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V. Atella, N. Pace and D. Vuri

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e-mail: de-child@unito.it
Web site: http://www.child-centre.it

Wages and Weight in Europe: Evidence using Quantile Regression Model *

Vincenzo Atella †
University of Rome Tor Vergata, CEIS and CHILD
Noemi Pace
University of Rome Tor Vergata and CHP-PCOR Stanford University
Daniela Vuri
University of Rome Tor Vergata, CHILD, IZA and CESifo

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Abstract

The aim of this research is to investigate the relationship between obesity and wages, using data for nine countries from the European Community Household Panel (ECHP) over the period 1998-2001. We improve upon the existing literature by adopting a Quantile Regression approach to characterize the heterogenous impact of obesity at different points of the wage distribution. Our results show that *i)* the evidence obtained from mean regression and pooled analysis hides a significant amount of heterogeneity as the relationship between obesity and wages differs across countries and wages quantiles and *ii)* cultural, environmental or institutional settings do not seem to be able to explain differences among countries, leaving room for a pure discriminatory effect hypothesis.

Keywords: quantile treatment effect, obesity, wages, endogeneity.
JEL classification: C12, C21, C23, I10, I18

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†Corresponding author. University of Rome Tor Vergata, Department SEFEMEQ, Via Columbia 2, 00133 Roma - Italy E-mail: vincenzo.atella@uniroma2.it . Tel. +39 06 7259 5635, Fax +39 06 2040694

1 Introduction

Although the obesity phenomenon is more recent in Europe compared to the US, it does create equal concern given that that its prevalence has increased by 10-40% in most European countries over the last decade (WHO, 2003) and obesity levels based on measured data already range from 13% to 23% (WHO, 2006). Even more worrisome is the spreading of obesity among teenagers and children (WHO, 2006). Apart from being a debilitating condition, obesity is also related to numerous health problems and many chronic diseases. In addition, obesity is not only a health but also an economic phenomenon (Finkelstein et al. 2005).

The aim of the paper is to focus on the economic side of this phenomenon by examining the relationship between obesity and wages in a cross-national perspective for Europe. So far, the literature on the relationship between weight and wages has focused on two main research topics: on one side the socioeconomic determinants of overweight and obesity[1], on the other side the costs associated with obesity. With respect to this last point, economists have identified two types of costs: direct and indirect costs. Generally speaking, direct costs include health care costs related to diagnostic and treatment services, while indirect costs are related to the value of wages lost due to inability to work because of illness as well as earning lost due to discrimination. This last aspect is the focus of our paper.

Starting with the pioneering work by Register and Williams (1990) several researchers have studied the existing relationship between excess weight and labor market outcomes.[2] The vast majority of empirical evidence produced by those studies agrees with the view that, at an individual level, obesity and labor outcomes (wage, occupation and labor force participation) are negatively related, although this relationship may vary across population groups. If this is due to a pure, a priori, discrimination of obese workers or it is, instead, the result of some economic relationship is still a matter of debate. Fall in productivity levels (Cawley, 2000, Pagan and Davila, 1997), reduced training opportunities caused by physical difficulties (Baum and Ford, 2004) and additional costs of the health insurance covered by the employers and charged on wages (Bhattacharya and Bundorf, 2005) are among the main reasons used to explain such a negative correlation.

Although using individual data, all evidence collected by this literature is based on a mean regression approach. This represents a major shortcoming as

[1] See Philipson and Posner (1999), Lakdawalla and Philipson (2002), Cutler, Glaeser and Shapiro (2003), Chou, Grossman and Saffer (2002) for the US, Loureiro and Nayga (2005) for OECD countries, and Sanz de Galdeano (2005) for European countries.

[2] See among others Averett and Korenman (1996), Pagan and Davila (1997), Cawley (2000, 2004), Bhattacharya and Bundorf (2005), Brunello and d'Hombres (2007), Sousa (2005), and Garcia and Quintana-Domeque (2007).

researchers are not allowed to investigate the role of obesity at different points of the wage distribution, and the observed average effect may, indeed, hide more complex behaviors. In fact, it could be that obesity affects individual wage differently at the bottom or at the top of the wage distribution.[3] For example, obesity could represent a serious problem in all those contexts where a high level of interaction with the public is required or where an intense physical activity is necessary. On the contrary, it may not represent a serious problem at high level of wages or, equivalently, in all those cases where intellectual activity is needed. Alternatively, as suggested by Hamermesh and Biddle (1994), appearance may count more than responsibility and managerial skills (although mainly for women) at the top of the wage distribution. Therefore, by adopting a mean regression approach we could miss relevant pieces of information on individual heterogeneity that may be extremely useful for a correct understanding of the phenomenon and for tailoring effective anti-discrimination policies.

The aim of this research is to improve upon the existing literature on two main aspects. First, we adopt a quantile regression approach, to investigate if and at what level of wages obesity represents a problem. Second, our analysis is based on data from nine countries included in the European Community Household Panel (ECHP), but differently from most work on this topic we capture country heterogeneity by modeling the relationship between obesity and wages country by country.[4] Our results show that the evidence obtained from mean regression and pooled analysis hides some heterogeneity as the relationship between obesity and wages differs across wage quantiles and countries. Second, there is no evidence that the results obtained can be related to existing differences in cultural, environmental or institutional settings across countries.

The paper proceeds as follows. Section 2 discusses the theoretical framework and presents an overview of the literature on the relationship between excess weight and the labor market outcome. Section 3 illustrates the data used and reports the main descriptive statistics. Section 4 introduces the empirical strategy adopted and reports the econometric results. In section 5 we deal with the problem of endogeneity between wages and obesity and present some results based on Instrumental Variable Quantile Regression (IVQR) technique. Finally, section 6 draws some conclusions.

[3] Similar concerns have been raised by Fahr (2006) who finds evidence that the body mass-wage relation is non-linear.

[4] It is important to note that all the evidence we collect need to be interpreted as statistical association rather than causal effects. However, in the last part of the paper, we try to assess the causal effect by adopting an instrumental variable strategy in a context of quantile regression.

2 Empirical Relationship between Obesity and Wages: Background and Literature Review

Following Register and Williams (1990), Loh (1993) and Gortmaker *et al.* (1993) the relationship between wages and weight has been usually modelled by means of the traditional human capital wage equation:

$$W_{i,t} = \beta_0 + \beta_1 BMI_{i,t} + \varphi X_{i,t} + \varepsilon_{i,t} \qquad for \qquad i = 1, ...N, \qquad t = 1, ...T. \quad (1)$$

where the subscript i refers to individual, t is time, BMI is the body mass index, defined as individual weight (measured in kilograms) divided by the square of height (measured in metres squared), X_{it} is a $[NT \times K]$ matrix of time-varying explanatory variables, ε is the vector of residuals.

Based on equation 1 and using different data sets and estimation techniques, studies on the U.S. data find mixed results on the relationship between wages and obesity. In particular, Gortmaker *et al.* (1993) find a negative relationship between wages and obesity but no evidence to support the hypothesis that obesity differentials are confounded by health status, since controlling for health status limitation does not change their results. Moreover, they reject the hypothesis that socioeconomic origin or ability account for the obesity differential. Averett and Korenman (1996) find that obese women have lower family income with respect to non obese women and that differences in economic status by BMI increase when they use a lagged weight value or restrict the sample to women who were single or childless when the early weight was reported. Pagan and Davila (1997) find that women pay a penalty for being obese due to labor market discrimination, while overweight males sort themselves into jobs, via occupational mobility, to offset this penalty.[5] Conley and Glauber (2007) find that obesity is associated with a reduction in women's wage and income by 18% and 25% respectively, and a reduction in women's probability of marriage by 16%. Moreover, they find that these effects persist across the life course, affecting older women as well as younger women. Baum and Ford (2004) find that both men and women experience a persistent wage penalty over the first two decades of their career. Cawley (2000, 2004) finds that weight lowers wages for white women and that in absolute value this reduction is equivalent to the wage effect of one year of education, two years of job tenure and three years of work experience. Behrman and Rosenzweig (2001) show that the significant negative relationship between adult BMI and wages found in cross-sectional estimates reflects only a correlation between unmeasured earning endowment and BMI,

[5] In this last case, male overweight workers choose jobs where they find a productivity advantage over the non-obese or where they have a premium for undertaking more employment related risks.

and it disappears when controlling for endowments common to monozygotic twins. Cawley and Danziger (2005) examine the relationship between weight and labor market outcome for individuals older than 65. They find that after controlling for individual fixed effects the estimates of the correlation of obesity and different labor market outcomes is not longer significant.

Similarly, in the European context, there are country specific studies for England, Scotland, and Wales (Sargent and Blanchflower, 1994), England (Morris, 2006), Germany (Cawley *et al.*, 2005) and Denmark (Greve, 2005). Sargent and Blanchflower (1994) find no relationship between earning and obesity for men and a statistically significant inverse relationship between obesity and earnings for women. Morris (2006) finds that BMI has a positive and significant effect on occupational attainment for males and a negative and significant effect for females. For Germany, Cawley *et al.* (2005) find that obesity is negatively associated with wages, both for men and women, when using OLS technique. However, once the authors control for the endogeneity using genetic factors, they conclude that there is no significant relationship between weight and wages. For Denmark, using information on whether the individuals' parents have ever taken medication related to obesity or obesity related diseases (namely hypertension and Type 2 diabetes) and their mortality cause, Greve (2005) finds a negative and significant relationship between BMI and the probability to be employed for women and an insignificant relationship for men.

European wide analyses have been conducted using pooled data from the European Community Household Panel (ECHP) by Sousa (2005), Brunello and d'Hombres (2007), Lundborg *et al.* (2007) and Sanz de Galdeano (2007). Country-by-country European analysis has, instead, been done by Fahr (2006) and Garcia and Quintana-Domeque (2007). Sousa (2005) focuses on the impact of the BMI on labor force participation. She finds that being overweight decreases labor force participation for women, but it increases labor force participation for men. However, she is not able to estimate the obesity effect for each country separately, because using the propensity score matching approach reduces enormously the sample size. Brunello and d'Hombres (2007) find a negative and statistically significant impact of obesity on wages independently of gender for the pooled sample of countries. Furthermore, the negative relationship between obesity and wage is higher in Southern Europe than in Northern Europe and the size of the effect of the BMI on wage depends on whether an individual lives in an area with higher or lower than area's average BMI, suggesting that local economic and social environment does matter. Lundborg *et al.* (2007) analyze the effect of obesity on employment, hours worked and hourly wages in 10 European countries for people aged 50 and above. Pooling all the countries, they find that obesity is negatively associated with being employed for both men and women and with female hourly wages. Moreover, when grouping the countries in Nordic, Central and Southern, they find that the effects of obesity on labor market outcomes differ across Europe. Sanz de Galdeano (2007) focuses on the costs of obesity in terms of health, use of health care services and absenteeism. She finds that obesity is negatively associated with health, especially for women and in Northern and Central European countries. Moreover, obesity is shown to be positively associated with the demand for general practitioner and specialist services. Concerning the relationship between obesity and absenteeism, obese women in some countries are found to be absent from work more often than healthy-weight women, while no significant effect is found for men.

A main drawback of all these studies is that they rely on a common effect of obesity on wages across the whole Europe or country groups. As shown by Fahr (2006) and Garcia and Quintana-Domeque (2007), allowing for country-by-country analysis provides more insights into the relationship between wages and obesity. Fahr (2006) analyzes wage penalties associates with deviation from a social norm on BMI. He estimates an equation where log of wages is regressed on two dummies capturing the influence of a deviation from the social norm, and on two dummies that account for the influence of deviations from an optimal BMI from a medical point of view. He finds that deviations of more than three index points in body mass in the upward direction from the norm is sanctioned with about 7% decrease in hourly wages in Austria, Greece and Spain. Garcia and Quintana-Domeque (2007) show that there is weak evidence that obese workers are more likely to be unemployed or tend to be more segregated in self-employment jobs than their non-obese counterparts. Moreover, they find that the relationship between labor market outcomes and obesity is heterogeneous across countries and gender and it can be explained by the role of some labor market institutions, such as collective bargaining and employer-provided health insurance.

Overall, two main lessons can be learned from this literature review: *i)* the evidence gathered on the relationship between wages and obesity is far from being conclusive; *ii)* country heterogeneity plays an important role and further analysis at country level or even at sub-region level should be undertaken whenever data are available. At the same time, a major criticism to be raised is that all these findings are based on "mean" values over the wage distribution. As also Garcia and Quintana-Domeque (2007) have pointed out, average effect may, indeed, hide more complex behaviors. Therefore, it is crucial to investigate the role of obesity at different points of the wage distribution, as it could be that obesity is related to individual wage differently at the bottom or at the top of the wage distribution. In what follows, we fill this gap by exploring the relationship between obesity and wages across countries and over the wage distribution through quantile regression.

3 Data and Descriptive Statistics

Our empirical analysis is based on data from the European Community Household Panel (ECHP), a dataset designed and coordinated by Eurostat, the European Statistical Office. The ECHP supplies a longitudinal panel of private households and individuals across countries of the European Union over eight consecutive years, from 1994 to 2001, with a focus on household income, living conditions, individual health, education and employment status. Moreover, the harmonized design of the ECHP ensures a good level of comparison across countries and over time.[6] We only consider those countries (Denmark, Belgium, Ireland, Italy, Greece, Spain, Portugal, Austria and Finland) and years (1998-2001) where information on weight and height is available. As done in previous studies, we drop potential outliers by restricting the sample to include only individuals with BMI above 15 and below 50. Moreover, we exclude pregnant women, and we further restrict our analysis to full-time dependent employees aged between 18 and 65 years.[7]

Table 1: Descriptive Statistics of BMI, Overweight and Obesity

	Women			**Men**		
	BMI	**Overweight**	**Obesity**	**BMI**	**Overweight**	**Obesity**
	Kg/m^2	%	%	Kg/m^2	%	%
Full Sample	23.51	21.05	6.51	25.50	42.18	9.12
Austria	23.15	20.32	4.90	25.34	38.88	9.03
Belgium	23.00	15.03	5.89	25.35	38.19	10.59
Denmark	24.27	24.94	10.19	25.41	41.13	9.45
Finland	24.45	26.45	10.05	25.80	42.77	11.23
Greece	23.43	22.37	5.03	25.86	49.81	8.04
Ireland	23.33	20.47	5.80	25.23	40.87	7.95
Italy	22.59	17.01	3.12	25.09	39.09	6.64
Portugal	24.15	24.05	8.46	25.49	42.85	8.53
Spain	22.82	16.01	4.55	25.92	44.98	11.73

Notes: Overweight and obese workers are individuals with BMI between 25 and 30 and over 30, respectively as indicated by WHO.

The dependent variable in our analysis is the log hourly wage for the respondent's current job. In order to make data from different countries comparable, we converted nominal wage into real wage using the time varying purchasing power parity conversion index provided by the ECHP. As covariates we consider a dummy identifying obesity (BMI>30 Kg/m^2),[8] along with age, education,

[6] For further details on the ECHP, see Peracchi (2002).

[7] Table A-1 in the Appendix shows the selection procedure with the number of observations deleted in each step.

[8] We did not use the continuous variable BMI as done in Brunello and d'Hombres (2007)

training, household compositions, health status (bad or good health status), number of days absent from work, smoking habits, private or public sector of activity, occupation and sector of activity, insurance paid by the employer, time and country dummies. These covariates are widely used in wage models in order to control for systematic differences in observed characteristics between individuals, as some of them may affect simultaneously weight and wages and their effects need to be netted out.[9] Table 1 provides summary statistics of the individual BMI, overweight and obesity rates, by country and sex. Men are more likely to be overweight and obese than women: 42.2% and 9.1% are respectively overweight and obese, compared to 21.1% and 6.5% for women. The prevalence of overweight and obesity varies also across countries. The table also shows that about 10.0% of women in both Denmark and Finland are obese, compared to 3.1% in Italy. Similar differences across countries exist also for men; in Spain the obesity rate is 11.7%, close to that in Belgium and Finland (10.6% and 11.2% respectively), and far from Italy's rate (6.6%). Tables A-2 and A-3 in the Appendix report the full set of summary statistics for the pooled sample and by country.

4 Ordinary Least Squares *vs* Quantile regression results

In this section we report the results of the empirical analysis we have carried out. As first step, table 2 reports the coefficients of obesity obtained from OLS regressions for the pooled sample and for each country, by gender. For the pooled sample, the obesity coefficient is negative for both men and women, although statistically significant (at 1%) for women but not for men, thus suggesting the existence of a wage penalty only for women at European level. On the contrary, country by country estimates provide a different picture, showing the existence of a large heterogeneity in the association between wages and weight across European countries. Not for all countries in our dataset women seem to suffer from a wage penalty, given that in Austria, Belgium and Portugal there is no

for the following two reasons: *i)* the RESET test rejects the hypothesis of linearity of the continuous BMI variable; *ii)* there is a clear indication in the data that health care costs at individual level (proxied by the number of visits to a GP) exhibit a discontinuity when the BMI is around 30 Kg/m^2, for both males and females.

[9] For example, for more educated people (and especially for women) education may have a negative influence on weight due to higher frequency of weight monitoring (Wardle and Griffith, 2001), different life-styles, lower intertemporal discount rates. Presence of children may be associated with increase in weight and specific labor market outcomes (Lacobsen, Pearce and Rosenbloom, 1999). Health problems are more frequent in obese people and they may also affect labor market performance (Andreyeva, Michaud and Van Soest 2005), while smoking is negatively correlated with labor productivity but also with weight (Molarius *et al.* (1997), Evans and Montgomery (1994)).

evidence of an association between wage and obesity. Furthermore, whenever this association is statistically significant, the impact of the wage penalty is rather heterogeneous across countries, ranging from -3% in Denmark to -11% in Spain. As far as men are concerned, differences among countries are even more striking. In fact, we observe three different clusters: Belgium, Finland, Ireland, Portugal and Spain which confirm the result of no statistical association from the pooled sample, Greece and Italy which show a wage penalty (-5.9% and -5.4% respectively) and, finally, Austria and Denmark which record a wage premium (2.9% and 3.0% respectively).[10]

Table 2: OLS Regression Estimates on the Mean, Pooled Sample

	Women	**Men**
Full Sample	-0.047***	-0.011
Austria	0.019	0.029**
Belgium	-0.023	0.006
Denmark	-0.031**	0.030*
Finland	-0.059***	-0.009
Greece	-0.044*	-0.059***
Ireland	-0.059*	0.010
Italy	-0.064***	-0.054***
Portugal	-0.026	-0.017
Spain	-0.112***	-0.016

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables include: country and time dummies, individual age, cohabitation status (living in couple or not), presence of children under twelve in the household, health status (bad or good health status) number of days absent from work, highest level of education completed (primary, secondary and tertiary), sector of activity (public or private), health insurance status (whether the health insurance is provided by the employer), sector (agriculture, industry and services) and occupational category (Professionals, Clerks, Agriculture and Fishery occupations, Elementary occupations). Estimates are obtained using sample weights. Huber-White heteroskedasticity robust standard errors are adjusted in order to take into account the presence of multiple observations for each individual.

As discussed in section 2, the whole literature on the relationship between wage and obesity has been based on a mean regression approach, which looks only at the role of obesity at the mean level of the wage, ignoring individual wage heterogeneity. Indeed, it could be that obesity affects individual wages differently across the wage distribution. A way to overcome such limitation

[10] In absolute values these percentages are not negligible. For example, given a coefficient of 0.05 (as for women in the pooled sample), and assuming an annual salary of 30,000 euros, the penalty effect amounts to about 125 euros per month. Slightly higher values are obtained at country level for some countries (for example in Spain it reaches the highest value of 225 euros per month).

is to adopt a quantile regression approach that allows us to characterize the whole conditional distribution of wage. Indeed, we may expect that in the lowest points of the wage distribution workers perform manual activities that require effort and greater muscle mass. Similarly, in the highest points of the wage distribution intellectual activity is needed and obesity may not represent an issue. In the first case we should expect a positive effect of the obesity coefficient in the left tail of the wage distribution, while in the second case a not significant effect in the right tail. Alternatively, as suggested by Hamermesh and Biddle (1994), appearance may count more than responsibility and managerial skills at the top of the wage distribution (although mainly for women), and for this reason we might expect a negative obesity coefficient at least in the right tail of the wage distribution.

Tables 3 and 4 report the quantile regression estimates for the pooled sample, respectively for women and men. What emerges from these results is that while for women in table 3 the QR estimates turn out to be not very different from the estimates computed at the mean, for men in table 4 the opposite holds. The effect of obesity for women is negative and statistically significant at 1% along the wage distribution, and in absolute terms slightly higher on the tails of the distribution (-4,2% at 15^{th} percentile and -4,4% at 85^{th} percentile, respectively) compared to the central part (slightly less than 4.0%).

Differently from women, the effect of obesity for men is heterogeneous across quantiles. In particular, men in the bottom part of the wage distribution seem to suffer from wage penalty due to obesity (-3.1% and -1.3% at 15^{th} and 25^{th} percentile, respectively), while the effect is not statistically significant in the remaining quantiles (see table 4). These last results seem to contradict both the "obesity as an asset" and the Hamermesh and Biddle (1994) "appearance theory" hypotheses.

Looking at country specific estimates in table 5, the heterogeneity in the statistical association between wages and obesity is even more pronounced. For women, in Ireland the wage penalty is found only in the left part of the wage distribution, in Greece only at the center of the wage distribution, in Italy the relationship is characterized by a reversed U-shaped curve with larger penalties on both tails. No regular patterns can be found in countries like Denmark, Finland and Spain, although coefficients vary quite a lot across quantiles (for example, in Finland, while the mean effect for women is equal to -5.9%, using quantile regression the effect ranges from -7.7% at 15^{th} percentile to -3.4% at 75^{th} percentile). Similar results hold for men. In summary, these findings seem to suggest that it would be misleading to ignore the heterogeneity of the obesity effect across countries and along the wage distribution.

Table 3: Quantile Regressions Estimates: Pooled Sample, Women - (n. obs 34,556)

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.042***	-0.038***	-0.039***	-0.039***	-0.044***
Insurance	0.049***	0.055***	0.050***	0.055***	0.059***
Training	0.119***	0.112***	0.100***	0.079***	0.079***
Sickness	-0.001	-0.000	-0.000	-0.001	-0.000
Bad Health	-0.013	-0.009	-0.023*	-0.034**	-0.008
Age	0.044***	0.037***	0.036***	0.035***	0.031***
Age Squared	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Private	-0.116***	-0.106***	-0.089***	-0.073***	-0.061***
Couple	0.030***	0.019***	0.014***	0.002	0.009
Children	0.007	0.008	0.012**	0.024***	0.031***
Secondary	0.165***	0.158***	0.151***	0.156***	0.171***
Tertiary	0.293***	0.294***	0.316***	0.379***	0.422***
Smoker	0.019***	0.026***	0.026***	0.033***	0.037***
Clerks	-0.116***	-0.129***	-0.151***	-0.194***	-0.203***
AgrFishery	-0.185***	-0.219***	-0.284***	-0.367***	-0.385***
Elementary	0.197***	-0.223***	-0.255***	-0.310***	-0.321***
Agriculture	-0.145***	-0.115***	-0.154***	-0.094***	-0.048**
Industry	0.084***	0.062***	0.049***	0.043***	0.030***
Constant	-0.887***	-0.616***	-0.347***	-0.183***	-0.009

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables include also country and time dummies.

4.1 Pure wage discrimination or alternative explanations?

Based on the results presented in the previous section, can we argue that a pure discriminatory effect exists, or rather is it the result of model misspecification due to omitted variables? Baum and Ford (2004) suggest three possible sources of misspecification: *i)* losses in productivity due to health problems; *ii)* agents' myopic behavior; *iii)* provision of health insurance by employers who discount higher health care costs for obese workers in the form of lower wages. We expect that if differences in wages between obese and non obese workers are due to one of the above mentioned reasons, once controlled for them, the obesity coefficient should become statistically insignificant. Therefore, in eq.1 we add a set of variables that should take into account the mentioned hypotheses. In this section we test the significance of these hypotheses. Results are reported in table 6.

Table 4: Quantile Regression Estimates: Pooled Sample, Men - (n. obs 54,074)

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.031***	-0.013**	0.004	0.009	-0.003
Insurance	0.058***	0.054***	0.061***	0.057***	0.057***
Training	0.100***	0.098***	0.087***	0.092***	0.087***
Sickness	-0.002***	-0.002***	-0.001**	-0.001	-0.000
Bad Health	-0.087***	-0.065***	-0.081***	-0.052***	-0.042***
Age	0.044***	0.038***	0.032***	0.031***	0.030***
Age Squared	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Private	-0.067***	-0.050***	-0.029***	-0.010	0.000
Couple	0.073***	0.079***	0.079***	0.080***	0.087***
Children	0.019***	0.016***	0.021***	0.024***	0.022***
Secondary	0.119***	0.116***	0.120***	0.134***	0.134***
Tertiary	0.235***	0.245***	0.282***	0.340***	0.351***
Smoker	-0.026***	-0.026***	-0.018***	-0.009*	-0.005
Clerk	-0.100***	-0.120***	-0.139***	-0.140***	-0.166***
AgrFishery	-0.130***	-0.145***	-0.176***	-0.197***	-0.213***
Elementary	-0.155***	-0.171***	-0.194***	-0.209***	-0.228***
Agriculture	-0.255***	-0.196***	-0.154***	-0.116***	-0.134***
Industry	0.082***	0.060***	0.037***	0.028***	0.022***
Constant	0.033***	0.058***	0.087***	0.104***	0.116***

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.
Notes: Control variables include also country and time dummies.

Productivity hypothesis In order to test whether obese workers earn less than non obese workers because they are less productive, we interact the obesity dummy with a productivity proxy, namely the number of days of absence from work due to sickness. The ECHP asks respondents to report the number of days they were absent from work during the last four working weeks because of illness or other reasons. It should be noted that this measure includes absent episodes due to illness and any other reason so it is not possible to isolate the impact of obesity-related illness episodes. Looking at table 6 (row 2), for the pooled sample we find that health limitations do not affect obese workers' wages differently from non obese workers' and the obesity wage penalties remain unchanged for both men and women suggesting that obesity influences wages through a channel different from productivity losses due to health limitations.[11]

[11] We should keep in mind that obesity might affect productivity in ways that are not as easily measured. The negative effect of obesity on appearance, for example, can affect confidence and communication, thereby influencing productivity. Mobius and Rosenblat (2004) estimate that confidence accounts for approximately 20% of the beauty premium. Persico, Postlewaite

Table 5: Quantile Regression Estimates: Obesity Coefficients

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Austria	0.029	0.021	-0.020	0.068*	0.038*
Belgium	-0.009	-0.020	-0.049	-0.014	0.011
Denmark	-0.046**	-0.051**	-0.037**	-0.049***	-0.046***
Finland	-0.077***	-0.039**	-0.046***	-0.034*	-0.042**
Greece	-0.023	-0.051*	-0.049	0.012	0.009
Ireland	-0.104**	-0.064*	-0.066**	-0.045	-0.033
Italy	-0.067*	-0.044	-0.031	-0.049	-0.071**
Portugal	0.010	-0.001	-0.025	-0.035	0.022
Spain	-0.105*	-0.101**	-0.087**	-0.114***	-0.131***
Men					
Austria	0.009	0.027*	0.042**	0.041*	0.043*
Belgium	0.019	0.030	0.004	-0.031	-0.043*
Denmark	0.027	0.029	0.039**	0.023	0.042*
Finland	-0.039*	-0.014	0.011	0.009	0.021
Greece	-0.065**	-0.042*	-0.024	-0.029	-0.030
Ireland	-0.004	-0.009	0.021	0.022	0.048
Italy	-0.068**	-0.063***	-0.042***	-0.040*	-0.029
Portugal	-0.072***	-0.006	0.008	0.024	-0.015
Spain	-0.023	-0.051**	-0.022	-0.016	0.002

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.
Notes: Control variables are as in Table 2.

Myopic behavior hypothesis According to the agents' myopic behavior hypothesis, obese workers heavily discount the future by caring less about obesity-related health problems and invest less in human capital accumulation (less training), thus generating a flatter wage profile. We test this hypothesis by interacting the obese dummy with the training dummy. The results show that while investment in training significantly increases wages for men and women, the interaction obesity-training is not significant for women and positive and significant for men, while the obesity coefficients (as shown in table 6, row 3) are slightly larger in absolute values for men and are virtually unchanged for women with respect to the base model (as reported in table 6, row 1). This indicates that, at least for women, agents' myopic behavior is not what drives the negative relationship between weight and wages. On the contrary, for men by

and Silverman (2004) hypothesize that height increases the chances that teenagers participate in social activities, such as nonacademic clubs and sports. This participation, in turn, helps them to learn skills that are rewarded by employers and might enhance productivity.

netting out the myopic behavior effect, the wage penalty due to obesity seems to be larger.[12]

Health care insurance costs hypothesis We investigate whether the observed wage differential between obese and non obese in European countries can be explained by the costs of health care insurance covered by the employer and charged on employees' wage. We test this hypothesis by interacting the obesity dummy with the health insurance dummy and we find that the interaction coefficient is positive but not significant both for men and women. As found for men in the myopic behavior hypothesis, controlling for health care insurance costs the negative association between wage and obesity slightly increases for the female group (table 6, row 4). Overall, this result is not surprising given that the countries in our sample are characterized by universal coverage of health care services and that health insurance provided by the employer covers additional services not included in the public insurance. As for the previous hypotheses, this finding seems to indicates that health care insurance costs are not able to explain the negative relationship between weight and wages.

To complete this analysis, we have run a new model in which all these hypotheses have been considered jointly. Results are reported in the last row of each panel in table 6.[13] Concerning men, we observe an increase in the wage penalty in the first two percentiles, while for the others the effect remains not significant. Also for women, we observe an increase in the wage penalty in all the quantiles except the first one which is not longer statistical significant.

Given that none of these hypotheses seem to be able to capture entirely the significance of the obesity coefficients, our findings could suggest the existence of a pure discriminatory effect, although not conclusive in the sense we are not estimating a causal effect.

4.2 The role of labor market institutions

Finally, we try to assess whether labor market institutions may help to understand the different results obtained in terms of the relationship between obesity and wages across countries by means of three indicators of labor market regulations: trade union density, bargaining governability, and degree of employment protection legislation (EPL) as reported in table A-7 in the appendix. In particular, we expect that in countries with the highest levels of union density, bargaining governability and EPL, where the wage setting is more controlled

[12] Baum and Ford (2004) use the experience variable as a proxy for engagement in training activities. Our data allow one to use directly the variable training. We also re-estimate the model interacting obesity with experience, but the results do not change (results not shown).

[13] The full set of results with all other covariates and results country by country are available upon request.

Table 6: Quantile Regression Estimates with Interactions, Obesity Coefficients
Pooled Sample

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Base model	-0.042***	-0.038***	-0.039***	-0.039***	-0.044***
Base + Sickness interaction	-0.040***	-0.048***	-0.055***	-0049***	-0.049***
Base + Training interaction	-0.035*	-0.050***	-0.058***	-0.049***	-0.050***
Base + Insurance interaction	-0.053***	-0.053***	-0.064***	-0.044***	-0.048***
Base + all 3 interactions	-0.036	-0.054***	-0.061***	-0.042**	-0.049***
Men					
Base model	-0.031***	-0.013**	0.004	0.009	-0.003
Base + Sickness interaction	-0.030***	-0.014**	0.000	0.007	-0.006
Base + Training interaction	-0044***	-0.024***	-0.009	-0.013	-0.012
Base + Insurance interaction	-0.032***	-0.014*	-0.009	-0.005	-0.020*
Base + all 3 interactions	-0.040***	-0.018***	-0.012	-0.015	-0.022*

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.
Notes: The regressions include all the covariates table2.

and employers and firms do not play any role in the wage setting, the relationship between obesity and wages is not significant or small in size. Unfortunately, we cannot empirically test these hypotheses in a regression framework for two main reasons: *i)* the ECHP data set does not provide union participation at individual level; *ii)* data on level of union density, bargaining governability, and EPL are obviously collected at country level and time invariant. However, we can provide an indirect evidence of the relationship between labor market institutions and wage penalty differences across countries by means of Spearman correlation coefficients.[14]

Table 7 shows that the ranking of countries according to the size of the obesity effect as obtained in Table 5) does not seem to have any correspondence with the ranking of countries according to the three labor market indicators. The only exception is represented by the EPL indicator for men, that shows coefficients above 0.7 in some percentiles. However, the non monotonicity of these effects makes it difficult to draw any economic interpretation. Overall, it

[14]Garcia and Quintana-Domeque (2007) analyze the relationship between labor outcomes (employment and wage) and collective bargaining coverage (the number of employees covered by a collective agreement over the total number of employees) through a simple graphical analysis, where they plot labor market institutions indicators on the X-axis and obesity labor market outcomes on the Y-axis. They find a positive association between collective bargaining coverage and the probability of being unemployed with respect to being employed for women, but no clear relationship for men. Moreover they find a strong positive association between collective bargaining coverage and wage gaps for women but no clear relationship for men.

is plausible to conclude that country specific labor market regulations do not play any role in explaining the differences in results across countries.

Table 7: Spearman Rank Correlation Coefficients by Quantiles

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Union Density	0.017	-0.171	-0.079	-0.196	-0.033
Bargaining Governability	-0.053	-0.229	-0.426	-0.030	-0.042
EPL	-0.350	-0.229	-0.204	-0.088	-0.15
Men					
Union Density	-0.567	-0.500	-0.517	-0.067	-0.283
Bargaining Governability	-0.292	-0.304	-0.601	-0.732	-0.470
EPL	0.733	0.367	0.700	0.283	0.733

Note: Each cell in the table reports the Spearman correlation coefficient between the obesity coefficient for each quantile at country level and the corresponding ranking for each labor market indicator. For example, the value reported at the cross between the 15^{th} quantile and the row with union density represents the Spearman correlation coefficient between the obesity coefficients recorded for each country in that quantile and the ranking of the union density variable.

5 Dealing with the endogeneity problem

As already discussed in the previous sections, the results produced so far cannot be interpreted as causal relationship from obesity to wages. This is because OLS may yield biased estimates for at least three reasons. First, unobservable individual effects associated to genetic and non-genetic factors, such as ability and parental background, might be correlated both with earning and the respondent's body mass index. Second, a problem of reverse causality might exist. For instance, the quality and the quantity of food might determine how an individual behaves, her level of productivity and inventiveness at work, and her earning potentialities, but, at the same time, individual working position and wages might influence her quality and quantity of food. Finally, the BMI can be measured with errors, as researchers rely on self reported measures of weight and height. In this case, the error term is correlated with the variable of interest by construction, generating inconsistent estimates.[15]

[15] Using the Third National Health and Nutrition Examination Survey (NHANES III), which contains measures of true and self-reported weight and height (and therefore, BMI), to correct the self-reports of weight and height in the NLSY, Cawley (2004) shows that this does not seem to be a major problem. He finds that even if women tend to underreport their weights but not their heights, using reported BMI instead of corrected BMI does not alter significantly

Several studies have dealt with the endogeneity problem using alternative identification strategies. Sargent and Blanchflower (1994), Gortmaker *et al.* (1993), and Averett and Korenman (1996) address reverse causality by replacing the contemporaneous BMI with its lagged value. However, the validity of this strategy relies on the hypothesis of independence between the lagged BMI and the residual, which is unlikely to be true especially in presence of unobserved individual effects. Baum and Ford (2004), Cawley (2004), Cawley and Danziger (2005) and Sanz de Galdeano (2007) use the fixed effect estimators to control for unobservable individual effects. This identification strategy does show some drawbacks. In particular, as also noted by Garcia and Quintana-Domeque (2007), a fixed effect strategy does not solve the reverse causality problem. In addition, there is a clear trade-off between consistency of the estimates obtained with longer panel and plausibility of the unobservables' time invariance.

Many researchers have instead adopted an instrumental variable approach to deal with the problem of endogeneity, using different instruments. Pagan and Davila (1997) choose as instrument indicators of health problems, such as self-esteem and family poverty. Cawley (2000 and 2004) adopts the BMI of "biological" family members (including parents', siblings' and children' body mass index) and Cawley *et al.* (2005) use the weight of a child or of a parent, under the assumption that the BMI of a biological family member does not affect the respondent's wage directly. Morris (2006) adopts the average BMI and prevalence of obesity across individuals living in the same health authority area as instruments. Greve (2005) uses information on whether the individuals' parents have ever taken medication related to obesity or obesity related diseases (namely hypertension and Type 2 diabetes) and their mortality status. Lundborg *et al.* (2007) choose as instruments the presence of other obese persons in the household, being an oldest child, and having sisters only. Finally, Brunello and d'Hombres (2007) solve the endogeneity problem by considering the "biological" BMI (computed as average of all household members' BMI) as instrument. The main drawback with the IV approach is that two conditions have to be satisfied to ensure the validity of an instrument. It must be

the estimates. Unfortunately, we do not have the possibility to apply a similar correction due to the lack of data on true measures of weight and height in Europe. However, we have no reason to believe that reporting errors differ over time and across countries. In order to assess the validity of this assumption, Sanz de Galdeano (2007) has compared aggregate obesity rates based on objective measures obtained by the WHO Global Database on Body Mass Index with the corresponding figures derived from the ECHP self-reported information on height and weight. She finds that the correlation coefficient between the ECHP and the WHO Global Database measures of obesity prevalence is reasonably high: 0.76 ($p < 0.05$) for men and 0.96 ($p < 0.01$) for women. Similar results are obtained when computing the Spearman rank correlation coefficients. Based on this evidence, in our analysis we will assume that the bias due to measurement errors is the same across countries and through time.

correlated with the endogenous variable and uncorrelated with the outcome's residuals. While the first condition can be easily tested, with respect to the second condition only indirect evidence can be provided given that no formal procedure exists to test for absence of correlation between the instrument and wage residuals.

Finally, in order to overcome the difficulty of finding suitable instruments, Sousa (2005) uses a propensity score matching approach. However, since this procedure implies to find comparable individuals within the same dataset it might lead to reduce enormously the sample size. A similar problem is found by Behrman and Rosenzweig (2001) and Conley and Glauber (2007) when using information on siblings and twins to remove the common household effect due to both genetic and non-genetic factors, given that the number of households with at least two children living in is limited and, therefore, it may create problems of representativeness.

With the data in our hands, we believe that the IV approach is the most convincing (among those mentioned above) to deal with the endogeneity problem, despite its drawback concerning the choice of the instrument. In order to better understand the limit of "biological" BMI we should notice that the residual of the wage equation (1) can be decomposed as:

$$\varepsilon_{i,t} = G_{i,t} + NG_{i,t} + \nu_{i,t} \tag{2}$$

where $G_{i,t}$ is the genetic component, $NG_{i,t}$ is the non genetic component and $\nu_{i,t}$ is a residual, i.i.d. over individuals and time.

Several studies reviewed in Cawley (2004) have shown that the correlation of weight within household members is due to genetic factors rather than to environmental influences. More specifically, according to Grilo and Pogue-Geile (1991), environmental experiences shared among family members are not important in determining individual differences in weight. Therefore it is unlikely that biological BMI is correlated with the unobserved non genetic errors and it can be safely assumed that $Corr(bBMI_{i,t}, NG_{i,t}) = 0$. Unfortunately, the error terms of the wage and obesity equations could be still correlated if unobservable genetic factors affecting individual earnings are correlated to transmitted genetic variation in weight ($Corr(bBMI_{i,t}, G_{i,t}) \neq 0$), although this event may not be very likely when analyzing labor market outcomes (Cawley, 2004).

Ideally, the best strategy to control for unobserved genetic factors is to use same-sex siblings or twins' weight as an instrument. In practice, apart from the reduction in sample size mentioned above, it has some additional drawbacks: *i)* it is not possible, in all surveys, to identify siblings because they may have left the original households; *ii)* in our specific case, it is likely that if they live in the same household it is because they are still at school and/or not working, thus not useful for identifying the relationship of interest.

In an effort to add robustness to our previous results and to compare them with what has been presented in the literature so far, here below we replicate our analysis by employing an IV approach. With the available data, the best instrument we can adopt is the "biological" BMI, as used by Brunello and d'Hombres (2007). This instrument averages out all the available individual body mass index of the family members biologically related who completed the questionnaire.

5.1 Results from the IV Quantile Regression (IVQR) approach

In this section we extend the quantile analysis run in the previous sections with the instrumental variable approach by adopting an IVQR. [16] Empirical contribution based on IVQR are relatively new in the literature.[17] and, to our knowledge, this is the first study which applies IVQR to analyze the relationship between wage and obesity. Tables 8 reports the IVQR estimates for the pooled sample and country by country, respectively for women and men.[18]

For the pooled sample IVQR estimates turn out to be very different from the QR estimates. The obesity estimate for women is significant and very large in size (25%) only in the highest quantile, while it was significant all along the distribution and much lower in the QR case. Similarly, we find striking differences between IVQR and QR for men. In fact, while in the QR case obesity penalty was significant below the 25^{th} percentile, with the IVQR approach it turns out to be significant starting at the 75^{th} percentile. As for the pooled results, country by country IVQR estimates are very different from the QR estimates, both in terms of coefficients' magnitude, statistical significance and quantile of interest.

Obviously, the differences between QR and IVQR estimates may arise from the combination of two sources. The first, and most obvious, has to do with the reduction of the sample size, due to the construction of the instrument (see

[16] For an exhaustive presentation of the IVQR model see Chernozhukov and Hansen (2005).

[17] Abadie, Angrist and Imbens (2002) and Chernozhukov and Hansen (2005) use IVQR to study the effect of the Job Training Partnership Program Act on the distribution of earnings; Arias, Hallok and Sosa-Escudero (2001) estimate the family returns to education at different quantiles of the conditional distribution of wages.

[18] These IVQR results have been obtained using the MATLAB code kindly provided by Christian Hansen is his web page http://faculty.chicagogsb.edu/christian.hansen/research/ and extended to allow for interactions between the endogenous variable and regressors. Unfortunately, we have not been able to estimate the model with interactions due to convergence problems of the loss function. However, this should not represent a problem for the validity of our line of reasoning, given that the results presented until now have shown that adding interactions hardly changes the obesity coefficients, and in the few cases where this happens the estimates are always larger in absolute value. Therefore the IVQR estimates without interactions can be interpreted as lower bounds of the true effect and the results presented here have to be compared to the base model, as reported in row 1 of each panel in table 6.

Table 8: IV Quantile Regressions Estimates: Obesity Coefficients

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Full Sample	0.035	-0.000	0.016	-0.082	-0.253***
Austria	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$
Belgium	0.025	0.010	0.007	-0.143	-0.062***
Denmark	0.036	0.014	-0.010**	-0.013	-0.019
Finland	-0.018	-0.051	-0.017***	-0.007**	0.003
Greece	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$
Ireland	-0.274	-0.040	-0.116*	-0.030***	-0.020
Italy	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$
Portugal	-0.049	0.102	-0.026	-0.074**	0.088
Spain	-0.796	-0.035*	-0.033***	-0.065***	-0.004
Men					
Full Sample	-0.055	0.010	-0.118	-0.195**	-0.219*
Austria	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$
Belgium	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$
Denmark	-0.010	-0.010	0.042	0.042	-0.018
Finland	-0.181	0.097	-0.067***	0.063**	-0.026**
Greece	0.000	0.161	0.001	-0.068	-0.007
Ireland	0.017	-0.037	-0.044	-0.065	-0.288
Italy	0.028	-0.026**	-0.044	-0.102**	-0.035
Portugal	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$	$^{(a)}$
Spain	0.000	-0.027	-0.009	-0.009*	-0.012***

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.
$^{(a)}$ Estimate is not reported since the instrument is not significant in the first stage regression.
Notes: Control variables are as in Table 2. Standard errors are adjusted for heteroschedasticity using a Gaussian kernel and a simple rule of thumb bandwidth (Powell, 1986).

table A-1 in the appendix). The second has to do with the different estimation technique (QR *vs* IVQR). In order to separate these two effects, we have first compared the QR estimates based on the unrestricted sample with the QR estimates based on the restricted sample and then these latter with the IVQR estimates. As expected, comparing the unrestricted QR estimates (see tables 3, 4, 5) with the restricted QR estimates reported in table 9 we can see that selection bias determines sizeable differences both in magnitude and significance across the two samples.

In fact, it must be noticed that in the case of single households with deceased parents, couples with no children, couples with children aged less than sixteen, or households whose components are not biologically related (step, adopted

Table 9: Quantile Regression Estimates for the Restricted Sample: Obesity Coefficients

	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Full Sample	-0.047*	-0.053***	-0.060***	-0.041**	-0.012**
Austria	-0.014	0.093***	0.109***	0.179***	0.147***
Belgium	0.082	0.063	-0.071**	-0.033	0.032
Denmark	-0.055**	-0.087**	-0.078***	-0.083***	-0.044***
Finland	-0.047	-0.017	-0.069**	0.052	0.014
Greece	0.372**	0.062	0.026	0.101**	0.080**
Ireland	-0.083	-0.100***	-0.083***	-0.016	0.028
Italy	0.092**	0.078**	0.004	-0.019	-0.034
Portugal	-0.109*	-0.061*	-0.127***	-0.151***	-0.165***
Spain	-0.133**	-0.095	-0.050*	-0.071**	-0.135*
Men					
Full Sample	-0.017	-0.010	0.002	-0.003	0.002
Austria	-0.116***	0.020	-0.108***	-0.051***	-0.088***
Belgium	-0.012	0.021	-0.007	-0.033	-0.051**
Denmark	-0.003	0.002	-0.021	0.005	0.007
Finland	0.003	-0.024	0.011	0.016	0.011
Greece	0.414***	0.186***	0.030	0.053	0.009
Ireland	-0.071***	-0.072**	-0.041	-0.027	-0.046
Italy	-0.013	-0.031	-0.055***	-0.043**	-0.039*
Portugal	0.016	0.096***	0.144***	0.181***	0.181***
Spain	-0.031	-0.037	-0.081***	-0.038	-0.050**

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

[(a)] Estimate is not reported since the instrument is not significant in the first stage regression.

Notes: Control variables are as in Table 2. Standard errors are adjusted for heteroschedasticity using a Gaussian kernel and a simple rule of thumb bandwidth (Powell, 1986).

and foster child, son and daughter in law, or just household's components not related), it is not possible to calculate the biological BMI and thus these observations need to be excluded from the sample. In our specific case, this procedure leads to a sharp reduction of the observations from 88,630 to 34,868.[19] As noted by Brunello and d'Hombres (2007) this could lead to select a non random sample of the population. Indeed, comparing the initial sample to the restricted sample we actually find that, while the average BMI in the two samples is very close, individuals in the restricted sample are on average younger, less educated, with lower average wage and belong to larger households. Moreover, individuals in Southern Europe countries have a higher probability of being included in the restricted sample because these countries are characterized by larger household size with respect to Northern Europe countries. In order to test whether this endogenous selectivity is affecting our estimates, we use a two-step approach as suggested by Wooldrige (2002) and applied also by Brunello and d'Hombres (2007). Differently from Brunello and d'Hombres (2007), we find that the selection bias correction does affect the magnitude of the coefficients for both men and women and, moreover, the Mills ratios are statistically significant. This result casts some doubts on the representativeness of the restricted sample.[20] Finally, comparing table 8 with table 9, we can see that differences in the estimates are stressed even further when adopting the instrumental variable approach. In conclusion, in the light of this lack of robustness in the estimates, and the concern around the instrument adopted, the only message we feel to support when using ECHP data is that caution should be taken when interpreting the relationship between obesity and wages as causal.

6 Conclusions

In this paper we have investigated the statistical association between obesity and wages along the wage distribution and, contrary to most work on this topic, we have taken care of the existing country heterogeneity by modeling the relationship between obesity and wages country by country. In the first part of the paper we have produced evidence of a negative statistical relationship, computed at the mean, between wages and obesity, and that this relationship is far from being homogeneous across countries and across wage quantiles. These results show that the mean and quantile approaches lead to different interpretation of the phenomenon under scrutiny, partly in line with the results obtained by Fahr (2006) and Garcia and Quintana-Domeque (2007).

Considering the pooled data, the relationship seems to be negative and signif-

[19] See table A-1 for the steps of the selection procedure. Moreover, the descriptive statistics of the reduced sample are reported in Table A-4.

[20] Results are available upon request.

icant all over the distribution for women and negative and significant only in the bottom part of the distribution for men, suggesting that males with less rewarding jobs are also more hit by obesity status. Furthermore, it was not possible to identify common patterns across countries that could be interpreted as environmental, cultural or institutional factors affecting the relationship between wages and obesity as instead suggested by Brunello and d'Hombres (2007).

We have also shown that this negative relationship holds even after controlling for lack of productivity due to health problems, agents' myopic behavior, and provision of health insurance by employers, thus suggesting that residual wage differences due to employer discrimination may be called into question.

Finally, in an attempt to control for endogeneity and to interpret our estimates as causal relationships, we have employed an IVQR technique. Unfortunately, the results we obtain can hardly be considered as conclusive for two main reasons: *i)* we can not prove that the instrument we have chosen is orthogonal with the error term in the wage equation, and *ii)* the construction of the instrument imposes a significant and non-random cut in our sample that prevent us from comparing the QR and IVQR estimates. In conclusion, in the light of this lack of robustness in the estimates, and the concern around the instrument adopted, the only message we feel to support, when using ECHP data, is that caution should be taken when interpreting the relationship between obesity and wages as causal.

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APPENDIX

Table A-1: Sample Selection from full ECHP sample, 1998 − 2001

Panel A: Sample Size for OLS and QR		**Panel B: Sample Size for IVQR**	
298,966	Initial Sample, 1998-2001	298,966	Initial Sample, 1998-2001
291,162	Observations (90,539 individuals)	291,162	Observations (90,539 individuals)
	7,804 Observations dropped with valid BMI in the Initial Sample		7,804 Observations dropped with valid BMI in the Initial Sample
290,780	Selection for BMI between 15 and 50	290,780	Selection for BMI between 15 and 50
	167 Observations Dropped BMI<15		167 Observations Dropped BMI<15
	215 Observations Dropped BMI>50		215 Observations Dropped BMI>50
287,169	Selection for no Pregnant Women	287,169	Selection for no Pregnant Women
	3,611 Observations Dropped		3,611 Observations Dropped
		115,995	Selection for construction of sample with biological BMI
			171,174 Observations Dropped for
			a. Respondent Living Alone (37,348)
			b. Respondent Living Alone in couple without children
			or in a couple with children aged <17 (122,768)
			c. Respondent for which was not possible to calculate the BMI because of one
			of the following relations with the other household components (2,728):
			c1. step/adopted/foster child
			c2. step/adopted/foster siblings
			c3. son/daughter in law
			c4. not related
			d. Respondent for which was not possible to calculate the BMI
			because of missing information about the relation (8,330)
228,191	Selection for sample aged 18 − 65	94,757	Selection for sample aged 18 − 65
	5,915 Observations Dropped < 18		2,616 Observations Dropped < 18
	53,063 Observations Dropped > 65		18,662 Observations Dropped > 65
130,139	Selection for no Part-Time	52,615	Selection for no Part-Time
	98,052 Observations Dropped		42,142 Observations Dropped
99,943	Selection for sample without	37,858	Selections for sample without
	outliers in the log hourly wage		outliers in the log hourly wage
	29,639 Observations Dropped (log hourly wage $< 1^{st}$ percentile)		14,751 Observations Dropped (log hourly wage $<^{st}$ percentile)
	557 Observations Dropped (log hourly wage $< 99^{th}$ percentile)		6 Observations Dropped (log hourly wage $> 99^{th}$ percentile)
88,630	Selection for sample with no missing data in the covariates	34,868	Selection for sample with no missing data in the covariates
	10,422 Observations Dropped		2,990 Observations Dropped
34,556	Final Sub-Sample Women	**12,594**	Final Sub-Sample Women
54,074	Final Sub-Sample Men	**22,274**	Final Sub-Sample Men

Table A-2: Descriptive Statistics, Pooled Sample

	Unrestricted Sample				Restricted Sample			
	Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log Hourly Wage	1.80	0.47	1.94	0.46	1.73	0.55	1.86	0.55
Hourly Wage	6.76	3.27	7.67	3.57	6.53	3.66	7.45	4.27
BMI	23.51	3.87	25.50	3.37	23.48	3.99	25.48	3.29
bBMI	[(a)]	[(a)]	[(a)]	[(a)]	24.77	3.25	24.54	3.29
Height	163.82	6.44	175.18	7.57	163.29	6.44	174.37	7.44
Weight	63.03	10.55	78.29	11.66	62.49	10.37	77.49	11.17
Sickness	1.21	4.42	0.76	3.33	1.01	4.01	0.73	3.30
Training	0.40	0.49	0.37	0.48	0.32	0.47	0.30	0.46
Private	0.61	0.49	0.72	0.45	0.63	0.48	0.73	0.44
Insurance	0.32	0.47	0.35	0.48	0.25	0.43	0.30	0.46
Age	37.17	10.64	38.32	10.99	36.23	10.37	38.15	11.23
Couple	0.62	0.49	0.67	0.47	0.64	0.48	0.69	0.46
Children	0.32	0.47	0.34	0.47	0.34	0.47	0.37	0.48
Primary	0.31	0.46	0.40	0.49	0.36	0.48	0.45	0.50
Secondary	0.40	0.49	0.39	0.49	0.38	0.48	0.35	0.48
Tertiary	0.29	0.46	0.21	0.41	0.27	0.44	0.19	0.39
Bad Health	0.03	0.17	0.03	0.18	0.03	0.17	0.02	0.15
Smoker	0.25	0.43	0.37	0.48	0.24	0.43	0.39	0.49
Professionals	0.33	0.47	0.26	0.44	0.29	0.45	0.22	0.41
Clerks	0.39	0.49	0.19	0.39	0.40	0.49	0.20	0.40
AgrFishery	0.07	0.26	0.26	0.44	0.09	0.28	0.26	0.44
Elementary	0.15	0.36	0.23	0.42	0.18	0.28	0.25	0.43
Agriculture	0.02	0.14	0.03	0.18	0.01	0.12	0.03	0.16
Industry	0.19	0.39	0.40	0.49	0.21	0.41	0.42	0.49
Services	0.70	0.46	0.49	0.50	0.72	0.45	0.49	0.50
Obs.	34,556		54,074		12,594		22,274	

Table A-3: Descriptive Statistics by Country, Unrestricted Sample

	Denmark				Belgium				Ireland				Italy			
	Women		Men		Women		Men		Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log																
Hourly Wage	2.12	0.26	2.18	0.33	2.04	0.29	2.13	0.32	2.01	0.40	2.16	0.42	1.93	0.39		
Hourly Wage	8.62	2.04	9.29	2.77	8.05	2.37	8.83	2.90	8.12	3.65	9.49	4.05	7.42	3.15		
BMI	24.27	3.94	25.41	3.44	23.00	3.69	25.35	3.80	23.33	3.74	25.23	3.40	22.59	3.38		
Height	167.01	5.91	180.24	6.94	165.72	6.24	177.43	7.07	164.37	6.68	176.82	7.25	162.89	6.51		
Weight	67.73	11.59	82.58	12.17	63.15	10.48	79.85	13.11	62.94	10.12	78.88	11.68	59.85	8.88		
Sickness	1.70	4.58	0.86	2.94	1.66	5.28	1.17	4.27	0.87	3.64	0.43	2.21	1.07	4.03	0.64	2.95
Training	0.88	0.33	0.82	0.3	0.35	0.48	0.40	0.49	0.71	0.46	0.74	0.44	0.55	0.50	0.68	0.47
Insurance	0.18	0.39	0.19	0.40	0.48	0.50	0.57	0.49	0.12	0.33	0.20	0.40	0.18	0.38	0.24	0.42
Age	39.91	10.70	40.21	11.44	37.12	9.35	39.69	9.84	32.87	10.59	36.15	11.57	38.22	10.35	39.13	10.65
Couple	0.85	0.36	0.81	0.40	0.69	0.46	0.7	0.42	0.38	0.49	0.57	0.50	0.63	0.48	0.66	0.47
Children	0.39	0.49	0.35	0.48	0.32	0.47	0.32	0.46	0.33	0.47	0.37	0.48	0.33	0.47	0.36	0.48
Primary	0.12	0.33	0.17	0.38	0.11	0.32	0.24	0.43	0.22	0.42	0.34	0.47	0.30	0.46	0.46	0.50
Secondary	0.55	0.50	0.54	0.50	0.32	0.47	0.37	0.48	0.49	0.50	0.45	0.50	0.55	0.50	0.43	0.49
Tertiary	0.33	0.47	0.29	0.45	0.56	0.50	0.39	0.49	0.29	0.45	0.21	0.41	0.14	0.35	0.11	0.31
Bad Health	0.01	0.11	0.01	0.10	0.02	0.13	0.02	0.12	0.01	0.08	0.00	0.05	0.03	0.18	0.03	0.17
Smoker	0.33	0.47	0.36	0.48	0.22	0.41	0.31	0.46	0.30	0.46	0.28	0.45	0.23	0.42	0.35	0.48
Professionals	0.48	0.50	0.43	0.49	0.25	0.43	0.23	0.42	0.34	0.47	0.32	0.47	0.30	0.46	0.19	0.40
Clerks	0.39	0.49	0.11	0.32	0.26	0.44	0.11	0.32	0.46	0.50	0.18	0.38	0.43	0.50	0.27	0.45
AgrFishery	0.02	0.13	0.23	0.42	0.01	0.09	0.09	0.28	0.02	0.14	0.21	0.40	0.09	0.29	0.25	0.43
Elementary	0.10	0.30	0.20	0.40	0.06	0.23	0.13	0.33	0.18	0.39	0.28	0.45	0.13	0.34	0.22	0.41
Agriculture	0.01	0.09	0.03	0.17	0.00	0.05	0.00	0.07	0.00	0.06	0.03	0.16	0.02	0.14	0.04	0.19
Industry	0.11	0.31	0.30	0.46	0.09	0.29	0.22	0.42	0.21	0.41	0.420.49	0.21	0.40	0.39	0.49	
Service	0.70	0.46	0.47	0.50	0.48	0.50	0.33	0.47	0.78	0.41	0.55	0.50	0.73	0.45	0.53	0.50
OBS.	3,189		4,048		2,504		4,020		2,235		3,904		5,837		9,754	

Table A-3: Descriptive Statistics by Country, Unrestricted Sample (ctd.)

	Greece				Spain				Portugal			
	Women		Men		Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log												
Hourly Wage	1.64	0.45	1.80	0.45	1.88	0.50	1.99	0.46	1.41	0.54	1.51	0.49
Hourly Wage	5.73	3.03	6.75	3.39	7.40	3.93	8.13	4.04	4.84	3.44	5.18	3.38
BMI	23.43	3.56	25.86	3.13	22.82	3.53	25.92	3.50	24.15	4.25	25.49	3.17
Height	165.09	5.33	176.19	6.79	162.70	6.22	173.27	7.24	160.79	5.86	170.36	6.67
Weight	63.81	9.76	80.25	10.40	60.33	9.27	77.80	11.36	62.30	10.41	73.98	10.06
Sickness	0.65	2.97	0.55	2.31	0.96	4.14	0.74	3.64	1.16	4.83	0.80	3.88
Training	0.12	0.33	0.16	0.37	0.37	0.48	0.29	0.45	0.17	0.38	0.17	0.38
Private	0.63	0.48	0.64	0.48	0.70	0.46	0.81	0.39	0.75	0.43	0.84	0.37
Insurance	0.32	0.46	0.36	0.48	0.43	0.49	0.45	0.50	0.18	0.38	0.22	0.42
Age	35.86	9.73	39.30	10.88	35.81	10.17	37.95	11.02	35.74	11.00	36.19	11.47
Couple	0.60	0.49	0.66	0.47	0.50	0.50	0.63	0.48	0.63	0.48	0.62	0.48
Children	0.33	0.47	0.33	0.47	0.26	0.44	0.32	0.47	0.39	0.49	0.35	0.48
Primary	0.21	0.41	0.32	0.47	0.31	0.46	0.52	0.50	0.65	0.48	0.75	0.43
Secondary	0.47	0.50	0.40	0.49	0.22	0.42	0.19	0.39	0.16	0.37	0.14	0.35
Tertiary	0.31	0.46	0.28	0.45	0.47	0.50	0.29	0.45	0.18	0.39	0.11	0.31
Bad Health	0.01	0.11	0.01	0.09	0.02	0.14	0.02	0.14	0.06	0.24	0.05	0.22
Smoker	0.34	0.47	0.54	0.50	0.33	0.47	0.43	0.50	0.13	0.33	0.35	0.48
Professionals0.33	0.47	0.26	0.44	0.38	0.49	0.24	0.43	0.22	0.41	0.17	0.37	
Clerks	0.46	0.50	0.26	0.44	0.37	0.48	0.16	0.37	0.35	0.48	0.18	0.38
AgrFishery	0.08	0.26	0.24	0.43	0.05	0.21	0.30	0.46	0.17	0.37	0.36	0.48
Elementary	0.13	0.34	0.21	0.41	0.19	0.40	0.28	0.45	0.27	0.44	0.29	0.45
Agriculture	0.01	0.09	0.01	0.09	0.02	0.13	0.05	0.21	0.03	0.17	0.03	0.18
Industry	0.17	0.37	0.33	0.47	0.17	0.37	0.46	0.50	0.30	0.46	0.51	0.50
Services	0.82	0.38	0.66	0.47	0.81	0.39	0.50	0.50	0.67	0.47	0.46	0.50
OBS.	3,044		5,014		4,369		8,646		5,795		8,241	

Table A-3: Descriptive Statistics by Country, Unrestricted Sample (ctd.)

	Austria				Finland			
	Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log Hourly Wage	1.89	0.33	2.07	0.32	1.82	0.29	1.95	0.32
Hourly Wage	6.99	2.36	8.37	2.85	6.40	1.82	7.38	2.46
BMI	23.15	3.63	25.34	3.38	24.45	4.13	25.80	3.65
Height	166.51	5.96	177.69	7.09	164.84	6.30	178.09	6.63
Weight	64.19	10.69	80.04	11.95	66.42	11.59	81.97	13.34
Sickness	0.87	3.31	0.78	3.14	1.96	5.50	1.04	3.64
Training	0.56	0.50	0.58	0.49	0.79	0.41	0.71	0.45
Private	0.67	0.47	0.75	0.43	0.48	0.50	0.72	0.45
Insurance	0.18	0.38	0.23	0.42	0.86	0.35	0.84	0.37
Age	36.00	10.66	37.76	10.59	41.49	10.13	39.85	10.29
Couple	0.52	0.50	0.63	0.48	0.73	0.44	0.74	0.44
Children	0.19	0.39	0.34	0.47	0.32	0.47	0.34	0.47
Primary	0.26	0.44	0.16	0.37	0.17	0.37	0.18	0.39
Secondary	0.64	0.48	0.76	0.43	0.39	0.49	0.48	0.50
Tertiary	0.10	0.30	0.07	0.26	0.44	0.50	0.34	0.47
Bad Health	0.02	0.13	0.01	0.12	0.05	0.21	0.12	0.33
Smoker	0.28	0.45	0.40	0.49	0.21	0.41	0.30	0.46
Professionals	0.29	0.46	0.29	0.45	0.48	0.50	0.42	0.49
Clerks	0.53	0.50	0.20	0.40	0.33	0.47	0.10	0.30
AgrFishery	0.05	0.22	0.33	0.47	0.04	0.19	0.23	0.42
Elementary	0.12	0.33	0.18	0.39	0.08	0.27	0.18	0.38
Agriculture	0.00	0.06	0.01	0.12	0.01	0.08	0.02	0.13
Industry	0.19	0.39	0.47	0.50	0.09	0.29	0.29	0.46
Services	0.80	0.40	0.51	0.50	0.49	0.50	0.33	0.47
OBS.	2,653		5,271		4,930		5,176	

Table A-4: Descriptive Statistics by Country, Restricted Sample

	Denmark				Belgium				Ireland				Italy			
	Women		Men		Women		Men		Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log																
Hourly Wage	2.12	0.26	2.18	0.32	2.02	0.29	2.12	0.33	2.01	0.42	2.15	0.44	1.92	0.41	1.97	0.37
Hourly Wage	8.56	2.10	9.23	2.79	7.89	2.25	8.80	2.93	8.14	3.83	9.45	4.57	7.44	3.97	7.81	3.98
BMI	24.27	3.94	25.44	3.49	22.74	3.63	25.45	3.59	23.66	3.85	25.14	3.41	22.63	3.43	25.24	3.11
bBMI	24.58	3.48	24.70	3.64	24.42	3.23	23.91	3.37	24.60	2.91	24.40	2.90	24.42	3.30	24.04	3.10
Height	166.82	5.75	179.54	6.59	165.25	6.02	177.84	6.75	164.42	6.71	176.89	7.50	162.73	6.54	173.80	6.97
Weight	67.56	11.50	82.11	12.87	62.00	9.78	80.46	12.01	63.85	10.37	78.66	11.79	59.82	8.98	76.22	10.34
Sickness	1.82	4.93	0.89	3.02	1.61	5.07	1.32	4.49	1.10	4.20	0.39	2.10	1.02	3.91	0.62	2.85
Training	0.89	0.32	0.77	0.42	0.64	0.48	0.63	0.48	0.35	0.48	0.33	0.47	0.20	0.40	0.16	0.37
Private	0.46	0.50	0.75	0.43	0.33	0.47	0.42	0.49	0.67	0.47	0.73	0.44	0.52	0.50	0.68	0.47
Insurance	0.22	0.41	0.18	0.38	0.47	0.50	0.54	0.50	0.11	0.32	0.18	0.39	0.18	0.39	0.24	0.43
Age	40.10	10.94	40.96	11.84	37.09	9.65	39.65	9.94	33.71	10.41	35.61	11.73	37.87	10.15	39.29	10.81
Couple	0.94	0.24	0.91	0.29	0.79	0.41	0.83	0.37	0.47	0.50	0.61	0.49	0.67	0.47	0.69	0.46
Children	0.41	0.49	0.40	0.49	0.31	0.46	0.34	0.47	0.36	0.48	0.40	0.49	0.33	0.47	0.37	0.48
Primary	0.14	0.35	0.19	0.39	0.10	0.30	0.24	0.42	0.24	0.43	0.34	0.47	0.30	0.46	0.51	0.50
Secondary	0.58	0.49	0.55	0.50	0.29	0.46	0.36	0.48	0.45	0.50	0.43	0.50	0.55	0.50	0.39	0.49
Tertiary	0.27	0.45	0.27	0.44	0.60	0.49	0.41	0.49	0.31	0.46	0.22	0.42	0.15	0.35	0.10	0.31
Bad Health	0.02	0.13	0.01	0.11	0.02	0.15	0.01	0.12	0.01	0.08	0.00	0.05	0.03	0.16	0.03	0.18
Smoker	0.35	0.48	0.41	0.49	0.19	0.39	0.27	0.45	0.29	0.46	0.28	0.45	0.22	0.42	0.37	0.48
Professionals	0.25	0.43	0.25	0.43	0.26	0.44	0.23	0.42	0.36	0.48	0.32	0.47	0.31	0.46	0.18	0.39
Clerks	0.45	0.50	0.10	0.29	0.26	0.44	0.10	0.30	0.42	0.49	0.16	0.36	0.42	0.50	0.25	0.43
AgrFishery	0.00	0.04	0.00	0.06	0.01	0.09	0.09	0.29	0.02	0.14	0.22	0.41	0.11	0.31	0.27	0.44
Elementary	0.09	0.29	0.23	0.42	0.05	0.22	0.13	0.34	0.18	0.38	0.28	0.45	0.11	0.32	0.23	0.42
Agriculture	0.01	0.08	0.02	0.13	0.01	0.08	0.01	0.09	0.00	0.04	0.03	0.18	0.03	0.17	0.05	0.21
Industry	0.09	0.29	0.32	0.47	0.09	0.29	0.23	0.42	0.19	0.39	0.44	0.50	0.21	0.41	0.40	0.49
Service	0.71	0.45	0.46	0.50	0.46	0.50	0.33	0.47	0.79	0.40	0.52	0.50	0.71	0.45	0.51	0.50
OBS.	827		1040		850		1488		1160		2110		2239		4281	

Table A-4: Descriptive Statistics by Country, Restricted Sample (ctd.)

	Greece				Spain				Portugal			
	Women		Men		Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log Hourly Wage	1.44	0.66	1.52	0.77	1.77	0.50	1.91	0.49	1.42	0.56	1.61	0.56
Hourly Wage	5.14	3.10	5.84	3.83	6.70	3.56	7.68	4.66	4.96	3.61	5.99	4.44
BMI	23.33	3.69	25.72	3.09	23.13	3.55	25.94	3.39	24.04	4.63	25.28	3.19
bBMI	25.08	3.22	24.71	3.09	24.93	3.31	25.07	3.58	24.84	3.20	24.68	3.07
Height	164.64	5.79	175.93	6.89	163.13	6.15	173.52	7.22	161.46	6.06	171.09	6.73
Weight	63.15	9.78	79.63	10.75	61.53	9.83	78.08	10.90	62.39	10.51	73.99	10.15
Sickness	0.67	2.88	0.62	2.63	0.77	3.68	0.75	3.68	0.98	4.28	0.82	3.85
Training	0.15	0.36	0.15	0.36	0.27	0.44	0.26	0.44	0.18	0.39	0.19	0.39
Private	0.59	0.49	0.62	0.49	0.72	0.45	0.78	0.41	0.79	0.41	0.87	0.34
Insurance	0.30	0.46	0.33	0.47	0.37	0.48	0.42	0.49	0.26	0.44	0.32	0.47
Age	36.00	9.56	39.28	10.94	35.24	9.57	38.30	11.08	35.02	10.76	36.41	11.73
Couple	0.66	0.48	0.69	0.46	0.55	0.50	0.68	0.47	0.60	0.49	0.62	0.49
Children	0.38	0.49	0.36	0.48	0.30	0.46	0.36	0.48	0.39	0.49	0.33	0.47
Primary	0.22	0.41	0.34	0.47	0.32	0.47	0.53	0.50	0.65	0.48	0.67	0.47
Secondary	0.49	0.50	0.41	0.49	0.29	0.45	0.25	0.43	0.14	0.35	0.18	0.38
Tertiary	0.29	0.45	0.26	0.44	0.39	0.49	0.23	0.42	0.21	0.41	0.16	0.36
Bad Health	0.02	0.13	0.01	0.12	0.01	0.12	0.02	0.14	0.06	0.23	0.04	0.20
Smoker	0.33	0.47	0.50	0.50	0.32	0.47	0.46	0.50	0.15	0.36	0.38	0.49
Professionals	0.32	0.47	0.26	0.44	0.33	0.47	0.20	0.40	0.21	0.40	0.17	0.37
Clerks	0.46	0.50	0.27	0.44	0.40	0.49	0.19	0.40	0.32	0.47	0.18	0.39
AgrFishery	0.08	0.27	0.24	0.42	0.23	0.42	0.28	0.45	0.20	0.40	0.37	0.48
Elementary	0.13	0.34	0.20	0.40	0.21	0.41	0.30	0.46	0.27	0.44	0.28	0.45
Agriculture	0.01	0.08	0.01	0.12	0.02	0.14	0.04	0.20	0.02	0.12	0.02	0.15
Industry	0.18	0.38	0.31	0.46	0.19	0.39	0.44	0.50	0.35	0.48	0.56	0.50
Services	0.81	0.39	0.67	0.47	0.79	0.41	0.51	0.50	0.63	0.48	0.42	0.49
OBS.	1333		2295		1863		3611		2094		3420	

Table A-4: Descriptive Statistics by Country, Restricted Sample (ctd.)

	Austria				Finland			
	Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log Hourly Wage	1.58	0.58	1.65	0.57	1.81	0.38	2.03	0.37
Hourly Wage	5.85	3.98	6.29	4.75	6.53	2.23	8.07	2.84
BMI	24.62	4.43	25.85	2.98	23.08	3.72	25.48	3.43
bBMI	24.90	3.26	25.16	3.96	25.21	3.20	24.17	3.12
Height	159.55	5.62	170.51	6.35	166.39	6.02	176.88	7.34
Weight	62.65	11.44	75.21	9.98	63.89	10.71	79.68	11.33
Sickness	0.97	3.95	0.61	3.18	0.75	2.96	0.68	2.90
Training	0.27	0.44	0.27	0.44	0.58	0.49	0.56	0.50
Private	0.59	0.49	0.78	0.41	0.69	0.46	0.78	0.42
Insurance	0.14	0.34	0.23	0.42	0.20	0.40	0.20	0.40
Age	37.54	10.55	37.83	10.84	35.16	10.40	38.11	10.70
Couple	0.65	0.48	0.71	0.45	0.61	0.49	0.70	0.46
Children	0.30	0.46	0.39	0.49	0.21	0.41	0.38	0.49
Primary	0.47	0.50	0.68	0.47	0.33	0.47	0.18	0.38
Secondary	0.25	0.43	0.16	0.37	0.59	0.49	0.75	0.43
Tertiary	0.28	0.45	0.16	0.37	0.07	60.25	0.06	0.23
Bad Health	0.08	0.26	0.04	0.20	0.01	0.10	0.01	0.10
Smoker	0.12	0.33	0.38	0.48	0.24	0.42	0.38	0.49
Professionals	0.32	0.47	0.38	0.49	0.22	0.42	0.26	0.44
Clerks	0.38	0.49	0.22	0.41	0.53	0.50	0.19	0.39
AgrFishery	0.05	0.22	0.24	0.43	0.06	0.24	0.35	0.48
Elementary	0.25	0.43	0.30	0.46	0.19	0.39	0.20	0.40
Agriculture	0.07	0.26	0.08	0.27	0.01	0.08	0.02	0.12
Industry	0.12	0.32	0.35	0.48	0.20	0.40	0.51	0.50
Services	0.81	0.39	0.57	0.50	0.79	0.41	0.47	0.50
OBS.	1239		2012		989		2017	

Table A-5: Quantile Regressions by Country, Unrestricted Sample

	Denmark									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.046**	-0.051**	-0.037**	-0.049***	-0.046***	0.027	0.029	0.039**	0.023	0.042*
Insurance	0.020*	0.018	0.018	0.022*	0.022*	0.055**	0.047***	0.031**	0.023*	0.040**
Training	0.045***	0.020	0.045***	0.053***	0.058***	0.018	0.027*	0.012	0.011	0.019
Sickness	0.001	0.000	-0.001	-0.000	0.001	0.000	0.000	-0.001	-0.002	-0.002
Bad Health	-0.088**	-0.029	-0.024	-0.071	-0.077**	-0.249***	-0.143*	-0.089*	-0.125***	-0.158***
Age	0.050***	0.040***	0.032***	0.033***	0.037***	0.075***	0.073***	0.046***	0.036***	0.030***
Age Squared	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.000***
Private	0.030**	0.020*	0.032***	0.071***	0.094***	0.050***	0.068***	0.071***	0.097***	0.097***
Couple	0.076***	0.050***	0.048***	0.014	0.018*	0.160***	0.102***	0.056***	0.032*	0.026
Children	0.053***	0.041***	0.020*	0.031**	0.019*	0.011	0.004	0.021	0.033**	0.037**
Secondary	0.144***	0.117***	0.098***	0.042**	0.027*	0.112***	0.109***	0.120***	0.109***	0.112***
Tertiary	0.260***	0.232***	0.179***	0.114***	0.103***	0.219***	0.204***	0.209***	0.179***	0.176***
Smoker	0.004	-0.004	-0.009	-0.009	-0.007	-0.009	-0.026*	-0.025**	-0.002	-0.003
Clerks	-0.100***	-0.091***	-0.102***	-0.110***	-0.128***	-0.090***	-0.112***	-0.135***	-0.168***	-0.167***
AgrFishery	-0.205***	-0.072*	-0.126***	-0.101**	-0.132***	-0.141***	-0.143***	-0.142***	-0.185***	-0.197***
Elementary	-0.126***	-0.138***	-0.169***	-0.206***	-0.234***	-0.130***	-0.153***	-0.166***	-0.190***	-0.191***
Agriculture	0.008	-0.084*	-0.108*	-0.200***	-0.151***	-0.093**	-0.015	-0.042	-0.043	-0.021
Industry	-0.027	-0.009	0.007	-0.015	-0.035**	0.026	0.014	0.016	0.023*	0.020
Constant	0.506***	0.878***	1.197***	1.344***	1.341***	0.041	0.229***	0.968***	1.305***	1.506***
OBS.			3,268					4,032		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Belgium									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.009	-0.020	-0.049	-0.014	0.011	0.019	0.030	0.004	-0.031	-0.043*
Insurance	0.073***	0.040**	0.065***	0.073***	0.072***	0.078***	0.063***	0.072***	0.078***	0.076***
Training	0.093***	0.104***	0.075***	0.050***	0.052**	0.070***	0.097***	0.077***	0.064***	0.064***
Sickness	-0.000	-0.000	0.000	-0.000	-0.002	-0.002	-0.001	0.000	-0.000	-0.001
Bad Health	-0.022	-0.106**	-0.089	-0.034	-0.028	-0.048	-0.076*	-0.059*	-0.092*	-0.078*
Age	0.044***	0.034***	0.027***	0.035***	0.034***	0.022***	0.024***	0.017***	0.011*	0.013**
Age Squared	-0.000***	-0.000***	-0.000**	-0.000***	-0.000**	-0.000	-0.000***	-0.000	0.000	0.000
Private	0.013	0.004	0.002	-0.012	-0.003	0.003	-0.021	-0.027*	-0.011	-0.013
Couple	-0.010	-0.027*	0.002	-0.022	-0.018	0.085***	0.065***	0.089***	0.092***	0.085***
Children	0.015	0.044***	0.027	0.038***	0.032*	-0.001	0.014	0.010	0.019	0.026*
Secondary	0.055**	0.076***	0.069***	0.083***	0.068**	0.050*	0.047***	0.052***	0.070***	0.070***
Tertiary	0.167***	0.162***	0.178***	0.224***	0.210***	0.151***	0.166***	0.192***	0.243***	0.255***
Smoker	-0.026	-0.041**	-0.044**	-0.045***	-0.056***	-0.021	-0.005	0.002	-0.005	-0.019
Clerk	-0.066***	-0.079***	-0.093***	-0.086***	-0.098***	-0.088**	-0.092***	-0.084***	-0.075***	-0.066***
AgrFishery	-0.128*	-0.173**	-0.137*	-0.084	-0.166*	-0.144***	-0.133***	-0.096***	-0.074**	-0.089***
Elementary	-0.152***	-0.171***	-0.146***	-0.133***	-0.152***	-0.114**	-0.064**	-0.068***	-0.035	-0.038
Agriculture	0.007	-0.058	0.152	0.051	-0.042	-0.069	-0.125*	-0.217***	-0.233**	-0.282***
Industry	-0.013	-0.004	-0.005	-0.003	-0.025	0.074**	0.071***	0.049***	0.019	0.041*
Constant	0.715***	0.979***	1.171***	1.128***	1.240***	1.046***	1.096***	1.350***	1.525***	1.558***
OBS.			2,559					4,012		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Ireland									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.104**	-0.064*	-0.066**	-0.045	-0.033	-0.004	-0.009	0.021	0.022	0.048
Insurance	0.109***	0.088***	0.049**	0.004	0.016	0.079***	0.060*	0.069***	0.078***	0.091***
Training	0.032	0.038*	0.045***	0.064**	0.010	0.042*	0.051*	0.007	-0.002	0.011
Sickness	-0.005*	-0.003	-0.006***	-0.005*	-0.005*	-0.001	-0.004	-0.006**	-0.003	-0.004
Bad Health	0.003	-0.095	-0.040	0.160*	0.059	0.074	0.048	-0.029	0.001	-0.080
Age	0.049***	0.053***	0.038***	0.036***	0.038***	0.046***	0.039***	0.035***	0.033***	0.031***
Age Squared	-0.001***	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Private	-0.212***	-0.187***	-0.213***	-0.229***	-0.271***	-0.261***	-0.242***	-0.209***	-0.208***	-0.178***
Couple	-0.029	-0.019	-0.015	-0.005	-0.015	0.165***	0.155***	0.153***	0.096***	0.104***
Children	0.012	0.021	0.065***	0.052*	0.091***	-0.023	-0.021	0.001	0.017	0.014
Secondary	0.145***	0.153***	0.180***	0.179***	0.168***	0.053**	0.071***	0.094***	0.100***	0.110***
Tertiary	0.274***	0.280***	0.311***	0.292***	0.291***	0.220***	0.230***	0.303***	0.316***	0.332***
Smoker	0.027	0.011	-0.015	-0.017	-0.012	-0.022	-0.033	-0.018	0.005	0.024
Clerk	-0.179***	-0.190***	-0.221***	-0.267***	-0.294***	-0.140***	-0.164***	-0.176***	-0.177***	-0.176***
AgrFishery	-0.204***	-0.106	-0.157**	-0.321***	-0.256***	-0.185***	-0.193***	-0.165***	-0.165***	-0.157***
Elementary	-0.174***	-0.203***	-0.238***	-0.338***	-0.339***	-0.210***	-0.218***	-0.221***	-0.234***	-0.221***
Agriculture	-0.657***	-0.383***	0.029	-0.053	-0.155	-0.501***	-0.375***	-0.146***	-0.039	-0.063
Industry	0.081***	0.040	0.067***	0.114***	0.091***	0.151***	0.147***	0.131***	0.122***	0.106***
Constant	0.864***	0.842***	1.256***	1.508***	1.639***	0.906***	1.158***	1.370***	1.570***	1.615***
OBS.			2,286					3,908		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Italy									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.067*	-0.044	-0.031	-0.049	-0.071**	-0.068**	-0.063***	-0.042***	-0.040*	-0.029
Insurance	-0.030*	-0.030**	-0.009	0.005	0.034**	-0.000	0.006	0.016*	0.015	0.022*
Training	0.115***	0.096***	0.104***	0.104***	0.082***	0.114***	0.106***	0.091***	0.084***	0.072***
Sickness	-0.001	-0.000	-0.001	-0.002	-0.001	0.000	-0.002	-0.002	-0.003*	0.000
Bad Health	0.099***	0.064**	0.068***	0.060	0.042	-0.066*	-0.057**	-0.091***	-0.076**	-0.038
Age	0.063***	0.041***	0.034***	0.025***	0.022***	0.054***	0.045***	0.032***	0.023***	0.019***
Age Squared	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***
Private	-0.131***	-0.119***	-0.096***	-0.050***	-0.031**	-0.067***	-0.056***	-0.030***	-0.009	0.021*
Couple	0.015	0.010	0.008	0.004	0.000	0.039*	0.046***	0.073***	0.085***	0.098***
Children	0.026*	0.023*	0.034***	0.036**	0.049***	0.033**	0.030***	0.037***	0.041***	0.049***
Secondary	0.177***	0.131***	0.110***	0.102***	0.099***	0.111***	0.098***	0.080***	0.088***	0.105***
Tertiary	0.284***	0.256***	0.304***	0.443***	0.447***	0.235***	0.247***	0.310***	0.447***	0.505***
Smoker	0.019	0.010	0.007	0.017	0.026*	-0.031***	-0.028***	-0.012	-0.005	0.011
Clerk	-0.034*	-0.068***	-0.125***	-0.244***	-0.275***	-0.037**	-0.065***	-0.097***	-0.108***	-0.116***
AgrFishery	-0.154***	-0.174***	-0.202***	-0.332***	-0.101***	-0.100***	-0.155***	-0.218***	-0.228***	-0.362***
Elementary	-0.106***	-0.135***	-0.182***	-0.337***	-0.398***	-0.100***	-0.100***	-0.138***	-0.179***	-0.194***
Agriculture	-0.401***	-0.100***	-0.100***	-0.100***	-0.100***	-0.100***	-0.138***	-0.179***	-0.194***	-0.100***
Industry	0.077***	-0.100***	-0.100***	-0.138***	-0.179***	-0.194***	0.050***	0.028*	0.025	0.009
Constant	0.184*	0.786***	1.129***	1.478***	1.632***	0.472***	0.752***	1.173***	1.485***	1.613***
OBS.			5,968					9,730		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Greece									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.023	-0.051*	-0.049	0.012	0.009	-0.065**	-0.042*	-0.024	-0.029	-0.030
Insurance	-0.017	-0.000	-0.006	0.004	0.004	0.035*	0.030*	0.020	-0.013	-0.010
Training	0.009	0.017	0.059**	0.048**	0.098***	0.100***	0.105***	0.087***	0.115***	0.099***
Sickness	0.002	0.000	0.003	-0.000	-0.002	-0.006*	-0.000	-0.000	0.001	-0.000
Bad Health	-0.235**	-0.161**	-0.177***	-0.161**	-0.192**	-0.157*	-0.156**	-0.150**	-0.050	-0.113
Age	0.066***	0.064***	0.052***	0.057***	0.054***	0.044***	0.045***	0.050***	0.051**	0.052***
Age Squared	-0.001***	-0.001***	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Private	-0.219***	-0.239***	-0.242***	-0.246***	-0.208***	-0.217***	-0.189***	-0.138***	-0.101***	-0.060**
Couple	0.061**	0.036**	0.032*	-0.004	0.027	0.119***	0.100***	0.065***	0.064**	0.060*
Children	0.060**	0.065***	0.067***	0.061***	0.045*	0.035	0.055***	0.074***	0.084***	0.081***
Secondary	0.157***	0.166***	0.136***	0.111***	0.126***	0.134***	0.130***	0.158***	0.133***	0.124***
Tertiary	0.334***	0.352***	0.393***	0.460***	0.521***	0.229***	0.363***	0.465***	0.470***	0.651***
Smoker	0.006	-0.007	-0.008	-0.000	-0.001	-0.002	-0.004	-0.005	0.009	0.004
Clerks	-0.078**	-0.074***	-0.122***	-0.171***	-0.186***	-0.143***	-0.149***	-0.158***	-0.220***	-0.271***
AgrFishery	-0.240***	-0.202***	-0.219***	-0.312***	-0.314***	-0.216***	-0.204***	-0.229***	-0.287***	-0.343***
Elementary	-0.263***	-0.251***	-0.268***	-0.264***	-0.267***	-0.171***	-0.183***	-0.194***	-0.252***	-0.304***
Agriculture	-0.182*	-0.146***	-0.105*	-0.048	-0.053	-0.105	-0.159***	-0.151***	-0.100*	-0.147*
Industry	0.102***	0.069***	0.063***	0.064***	0.036	0.107***	0.052***	0.047***	0.035*	0.036
Constant	-0.145	-0.001	0.463***	0.582***	0.669***	0.363***	0.465***	0.470***	0.651***	0.739***
OBS.			3,107					5,000		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Spain									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.105*	-0.101**	-0.087**	-0.114***	-0.131***	-0.023	-0.051**	-0.022	-0.016	0.002
Insurance	0.143***	0.113***	0.066***	0.072***	0.049***	0.050***	0.059***	0.057***	0.055***	0.054***
Trainining	0.121***	0.116***	0.125***	0.093***	0.105***	0.125***	0.119***	0.146***	0.137***	0.121***
Sickness	0.002	0.001	-0.001	-0.001	-0.000	-0.007***	-0.007***	-0.001	-0.001	-0.001
Bad Health	0.035	0.019	-0.003	0.010	0.015	-0.069	-0.093*	-0.133***	-0.138***	-0.164***
Age	0.053***	0.049***	0.043***	0.039***	0.032***	0.044***	0.039***	0.029***	0.023***	0.026***
Age Squared	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**
Private	-0.199***	-0.192***	-0.179***	-0.152***	-0.136***	-0.180***	-0.133***	-0.060***	0.008	0.038*
Couple	0.054*	0.046*	0.056***	0.022	0.067***	0.091***	0.080***	0.070***	0.074***	0.066**
Children	0.067*	0.026	0.031*	0.019	-0.006	-0.007	0.018	0.016	0.021	0.033*
Secondary	0.130***	0.141***	0.136***	0.153***	0.160***	0.124***	0.119***	0.099***	0.105***	0.130***
Tertiary	0.232***	0.240***	0.255***	0.234***	0.190***	0.212***	0.202***	0.210***	0.220***	0.237***
Smoker	0.013	0.007	0.019	0.032*	0.020	-0.044**	-0.034**	-0.016	-0.023*	-0.030*
Clerk	-0.224***	-0.273***	-0.296***	-0.370***	-0.380***	-0.177***	-0.184***	-0.255***	-0.266***	-0.219***
AgrFishery	-0.328***	-0.390***	-0.433***	-0.570***	-0.562***	-0.231***	-0.254***	-0.326***	-0.366***	-0.329***
Elementary	-0.306***	-0.347***	-0.353***	-0.454***	-0.468***	-0.249***	-0.285***	-0.363***	-0.378***	-0.361***
Agriculture	-0.016	-0.096	-0.122**	-0.001	-0.005	-0.222***	-0.193***	-0.179***	-0.178***	-0.187***
Industry	0.142***	0.110***	0.131***	0.142***	0.120***	0.183***	0.149***	0.109***	0.071***	0.041**
Constant	0.276	0.516***	0.833***	1.132***	1.372***	0.565***	0.794***	1.207***	1.504***	1.507***
OBS.			4,457					8,636		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Portugal									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	0.010	-0.001	-0.025	-0.035	0.022	-0.072***	-0.006	0.008	0.024	-0.015
Insurance	0.040**	0.033***	0.022	0.036**	0.044***	0.038*	0.066***	0.079***	0.089***	0.140***
Training	0.066***	0.090***	0.135***	0.152***	0.139***	0.132***	0.136***	0.131***	0.121***	0.123***
Sickness	-0.003*	-0.001	-0.000	-0.001	-0.002*	0.001	-0.001	-0.001	0.003	-0.002
Bad Health	0.007	-0.002	-0.034	-0.084***	-0.103***	-0.123***	-0.119***	-0.107***	-0.135***	-0.146***
Age	0.006	0.009***	0.011**	0.020***	0.026***	0.029***	0.029***	0.031***	0.038***	0.040***
Age Squared	-0.000	-0.000**	-0.000	-0.000*	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Private	-0.279***	-0.274***	-0.225***	-0.147***	-0.130***	-0.106***	-0.057***	-0.060***	-0.021	-0.022
Couple	0.070***	0.046***	0.047**	0.005	-0.032**	0.088***	0.097***	0.110***	0.146***	0.179***
Children	0.006	-0.002	-0.024	-0.008	0.025*	0.011	0.013	0.018	0.019	0.000
Secondary	0.111***	0.131***	0.207***	0.300***	0.346***	0.101***	0.112***	0.191***	0.180***	0.143***
Tertiary	0.534***	0.531***	0.605***	0.640***	0.640***	0.543***	0.616***	0.655***	0.682***	0.643***
Smoker	0.062***	0.075***	0.124***	0.129***	0.108***	-0.023	-0.029**	-0.031*	-0.022	-0.011
Clerks	-0.256***	-0.281***	-0.322***	-0.336***	-0.318***	-0.217***	-0.229***	-0.226***	-0.191***	-0.205***
AgrFishery	-0.277***	-0.343***	-0.405***	-0.510***	-0.533***	-0.209***	-0.215***	-0.277***	-0.278***	-0.268***
Elementary	-0.308***	-0.366***	-0.426***	-0.469***	-0.458***	-0.259***	-0.248***	-0.284***	-0.295***	-0.331***
Agriculture	-0.035	-0.005	-0.090*	-0.149***	-0.155***	-0.309***	-0.255***	-0.217***	-0.109*	-0.160**
Industry	0.093***	0.085***	0.048**	0.092***	0.059**	0.071***	0.032**	-0.004	-0.035	-0.060**
Constant	1.133***	1.184***	1.280***	1.170***	1.139***	0.620***	0.660***	0.801***	0.807***	0.913***
OBS.			5,981					8,229		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Austria									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	0.029	0.021	-0.020	0.068*	0.038*	0.009	0.027*	0.042**	0.041*	0.043*
Insurance	0.031	0.074***	0.105***	0.105***	0.105***	0.087***	0.098***	0.101***	0.109***	0.105***
Training	0.066***	0.066***	0.049***	0.013	0.015	0.059***	0.049***	0.048***	0.047***	0.043**
Sickness	-0.002	-0.000	0.001	-0.000	-0.002	-0.003	-0.001	-0.001	-0.003*	-0.005**
Bad Health	0.039	0.021	0.047	-0.029	-0.021	-0.046	-0.053	-0.086*	-0.010	0.123**
Age	0.050***	0.040***	0.039***	0.024***	0.017***	0.041***	0.033***	0.021***	0.018***	0.013**
Age Squared	-0.001***	-0.000***	-0.000***	-0.000***	-0.000	-0.000***	-0.000***	-0.000***	-0.000**	-0.000
Private	-0.083***	-0.059***	-0.054***	-0.042*	-0.058***	0.021	0.052***	0.042***	0.041***	0.045**
Couple	-0.029	-0.029**	-0.010	0.022	0.028**	0.010	0.006	0.058***	0.026*	0.037*
Children	-0.067**	-0.056***	-0.054***	-0.045*	-0.037**	-0.009	0.000	-0.025*	-0.007	-0.002
Secondary	0.078***	0.086***	0.066***	0.058***	0.053***	0.107***	0.112***	0.101***	0.096***	0.109***
Tertiary	0.107**	0.149***	0.140***	0.067*	0.057**	0.204***	0.230***	0.241***	0.309***	0.402***
Smoker	0.024	0.011	0.026**	0.011	0.007	-0.053***	-0.029***	-0.015	-0.024*	-0.014
Clerks	-0.119***	-0.124***	-0.153***	-0.227***	-0.239***	-0.164***	-0.165***	-0.189***	-0.140***	-0.130***
AgrFishery	-0.210***	-0.251***	-0.335***	-0.477***	-0.465***	-0.147***	-0.172***	-0.194***	-0.208***	-0.201***
Elementary	-0.278***	-0.286***	-0.338***	-0.482***	-0.500***	-0.230***	-0.276***	-0.278***	-0.276***	-0.301***
Agriculture	0.057	0.048	0.014	-0.019	-0.071	-0.242***	-0.118***	-0.092**	-0.079*	-0.145*
Industry	0.036	0.065***	0.089***	0.095***	0.086***	0.054***	0.049***	0.043***	0.045***	0.043**
Constant	0.648***	0.901***	1.073***	1.516***	1.704***	0.812***	1.042***	1.408***	1.601***	1.740***
OBS.			2,688					5,257		

Table A-5: Quantile Regressions by Country, Unrestricted Sample (ctd)

	Finland									
	Women					Men				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Obesity	-0.077***	-0.039**	-0.046***	-0.034*	-0.042**	-0.039*	-0.014	0.011	0.009	0.021
Insurance	0.131***	0.093***	0.066***	0.057***	0.070***	0.153***	0.114***	0.078***	0.073***	0.052**
Training	0.140***	0.104***	0.082***	0.073***	0.050***	0.073***	0.073***	0.086***	0.100***	0.115***
Sickness	-0.001	-0.000	-0.000	-0.000	-0.001	-0.000	-0.001	-0.001	-0.000	0.001
Bad Health	-0.007	-0.005	-0.013	0.027	0.060**	-0.010	-0.018	-0.010	0.012	0.018
Age	0.049***	0.036***	0.025***	0.018***	0.020***	0.028***	0.027***	0.027***	0.026***	0.030***
Age Squared	-0.001***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Private	0.009	0.012	0.025**	0.046***	0.050***	0.005	0.012	0.038***	0.038***	0.037*
Couple	0.010	-0.016	-0.011	-0.018	-0.024*	0.066***	0.040*	0.041**	0.015	0.018
Children	0.010	0.002	-0.001	0.004	0.016	0.038**	0.033	0.011	0.010	0.005
Secondary	0.031	0.021	0.028*	0.010	0.017	0.059***	0.057**	0.047**	0.039**	0.055**
Tertiary	0.158***	0.133***	0.144***	0.170***	0.212***	0.169***	0.167***	0.186***	0.193***	0.218***
Smoker	0.010	0.004	0.001	-0.008	-0.009	-0.012	-0.010	-0.023*	-0.028**	-0.031*
Clerks	-0.089***	-0.093***	-0.103***	-0.137***	-0.127***	-0.129***	-0.121***	-0.131***	-0.169***	-0.154***
AgrFishery	-0.146***	-0.153***	-0.145***	-0.156***	-0.173***	-0.065***	-0.090***	-0.109***	-0.115***	-0.118***
Elementary	-0.114***	-0.157***	-0.190***	-0.209***	-0.214***	-0.111***	-0.119***	-0.139***	-0.117***	-0.089***
Agriculture	-0.027	0.004	-0.017	-0.014	-0.005	-0.025	-0.072	-0.057	-0.099**	-0.121**
Industry	0.020	0.022	0.011	0.030	0.050**	0.022	0.023	0.019	0.011	0.025
Constant	0.235*	0.657***	1.028***	1.301***	1.317***	0.722***	0.876***	1.033***	1.207***	1.185***
OBS.			5,024					5,159		

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample

	Denmark				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	0.068	0.039	0.003	-0.041	-0.070**
Sickness	0.002*	0.001	-0.001	-0.001	-0.001
Training	0.051***	0.039***	0.054***	0.055***	0.050***
Insurance	0.021**	0.028***	0.029***	0.035***	0.027***
Sickness interaction	-0.002	0.002	0.002	0.002	-0.001
Training interaction	-0.110**	-0.091**	-0.036	0.019	0.043
Insurance interaction	-0.003	-0.030	-0.082***	-0.090**	-0.062**
Men					
Obesity	0.021	0.050	-0.002	-0.003	-0.003
Sickness	0.000	-0.001	-0.001	-0.003*	-0.002*
Training	0.017	0.033*	0.009	0.009	0.015
Insurance	0.052***	0.042**	0.028***	0.030***	0.044***
Sickness interaction	-0.001	0.005	0.002	0.004	0.001
Training interaction	-0.002	-0.047	0.035	0.051*	0.083**
Insurance interaction	0.045	0.045	0.036	-0.042	-0.091**

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Belgium				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.124***	-0.136***	-0.053	-0.065	-0.080
Sickness	0.000	-0.000	-0.001	-0.000	-0.002*
Training	0.097***	0.109***	0.078***	0.051***	0.051***
Insurance	0.060***	0.034***	0.055***	0.072***	0.065***
Sickness interaction	0.005	0.004*	0.006	0.009***	0.005*
Training interaction	-0.122**	-0.044	-0.133**	-0.069	0.005
Insurance interaction	0.264***	0.188***	0.125**	0.107	0.096*
Men					
Obesity	0.042	0.019	-0.002	-0.050*	-0.063*
Sickness	0.001	0.001	0.001	0.001	-0.001
Training	0.067***	0.093***	0.076***	0.072***	0.059
Insurance	0.084***	0.060***	0.063***	0.061***	0.062***
Sickness interaction	-0.026***	-0.012***	-0.004	-0.005*	-0.003
Training interaction	0.009	0.022	-0.019	-0.042	-0.060
Insurance interaction	0.000	0.038	0.053*	0.117***	0.133***

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Ireland				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.067	-0.038	-0.061*	-0.138***	-0.118**
Sickness	-0.006**	-0.002*	-0.006***	-0.005***	-0.005**
Training	0054*	0.053***	0.048***	0.053***	0.003
Insurance	0.080**	0.074***	0.035*	0.006	0.020
Sickness interaction	-0.001	-0.005	-0.011*	-0.015***	-0.019***
Training interaction	-0.062	-0.044	0.028	0.205***	0.245***
Insurance interaction	0.040	-0.047	-0.020	-0.086	-0.230***
Men					
Obesity	0.013	-0.015	-0.007	0.007	0.006
Sickness	-0.002	-0.005*	-0.007**	-0.003	-0.004
Training	0.027	0.045**	0.005	-0.000	0.006
Insurance	0.096***	0.062**	0.071***	0.077***	0.071***
Sickness interaction	0.002	0.004	-0.002	-0.005	0.007
Training interaction	0.075	0.086	0.079	0.014	0.042
Insurance interaction	-0.146**	-0.108	-0.025	0.108	0.089*

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Italy				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.112***	0.051	-0.018	-0.041	-0.034
Sickness	-0.001	-0.000	-0.001	0.002	-0.001
Training	0.108***	0.090***	0.104***	0.111***	0.088***
Insurance	-0.026**	-0.024**	-0.006	0.009	0.036***
Sickness interaction	-0.000	-0.006	-0.009**	0.000	-0.002
Training interaction	0.105	0.071	0.020	-0.024	-0.029
Insurance interaction	-0.048	0.012	-0.055	-0.013	-0.085*
Men					
Obesity	-0.097***	-0.057***	-0.043***	-0.054***	-0.055***
Sickness	-0.000	-0.002	-0.002*	-0.003**	-0.000
Training	0.108***	0.101***	0.088***	0.079***	0.071***
Insurance	0.004	0.009	0.018**	0.015	0.018*
Sickness interaction	-0.000	-0.002	-0.002*	-0.003*	-0.000
Training interaction	0.071	0.020	-0.005	0.046	0.031
Insurance interaction	-0.059	-0.040	-0.006	0.017	0.058*

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Greece				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.027	-0.063***	-0.010	0.046	0.033
Sickness	0.002	-0.000	0.003	0.000	-0.001
Training	0.016	0.020	0.056***	0.044**	0.094***
Insurance	-0.010	-0.006	0.004	0.012	0.015
Sickness interaction	0.007	0.005	0.000	-0.004	-0.004
Training interaction	-0.083	-0.050	0.021	0.100	0.029
Insurance interaction	-0.013	-0.008	-0.093*	-0.158***	-0.078*
Men					
Obesity	-0.088***	-0.064***	-0.050**	-0.040	-0.044
Sickness	-0.005**	-0.000	-0.000	0.000	-0.002
Training	0.104***	0.106***	0.085***	0.114***	0.097***
Insurance	0.033**	0.025**	0.017	-0.011	-0.011
Sickness interaction	-0.000	-0.014**	0.001	0.006	0.003
Training interaction	-0.019	0.022	0.074	0.068	-0.045
Insurance interaction	0.081**	0.029	0.021	-0.037	0.054

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Spain				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.171***	-0.133**	-0.084*	-0.110**	-0.128***
Sickness	0.002	0.002	-0.001	-0.001	-0.000
Training	0.111***	0.114***	0.126***	0.088***	0.103***
Insurance	0.147***	0.108***	0.061***	0.075***	0.050***
Sickness interaction	-0.000	-0.002	-0.000	0.001	0.001
Training interaction	0.092	0.011	-0.077	-0.034	-0.111
Insurance interaction	0.047	0.054	0.023	0.001	0.001
Men					
Obesity	-0.024	-0.061**	-0.038*	-0.025	-0.005
Sickness	-0.007***	-0.007***	-0.001	-0.002	-0.001
Training	0.120***	0.114***	0.143***	0.136***	0.126***
Insurance	0.053***	0.060***	0.054***	0.052***	0.049***
Sickness interaction	0.001	0.001	0.003	0.002	-0.000
Training interaction	0.022	0.058	0.002	0.016	-0.051
Insurance interaction	-0.015	0.009	0.036	0.016	0.052

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Portugal				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.017	0.006	-0.028	0.013	0.054***
Sickness	-0.003	-0.000	0.000	-0.001	0.000
Training	0.077***	0.099***	0.136***	0.162***	0.134***
Insurance	0.017	0.006	-0.028	0.013	0.054***
Sickness interaction	-0.001	-0.004	-0.000	-0.003	-0.005***
Training interaction	0.042	-0.018	-0.037	-0.085*	-0.112***
Insurance interaction	0.064	0.022	0.025	0.050	-0.020
Men					
Obesity	-0.012	0.059***	0.026	0.017	-0.050
Sickness	0.001	-0.001	-0.001	0.003*	0.001
Training	0.145***	0.142***	0.145***	0.123***	0.125***
Insurance	0.048**	0.069***	0.073***	0.077***	0.100***
Sickness interaction	0.004	-0.003	-0.004	-0.010**	-0.010*
Training interaction	-0.192***	-0.070	-0.050	-0.008	-0.003
Insurance interaction	-0.087	-0.158***	0.001	0.126**	0.263**

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Austria				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	0.098**	0.060**	0.019	0.071*	0.032
Sickness	0.000	0.000	0.001	0.000	-0.002
Training	0.083***	0.069***	0.054***	0.018	0.017*
Insurance	0.029	0.070***	0.103***	0.095***	0.100***
Sickness interaction	-0.005	-0.009**	-0.015***	-0.024***	-0.026***
Training interaction	-0.161**	-0.088*	-0.077**	-0.017	-0.001
Insurance interaction	0.095	0.056	0.080*	0.164**	0.141***
Men					
Obesity	-0.011	0.008	0.015	0.044*	0.065**
Sickness	-0.002	-0.001	-0.001	-0.004***	-0.005***
Training	0.048***	0.048***	0.045***	0.047***	0.048***
Insurance	0.091***	0.090***	0.101***	0.116***	0.108***
Sickness interaction	-0.002	-0.001	0.001	0.002	0.001
Training interaction	0.041	0.015	0.059**	0.026	-0.025
Insurance interaction	0.014	0.038	-0.023	-0.067*	-0.058

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-6: Quantile Regressions with Interactions by Country, Unrestricted Sample (ctd)

	Finland				
	$\alpha(15th)$	$\alpha(25th)$	$\alpha(50th)$	$\alpha(75th)$	$\alpha(85th)$
Women					
Obesity	-0.219***	-0.181***	-0.130***	-0.151***	-0.151***
Sickness	-0.001	-0.000	-0.000	-0.001	-0.001
Training	0.146***	0.104***	0.080***	0.070***	0.045***
Insurance	0.107***	0.075***	0.055***	0.052***	0.068***
Sickness interaction	-0.007**	-0.000	0.001	0.002	0.003
Training interaction	-0.006	0.041	0.022	0.011	0.063*
Insurance interaction	0.168**	0.117***	0.077*	0.114***	0.052
Men					
Obesity	-0.018	0.035	0.022	0.003	0.020
Sickness	-0.001	-0.002	-0.001	-0.000	0.001
Training	0.078***	0.074***	0.090***	0.103***	0.110***
Insurance	0.151***	0.121***	0.079***	0.070***	0.054***
Sickness interaction	0.006***	0.004	0.001	-0.000	0.000
Training interaction	-0.011	-0.011	-0.020	-0.012	0.043
Insurance interaction	-0.028	-0.062	0.001	0.015	-0.028

Symbols: *** significant at 1%; ** significant at 5%;* significant at 10%.

Notes: Control variables are as in Table 2.

Table A-7: Trade Union Density, Bargaining Governability and EPL

	Union Density	**Bargaining Governability**	**EPL Strictness**
Austria	37%	3	2.3
Belgium	56%	1	2.5
Denmark	74%	4	1.5
Finland	76%	4	2.1
Greece	27%	$^{(a)}$	3.5
Ireland	38%	1	1.1
Italy	35%	1	3.4
Portugal	24%	3	3.7
Spain	15%	3	3.1

Notes: Trade union density is defined as the proportion of the labor force belonging to a trade union (for details see OECD 2004). Bargaining governability is an indicator of vertical co-ordination and is a measure of the extent to which collective contracts are effectively followed at lower levels. This indicator assumes the following values: 4 when collective agreement are legally enforceable and there is an automatic peace obligation during the validity of the agreement; 3 when collective agreement are legally enforceable and there are widespread but optional peace of obligation clauses in agreements; 2 when there is legal enforceability, but no effective tradition or practice of peace of obligation clauses; 1 when neither of the above conditions are effectively present. For further detail on bargaining governability, see OECD (2004) and Traxler *et al.* (2001). The EPL is a summary indicator, obtained as weighted average of three main components: protection against individual dismissal of a regular employee, protection against individual dismissal of a temporary employee and protection against collective dismissals. For further details on EPL see OECD (1999).