Up in the skies?
The relationship between body height and earnings in Germany

GUIDO HEINECK [*]

Department of Economics, University of Munich, Ludwigstr.33/IV, Munich, D-80539, Germany, email: heineck@econhist.de

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Abstract

This paper analyzes whether taller workers earn more then their shorter counterparts. Using GSOEP data from 1991 to 2002, earnings functions are estimated separately for male and female workers in both West and East German regions. The Hausman-Taylor IV estimator ist applied to account for unobservable heterogeneity including also time-invariant indicators. The results do not suggest for an effect of height on the earnings of female workers and male East German workers. There, however, is an earnings premium associated with stature for male workers from West Germany of more than 4% for additional 10cm in height.

Keywords: Body height, earnings regressions, Hausman-Taylor IV estimator
JEL-Classification: J31, J71, J10

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I. INTRODUCTION

There is an established literature in social psychology and also in economics that addresses the relationship between physical appearance and labor market outcomes. In general, three types of indicators of physical attributes are examined. First, there are analyses that focus on the impact of the looks of people, i.e. their beauty or attractiveness. Among economics' scholars, it is Daniel Hamermesh who regularly studies the effects of human beauty on earnings (Hamermesh and Biddle, 1994; Biddle and Hamermesh, 1998; Hamermesh and Parker, 2003). His findings suggest that workers of above average beauty earn some 10-15% more than average- or plain looking people. Furthermore, the results imply employer discrimination rather than productivity based differences caused by differences in appearance. This implication has been supported by Mobius and Rosenblatt (2003) who set up an experimental labor market situation but who also find that the direct stereotype effect explains only about 30% of the beauty premium. According to their analysis, the larger part of the premium is caused by a higher self-confidence and certain communication skills by physically attractive workers.

Secondly, there is a large and ever increasing body of literature that examines the effect of individuals' body weight on socio-economic outcomes. The focus here is on obese individuals which is partly due to the obesity epidemic and the accompanying scholarly interest.[1] The results from the empirical literature show that it is in particular heavier women who earn less (Averett and Korenmann, 1996; Cawley, 2000; Mitra, 2001; Pagán and Dávilla, 1997; Register and Williams, 1990). These negative effects that are associated with obesity are explained by decreased labor productivity as well as by social stigma.

Some of the studies on the relationship between body weight and labor market outcomes also include body height as further control variable. The effects of height itself, however, have been examined by only a few studies (Schultz, 2002a, 2002b; Judge and Cable, 2003; Persico *et al*., 2003) which will be summarized in more detail below.

The purpose of this paper is to examine whether earnings differentials by height also exist for the sample of German workers used here. Therefore, this analysis adds to the literature as it provides evidence on height differentials from German data for the first time. As prior research mainly has explored data from the US, this allows for transcontinental comparisons.

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[1] The increase in obesity in Western industrialized countries is documented in, for example, Popkin and Doak (1998) or Philipson. (2001). For the development of body size of US Americans over the course of the 20^{th} century, see Komlos and Baur (2003).

Furthermore, while most of previous studies are based on cross-sectional data, the use of panel data allows to control for unobservable individual heterogeneity. In spite of body height being a time-invariant indicator that would drop out of fixed effects regression, employing the Hausman-Taylor instrumental variable (HT-IV) estimator allows to include body height as regressor. Furthermore, in contrast to the random effects estimator, the HT-IV estimator allows for correlation between subsets of the regressors and the individual-specific effect.

The remainder of the article is as follows: Next, in section II, background and findings from previous research will shortly be introduced. Section III presents data and methods used in the analysis, results from the estimations are discussed in section IV and concluding remarks are given in section V.

II. BACKGROUND AND PREVIOUS RESEARCH

The empirical labor economics literature offers hundreds, if not thousands of studies that address discrimination in labor market outcomes by, for example, gender, race, differences in health status or behavior and many other aspects. Among these factors analyzed, physical appearance also attracted research efforts. Unsurprisingly, the looks of people play an important role in determining individuals' outcomes on the labor market. This is because appearance is often exposed to cultural and social stigma. In particular, individuals who do not meet (informal) standards are often mistreated.[2]

It is because of this discriminatory phenomenon that, for example, obese women are disadvantaged in many aspects like earning less or having lower marriage probabilities (Averett and Korenmann, 1996). The socio-psychological reasoning behind this is the (un)conscious association of overweight with negative personal traits. Overweight and particularly obese people are more likely considered to be less intellgent or to lack in self-discipline or motivation.[3]

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2 Averett and Korenmann, for example, point out that there is "… little doubt that Americans (especially women) experience great social and psychological pressure with respect to body size …" (Averett and Korenmann, 1996, p. 305).

3 A few studies have addressed the possibility of 'reversed causality', meaning that it rather is a low socio-economic status that leads to lower wages and other socio-economic disadvantages. Cawley (2000), for example, applies instrumental variable estimators to account for endogeneity. However, while his findings are not conclusive, the evidence rather is in support for the discrimination hypothesis.

While it may at first glance be puzzling that body height should be exposed to similar discriminatory behavioral structures, the underlying psycho-social mechanisms are not much different from the perception of individuals' body weight. That is, tallness particularly among men is associated with authority, capability and success. Followingly, compared to their shorter counterparts, taller men are found to have advantages in both the hiring process and in the earnings potential (Ross and Ferris, 1981).

However, it can *a priori* not be ruled out that height differentials reflect differences in individuals' labor productivity. This is because human stature may well be considered to be the result of long-term investments in health human capital. Clearly, deciding upon these investments rather is made by an individual's parents than by herself. However, besides genetic endowments, it is the nutritional status as well as health behavior, and thus the knowledge about, that both contribute to the final body height. Followingly, there is evidence that individuals from low socio-economic groups are shorter than individuals from higher socio-economic groups (Boström and Diderichsen, 1997).[4]

Such may consequently also suggest for differences in individuals' characteristics that are rewarded differently on the labor market. However, previous research implies that body height affects earnings even after adjusting for controls like age, own or parents' education. In the beauty literature, Hamermesh and Biddle (1994) find wage penalties also for shorter than average men and, interestingly though, wage premiums for both taller and shorter women. In the literature that mainly focuses on body weight but further accounts for height, Cawley (2000) finds a wage premium for height among white women. His analyses suggest an increase in wages of about 4% by a difference in height of 3 inches. In a study of data from urban Brazil, the findings suggest that height is an important determinant for both males and females (Thomas and Strauss, 1997). Mitra (2001) concludes that taller women in managerial or professional occupations receive a wage premium of about 2.5% with a one-inch increment in height.

In the studies that focus on body height only, Schultz (2002a, 2002b) addresses stature as a result of health human capital and examines its effects on wages for samples from Ghana, Brazil and the US. His results from OLS estimations suggest for wage premiums of an

[4] The positive association between individuals' income and body height is well documented in the cliometric and anthropometric history literature. Furthermore, there is a large number of studies that consequently shows average body height to be responsive to economic processes. For example, see Steckel (1995), Komlos and Baten (1998) or Komlos (1998).

additional centimeter in adult height of about 1.5% in Ghana and Brazil, and of about 0.4% for US workers. For the latter sample, applying instrumental variable estimations and using parental education as instrument, his findings even suggest for wage premiums that are many times larger than those from OLS.

Judge and Cable (2003) show for data for the US and the UK that each one-inch increase in height results in an increase in annual earnings of, on average, about $789 more a year. Persico *et al*. (2003) find a wage premium for any additional inch of some 2.5% for white male British and US workers. However, they suggest that it is not adult height that affects labor market outcomes, but that it rather is tallness as teenager that matters. In their words, it is "…social effects during adolescence, rather than contemporaneous labor market discrimination or correlation with productive attributes [that] may be at the root of the disparity in wages across heights."[5]

While the latter cannot be examined with the data used here, the following analysis will nevertheless contribute to the literature as it explores whether wage premiums for height exist also for German workers.

III. DATA AND METHODS

The data used in this analysis are drawn from the German Socio-Economic Panel (GSOEP). It is a representative survey for Germany that was implemented in 1984 in West Germany and extended to the former GDR in 1990. In 2002, the latest wave available, the survey comprises almost 24,000 interviewed individuals. It includes a wide range of socio-economic and labor related indicators. While there also is a set of health related variables, anthropometric indicators, i.e. body weight and height, yet were asked for only in 2002. Given that the indicators are self-reported, one should be aware of potential bias due to misclassification of height and weight. However, while there is evidence of a systematic bias in self-reported body weight, height seems not to be affected strongly (Boström and Diderichsen, 1997).

Furthermore, body weight is rather volatile. While there is a positive relationship with age, weight still can be affected by behavior also in the short term. As noted above, height on the other hand is a result of complex biological and nutritional processes which is influenced by individual behavior only to some minor extent but rather is determined individuals' parents.

[5] Persico *et al*. (2003), p. 6.

With the anthropometric data at hand, including body weight in cross-sectional regressions would be possible. This is not done in this analysis, because cross-sectional estimation quite likely is biased if unobservable individual-specific effects are not controlled for. Body height, on the other hand, may be assumed to be constant for individuals between 21 and 50 years of age, it is possible to link this information to individuals' characteristics from prior waves. It is therefore possible to account for individual-specific effects by applying panel estimators.

In the literature, the standard methods to account for unobservable heterogeneity are the fixed effects estimator and the random effects estimator. The major difference between the two models is based on assumptions about the correlation between the individual-specific effects and the set of regressors. There are two major shortcomings with these models: First, the user is left to make an 'all or nothing' decision based on whether she assumes that there is correlation or not. Second, in cases where it is more reasonable to assume that the individual effects are related to the regressors, estimation of time-invariant explanatory variables is not possible.

To overcome these shortcomings, Hausman and Taylor (1981) introduced a model where some of the explanatory variables are related to the individual-specific effects, while others are not. Following their approach, the model can be written as

$$\ln w_{it} = \mathbf{X}_{1it}\boldsymbol{\beta}_1 + \mathbf{X}_{2it}\boldsymbol{\beta}_2 + \mathbf{Z}_{1i}\boldsymbol{\gamma}_1 + \mathbf{Z}_{2i}\boldsymbol{\gamma}_2 + \mu_i + \nu_{it} \qquad (3.1)$$

where $\mathbf{X}_{1it}$ ($\mathbf{X}_{2it}$) is k_1 (k_2) variables that are time-varying and uncorrelated (correlated) with μ_i, and $\mathbf{Z}_{1i}$ ($\mathbf{Z}_{2i}$) is g_1 (g_2) variables that are time-invariant and uncorrelated (correlated) with μ_i. Hausman and Taylor propose an instrumental variable approach where the following variables are used as instruments in the final GLS estimator: $\mathbf{X}_{1it}, \mathbf{Z}_{1i}$ and $\mathbf{X}_{2it} - \overline{\mathbf{X}}_{2i\cdot}, \overline{\mathbf{X}}_{1i\cdot}$.[6]

The dependent variable used in all regressions is monthly gross earnings. As Anger and Schwarze (2003) point out, monthly labor income might overstate the remuneration of workers whose weekly hours of work exceed 40. Using hourly wages, which can be calculated by dividing earnings by working hours, may, on the other hand, understate the earnings of those who work long hours. Thus, to prevent differences in working hours from distorting the estimates, working time is used as a control variable.

[6] For a detailed outline of the estimation strategy, see Greene (2003).

Individuals' height is the primar regressor of interest. Besides, the analysis uses a wide range of further control variables that are standard in the estimation of Mincer-type earnings functions. In particular, the regression equations include age, age squared, job tenure and, as pointed out, the hours regularly worked per week as continuous variables. Furthermore, the following binary indicators are included: married, blue collar worker, public employer, part-time occupation, whether overtime work is done, three firm-size dummies, eight occupation dummies, twelve branch dummies and, in the panel regressions, dummies indicating the year of observation. To economize on space, neither *a priori* expectations nor estimation results for the controls are discussed.[7]

Because of body height being constant only between 21 to 50 years of age, the sample used is limited to workers in that age range. In the panel analyses, the sample is limited to workers being at least 21 years old in 1991 and at maximum 50 years old in 2002. Furthermore, the analysis focuses on full- and part-time blue and white collar workers. That is, both self-employed workers as well as public servants are not included in the regressions. While occupational crowding, i.e. the sorting into particular occupations, may also be associated with physical appearance, such analysis is beyond the scope of this paper.

The final sample comprises 33,247 person-year observations that allocate to 9,955 (4,668) observations for female workers from West (East) Germany and to 13,644 (4,980) for male workers.

IV. RESULTS

Before discussing the results from the pooled OLS and panel regressions, some descriptive findings are presented first. Table 1 illustrates the distribution of body height of German workers in 2002. It shows that twelve years after German reunification, average body height is still different with East Germans lagging behind. While the differences in height are at about 1.2cm for male and 1.3cm for female workers, Komlos and Kriwy (2003) document that East Germans caught up in the last decade suggesting for a remarkable improvement in the nutritional status.

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[7] See the Appendix for the descriptive statistics of the data used. Full estimation results are available upon request.

Table 1: Distribution of body height (in cm) of German workers, 21-50 years old

	Female workers	Male workers
West Germany	166.93	179.72
	(6.45)	(6.99)
East Germany	165.68	178.52
	(6.19)	(6.21)

Notes: Standard deviation in parentheses.
Source: GSOEP, 2002.

While the determinants of the biological standard of living are an interesting endpoint in itself, Table 2 furthermore shows some first, though not clear-cut evidence for possible wage premiums for height. For example, with East German females being exceptional, the particular means suggest for a linear relationship between earnings and workers with shorter workers earning way less than workers who are above average height (upper part of Table 1). These data would suggest earnings differentials of up to even more than €700 per month for West German males.

Table 2: Gross monthly earnings (in €) by body height

	Female workers		Male workers	
	East Germany	West Germany	East Germany	West Germany
Above average height	1,628.5	1,835.0	2,442.7	3,287.7
	[933.1]	[1,125.5]	[1,965.1]	[1,813.0]
Average height	1,635.6	1,671.3	1,888.5	2.983.3
	[884.3]	[1,070.0]	[1,041.8]	[1,703.8]
Below average height	1,853.3	1,451.8	1,842.9	2,524.7
	[974.3]	[971.5]	[877.2]	[1,430.9]
F: >=180cm; M: >=195cm	(1,099.0)	1,993.7	(1,975.4)	3,080.1
	[747.3]	[977.0]	[1,009.2]	[2,023.0]
F: 170-179.9; M: 185-194.9	1,696.3	1,744.1	2,462.4	3,294.8
	[880.9]	[1,097.5]	[1,993.0]	[1,724.0]
F: 160-169.9; M: 175-184.9	1,617.4	1,644.1	1,872.0	2,991.8
	[901.9]	[1,064.4]	[1,074.1]	[1752.8]
F: 150-159.9; M: 165-174.9	1,854.8	1,365.2	1,908.6	2,503.4
	[979.8]	[938.16]	[843.4]	[1,372.1]
F: <150; M: <165cm	(1,771.8)	(2,398.7)	(1,636.3)	2,733.0
	[595.7]	[1,069.5]	[994.2]	[1,209.5]
Average earnings	1,667.5	1,658.3	1,979.4	2,963.1
	[911.9]	[1,068.1]	[1,254.3]	[1,697.6]

Notes: ( ) less than 30 observations; standard deviations in parentheses [ ]; $N = 7{,}829$.
'Above (below) average height' defined as height > (<) mean + (-) one standard deviation.
Source: GSOEP, 2002. Own calculations, weighted.

Furthermore, stratifying individuals' stature into a range of height groups, the story is more or less the same also suggesting for a linear relationship in the three 'middle' height groups. However, the extremes do not fit that picture anymore, which only partially may be associated to the limited sample size in these height classes. Furthermore, the means presented are not adjusted for individual characteristics.

Therefore, findings from pooled OLS regressions next are shown in Table 3. To test for model specification, height is included in three different ways. Similar to Table 2, height is controlled for including below and above average height categories (average height being the reference group) and using the classification by 10cm increments. Furthermore, there is another model specification that includes height as continuous variable. The results from this latter equations will allow to interpret the coefficients as earnings premiums or penalties by any one additional centimeter in height.

Table 3: Height and earnings; pooled OLS estimates including control variables

	Female workers		Male workers	
	East	West	East	West
Height	0.0016**	0.0004	0.0054***	0.0034***
	(0.0007)	(0.0005)	(0.0006)	(0.0003)
Adj. R^2	0.7003	0.7116	0.5827	0.6084
F	243.29	546.84	155.49	472.05
Above average height	0.0098	-0.0164	0.0360***	0.0397***
	(0.0121)	(0.0106)	(0.0106)	(0.0061)
Below average height	-0.0216*	-0.0107	-0.0621***	-0.0270***
	(0.0122)	(0.0084)	(0.0102)	(0.0057)
Adj. R^2	0.7002	0.7117	0.5815	0.6076
F	237.91	535.11	151.40	460.18
F: >=180cm; M: >=195cm	-0.0101	0.0016	-0.0543	-0.0127
	(0.0453)	(0.0306)	(0.0598)	(0.0188)
F: 170-179.9; M: 185-194.9	-0.0030	0.0211***	0.0350***	0.0407***
	(0.0105)	(0.0077)	(0.0108)	(0.0058)
F: 150-159.9; M: 165-174.9	-0.0157	0.0082	-0.0519***	-0.0307***
	(0.0118)	(0.0099)	(0.0093)	(0.0055)
F: <150; M: <165	-0.0992	0.0013	-0.1022***	-0.0516***
	(0.1004)	(0.0597)	(0.0374)	(0.0165)
Adj. R^2	0.6999	0.7117	0.5815	0.6086
F	227.78	513.02	145.11	442.91
N	4,668	9,955	4,980	13,644

Notes: Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%
'Above (below) average height' defined as height > (<) mean + (-) one standard deviation.
Source: GSOEP, 1991-2002.

In contrast to the descriptive findings, the results now suggest reversed results for female workers: While earnings of West German females seem not to be affected by height, East Germans women receive an earnings premium of either about 1% with a height increment of one standard deviation. This, however, mainly refers to individuals of lower and average height, with lower than average women earnings some 2% less than their average-height counterparts.

Furthermore, earnings differentials by height are even more distinct for male workers from both parts of Germany. While the height classification by 10cm increments support the first impression that there is no linear relationship over the whole range of individuals' height, the results would suggest for wage differentials of even up to 13% between short East German males, i.e. whose height is less than 165cm, compared to their counterparts with a body height between 185cm and 195cm. The findings from the model specification using the continuous height indicator suggest for earnings premiums of about 1.3% for East Germans and 1% for West German males with an additional centimeter of height. This corresponds to some 3% earnings gain of above average height males in both East and West Germany, while the penalties for having below average height are somewhat differing: There is an almost 3% earnings loss for West German males and even a 6% penalty for East Germans.

While these findings support previous research, the results may still be biased as they come from pooled OLS estimations that do not account for unobservable heterogeneity. Therefore, panel estimations are run, its results are presented in Table 4.

Followingly, the earnings of female workers, by and large, are not affected by individuals' height. While the coefficients in all models still mainly show the signs that would be expected from the pooled OLS estimates, statistical significance is found only for some few indicators in the random effects specifications. On the other hand, there are effects of body height on the earnings of male workers. The magnitude that is found for the height effects in the East German sample in the RE specification is about the same as it is in the pooled OLS model. However, once taking into account that some of the regressor may be correlated with the individual-specific effects, i.e. applying the Hausman-Taylor estimator, none of the height indicators is statistically significant anymore.

For West German males, the results are in support of earnings differentials by height. First, compared to the findings from the pooled OLS estimates in Table 3, the effects increase in size in the RE model suggesting for an earnings premium of some 15% for males between 180cm and 195cm compared to males shorter than 165cm.

Table 4: Body height and earnings, panel regressions including control variables

	Females East		Females West		Males East		Males West	
	RE	HT-IV	RE	HT-IV	RE	HT-IV	RE	HT-IV
Height	0.0027*	0.0035	0.0020*	0.0012	0.0061***	0.0055	0.0058***	0.0058***
	(0.0015)	(0.0041)	(0.0011)	(0.0022)	(0.0014)	(0.0039)	(0.0008)	(0.0014)
R^2	0.6781	—	0.7003	—	0.5579	—	0.5655	—
Chi^2	9,005.17	8,812.69	13,786.12	10,747.03	7,621.57	7,950.13	13,299.69	11,943.10
Above average height	0.0176	0.0036	-0.0006	-0.0193	0.0426*	0.0334	0.0490***	0.0345
	(0.0254)	(0.0607)	(0.0212)	(0.0352)	(0.0241)	(0.0574)	(0.0142)	(0.0223)
Below average height	-0.0393	-0.0211	-0.0301*	-0.0030	-0.0703***	-0.0699	-0.0662***	-0.0422*
	(0.0259)	(0.0619)	(0.0170)	(0.0284)	(0.0238)	(0.0565)	(0.0139)	(0.0218)
R^2	0.6781	—	0.7003	—	0.5569	—	0.5639	—
Chi^2	9,002.68	8,811.75	13,784.04	10,736.05	7,611.15	7,949.02	13,265.55	11,924.10
F: >=180cm; M: >=195cm	-0.0068	-0.0191	0.0337	0.0432	-0.0540	-0.1537	0.0066	-0.0283
	(0.0979)	(0.2316)	(0.0529)	(0.0855)	(0.1197)	(0.2802)	(0.0419)	(0.0654)
F: 170-179.9; M: 185-194.9	0.0004	0.0047	0.0332**	0.0275	0.0401	0.0354	0.0443***	0.0331
	(0.0217)	(0.0512)	(0.0154)	(0.0254)	(0.0248)	(0.0588)	(0.0137)	(0.0214)
F: 150-159.9; M: 165-174.9	-0.0370	-0.0190	-0.0160	0.0306	-0.0623***	-0.0579	-0.0663***	-0.0485**
	(0.0250)	(0.0592)	(0.0206)	(0.0345)	(0.0216)	(0.0510)	(0.0131)	(0.0204)
F: <150; M: <165	-0.1284	-0.1374	0.0508	0.1014	-0.1284	-0.1301	-0.1133***	-0.0711
	(0.1522)	(0.3336)	(0.1426)	(0.2375)	(0.0789)	(0.1840)	(0.0394)	(0.0610)
R^2	0.6780	—	0.7005	—	0.5571	—	0.5654	—
Chi^2	8,998.15	8,806.40	13,788.60	10,740.72	7,614.79	7,946.81	13,291.36	11,934.70
Person-Year-Observations	4,668	4,668	9,955	9,955	4,980	4,980	13,644	13,644
No. of individuals	848	848	2,344	2,344	831	831	2,606	2,606

Notes: Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%
'Above (below) average height' defined as height > (<) mean + (-) one standard deviation.

Source: GSOEP, 1991-2002.

Finally, applying the Hausman-Taylor estimator, half of the prior statistically significant coefficients seem not to be different from zero anymore. However, the direction of the coefficient still point towards the linear relationship and there furthermore is evidence for shorther than average males to earn some 4% less than male workers of average height. Based on the continuous height indicator, there is an earnings premium of about 1.5% for an increment of one inch in height which corresponds to a 4% earnings differentials for a one standard deviation change in height.

V. CONCLUDING REMARKS

This paper presents evidence for the relationship between body height and earnings of German workers. Height may, on the one hand, be a discriminatory factor insofar that socio-psychological mechanisms associate tallness with strength, intelligence or success. Stature may, on the other hand, as well be the result of long term investments in health human capital that also translate into differences in labor productivity. Using longitudinal data from the GSOEP, this paper analyzes for the first time whether prior results found for the US, Canada or the UK also exist for Germany. Panel estimators are applied that account for unobservable individual heterogeneity. While the fixed effects estmator would not allow to use body height as regressor because of it being a time-invariant indicator, the Hausman-Taylor instrumental variable estimator is a quite appropriate method as it furthermore allows for the correlation between subsets of regressors and the individual-specific effects.

The results from a variety of model specifications support prior research insofar that there is evidence for an earnings differential by height for male workers from West Germany. Followingly, a one standard deviation in height is associated with a wage premium of about 4%.

As for a next research step, it would be valuable to examine whether similar effects of body weight and especially of overweight and obesity on earnings or occupational attainment, for which there is evidence in the literature, also exist for Germany.

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APPENDIX: DESCRIPTIVE STATISTICS

Variable	Mean	Std.Dev.	Min	Max
(Log of) Gross monthly earnings	7.4901	(0.5746)	3.5776	10.1487
Body height in centimeter	172.8287	(9.1545)	131	204
Females-West: above average height [a)]	0.1209	(0.3260)	0	1
Females-West: below average height [a)]	0.2237	(0.4167)	0	1
Females-East: above average height [b)]	0.1480	(0.3551)	0	1
Females-East: below average height [b)]	0.1452	(0.3523)	0	1
Males-West: above average height [c)]	0.1643	(0.3705)	0	1
Males-West: below average height [c)]	0.2074	(0.4055)	0	1
Males-East: above average height [d)]	0.1696	(0.3753)	0	1
Males-East: below average height [d)]	0.1871	(0.3900)	0	1
Male height: >=195cm [e)]	0.0113	(0.1060)	0	1
Male height: 185cm - 194.9cm [e)]	0.1854	(0.3886)	0	1
Male height: 175cm – 184.9cm [e)] (*ref. cat.*)	0.5389	(0.4984)	0	1
Male height: 165cm - 174.9cm [e)]	0.2474	(0.4315)	0	1
Male height: <165cm [e)]	0.0167	(0.1283)	0	1
Female height: >=180cm [f)]	0.0113	(0.1059)	0	1
Female height: 170cm - 179.9cm [f)]	0.2869	(0.4523)	0	1
Female height: 160cm - 169.0cm [f)] (*ref. cat.*)	0.5422	(0.4982)	0	1
Female height: 150cm - 159.9cm [f)]	0.1567	(0.3635)	0	1
Female height: <150cm [f)]	0.0027	(0.0522)	0	1
Age	36.5678	(6.2111)	21	50
Age squared	375.781	(455.983)	441	2500
Male	0.5601	(0.4963)	0	1
Married	0.7057	(0.4557)	0	1
Years of education	12.1037	(2.4947)	7	18
Full-time worker (*ref. cat.*)	0.8290	(0.3765)	0	1
Part-time worker	0.1709	(0.3765)	0	1
Job duration	7.6570	(6.9941)	0	52
Blue-collar worker	0.4198	(0.4935)	0	1
White-collar worker (*ref. cat.*)	0.5793	(0.4936)	0	1
Public employer	0.2302	(0.4210)	0	1
Hours worked weekly	39.8365	(10.4131)	1	80
Working overtime hours	0.5284	(0.4991)	0	1
Firm size: < 20 workers (*ref. cat.*)	0.2321	(0.4221)	0	1
Firm size: 20-199 workers	0.2978	(0.4572)	0	1
Firm size: 200-1999 workers	0.2362	(0.4247)	0	1
Firm size: 2000 and more workers	0.2186	(0.4133)	0	1

Notes: *N*=33,247 person-year observations; West-East/male-female subsets: a) N=9,955; b) *N*=4,668; c) 13,644; d) *N*=4,980. Male-Female subsets: e) *N*=18,624; f) *N*=14,623. Sample furthermore includes 10 occupational indicators, 12 branch indicators as well as 12 year-of-observation indicators.

Source: GSOEP, 1991-2002.