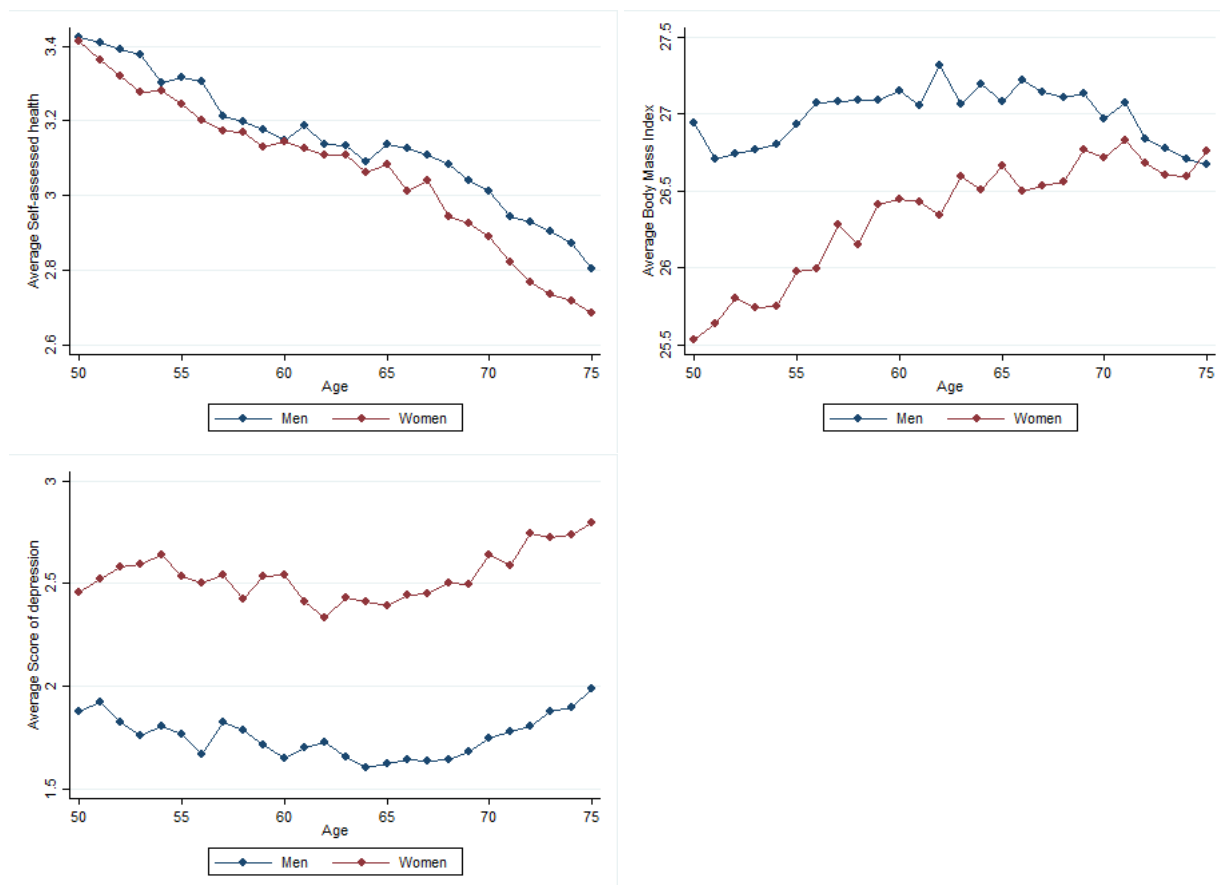


FIGURE B2 – Prevalence of heart attack, hypertension, cholesterol, stroke, diabetes and lung disease for Men and Women by age : SHARE sample

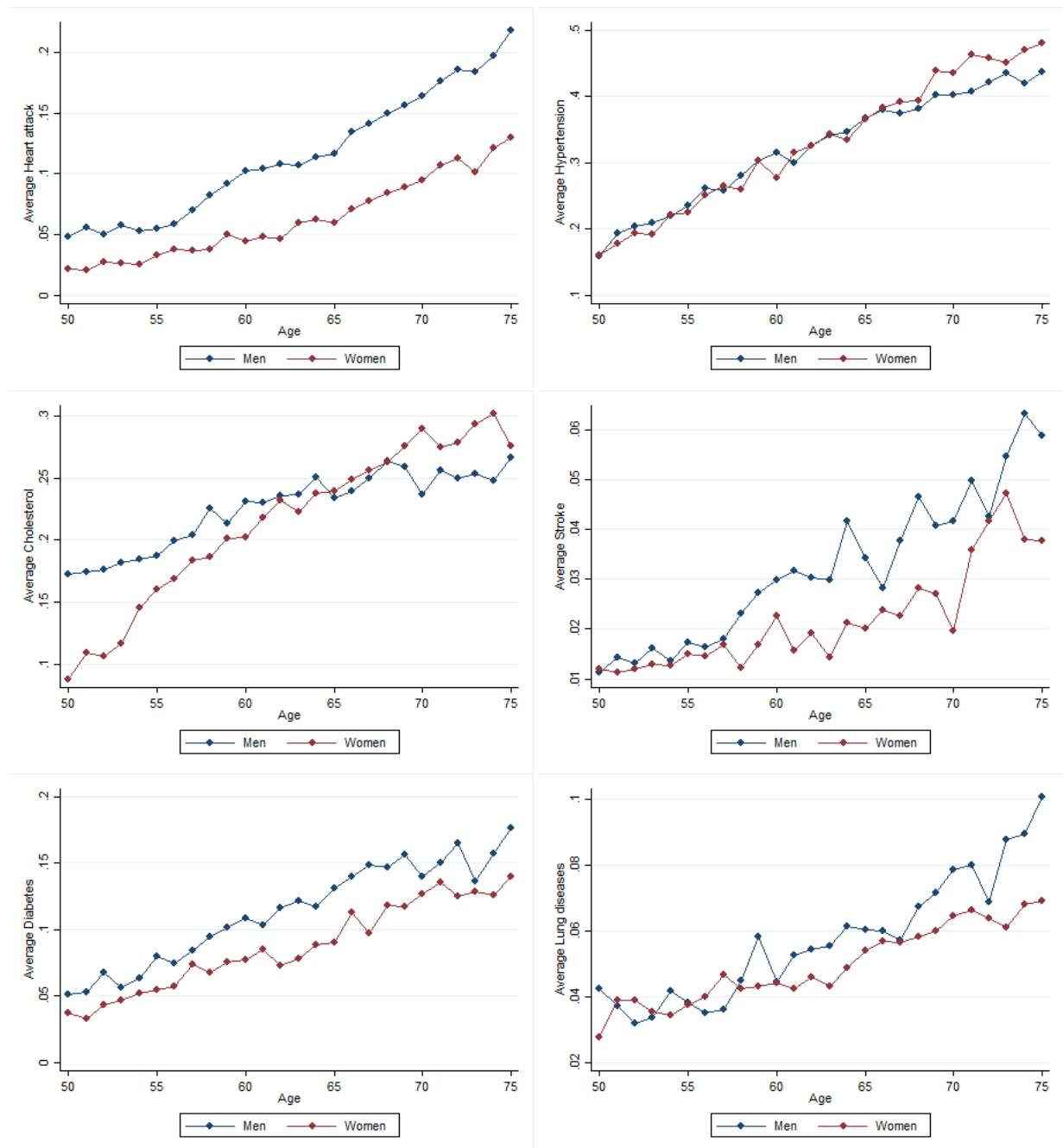
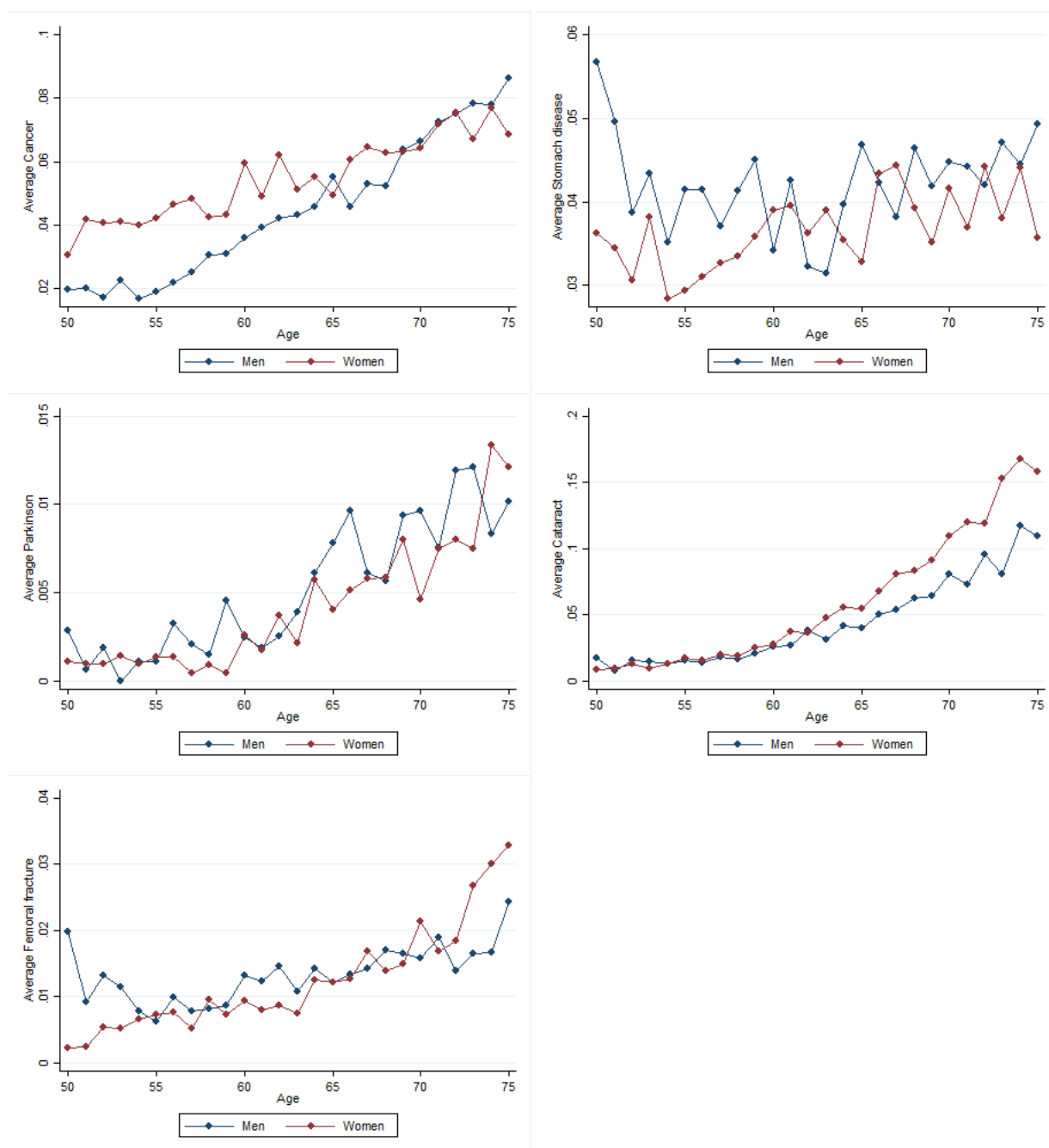


FIGURE B3 – Prevalence of cancer, stomach disease, parkinson, cataract and femoral fracture for Men and Women by age : SHARE sample



Chapitre III

Self-reported health and gender : The role of social norms

*“ La conscience que la femme
prend d’elle-même n’est pas
définie par sa seule sexualité :
elle reflète une situation qui
dépend de la structure
économique de la société. ”*

Simone de Beauvoir, *Le
deuxième sexe I* (1949).

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1 Introduction

The literature on health and gender has long evidenced a striking paradox : women consistently report worse self-rated health than men while their probability of dying is lower than men's throughout their life - see Lahelma *et al.* (1999) and Cambois *et al.* (2011). A first explanation of this paradox relies on "true" health differences : women would suffer more than men from chronic diseases generating serious limitations in their activity. Case et Paxson (2005) indeed show that gender differences in self-rated health can be entirely explained by the distribution of chronic conditions. However, the authors also find that men with some specific health conditions are more likely to be hospitalised and die. The reason they consider most plausible to account for this specific pattern is that the symptoms that individuals experience convey little information about the severity of their disease. Another - potentially complementary - explanation for the gender gap in self-reported health has to do with sex differences in health-reporting behaviour : for given health conditions, women would report worse health status than men do. Health-reporting biases have long been studied in the literature. They have been shown to be potentially large and to vary according to a number of dimensions, including education (Bago d'Uva *et al.*, 2011; Schneider *et al.*, 2012), income (Etilé et Milcent, 2006; Johnston *et al.*, 2009; Schneider *et al.*, 2012), age (Bago d'Uva *et al.*, 2008; Lindeboom et Van Doorslaer, 2004) and gender (Bago d'Uva *et al.*, 2008; Lindeboom et Van Doorslaer, 2004). Another strand of the literature focuses specifically on the health-reporting behaviour of women as compared to men's and the debate is still open as to whether women tend to over-report minor health problems as compared to men and, if so, why - see the special issues of *Social Science & Medicine*, 36(1), 1993 and 48(1), 1999. A new way to shed light on this issue is to consider whether differences in health-reporting behaviours across genders may be influenced by social norms. The role of social norms has been considered in the health literature mostly in relation with body weight. Christakis et Fowler (2007) provide evidence that weight gains tend to spread through a population via social networks. The extent to which this result can be interpreted as a causal effect of peers' weight on own weight or is, alternatively, due to endogenous peer-group formation has been much discussed since then - see Cohen-Cole et Fletcher (2008), Fowler et Christakis (2008), Halliday et Kwak

(2009). Complementary evidence shows that individuals are sensitive to peers' weight : the probability for them to feel overweight or dissatisfied with their weight increases with their relative BMI – computed as the ratio of own BMI to average BMI in the reference group, the latter being defined with reference to age, gender and possibly geographic localisation (see Blanchflower *et al.* (2009)). Similarly, life satisfaction appears to decrease with relative BMI. Etilé (2007) goes one step further and shows that social norms play a key role in the determination of ideal body weight, in particular for women. Social norms are captured by the average of ideal BMI in the reference group, where the ideal BMI is computed using the weight individuals report as the one they would like to "reach or keep". The results show that the elasticity of women's ideal BMI to the norm is as high as 0.5. In contrast, men do not seem to be sensitive to social norms. Similarly, Gil et Mora (2011) show that women tend to underestimate their weight and that the gap between measured and self-reported weight is affected by social norms : it increases when the ideal weight decreases in the reference group. Beyond body weight preferences, the literature has not much analysed the potential impact of social norms on other health outcomes. Raspe *et al.* (2008) mention that "social influences" may be one of the explanations for the convergence in prevalence rates of self-reported back pain in Western and Eastern Germany after reunification. The prevalence rate was 10 percentage points higher in Western than in Eastern Germany as of 1991, while the gap had virtually gone down to zero in 2003, because of a sharp increase in reported back pain in the Eastern part of the country over the period. One of the reasons mentioned by the authors to account for this increase is the fact that "back myths and misconceptions about back pain being pervasive in Western societies were immediately disseminated in East Germany". Unfortunately, the authors cannot test this assumption with the data they have. Powdthavee (2009) considers the impact of social norms within the household on potential health-reporting biases. He shows that the specific health problems individuals suffer from have a negative impact on their self-assessed health, but that this impact is significantly lower for individuals living in households where the number of health problems per other family member is high. This result suggests that self-assessed health is potentially biased owing to the "confounding health norm effects", although the bias turns out to be economically very small. One issue

raised by Powdthavee has to do with the definition of the reference group. His paper innovates in considering the household as the reference group but he underlines that other people in close proximity, such as friends, colleagues or people in the same region could also be relevant. In this chapter, we investigate the importance of social norms in the working environment in accounting for differences in self-reported health across men and women. Using the European Working Conditions Survey (EWCS, 2010), we first replicate the standard result that women report worse health than men, whatever the health outcome we consider – except hearing problems and cardiovascular diseases. We then proxy social norms by the gender structure of the workplace environment and study how the latter affects self-reported health for men and women separately. Our findings indicate that individuals in workplaces where women are a majority tend to report worse health than individuals employed in male-dominated work environments, be they men or women. These results are robust to controlling for a large array of working-condition indicators, which allows us to rule out that the poorer health status reported by individuals working in female-dominated environments could be due to worse job quality. We interpret this evidence as suggesting that social norms associated with specific gender environments play an important role in explaining differences in health-reporting behaviours across gender, at least in the workplace.

2 Health, Gender and Social Norms

We refer to social norms as defined by Akerlof et Kranton (2000) in terms of "prescriptions", i.e. "shared expectations about how the group members ought ideally to behave". In their model, prescriptions affect identity so that social norms enter in the individual's utility function. A number of authors consider that individuals' utility depends on the dominant social norm within their group - see Brock et Durlauf (2001) and Blanchflower *et al.* (2009), for example. As a matter of fact, there is evidence that perceptions of social norms influence health behaviours in terms on alcohol consumption, tobacco use, dietary habits etc. - Mahalik *et al.* (2007). In such a framework we may expect individuals to be more inclined to report poor self-assessed health and/or more health symptoms when

belonging to a group in which doing so is more legitimate because it is a commonly-held norm. As underlined by Manski (1993), proper identification of a social-norm effect requires that the group to which individuals are assigned be adequately defined. In what follows, the social group we consider is the group of work colleagues with similar job titles as the individual. We hypothesise that when discussing or even mentioning health problems is considered more legitimate in the reference professional group, individuals will tend to report such problems more easily when asked about their health. Our assumption here is that health-reporting norms differ across genders in general, and in the workplace in particular. There is evidence in the literature that women tend to report higher morbidity rates than men, which is in contrast with their longevity advantage. The existence of such a gender-morbidity gap has been highly debated since the 1980s - see Hunt et Annandale (1999). Marshall (1987) study sex differences in the lag between first recognition of symptoms and definitive diagnosis and treatment for colorectal cancer. Report of pre-diagnostic symptoms and ratings of severity of symptoms did not differ significantly between men and women. Similarly, Macintyre (1993) studies a group of British volunteers who have been inoculated with a cold virus or an inert substance in hospital. The severity of their colds was evaluated both by the respondents themselves and by a clinical observer with double-blind ratings. The results suggest that women were not more likely than men to assess themselves as having a cold. Men were significantly more likely than women to over-rate their cold symptoms as compared to the observer's ratings. Another example is Arber et Cooper (1999) who consider men and women over 60 with similar levels of disability and find that men rather than women are more likely to assess their health as being poor, after accounting for structural factors. In contrast, a large strand of literature does find greater reported morbidity among women. Hibbard et Pope (1983) use US data covering adults, most of whom are husband and wife pairs. The sample under study is restricted to respondents who rated their health as good or excellent. The authors find that women report more symptoms than men do. Similar results are found by Verbrugge (1989) on the Health in Detroit survey : women show higher morbidity on almost all health indicators with an especially large gap for circulation and nervous conditions over the past twelve months. Popay *et al.* (1993) also find that women report more affective

disorders and minor physical morbidity than men in a survey covering individuals aged 18 and above in England, Wales and Scotland (the Health and Lifestyles Survey). Using the UK Whitehall II survey of London-based Civil Servants, Emslie *et al.* (2002) find that women report greater psychiatric morbidity, especially when employed in higher positions. This is confirmed by Zunzunegui *et al.* (2009) on data collected in San Paolo, Santiago and Mexico : women showed poorer health outcomes than men for all health indicators in all cities. This gender gap in health reporting has been found to be partly due to different health attitudes across genders. According to Kessler et al (1981), women are more likely to interpret symptoms associated with depression and low well-being as signs of emotional problems and hence to get psychiatric help. This suggests that women perceive symptoms in a different way as compared to men, so that they also seek more medical care. Hibbard et Pope (1983) find that women also report higher interest and concern about health than men do. This is confirmed by Verbrugge (1989) who finds that health matters are more salient among women, that they value health more than men do and that they have more responsibility in caring for ill family members. Such findings are consistent with the idea that women pay more attention to health than men do. Hibbard et Pope (1986) also find evidence that the largest gaps in health symptoms reported by women as compared to men are found for those categories which represent milder morbidities and those where there is a great degree of discretion in defining illness and/or the need for care. This brings the authors to the conclusion that sex differences reflect differences in the way in which men and women come to define themselves as "ill". More recent evidence goes in the same direction. Emslie *et al.* (1999) study gender differences in physical symptoms, malaise symptoms (i.e. difficulties sleeping, nerves, always feeling tired, difficulties concentrating and worrying over every little thing) and GHQ-12 psychiatric morbidity. They investigate the impact on those symptoms of gender-role orientation as captured by the Bem Sex Role Inventory. This index is based on individuals' evaluation of themselves through a series of adjectives and characteristics which are considered as culturally characteristic of either males or females - see Bem (1981). Emslie *et al.* (1999) find that gender-role orientation plays an important role : the masculinity score is associated both with fewer reported malaise symptoms and better psychiatric health while the femininity score is

associated with more malaise symptoms. All these findings suggest that health matters may be more important to women than to men and that admitting illnesses and discussing symptoms may be socially more acceptable for women. In what follows, we test whether gender differences in health reporting can be partly ascribed to different social norms across men and women, as showing up in the workplace. In the literature, social norms are usually captured by the average corresponding characteristic – for example the average ideal weight in the obesity literature – in the reference group - see Etilé (2007) and Gil et Mora (2011). In our framework, the reference group is work colleagues. Following the standard methodology, social norms should be proxied by the average gender-specific health reporting behaviour in that group. Given that the European Working Conditions Survey that we use does not contain such direct information, we proxy gender-specific health-reporting norms by the gender composition of the group. We therefore hypothesise that reporting health symptoms and/or poor general health will be considered more legitimate in female-dominated work environments than in male-dominated environments. In the rest of the chapter, we test this assumption by estimating whether women (resp. men) report worse self-assessed health and/or more health problems when working in female than in male-dominated environments.

3 Empirical strategy

As a first step, we estimate the effect of gender on self-reported health either by probit (for all health outcomes that are binary) or by ordered probit (for general self-assessed health which is rated from 1 to 5). The probit specification is the following :

$$Health_{ijs}^* = \alpha + \beta Female_{ijs} + X_{ijs}\gamma + D_j + D_s + v_{ijs} \quad (1)$$

where $Health_{ijs}^*$ denotes the latent health status of individual i in country j and industry s :

$$\begin{cases} Health_{ijs} = 1 & \text{if } Health_{ijs}^* < 0 \\ Health_{ijs} = 0 & \text{if otherwise} \end{cases}$$

$Female_{ijs}$ is an indicator of gender, X_{ijs} is a vector of individual and establishment-level controls including age, education, occupation, marital status, the number of children, es-

establishment size and individual's tenure in the plant. D_s and D_j denote industry and country dummies respectively.

Once established that women systematically report poorer self-rated health than men, we investigate the potential role of social norms in explaining this pattern of results. To do so, we estimate the impact of the gender structure of individuals' work environment on the health outcomes that they report, for men and women separately. More specifically, for each gender group, we estimate the following probit model :

$$Health_{ijs}^* = \alpha + X_{ijs}\gamma + \delta_1 MaleEnv_{ijs} + \delta_2 FemaleEnv_{ijs} + D_j + D_s + v_{ijs} \quad (2)$$

where MaleEnv (respectively FemaleEnv) is an indicator of a male (resp. female) dominated work environment – i.e. of an environment in which males (resp. females) are a majority. In this specification the reference is a mixed-gender environment. We interpret the marginal effects on the MaleEnv and FemaleEnv variables as capturing the impact of gender-related social norms in the work environment and systematically test the significance of the difference between δ_1 and δ_2 . These parameters indeed indicate how a work environment respectively dominated by males or females may affect self-reported health for men and women, all other things equal.

One problem when estimating equation (2) arises if male-dominated work environments are systematically of better (or worse) quality than female-dominated environments. In this case, our estimates suffer from an omitted-variable bias and we may attribute to social pressure health-reporting behaviours that are, in fact, due to differences in job quality. In order to overcome this problem, we take advantage of the very rich information on job quality available in our data – see Section 4 – and estimate a more complete specification in which we control for 13 indices of job quality covering a uniquely large range of job characteristics and working conditions :

$$Health_{ijs}^* = \alpha + X_{ijs}\gamma + \delta_1 MaleEnv_{ijs} + \delta_2 FemaleEnv_{ijs} + JobQual_{ijs}\vartheta + D_j + D_s + \epsilon_{ijs} \quad (3)$$

where $JobQual_{ijs}$ is a vector of job-quality indicators. Assuming that the latter properly control for systematic differences in the quality of work across male and female-dominated work environments, we can validly interpret $\hat{\delta}_1$ and $\hat{\delta}_2$ as capturing the "true" effect of gender-related social pressure in the work environment on self-reported health outcomes.

We choose to estimate equations (2) and (3) separately for men and women rather than interacting male and female-dominated work environments with gender. We do so because this specification allows the impact of the job quality and control variables to differ across gender, which would not be the case in a general model with interactions. This is potentially important for a number of job-quality indicators. In particular, the impact of work-family balance, emotional stress, work harassment or painful physical working conditions, for example, may be different across gender.

4 Data and descriptive statistics

The European Working Conditions Survey

The data we use come from the fifth wave of the European Working Conditions Survey (EWCS). This survey has been commissioned by the European Foundation for the Improvement of Living and Working Conditions and carried out in 2010. Although it contains information on human subjects, seeking ethical approval is not necessary for researchers since it has been obtained by the European Foundation itself before conducting the survey. The 2010 wave is the first one having information on the gender composition of the working environment. Face-to-face interviews were conducted with persons in employment in the 28 member states as well as in Norway, Macedonia, Turkey, Albania, Kosovo and Montenegro. The dataset contains detailed information on individual working conditions, earnings, work-life balance, hours worked and work organisation. It also covers several aspects of health as well as demographic and socio-economic characteristics. Using international data to investigate the impact of the work environment on self-reported health may raise concerns, both because health perceptions may vary across country, and because labour market participation – particularly of women – differs substantially from one country to the other. We deal with this issue by including a full set of country dummies in our analysis. These capture all country-specific factors, including health-reporting and labour market behaviours, thereby ensuring that our results are not driven by systematic cross-country differences in individual perceptions or labour-market decisions. In addition, we check that our results are robust to removing countries one-by-one from the sample,

in order to make sure that our findings are not driven by one specific country.

Given that the focus of our analysis is on the health impact of social norms as measured in the work environment, we consider only salaried individuals. We exclude employees for which we do not have information on the sector in which they are employed and those working in agriculture, mining and fuel production because of scarce data reliability. Overall, the sectors included in our study correspond to sectors 15 to 95 in the Nomenclature of Economic Activities in the European Union (NACE Rev. 1 classification). Only individuals aged 65 and below are included in our study. Our final sample consists of 30,124 individuals from 30 countries.

Variables

Individual health is measured using several self-reported variables. The first one is general self-assessed health which is captured by the following question : "How is your health in general? Would you say it is . . . Very good, Good, Fair, Bad, Very bad" with very bad being rated 1 and very good, 5. There is evidence in the literature that self-rated health is a good indicator of individual overall health (Ferrie *et al.*, 1995). It has been found to be a good predictor of mortality even after controlling for more objective measures of health (Bath, 2003; Idler et Benyamini, 1997; Idler et Kasl, 1991). However, the probability of reporting good or bad health may suffer from individual reporting heterogeneity (Etilé et Milcent, 2006; Tubeuf *et al.*, 2008). So, we also use more precise measures of health capturing specific diseases or symptoms. In the EWCS database, respondents are asked whether they have suffered over the last 12 months from either hearing problems, backache, skin problems, muscular pain in shoulders, neck and/or upper limbs, muscular pain in lower limbs, headache or eyestrain, stomach ache, respiratory difficulties, cardiovascular diseases, depression or anxiety, overall fatigue, or insomnia. For each of these health disorders, we build a corresponding dummy variable taking value 1 if the individual suffered from it, 0 otherwise.

Our baseline specification includes individual and plant characteristics. More specifically, we control for age (8 classes), education (higher education, secondary education and below secondary), occupation (managers, professionals, technicians and supervisors, skilled and unskilled white collars and skilled and unskilled blue collars), marital status (presence of

a spouse or partner), the number of children (entered as a continuous variable), establishment size (5 classes), individual's tenure in the plant, industry and country dummies.

The gender structure of the work environment is assessed using the answer to the following question : "At your place of work are workers with the same job title as you mostly men, mostly women, more or less equal numbers of men and women?". We capture a male environment with a dummy variable equal to 1 if the individual answers "Mostly men" (0 otherwise) and a female environment with a dummy variable equal to 1 if she answers "Mostly women" (0 otherwise). Answers indicating "More or less equal numbers of men and women" are considered as capturing a mixed-gender environment. Note that these variables capture gender-related social pressure arising from interactions with the closest colleagues, insofar as they regard individuals with the same job title.

Our complete specification includes indicators of job quality. As recommended by the literature on job quality - see Green *et al.* (2013) and OECD (2013), for example -, we consider several dimensions of it : job quality is measured on the basis of 47 raw indicators that we aggregate into 13 variables in most specifications. Most variables are indices taking values 0 to 10 and are the normalised sum of a specific number of raw indicators. The first index captures painful physical working conditions such as working at high or low temperature, being exposed to vibrations from tools or machinery, loud noise, smokes or fumes, vapours, painful positions, handling or being in direct contact with chemical products or materials that can be infectious, lifting or moving people, carrying heavy loads, standing and performing repetitive movements. Other dimensions of job quality include : work pressure (working more than 48 hours a week, not having enough time to get the job done, working at high speed or to tight deadlines and commuting more than one hour a day), work harassment (being the object of verbal abuse, threats or bullying), emotional stress (carrying out tasks that are in conflict with one's personal values, having to hide one's feelings, handling angry clients), decision latitude (ability to choose the order of tasks, the methods and speed of work, ability to make a break when one wishes and to apply one's own ideas in one's work), learning opportunities (benefiting from on-the-job training and/or employer-paid or provided training, having the opportunity of learning new things and solving unforeseen problems), task clarity (knowing what is expected from

one's work, getting feedback from one's supervisor about one's work and having a supervisor who is good at planning the work), managerial support (getting help from one's supervisor, having a supervisor who respects you, who is good at resolving conflicts and who encourages you to participate in important decisions), support from colleagues (getting help from colleagues, feeling "at home" in the organisation, having good friends at work). Eventually, our job quality controls also include job insecurity (perceived risk of losing one's job in the next six months, ranging from 1 to 5), monthly earnings (grouped into quintiles), employability (ability to find a new job easily if one should lose the current one, ranging from 1 to 5) and work-family balance (how well working hours fit with family and social commitments, ranging from 0 to 3).

Some robustness checks are also conducted including additional controls : a dummy variable for working part-time versus full-time, individual satisfaction with working conditions (ranging from 1 to 4) and psychological well-being (ranging from 0 to 4).

Descriptive statistics

Descriptive statistics are provided in Appendix III Tables A1 - A2 and C1 - C3. In our sample, women are slightly older than men, a smaller proportion of them live in couple and they have marginally more children – see Appendix III Table A1. They are also more educated and tend to be more often in professional and white-collar occupations whereas men are more concentrated in managerial and blue-collar occupations. Women also, work in smaller establishments and have lower tenure than men on average.

When considering health variables, women appear to report poorer health in general but they also report more specific health symptoms, except for hearing problems – see Appendix III Table A2. As regards job quality, women seem to benefit from a better work environment in terms of physical working conditions, support from managers and colleagues and work-family balance, as well as reduced work pressure and job insecurity. In contrast, they suffer more than men from work harassment and emotional stress and report lower decision latitude, learning opportunities and employability. They work part-time more often than men do, have almost identical satisfaction with working conditions but report lower psychological well-being.

The largest proportion of respondents in our sample comes from Belgium, France and Ger-

many - see Appendix III Table C1 - while the smallest group are the Greeks. As regards male and female-dominated environments, they turn out to be highly polarised - see Figure 1 : men represent 87% of employees in the former while women represent 89% in the latter. In contrast, mixed-gender environments are clearly balanced with 56% of women and 44% of men. Overall, manufacturing industries represent 23.2% of male-dominated environments, as compared to 16.2% for the construction sector, 9.4% for transports and 8.6% for the public administration/defense sector - see Appendix III Table C2. In contrast, female environments are highly concentrated in health and social work (22.6% of these environments), education (18.5%) and retail trade (14.7%). Female-dominated environments also tend to be more educated than male-dominated ones. They are highly concentrated in professional and unskilled white-collar occupations whereas male-dominated environments are concentrated in blue-collar occupations. As evidenced in Figures 2 and 3, women report slightly poorer self-assessed health and more specific health symptoms when employed in female-dominated work environments. This is not the case for men who appear to report worse health when employed in male-dominated environments, at least when we consider only the raw data. Eventually male-dominated environments appear to be characterised by poorer job quality as regards physical working conditions, work pressure, job insecurity and work-family balance in particular - see Appendix III Table C3. In contrast, female-dominated environments turn out to be disadvantaged in terms of work harassment and emotional stress. Regarding the other dimensions of job quality, there is no systematic pattern across work environments, since some job-quality indicators are higher in female-dominated environments while others are higher in male-dominated environments.

5 Results

The gender gap in self-reported health

We first estimate the impact of gender on self-reported health controlling for a series of individual and establishment-level characteristics – see equation (1). The results presented in Table 1 suggest that women systematically report poorer health than men. They

report lower self-assessed health and declare suffering from specific health symptoms more frequently than men do. This is the case for all the health outcomes we consider (skin problems, backache, muscular pain in upper and lower limbs, headache and eyestrain, stomach ache, respiratory difficulties, depression and anxiety, fatigue and insomnia) and the difference with men is always significant at the 1% level. The only exceptions are hearing problems which women report less frequently than men do and cardiovascular diseases for which there is no significant difference across gender.

When estimating all health outcomes, we control for several individual characteristics. The marginal effects on these control variables are shown for one specific health outcome - namely self-assessed health - in Appendix III Table B1. As expected, age turns out to have a negative impact on health ; individuals with higher levels of education are in better health as are employees in more highly-skilled occupations. Conditional on these variables, neither the individual's marital status, nor the number of children nor tenure appear to have any significant effect on health. In contrast, working in a small establishment (less than 10 employees) seems to be positively correlated with health.

When considering the results in Table 1, it may be interesting to notice that women systematically report a lower health status than men for all outcomes that can be, to some extent, self-diagnosed - except hearing problems : worse self-assessed health, more health "problems" (related to skin or respiration), more pain (backache, muscular pain, headache, stomach ache) and more mental health problems (depression and anxiety, fatigue and insomnia). In contrast, there is no difference between men and women for cardiovascular diseases, which is arguably the health problem most likely to have been diagnosed by a physician. This suggests that, beyond differences in actual health across genders, there may also be differences in reporting with women being systematically more pessimistic about their health than men are. In what follows, we investigate the potential role of social norms in the work environment in shaping health-reporting differences across genders.

Social norms and gender differences in self-reported health

We capture social norms in the work environment by the gender structure of this environment. More specifically, we estimate equation (2) separately for women and men and interpret the impact of working in a male or female-dominated environment as a proxy of

the role of social norms in that environment.

When considering the sample of women, we find important differences in health-reporting behaviours across types of work environments : women working in female-dominated environments report more frequently specific health symptoms than women working in mixed-gender environments, whereas this is not the case for women working in male-dominated environments – see Table 2 – cols (1) and (2). More specifically, women working in environments where women are a majority report significantly more hearing problems, skin problems, backache, muscular pain both in upper and lower limbs as well as cardiovascular diseases, and the difference with women employed in male-dominated environments is statistically significant – see Table 2 – col (3). We also find that women working in female-dominated environments report poorer self-assessed health, more headaches and eyestrain, more respiratory difficulties as well as more depression and anxiety, overall fatigue and insomnia than women employed in mixed-gender environments, but the difference with women working in male-dominated environments is not statistically significant at conventional levels. This pattern of results is found, to a lower extent, for men too. Men working in female and in male-dominated environments both report more health problems than men employed in mixed gender environments – e.g. backache and muscular pain in upper and lower limbs ; see Table 2 – cols (4) and (5). But interestingly, men employed in female-dominated environments report significantly more health symptoms than men employed in male-dominated environments. This is the case for skin problems, headaches and eyestrain, cardiovascular diseases, depression and anxiety and insomnia – see Table 2 – col (6). Overall, women appear to report more health problems when employed in female-dominated than in male-dominated work environments, and the same holds for men. One explanation for this pattern of results is that health-reporting behaviours are affected by social norms. In environments where women are a majority, it would be “legitimate” to mention health problems, so that both men and women would report more of them when asked in a survey, whereas, in environments in which men are a majority, this would not be the case. Of course, a competing explanation would be that work is more harmful to health in female-dominated than in male-dominated work environments so that all individuals - whatever their gender - tend to report poorer health in the former than in the latter.

We test this hypothesis by re-estimating equation (2) controlling for a large array of job quality indicators - see equation (3). The specification presented in Table 3 includes 13 aggregate indices of job quality covering aspects as varied as painful physical working conditions, work harassment, decision latitude, learning opportunities, task clarity, managerial support and support from colleagues, work pressure, emotional stress, employability, job insecurity, work-family balance and earnings. As evidenced in Table 3, our results are robust to the inclusion of these additional controls. Women working in male-dominated environments do not report worse health status than women working in mixed-gender environments - see col (1). In contrast, women working in environments where females are a majority report more skin problems, backache, muscular pain both in upper and lower limbs and greater overall fatigue - see col (2). The difference with women working in male-dominated environments is significant for all these health outcomes as well as for self-assessed health and cardiovascular diseases which are respectively worse and more frequent in female than in male-dominated work environments - see col (3). The pattern of results obtained for men goes in the same direction : men working in male-dominated environments report, if anything, fewer health symptoms than men working in mixed-gender environments : this is the case for cardiovascular diseases and depression and anxiety - see col (4). In contrast, men working in female-dominated environments report more health symptoms, in particular skin problems, backache and muscular pain in upper limbs - see col (5). As regards the direct comparison between male and female-dominated environments, it turns out that men working in environments where females are a majority report significantly more skin problems, muscular pain in upper limbs, headaches and eyestrain, cardiovascular diseases and depression and anxiety than men working in male-dominated environments.

Another way to investigate the impact of gender-specific work environments on self-reported health with our data is to consider the total number of health problems reported by individuals. Using it as a dependent variable, we estimate a negative binomial model and find consistent results with those presented in Table 3 : women employed in female-dominated environments report a higher number of health problems than women employed in male dominated environments. The same holds for men and the difference

between the marginal effects associated with both types of work environments is always significant at the 1% level.

Robustness checks

A key methodological issue here is whether we have properly controlled for job quality in our estimations. If this is not the case our results could indeed still be due to the fact that working conditions are more adverse in female-dominated than in male-dominated environments. In order to make sure that we do properly control for job quality, we run several robustness checks which are only summarised here due to space limitation. The first one consists in controlling for the 47 raw job quality indicators that we have in our data instead of the 13 aggregate indices used in Table 3. Thus doing, we allow for a much more flexible model of job quality to the extent that each single indicator may have a different health impact. Our results are robust to the inclusion of this very extensive set of controls : both women and men still report more health symptoms when employed in female than in male-dominated work environments.

One could be concerned that our measures of job quality do not include part-time work. This is standard in the literature since in a number of countries working part-time is essentially voluntary, hence results from positive choices made by individuals. But part-time work may, in some circumstances, be involuntary in which case it is legitimate to consider it as an additional indicator of (poor) job quality. When re-estimating equation (3) including job quality as an additional regressor, our results are unchanged with respect to Table 3.

Another concern could arise from the way we capture work-family balance. Our indicator is based on a question on how well working hours fit with family or social commitments. But the impact of own working hours on individuals' health may vary with the intensity of work of the partner. Our data do not have information on partners' working hours, but we can control for whether he/she is working full-time, part-time or is inactive (on leave from work or full-time homemaker). We interact our work-family balance variable with this indicator in order to capture the health impact of potential work-hour interactions within the family. When doing so, our results are unchanged : both women and men still report more health symptoms when employed in female-dominated than in male-dominated work

environments.

A final test consists in controlling for individuals' satisfaction with working conditions. The underlying assumption is that any dimension of poor job quality that would not be captured by our indicators but would be of importance to workers should materialise into lower satisfaction with working conditions. When re-estimating equation (3) controlling for this variable, our results are unchanged with respect to those reported in Table 3. This suggests that our extensive set of controls does properly capture the main dimensions of job quality.

To the extent that we use international data, one concern could be that our findings are driven by one specific country. In order to make sure that this is not the case, we re-run our estimates in Table 3 removing countries one-by-one from our sample. Our results are robust to this test : the significance of the difference between the marginal effects associated with male and female-dominated work environments is unchanged for almost all health outcomes, whatever the country we remove. The least robust of our outcomes is overall fatigue for which the difference across male and female-dominated work environments is not significant anymore for women when removing either Belgium, Latvia, Malta or Norway. All other outcomes are essentially unaffected.

A last issue raised by our methodology is that, since we do not have panel data, we cannot control for individual fixed effects. This may be a problem all the more that our health outcomes are self-reported. If some individuals tend to be more pessimistic than others, this may lead them to report poorer health for a given "true" health status. Note that this will bias our estimates in Table 3 only if pessimistic (resp. optimistic) individuals tend to concentrate in a disproportionate way in work environments in which either males or females are a majority. By definition, we cannot control for unobserved individual characteristics. However, our data allow us to build an indicator of psychological well-being. To the extent that pessimistic individuals will tend to report lower psychological well-being than others, controlling for this variable should allow us to make sure that our results are not driven by unobserved heterogeneity in individual psychology. When re-estimating equation (3) with psychological well-being as an additional regressor, our results are unchanged with respect to Table 3, which suggests that unobserved individual characteristics

do not generate a major bias in our results.

Our results in Table 3 and the robustness tests that we have conducted suggest that the differences in self-reported health observed across male and female-dominated work environments cannot be entirely ascribed to differences in job quality. At least part of them is due to social norms, which make it more legitimate to discuss and hence report health problems in female than in male-dominated environments.

6 Conclusion

This study analyses the role of social norms associated with specific gender environments in the workplace in accounting for differences in health-reporting behaviours across men and women. As a first step, we provide evidence that women report poorer health than men on all health outcomes except hearing problems and cardiovascular diseases. This contributes to the literature showing significant differences in reported morbidity across genders. This difference is still a puzzle and one possible explanation is that health-reporting behaviour varies across genders. Results by Spiers *et al.* (2003) go in this direction since they find that self-rated health is less strongly associated with mortality for women than for men and that this is unlikely to be explained by differences in the nature of their physical health problems.

In the second part of this study, we investigate to what extent the difference in self-reported health between men and women may be partly ascribed to gender-based social norms as they materialise in the work environment. We capture social norms by the gender composition of the work environment and show that men and women employed in workplaces where women are a majority tend to report worse health than individuals employed in male-dominated work environments. We interpret our results as suggesting that reporting health symptoms is more legitimate in female than in male-dominated work environments.

Our results contrast with Case et Paxson (2005) who conclude that health-reporting behaviours do not differ across genders based on the observation that men and women with the same chronic conditions report the same self-rated health. However, most of the chronic conditions they consider are also self-reported and may hence be subject to some form of bias (Bago d'Uva *et al.*, 2008; Johnston *et al.*, 2009). Some of them have most likely been diagnosed by a doctor. This is the case of the various types of cancers (skin, stomach, reproductive, respiratory) or of cardiovascular diseases, emphysema or diabetes. However, other chronic conditions may be reported in a different way by men and women. This is the case for headaches, other pain, arthritis, lung problems, vision problems or depression. For the latter, the fact that they be correlated in the same way with general self-assessed health does not prevent men and women from having different reporting behaviours since

women may over-report both poor self-assessed health and chronic conditions.

A limitation of our study lies in the fact that we do not directly measure gender-specific health-reporting social norms. The strategy we adopt is to proxy them by the gender composition of the work environment. A key advantage of the EWCS data is that it contains a wealth of information on job quality which allows us to rule out that female-dominated work environments could be of poorer quality which would account for worse reported health. However, one of its drawbacks is the lack of information - beyond its gender composition - on the characteristics of the work environment. More generally, information on the characteristics of individuals' work environment is usually scarce in available survey data. Collecting such information is however a necessity to allow researchers to investigate the role of social norms in shaping health and, more generally, social attitudes as well as interpersonal relationships in the workplace.

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Figures

FIGURE 1 – Gender composition by type of work environment

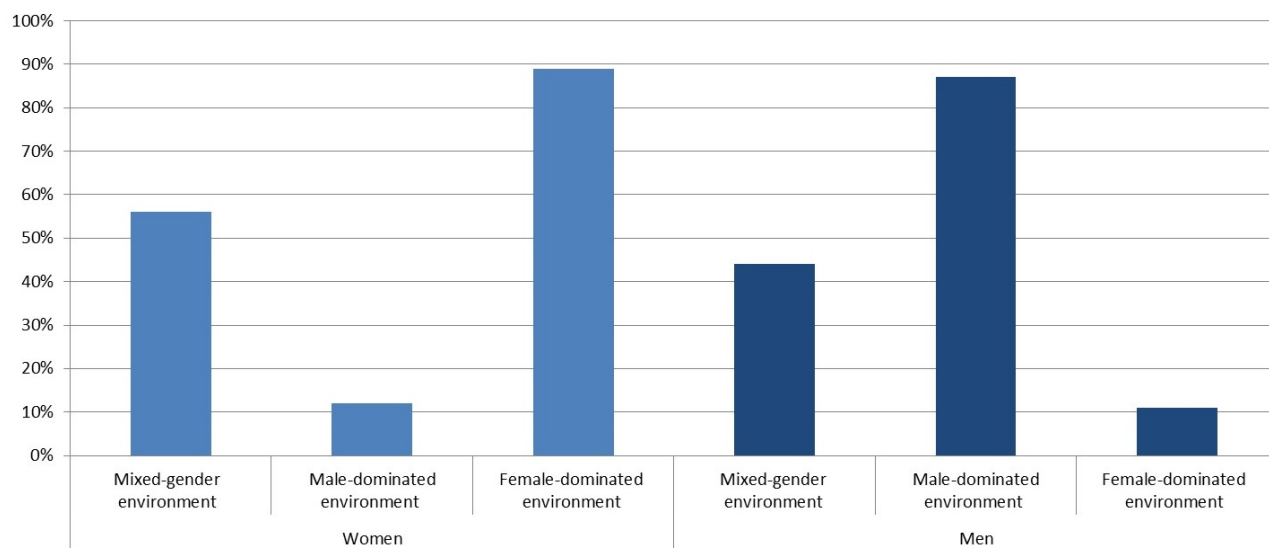


FIGURE 2 – Mean self-assessed health by work environment

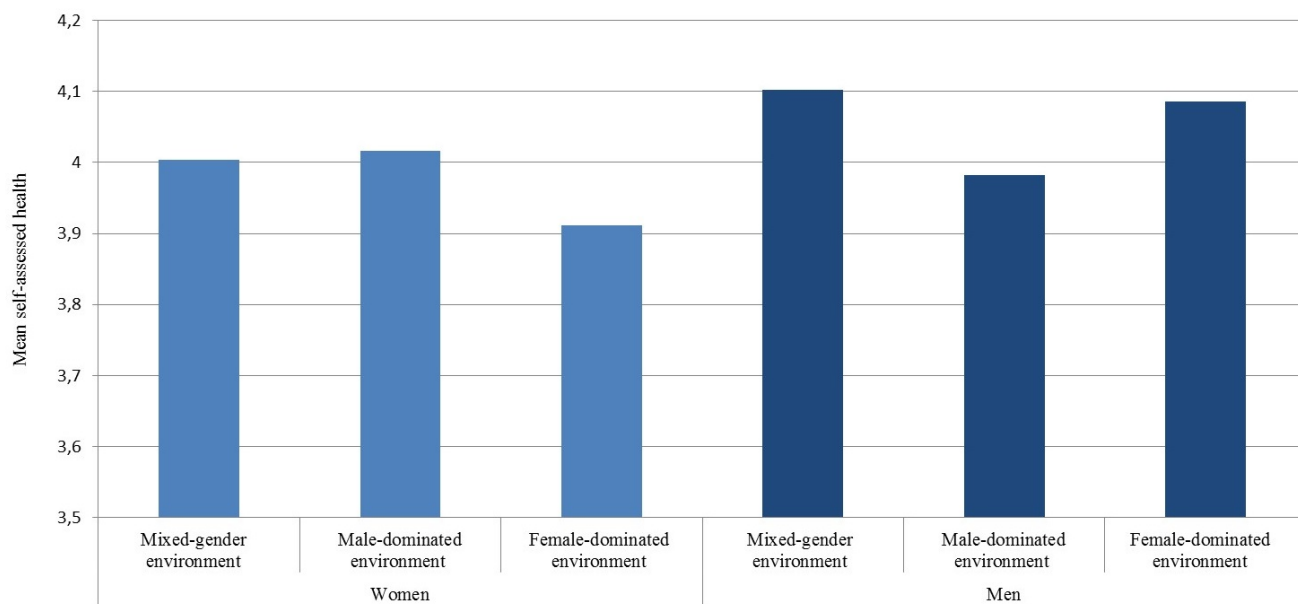
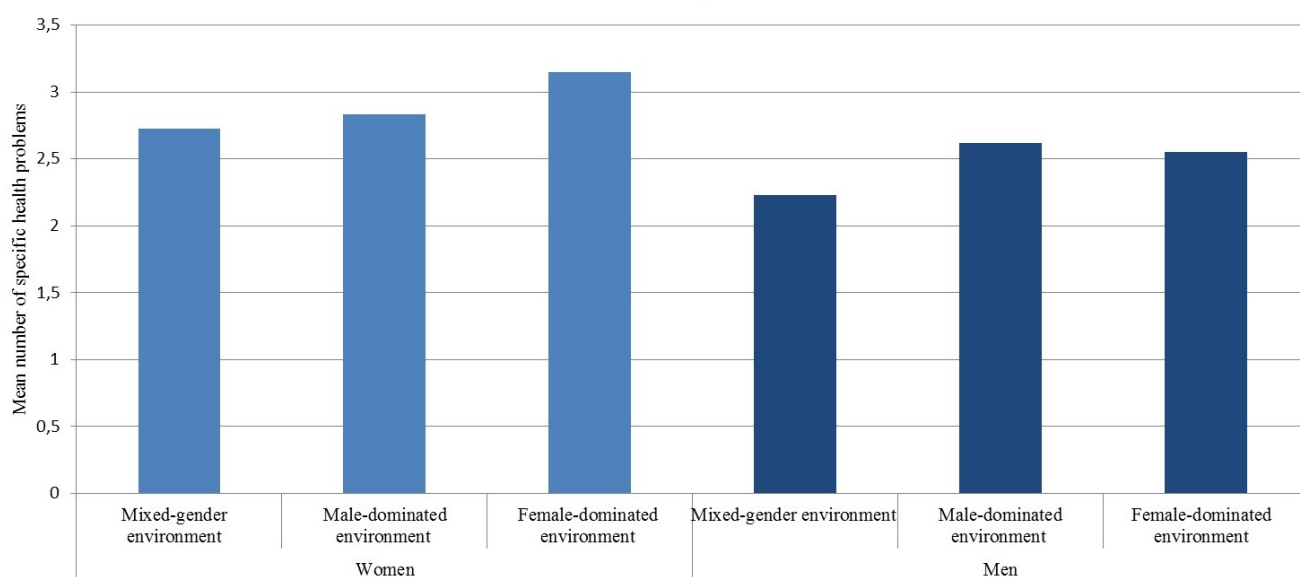


FIGURE 3 – Mean number of specific health problems by work environment



Tables

TABLE 1 – Marginal Effects of being a woman

Health outcomes)	Marginal Effects	Standard errors
Self-assessed health	-0.042***	(0.006)
Hearing problems	-0.015***	(0.004)
Skin problems	0.034***	(0.005)
Backache	0.077***	(0.009)
Muscular pain in upper limbs	0.112***	(0.008)
Muscular pain in lower limbs	0.048***	(0.008)
Headache/eyestrain	0.136***	(0.008)
Stomach ache	0.028***	(0.006)
Respiratory difficulties	0.018***	(0.004)
Cardiovascular diseases	-0.002	(0.004)
Depression and anxiety	0.031***	(0.006)
Overall fatigue	0.083***	(0.008)
Insomnia	0.050***	(0.007)
Observations	17 103	

Notes : (1) Control variables include : age, education, occupation, marital status, number of children, establishment size, tenure, industry and country dummies. (2) All estimates are obtained by simple probits except for self-assessed health for which they are obtained by ordered probit. (3) Robust standard errors are in parentheses *** : significant at the 1% level, ** : significant at the 5% level, * : significant at the 10% level.

TABLE 2 – Marginal effects of male and female-dominated work environments

Health outcomes	Subsample : Women			Subsample : Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Male-dominated Environment (ref. mixed-gender environment)	Female-dominated Environment (ref. mixed-gender environment)	Significance of the difference across marginal effects in (1) and (2)	Male-dominated Environment (ref. mixed-gender environment)	Female-dominated Environment (ref. mixed-gender environment)	Significance of the difference across marginal effects in (4) and (5)
Self-assessed health	-0.000 (0.010)	-0.016*** (0.0)	ns	-0.013* (0.007)	-0.008 (0.012)	ns
Hearing problems	-0.002 (0.007)	0.010** (0.004)	*	0.003 (0.006)	-0.002 (0.010)	ns
Skin problems	0.000 (0.010)	0.024*** (0.006)	**	0.008 (0.006)	0.031*** (0.008)	***
Backache	0.020 (0.015)	0.050*** (0.010)	**	0.042*** (0.010)	0.043** (0.017)	ns
Muscular pain in upper limbs	0.013 (0.015)	0.053*** (0.010)	***	0.040*** (0.010)	0.054*** (0.017)	ns
Muscular pain in lower limbs	-0.004 (0.015)	0.048*** (0.010)	***	0.033*** (0.010)	0.028* (0.016)	ns
Headache / eyestrain	-0.000 (0.015)	0.020** (0.009)	ns	-0.017* (0.010)	0.014 (0.016)	**
Stomach ache	0.008 (0.011)	0.003 (0.007)	ns	0.008 (0.007)	0.017 (0.011)	ns
Respiratory difficulties	-0.000 (0.008)	0.010** (0.005)	ns	0.003 (0.005)	0.006 (0.008)	ns
Cardiovascular diseases	-0.005 (0.008)	0.009** (0.004)	*	-0.007 (0.004)	0.010 (0.007)	**
Depression and anxiety	0.007 (0.011)	0.013** (0.006)	ns	-0.002 (0.006)	0.023** (0.009)	***
Overall fatigue	0.012 (0.015)	0.031*** (0.010)	ns	0.016 (0.010)	0.028* (0.016)	ns
Insomnia	0.011 (0.013)	0.014* (0.010)	ns	0.007 (0.008)	0.028** (0.013)	*

Notes : (1) Control variables include : age, education, occupation, marital status, number of children, establishment size, tenure, industry and country dummies. (2) All estimates are obtained by simple probits except for self-assessed health for which they are obtained by ordered probits. (3) Robust standard errors are in parentheses *** : significant at the 1% level, ** : significant at the 5% level, * : significant at the 10% level.

TABLE 3 – Marginal effects of male and female-dominated work environments – Controlling for job quality

Health outcomes	Subsample : Women			Subsample : Men		
	Male-dominated Environment (<i>ref. mixed-gender environment</i>) (1)	Female-dominated Environment (<i>ref. mixed-gender environment</i>) (2)	Significance of the difference across marginal effects in (1) and (2) (3)	Male-dominated Environment (<i>ref. mixed-gender environment</i>) (4)	Female-dominated Environment (<i>ref. mixed-gender environment</i>) (5)	Significance of the difference across marginal effects in (4) and (5) (6)
Self-assessed health	0.014 (0.012)	-0.009 (0.007)	*	-0.001 (0.010)	-0.014 (0.015)	ns
Hearing problems	-0.002 (0.010)	0.010 (0.006)	ns	0.003 (0.007)	-0.002 (0.012)	ns
Skin problems	-0.009 (0.013)	0.021*** (0.008)	**	0.005 (0.007)	0.031*** (0.011)	**
Backache	0.000 (0.020)	0.038*** (0.012)	**	0.015 (0.013)	0.037* (0.021)	ns
Muscular pain in upper limbs	-0.006 (0.020)	0.033*** (0.011)	**	0.005 (0.013)	0.041** (0.021)	*
Muscular pain in lower limbs	-0.029 (0.018)	0.032*** (0.011)	***	0.011 (0.012)	0.023 (0.020)	ns
Headache / eyestrain	-0.004 (0.019)	0.004 (0.012)	ns	-0.040 (0.013)	0.017 (0.020)	***
Stomach ache	-0.001 (0.014)	0.009 (0.010)	ns	0.005 (0.009)	0.016 (0.013)	ns
Respiratory difficulties	-0.007 (0.011)	0.005 (0.006)	ns	-0.002 (0.007)	-0.001 (0.010)	ns
Cardiovascular diseases	-0.017 (0.011)	0.007 (0.006)	**	-0.017*** (0.005)	0.003 (0.008)	**
Depression and anxiety	-0.006 (0.013)	0.010 (0.008)	ns	-0.015** (0.007)	0.013 (0.011)	**
Overall fatigue	-0.012 (0.020)	0.022** (0.011)	*	0.009 (0.012)	0.021 (0.020)	ns
Insomnia	0.008 (0.016)	0.009 (0.010)	ns	-0.003 (0.010)	0.020 (0.016)	ns

Notes : (1) Control variables include : age, education, occupation, marital status, number of children, establishment size, tenure, industry and country dummies. (2) All estimates are obtained by simple probits except for self-assessed health for which they are obtained by ordered probit. (3) Robust standard errors are in parentheses *** : significant at the 1% level, ** : significant at the 5% level, * : significant at the 10% level.

Appendix

A Descriptive statistics

TABLE A1 – Descriptive statistics : individual and firm characteristics

Variables	Whole sample		Women		Men	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
<i>Age</i>						
Between 15 and 24	0.082	(0.27)	0.076	(0.26)	0.089	(0.28)
Between 25 and 30	0.143	(0.35)	0.132	(0.34)	0.156	(0.36)
Between 31 and 35	0.125	(0.33)	0.123	(0.33)	0.126	(0.33)
Between 36 and 40	0.141	(0.35)	0.143	(0.35)	0.138	(0.34)
Between 41 and 45	0.136	(0.34)	0.140	(0.35)	0.132	(0.34)
Between 46 and 50	0.137	(0.34)	0.146	(0.35)	0.126	(0.33)
Between 51 and 55	0.118	(0.32)	0.124	(0.33)	0.112	(0.31)
Between 56 and 65	0.118	(0.32)	0.114	(0.32)	0.121	(0.33)
Couple	0.663	(0.47)	0.641	(0.48)	0.686	(0.46)
Number of children	0.900	(1.05)	0.963	(1.03)	0.859	(1.07)
<i>Education</i>						
Higher education	0.362	(0.48)	0.398	(0.49)	0.322	(0.47)
Secondary education	0.397	(0.49)	0.380	(0.49)	0.415	(0.49)
Below secondary	0.241	(0.43)	0.221	(0.41)	0.262	(0.44)
<i>Occupation</i>						
Managers	0.052	(0.22)	0.039	(0.19)	0.066	(0.25)
Professionals	0.017	(0.38)	0.207	(0.40)	0.130	(0.34)
Technicians/supervisors	0.155	(0.36)	0.167	(0.37)	0.142	(0.35)
Skilled white collars	0.108	(0.31)	0.138	(0.34)	0.075	(0.26)
Unskilled white collars	0.206	(0.40)	0.267	(0.44)	0.138	(0.34)
Skilled blue collars	0.123	(0.33)	0.035	(0.19)	0.219	(0.41)
Unskilled blue collars	0.185	(0.39)	0.145	(0.35)	0.229	(0.42)
<i>Tenure</i>						
Less than 1 year	0.091	(0.29)	0.091	(0.29)	0.091	(0.29)
1 to 5 years	0.377	(0.48)	0.383	(0.49)	0.371	(0.48)
5 to 10 years	0.194	(0.40)	0.202	(0.40)	0.186	(0.39)
More than 10 years	0.337	(0.47)	0.323	(0.47)	0.352	(0.48)
<i>Establishment size</i>						
Less than 10 employees	0.315	(0.46)	0.343	(0.47)	0.282	(0.45)
11 to 49 employees	0.334	(0.47)	0.333	(0.47)	0.334	(0.47)
50 to 99 employees	0.121	(0.33)	0.118	(0.32)	0.123	(0.33)
100 to 499 employees	0.152	(0.36)	0.137	(0.34)	0.167	(0.37)
More than 500 employees	0.079	(0.27)	0.068	(0.25)	0.091	(0.29)

TABLE A2 – Descriptive statistics : Health variables and job quality indicators

Variables	Whole sample		Women		Men	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Health variables						
<i>Self-assessed health</i>						
Very good	0.25	(0.43)	0.23	(0.42)	0.27	(0.44)
Good	0.51	(0.50)	0.51	(0.50)	0.51	(0.50)
Fair	0.21	(0.41)	0.23	(0.42)	0.19	(0.40)
Bad	0.02	(0.15)	0.03	(0.16)	0.02	(0.14)
Very bad	0.002	(0.05)	0.002	(0.05)	0.003	(0.05)
<i>Specific health problems (0/1)</i>						
Hearing problems	0.06	(0.25)	0.05	(0.22)	0.08	(0.27)
Skin problems	0.09	(0.28)	0.10	(0.30)	0.07	(0.26)
Backache	0.46	(0.50)	0.48	(0.50)	0.44	(0.50)
Muscular pain in upper limbs	0.44	(0.50)	0.48	(0.50)	0.41	(0.49)
Muscular pain in lower limbs	0.32	(0.46)	0.32	(0.47)	0.31	(0.46)
Headache/eyestrain	0.41	(0.49)	0.48	(0.50)	0.34	(0.47)
Stomach ache	0.14	(0.34)	0.15	(0.36)	0.12	(0.32)
Respiratory difficulties	0.06	(0.25)	0.07	(0.25)	0.06	(0.24)
Cardiovascular diseases	0.06	(0.23)	0.06	(0.24)	0.05	(0.22)
Depression and anxiety	0.11	(0.32)	0.14	(0.34)	0.09	(0.29)
Overall fatigue	0.41	(0.49)	0.44	(0.50)	0.37	(0.48)
Insomnia/sleep difficulties	0.21	(0.40)	0.23	(0.42)	0.18	(0.38)
<i>Number of specific health problems</i>	2.76	(2.39)	2.99	(2.44)	2.51	(2.29)
Job quality						
Painful physical working conditions (indicator ranging from 1 to 10)	2.05	(1.58)	1.78	(1.36)	2.34	(1.75)
Work harassment (1 to 10)	0.75	(2.01)	0.79	(2.06)	0.70	(1.96)
Decision latitude (1 to 10)	5.83	(2.74)	5.79	(2.68)	5.88	(2.80)
Learning opportunities (1 to 10)	5.55	(3.05)	5.52	(3.09)	5.59	(2.99)
Task clarity (1 to 10)	8.70	(1.61)	8.73	(1.59)	8.68	(1.64)
Managerial support (1 to 10)	7.48	(2.38)	7.51	(2.40)	7.44	(2.36)
Support from colleagues (1 to 10)	7.19	(1.83)	7.21	(1.86)	7.17	(1.80)
Work pressure (1 to 10)	3.77	(2.36)	3.58	(2.37)	3.97	(2.33)
Emotional stress (1 to 10)	2.60	(2.01)	2.77	(2.02)	2.41	1.99
Employability (1 to 5)	2.67	(1.26)	2.66	(1.27)	2.69	(1.25)
Job insecurity (1 to 5)	2.31	(1.23)	2.29	(1.23)	2.33	(1.23)
Work-family balance (0 to 3)	2.09	(0.76)	2.13	(0.74)	2.04	(0.78)
Additional controls						
Part time job (0/1)	0.18	(0.39)	0.27	(0.44)	0.09	(0.28)
Satisfaction with working conditions (1 to 4)	3.03	(0.70)	3.02	(0.70)	3.00	(0.71)
Psychological well-being (0 to 4)	3.02	(1.33)	2.94	(1.36)	3.10	(1.28)

B Self-assessed health : average marginal effects on all control variables

TABLE B1 – Self-assessed health (ordered probit) - average marginal effects on all control variables

Dependent variable : Self-Assessed Health	Average marginal effect	Robust Standard errors
Women	-0.042***	(0.006)
<i>Age classes (Ref. Between 15 and 24)</i>		
Between 25 and 30	-0.059***	(0.012)
Between 31 and 35	-0.112***	(0.013)
Between 36 and 40	-0.148***	(0.013)
Between 41 and 45	-0.187***	(0.013)
Between 46 and 50	-0.218***	(0.013)
Between 51 and 55	-0.258***	(0.013)
Between 56 and 65	-0.294***	(0.013)
<i>Education (Ref : Below secondary education)</i>		
Higher education	0.064***	(0.009)
Secondary education	0.041***	(0.007)
<i>Occupation (Ref. Unskilled blue collars)</i>		
Managers	0.074***	(0.014)
Professionals	0.079***	(0.011)
Technicians/supervisors	0.084***	(0.010)
Skilled white collars	0.057***	(0.010)
Unskilled white collars	0.038***	(0.010)
Skilled blue collars	0.003***	(0.010)
<i>Marital status (Ref. Does not live with a spouse nor a partner)</i>		
Lives with a spouse or partner	0.000	(0.006)
Number of children	0.000	(0.003)
<i>Tenure (Ref. Less than one year)</i>		
Between 1 and 5 years	0.004	(0.010)
Between 6 and 10 years	0.013	(0.011)
More than 10 years	0.008	(0.011)
<i>Establishment size (Ref. Less than 10 employees)</i>		
Between 10 and 49 employees	-0.021**	(0.006)
Between 50 and 99 employees	-0.044***	(0.009)
Between 100 and 499 employees	-0.012	(0.008)
More than 500 employees	-0.020*	(0.011)
Country dummies	yes	-
Industry dummies	yes	-
Pseudo R-squared	0.074	-
Observations	17,103	-

C Additional descriptive statistics

TABLE C1 – Descriptive statistics - Countries frequency (%)

Variables	Whole sample	Women	Men
Austria	2.62	2.79	2.44
Belgium	10.12	9.20	11.13
Bulgaria	2.56	2.77	2.32
Cyprus	2.51	2.34	2.70
Croatia	2.80	2.72	2.89
Czech Republic	2.28	2.77	2.04
Denmark	3.07	3.00	3.15
Estonia	2.59	3.27	1.83
Finland	2.88	3.23	2.49
France	8.17	8.84	7.43
Germany	5.95	5.50	6.44
Greece	2.07	1.77	2.41
Hungary	2.62	2.74	2.50
Ireland	2.60	2.61	2.59
Italy	3.38	3.46	3.29
Latvia	2.76	3.53	1.90
Lithuania	2.50	3.03	1.91
Luxembourg	2.62	2.29	2.98
Malta	2.71	2.10	3.38
Netherlands	2.60	2.48	2.73
Norway	2.98	3.08	2.88
Poland	3.28	3.48	3.06
Portugal	2.45	2.51	2.38
Romania	2.22	2.08	2.37
Slovenia	3.70	3.97	3.42
Slovakia	2.47	2.60	2.34
Spain	2.69	2.60	2.79
Sweden	2.68	2.93	2.40
Turkey	4.10	2.23	6.17
United Kingdom	4.02	4.34	3.68
Observations	30 124	15 787	14 337

TABLE C2 – Descriptive statistics : Characteristics of the various work environments, frequency (%)

Variables	Mixed-gender environment	Male-dominated environment	Female-dominated environment
<i>Industry</i>			
Food and beverages	2.73	2.99	2.40
Textiles, wearing apparel	1.07	0.93	3.11
Leather	0.33	0.24	0.45
Wood and wood products	0.50	1.37	0.20
Paper, printing and publishing	1.65	1.54	0.54
Refined petroleum and nuclear fuel	0.03	0.13	0.04
Chemicals and chemical products	1.04	1.19	0.55
Rubber and plastics	0.54	1.22	0.25
Non-metallic mineral products	0.41	1.07	0.20
Basic metals and fabricated metal	1.17	4.42	0.43
Machinery	0.76	2.28	0.29
Electrical and optical equipment	1.40	1.48	1.04
Transport equipment	0.72	2.34	0.44
Manufacturing, recycling	1.03	1.99	0.51
Electricity, gas and water supply	1.33	3.84	0.90
Construction	2.56	16.22	0.69
Motor trade and repair	1.34	4.56	0.42
Wholesale trade	3.16	3.46	1.39
Retail trade	11.83	6.53	14.65
Hotels and restaurants	6.78	3.28	4.68
Transport and storage	3.46	9.40	1.62
Post and telecommunications	2.11	2.22	1.02
Financial intermediation	4.49	2.06	2.81
Real estate activities	1.44	0.62	0.43
Renting and business activities	1.27	2.29	0.25
Research and development	6.95	5.35	5.56
Public administration and defense	9.34	8.63	6.75
Education	10.36	2.27	18.49
Health and social work	9.89	2.35	22.56
Social and personal services	7.03	3.45	6.42
Private households with employed persons	1.95	0.14	0.76
Extra-territorial organisations and bodies	0.31	0.15	0.15
<i>Education</i>			
Higher education	43.63	25.85	40.57
Secondary education	35.02	45.01	38.19
Below secondary	21.34	29.14	21.23
<i>Occupation</i>			
Managers	8.46	4.94	2.80
Professionals	19.10	8.77	23.61
Technicians/supervisors	18.02	13.28	15.83
Skilled white collars	14.86	7.17	11.18
Unskilled white collars	20.10	12.38	29.00
Skilled blue collars	4.91	27.36	3.52
Unskilled blue collars	14.55	26.09	14.05
	100	100	100

TABLE C3 – Descriptive statistics : Characteristics of the various work environments, frequency (%)

Variables	Mixed-gender environment	Male-dominated environment	Female-dominated environment
<i>Painful physical working conditions</i>			
Being exposed to vibrations from tools or machinery (1 to 7)	1.54	2.70	1.49
Loud noise (1 to 7)	1.83	2.81	1.98
Working at high temperatures (1 to 7)	1.65	2.31	1.70
Working at low temperatures (1 to 7)	1.63	2.38	1.58
Smokes or fumes (1 to 7)	1.39	2.37	1.31
Vapours (1 to 7)	1.29	1.72	1.34
Handling or being in skin contact with chemical products or substances (1 to 7)	1.44	1.78	1.60
Handling or being in direct contact with materials that can be infectious (1 to 7)	1.40	1.46	1.74
Painful positions (1 to 7)	2.58	3.21	2.99
Lifting or moving people (1 to 7)	1.32	1.24	1.72
Carrying or moving heavy loads (1 to 7)	1.91	2.78	2.06
Standing (1 to 7)	3.79	4.35	4.35
Repetitive hand or arm movements (1 to 7)	3.72	4.10	4.00
<i>Work pressure</i>			
Working more than 48 hours a week (0 to 5)	0.14	0.19	0.08
Commuting more than one hour a day (0 to 5)	0.34	0.36	0.28
Not having enough time to get the job done (0 to 5)	2.05	2.09	2.08
Working at very high speed (0 to 5)	3.47	3.70	3.57
Working to tight deadlines (0 to 5)	3.59	3.93	3.43
<i>Work harassment</i>			
Verbal abuse (0/1)	0.11	0.11	0.13
Threats and humiliating behaviours (0/1)	0.05	0.05	0.07
Bullying (0/1)	0.05	0.04	0.05
<i>Emotional stress</i>			
Having to hide one's feelings (1 to 5)	2.67	2.43	2.83
Carrying out tasks that are in conflict with one's personal values (1 to 5)	1.75	1.70	1.71
Handling angry clients (1 to 7)	2.27	2.11	2.43
<i>Job insecurity</i>			
Perceived risk of losing one's job (1 to 5)	2.23	2.40	2.28
<i>Decision latitude</i>			
Ability to choose task order (0/1)	0.69	0.57	0.65
Ability to choose methods of work (0/1)	0.68	0.60	0.65
Ability to choose speed of work (0/1)	0.71	0.66	0.69
Ability to make a break when one wishes (1 to 5)	3.22	3.18	2.77
Ability to apply one's own ideas in one's work (1 to 5)	3.52	3.33	3.43
<i>Learning opportunities</i>			
Solving unforeseen problems (0/1)	0.80	0.82	0.78
Having the opportunity of learning new things (0/1)	0.68	0.70	0.80
Benefiting from on-the-job training (0/1)	0.35	0.35	0.39
Benefiting from employer-paid or provided training (0/1)	0.32	0.38	0.35
<i>Task clarity</i>			
Knowing what is expected from one's work (1 to 5)	4.58	4.57	4.64
Getting feedback from one's supervisor about one's work (0/1)	0.78	0.79	0.78
Having a supervisor who is good at planning work (0/1)	0.83	0.83	0.83
<i>Managerial support</i>			
Getting help from one's supervisor (1 to 5)	3.73	3.68	3.74
Having a supervisor who respects you (0/1)	0.94	0.95	0.82
Having a supervisor who is good at resolving conflicts (0/1)	0.82	0.82	0.81
Having a supervisor who encourages you to participate in important decisions (0/1)	0.69	0.64	0.65
<i>Support from colleagues</i>			
Getting help from colleagues (1 to 5)	3.93	4.00	4.05
Feeling "at home" in the organisation (1 to 5)	3.78	3.63	3.73
Having very good friends at work (1 to 5)	3.87	3.92	3.91
<i>Employability</i>			
Ability to find a new job easily (1 to 5)	2.65	2.65	2.68
<i>Work-family balance</i>			
How well working hours fit with family and social commitments (0 to 3)	2.13	2.00	2.13

Conclusion

Sommaire

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Cette thèse, en s'intéressant à la qualité de vie, étudie l'influence du travail dans la détermination de la qualité de l'emploi et celle de l'existence, cette dernière étant appréhendée à travers la perception que les femmes et les hommes ont de leur santé. Le premier chapitre porte sur l'impact de la perte d'emploi sur la qualité de l'emploi retrouvé et la satisfaction. Les chapitres deux et trois analysent les différences de santé perçue par les femmes et les hommes à travers le prisme de la dépression et des normes sociales. Nous présentons dans cette dernière partie les principaux résultats trouvés et des pistes de réflexions pour une future recherche.

Dans quelle mesure la perte d'emploi détériore-t-elle à long terme la qualité de l'emploi retrouvé et la satisfaction ?

Le premier chapitre de cette thèse examine la qualité de l'emploi retrouvé et la satisfaction des travailleurs jusqu'à dix ans après la perte d'emploi involontaire liée à la fermeture d'un établissement. Nous trouvons des résultats similaires à ceux trouvés dans la littérature en Europe (Eliason et Storrie, 2009; Hijzen *et al.*, 2010) : le choc économique

que représente le licenciement affecte durablement la probabilité d'être employé et à plus court terme les salaires. Ces derniers diminuent de 10% sur l'ensemble de la période et ce jusqu'à 6 ans après la perte d'emploi. Au-delà des effets délétères sur les salaires, nous montrons que le licenciement impacte négativement et à long terme l'ensemble des indicateurs de la qualité de l'environnement de travail - tels que la probabilité de travailler plus de 48 heures par semaine, la distance au travail, l'écart entre les heures travaillées - à l'exception de la probabilité de travailler à temps plein. Parmi ces indicateurs, la distance au travail et la probabilité de travailler plus de 48 heures par semaine sont les deux facteurs les plus fortement impactés. En effet, les travailleurs qui retrouvent un emploi ont 30% plus de chance de travailler de longues heures (plus de 48h/semaine) et font entre 8 et 12 kilomètres de plus pour rejoindre leur lieu de travail. Nous avons également dans ce chapitre montré que la détérioration à long terme de la qualité de l'emploi affecte plus les hommes, les ouvriers mais également les travailleurs âgés ayant une ancienneté élevée.

En résumé, nos résultats révèlent que le coût de la perte d'un emploi est bien plus important pour le travailleur lorsqu'on prend en considération l'ensemble des dimensions de la qualité de l'emploi et pas seulement les salaires. L'une des explications possibles de cet effet réside dans le rôle du capital humain spécifique. En effet, selon la théorie du capital humain (Becker, 1975), les formations spécifiques acquises tout au long de la carrière professionnelle permettent aux salariés d'avoir accès à des emplois de bonne qualité. Le caractère peu transférable de celles-ci entraîne néanmoins, suite à un licenciement, une baisse considérable de la qualité de l'emploi retrouvé.

De plus, ce chapitre soulève la question du retour à l'emploi et plus particulièrement des mesures d'aides pouvant soutenir ce retour, dans un marché du travail incertain. Si nous ne disposons pas des données nécessaires dans ce chapitre pour étudier l'employabilité des individus - concept qui renvoie à la capacité qu'ont les individus à se maintenir en emploi et à trouver un travail -, il n'en reste pas moins crucial aujourd'hui de trouver des solutions pour préparer au mieux les travailleurs à faire face à des ruptures professionnelles et leur permettre de s'adapter aux évolutions du marché du travail en maintenant leurs compétences professionnelles. De plus, le rôle de l'employabilité, dans le maintien du bien-être des travailleurs (Green, 2011) et de la confiance qu'ils ont vis-à-vis de leurs

compétences, n'est certainement pas assez pris en considération pour les aider à faire face aux aléas professionnels. Pour cela, il semble essentiel d'investir dans le maintien comme le perfectionnement des compétences afin de sécuriser les trajectoires professionnelles. Ainsi, la Commission européenne définit la formation tout au long de la vie comme un outil majeur pour les politiques dont l'objectif principal est de protéger les salariés de la perte d'emploi ou encore de les aider à se réinsérer sur le marché du travail. Enfin, l'avantage de cette formation continue, par conséquent longue, repose sur l'acquisition de compétences transférables et pourrait diminuer le coût que représente la perte d'emploi pour le salarié.

Comment comprendre les différences de santé déclarée suivant le genre ?

En Europe, un paradoxe surprenant est mis en évidence par la littérature portant sur la santé et le genre (Cambois *et al.*, 2011; Lahelma *et al.*, 1999) : l'espérance de vie à la naissance des femmes est nettement supérieure à celle des hommes, pourtant ces dernières se sentent en moins bon état de santé. Les deux derniers chapitres de cette thèse s'inscrivent dans cette littérature et tentent d'apporter des éléments de réponses pour mieux comprendre ce paradoxe.

Nous nous intéressons plus particulièrement aux rôles qu'ont la dépression et la composition genrée de l'environnement de travail sur la santé perçue. Nous cherchons à comprendre les différences de perception traduisant dans une certaine mesure le bien-être des individus. Notons que la perception d'un bon état de santé a un rôle essentiel notamment dans le processus de guérison de certaines maladies comme le cancer (Carver *et al.*, 2003, 2005). Par ailleurs, le genre est un élément constitutif de la personnalité permettant de mieux comprendre les perceptions qu'ont les individus de leur santé. Nous montrons dans le deuxième chapitre que les femmes, européennes et françaises, se sentent en moins bon état de santé que les hommes, à santé physique égale et ce même lorsque nous contrôlons d'un ensemble de poly-pathologies physiques. Néanmoins, nous constatons que l'écart dans les déclarations s'inverse lorsque nous prenons en considération la dépression et les souffrances affectives. En effet, à santé mentale égale, les femmes européennes âgées de

50 à 75 ans déclarent une meilleure santé générale que les hommes. Ce résultat est également retrouvé pour les femmes appartenant à l'échantillon français (ESPS) âgé de 25 à 75 ans. La dépression et les souffrances affectives peuvent alors être appréhendées comme un mal-être, lequel représente une souffrance mentale ou psychologique influençant les comportements sociaux, et les déclarations, des individus et plus particulièrement des femmes. Nous utilisons dans ce chapitre un score de dépression, qui bien qu'utilisé par les psychiatres et les épidémiologistes, peut être impacté par un biais de déclaration similaire à celui de la santé perçue.

Au regard de nos résultats et face à l'enjeu de taille que représente la santé mentale pour les politiques publiques de santé, il est nécessaire de mieux comprendre les conséquences réelles de la dépression afin de prévenir ces situations de mal-être auxquelles peuvent être confrontés les individus. En ce sens, la santé mentale capture une forte dimension subjective et genrée et si les perceptions de santé sont différentes suivant le genre nous pouvons alors nous demander si le collectif de travail n'affecte pas également la santé perçue. Nous étudions ainsi dans le chapitre III de cette thèse l'influence des normes sociales, lesquelles sont approximées par la composition genrée de l'environnement de travail. Nos résultats montrent que les conditions de travail expliquent seulement une partie des différences de santé entre hommes et femmes. En revanche, nous constatons que la composition genrée du collectif de travail - à savoir s'il est majoritairement féminin, majoritairement masculin ou mixte - influence les déclarations de santé pour les deux genres. Ainsi, les femmes qui travaillent dans un collectif féminin déclarent davantage de problèmes de peau, de dos, de douleurs musculaires dans les membres inférieurs et supérieurs et de fatigue que celles travaillant dans des collectifs masculins, et ce même lorsque nous contrôlons par une large gamme d'indicateurs de la qualité de l'emploi. De même, mais dans une moindre mesure, les hommes déclarent plus de problèmes de peau et de douleurs musculaires dans les membres supérieurs lorsqu'ils travaillent dans un environnement féminin plutôt que masculin. Une interprétation possible de ces résultats est qu'il est plus acceptable de parler de ses problèmes de santé dans des environnements féminins plutôt que masculins, ce qui souligne le rôle majeur des normes sociales dans les déclarations.

L'ensemble de ces résultats soulève de nombreuses questions quant à la conciliation du

rôle traditionnel des femmes - c'est-à-dire s'occuper des tâches ménagères et des personnes à charge dans le ménage - avec leurs responsabilités professionnelles. En effet, en prolongeant les résultats du dernier chapitre de cette thèse, nous pouvons dire que le concept de genre mesuré par la composition de l'environnement de travail met en évidence que les rapports et les échanges sociaux ne sont pas les mêmes entre les hommes et les femmes. De plus, de nombreuses recherches notamment en sociologie ont montré que les représentations de l'univers familial attribuent à la femme les soins et l'hygiène des membres de la famille (Detrez, 2002, 2005). Par ailleurs, la place des femmes et les changements organisationnels sur les lieux du travail mettent au coeur du problème la conciliation entre vie professionnelle et vie familiale afin de contribuer à la promotion de l'égalité entre les genres en Europe. Les individus et plus spécifiquement les femmes, font alors face à une double obligation portant à la fois sur le fait d'assurer leurs responsabilités professionnelles et de répondre aux devoirs familiaux en prenant en charge leurs enfants, leurs parents voire même leurs petits-enfants. Autant de responsabilités qui pèsent sur leur bien-être. Il serait ainsi utile et intéressant d'étudier l'impact sur la satisfaction et le bien-être des mesures visant à la fois à améliorer les transports, à aménager les temps de travail (horaires flexibles, télétravail, etc.) mais également à améliorer l'ensemble des indicateurs de la qualité de l'emploi.

En conséquence, l'univers du travail et les représentations sociales du genre sont constitutifs du bien-être des individus. Il est alors important pour les recherches futures, dans un premier temps, de réfléchir aux outils et mesures qui permettraient de ne pas exclure les individus du marché du travail mais surtout de maintenir tout au long d'une carrière professionnelle une bonne qualité d'emploi. En effet, la qualité de l'emploi retrouvé (après une rupture professionnelle) reste un gage de qualité de vie et de bien-être. Dans second temps, il serait utile de considérer le poids que représentent les normes sociales, la qualité et l'environnement au travail dans le coût économique et social du mal-être des individus dans la vie comme sur les lieux du travail.

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Résumé

Cette thèse étudie l'influence du travail sur la qualité de l'emploi et la qualité de vie des individus. Cette dernière est approximée par la perception que les individus ont de leur santé. Le premier chapitre étudie les conséquences de la perte d'emploi liée à la fermeture d'un établissement sur l'ensemble des dimensions de la qualité de l'emploi retrouvé. Nous montrons que ce choc induit une dégradation, y compris sur le long terme, des salaires, de l'insécurité de l'emploi perçue, de la qualité de l'environnement de travail et de la satisfaction des travailleurs. Les deux derniers chapitres tentent de comprendre les déterminants des différences de santé perçue selon le genre. Dans le deuxième chapitre, nous analysons le rôle de la santé mentale dans les écarts de santé déclarée selon le genre. Le troisième chapitre étudie l'influence des normes sociales au travail, sur la santé perçue. Nous montrons que les femmes comme les hommes travaillant dans des collectifs de travail féminins déclarent davantage de problèmes de santé spécifiques que celles et ceux travaillant dans des collectifs masculins. Ce travail souligne donc, d'une part, l'effet négatif de la perte d'emploi sur la qualité de l'emploi retrouvé et la satisfaction à long terme et, d'autre part, l'importance du mal-être et des normes sociales au travail pour comprendre les différences de santé perçue entre les genres.

Mots Clés

Santé, Santé autodéclarée, Santé mentale, Genre, Normes sociales, Qualité de l'emploi, Perte d'emploi.

Abstract

This thesis studies the influence of work on job and life quality, the latter being considered through the perception that individuals have of their own health. The first chapter focuses on the long-term effects of job losses due to plant closure on job quality. We show that job loss negatively affects wages, perceived job insecurity, the quality of the working environment and job satisfaction, including in the long run. The two last chapters investigate gender differences in self-reported health. The second chapter provides descriptive evidence on the relationships between self-assessed health, gender and mental health problems, i.e. depression and/or affective pains. Finally, in the last chapter, we study the influence of social norms as proxied by the gender structure of the workplace environment, on gender differences in self-reported health. We show that both women and men working in female-dominated environments report more specific health problems than those who work in male-dominated environments. The overall findings of this thesis are twofold. First, losing a job has a negative impact on several dimensions of job quality and satisfaction in the long run. Secondly, mental diseases and social norms at work are important to understand gender-related differences in health perceptions.

Keywords

Health, Self-Reported Health, Mental Health, Gender, Social Norms, Job Quality, Job Loss.