The 'healthy worker effect': do healthy people climb the occupational ladder?

The ‘Healthy Worker Effect’: Do Healthy People Climb the Occupational Ladder?

Abstract

The association between occupational status and health has been taken to reveal the presence of health inequalities shaped by occupational status. However, that interpretation assumes no influence of health status in explaining occupational standing. This paper documents evidence of non-negligible returns to occupation status on health (which we refer as 'healthy worker effect'). We use a unique empirical strategy that addressed reverse causality, namely an instrumental variable strategy using the variation in average health in the migrant's country of origin, a health measure plausibly not determined by the migrant's occupational status. Our findings suggest that health status exerts significant effects on occupational status in several dimensions; having a supervising role, worker autonomy, and worker influence. The effect size of health is larger than that of an upper secondary education.

Keywords: occupational status; self-reported health; immigrants; work autonomy; supervising role.

JEL: J5, I18

1. Introduction

Health has been traditionally conceptualised as a productive investment that can improve productivity and wages (Mushkin 1962, Grossman, 1972). The World Health Organisation Commission Report on Macroeconomics and Health (2001) reports that health inputs contribute to economic growth through labour market outcomes.[1] However, the underpinning mechanisms are still not well understood. This paper aims to contribute by shedding some light on its potential mechanisms, and specifically, how health status influence occupational status, or what can be labelled as the "healthy worker effect".

One of the potential concerns in identifying the labour market returns to health investments lies in that health capital takes some time to build, and it is partially unobservable to both employees and employers. This is particularly true at time of employee hire. However, over time, such unobservability fades away (e.g., health related absenteeism is one mechanism to identify an employee's health status). Furthermore, employers can routinely perform health risk appraisals which help identify if the employee suffers from some chronic health condition. It is not infrequent for large-sized employers to establish medical clinics together with health

[1] Weil (2007) provides additional evidence that health promotes output at the macro level.

and wellness programs. Health can be thought of driving career trajectories, even conditioning on the fact that health depreciates at different rates across individual's due to a number of given and environmental circumstances.

Employees exhibiting poorer health might be less likely to be promoted as unobservability problems fade[2], even without any health discrimination. The contrary applies if health investments yield productive returns by increasing the probability of employment (Currie and Madarian, 1999), which in turn can explain the probability of a promotion independently of wages. Other studies focus on more observable characteristics such as alcoholism. For instance, Mullahy and Sindelar (1992) report that alcohol dependence reduces the probability of employment in management, administrative, technical or professional occupations.

Evidence from the Whitehall study Marmot *et al* (1978) documents an association between employment grade and the prevalence of coronary heart disease (CHD) alongside health behaviours and mental health (Kivimäki et al, 2003; Metcalfe et al, 2003), and Chirikos and Nestel (1981) found little evidence that older men adjust their employment to changes in health status. However, these studies are potentially biased given the potential reverse causality and selection into employment (see

[2] An exception includes health discrimination affecting disabled individuals (Baldwin and Johnson, 1994).

Barnay, 2016 for a literature review)[3]. Indeed, recent studies have established that workers in poorer health select into temporary employment (Ehlert et al, 2011), and Boyce and Oswald (2012) using British data and an empirical strategy to deal with reverse causality, show that people who start in good health are more likely to be promoted, but find no evidence that promotion exerts an effect on health. Bound et al. (1995) find that health status can explain significant racial and educational gaps in labour force participation.

In this paper, we build on an instrumental variable strategy to take advantage of the variation in health status resulting from differences in ancestral health that provide us with a local average treatment effect (LATE) on occupational status. More specifically, we examine what we label as the "healthy worker effect"; the influence of health status on occupational status. We study a sample of migrants (first generation only) to European countries. For these migrants it is possible to identify a source of variation of health status not endogenous to individual occupational status, namely the average health status in the country of origin of such migrants which can be used as an instrumental variable.

[3] Bias does not entail that there is a genuine effect of socio-economic status on health (Sasaki et al., 2017).

Our approach builds on the cultural transmission literature where ancestral country factors, which are orthogonal to individual health, are used to measure persistent individual characteristics (Fernandez and Fogli 2009). Moreover, the approach holds resident country influences constant as all comparisons are within resident country. Given that health is persistent one would expect health status of the country of origin to influence health of migrants, evidence of which we present below. The first part of analysis establishes that birth country health is a strong and robust predictor of individual health among migrants. This establishes the first stage of an instrumental variable strategy where occupational status is regressed on individual health, instrumented with birth country health.

Our findings suggest that health influence the probability of a higher occupational status along three dimensions: having a supervising role, worker autonomy to organize daily task, and worker influence on policy decisions at the organization. Our strategy satisfies the traditional requirement of instrumental variable requirements, including theoretical relevance, and statistical significance.[4] We also present robust evidence that migrants bring their health with them and that

[4] The causal interpretation of the estimates is of course conditional on the untestable exogeneity assumption.

health in turn affects occupational status by accounting for a wide range of additional birth country characteristics including economic and social development. Moreover, both cognitive and non-cognitive skills in the birth country are accounted for. Occupational specific human capital and other characteristics are accounted for when making within occupation comparisons.

The structure of this paper is the following. Next, we discuss the relevant 'healthy worker effect', its measurement, mechanisms and the use of migrant's data to deal with endogeneity concerns. Sections three and four describe the empirical strategy employed and the data used. Section five presents the results and includes a number of robustness checks, and finally section six concludes.

2. Healthy worker effect

2.1 Background

Health is a strategic input influencing the supply of labour, the ability to find suitable employment, and employment outcomes. The existing literature provides already some evidence of the effects of a health shock on work capacity, labour force participation, and occupational choice (Currie and Madarian, 1999: Gruber, 2000). However, the effects are not conclusive. Probably, the main concern in the identification of the effects lies in the effects of reverse causality, and sample

selection. Specifically, cross-sectional correlations between socio-economic status (SES) and health are well established (Marmot, 2003). Evidence from quasi-experiments such as Rablen and Oswald (2008) and Redelmeier and Singh (2001) concludes that Nobel Prize and Academy Award are associated with extended longevity. As with the Whitehall study, such evidence has partial external validity given the selected samples (civil servants) the evidence relies on. Other economics research using representative samples finds consistently with Rablen and Oswald (2008) and Redelmeier and Singh (2001) that the association between SES and health is not conclusive (Smith, 1999, Deaton, 2003). Furthermore, similar results are found when lagged SES is used to control for endogeneity (Adda et al., 2003).

2.2 Dealing with Sample Selection

More recent evidence remains inconclusive mainly as a result of sample selection. Anderson and Marmot (2011) take advantage of the relatively unexpected, but not random, effective availability of a promotion to estimate the association between changes in occupational status and cardiovascular health. The latter approach plausibly addresses some of the endogeneity concerns in the previous literature, but not issues of selection as the sample is made predominantly of white-collar jobs and hence, suffer from some lack of external validity. However, there is some level of selection into a white or blue-collar job that needs to be accounted for and has not been treated specifically in the literature. Another recent study that employs a representative sample of individuals (rather than civil servants alone) and deals with

reverse causality find little evidence of an effect of a promotion on health status (Boyce and Oswald, 2012). Finally, of the potential limitations of such studies lies in the delayed effects of occupational status on health, which might take place later life. For instance, Fletcher and Sindelar (2009) find that blue-collar work is associated with significantly worse health status at old age.

2.3 Mechanisms

The latter effects are driven by different mechanisms. First, there are heterogeneous effects of employment history. Morefield et al (2011) examine the effects of an individual's occupational history on the probability of transitioning between health states. Some occupations encompass 'protective health investments' whilst others might trigger disinvestment, and the depreciation rate of health capital is likely to be different across those types of jobs. Second, some effects can be explained by the role of health information. If information is a luxury good, then occupational status is likely to correlate with access to such information too, in part due to network effects. Third, high skilled white-collar jobs are less likely to give rise to fatal accidents than blue collar jobs. Fourth, jobs at the lower part of the status ladder are exposed to more job insecurity which can deteriorate on mental health (Ferrie *et al*, 2001).

Another set of health effects are channelled through perceived job status (Kasi and French, 1962). Consistently, job satisfaction improves individual's health (Fischer and Sousa-Poza, 2009). Finally, one can argue that higher occupation status

brings more control over work tasks. Consistently, Ala-Mursula et al (2005) conclude that women with less work-time control have an increased risk of health problems.

2.4 Migrants and Endogeneity

One of the concerns with such evidence is the exogeneity of health. One strategy to address such effects is to restrict the analysis to a sample of (first generation) immigrants and use average health status in the country of origin as instruments. Indeed, immigrant health is often found to differ across groups at the point of immigration (Antecol and Bedard, 2006; McDonald et al, 2004; Frisbie et al, 2011). However, the evidence is mixed and inconclusive. For instance, some studies find migrants exhibit poorer health compared to natives (John, et al., 2012) whilst others show that immigrants tend to have better health and mortality profiles than the native born, especially from the same racial/ethnic group (Markides & Rote, 2015). However, most of these studies relate to a small number of countries or a single country, whilst Ljunge (2016), using the same dataset as the one we employ in this study find no evidence of health differences between migrants and natives with the exception of Muslims. Hence, evidence from migrants into European countries can be regarded as quasi experimental for our purposes. It provides for a source of variability in health status that we need to identify the effect of health on occupational status.

3. Empirical Strategy

Individual correlations between health and occupational status could reflect causal relationships in both directions. To examine the causal direction in either way an alternative identification strategy to individual correlations is required.

Our approach is to focus on a sample of immigrants, where there is a measure of health that plausibly is not endogenous to occupational status; birth country average health. Given that immigrants' health is in part determined by the health in their birth country, as is shown below as well as by Ljunge (2016), it is possible to use birth country health to measure a persistent component of individual health of immigrants. Birth country health is unlikely to be affected by reverse causality from the immigrants' health to country of origin health. The occupational status of an individual in one country is an implausible determinant of average health in another country. This addresses the main mechanisms behind reverse causality concerns from occupational status to our main health variable (that is, birth country health).

Once reverse causality concerns are avoided, it is possible to estimate a local average effect of health status on occupational status. We do so using three specific measures of occupation status available in the dataset, namely whether the individuals carry out supervising work, organizes work tasks and has an influence over policy. The three occupational status dimensions capture external status, internal status and a public status, respectively. We estimate the effect of health on each occupational

status dimension. Arguably, internal and external dimensions of occupational status are likely to be reflected in higher salaries whilst policy related dimensions might provide for a higher social status without necessarily improving an individual's salary. The estimates for this study will allow testing such hypothesis. Finally, we also study a summary measure of occupational status as the principal component of the three individual components.

The analysis starts with studying ordinary least squares models corresponding to the reduced form of the full model. The second part of the analysis estimates instrumental variable models using two-stage least squares. This part also studies the first stage, the transmission of health from the birth country to the migrant, in some detail.

The first part of the analysis applies a linear ordinary least squares (OLS) model. The regressions are of the following form:

$$Y_{icat}=\beta_0+\beta_1 X_{icat}+\beta_2 \text{Mean\_Health}_a+\gamma_c+\tau_t+\varepsilon_{icat} \qquad (1)$$

Y_{icat} captures the occupational status variable in period t of individual i, residing in country c, and born in country a. X_{icat} captures individual demographic and socioeconomic controls, that may affect the outcome. The country of residence and year fixed effects are denoted by γ_c and τ_t, respectively. ε_{icat} is the error term. This regression is run on samples of immigrants. The mean level of ancestral country health assessment, $Mean\_Health_a$, is common to all individuals born in country a, and for immigrants, $a \neq c$. Ancestral country and birth country are used interchangeably in this paper. All standard errors are clustered by the individual's birth country to allow for arbitrary correlations of the error terms among individuals with the same birth country (Angrist & Pischke, 2009). The results presented below are based on a linear model but the results are robust to using the ordered Logit or the ordered Probit estimator. When studying health transmission, the dependent variable is health.

$$Health_{icat} = \beta_3 + \beta_4 X_{icat} + \beta_5 Mean\_Health_a + \gamma_c + \tau_t + \varepsilon'_{icat} \qquad (2)$$

$Health_{icat}$ captures the self-reported health of the individual. The health transmission equation (2) is also the first stage of a two-stage model where occupational status is regressed on individual health, which is instrumented for with birth country health. The first stage equation is:

$$Y_{icat}=\beta_6+\beta_7 X_{icat}+\beta_8 Health_{icat}+\gamma_c+\tau_t+\varepsilon''_{icat} \quad (3)$$

Equations (2) and (3) are estimated jointly as a two stage least squares model. Standard errors are clustered by birth country as in the reduced form model (1) where occupation status is regressed on the instrument.

The inclusion of the country fixed effect γ_c means that the institutional structure and all other unobserved differences which apply to all residents in country c (such as the mean self-reported health and the residence country health system) are accounted for. It also means that the variation used to identify the estimate on ancestral health assessment is to compare the outcomes of immigrants within each country of residence relative to the values in their birth countries.

The underlying source of variation we explore is birth country health and how it persists among migrants. This focus on persistence guides our measure of birth country health. The measure is not only an average across the population in the birth country but also across survey waves. The average across survey waves averages out idiosyncratic fluctuation across years to better measure the persistent level of health across time. It is also this persistent component that we postulate is ported by migrants to their destination countries. Time varying parts of health measures may to

a large degree be influenced by contemporaneous contextual factors in the birth country, and migrants' health in the destination country may be influenced by contextual factors there. Our empirical design is to not focus on such contextually driven fluctuations but rather the persistent component of birth country health carried on by the migrants, hence the construction of the birth country health variable as a time average. Note also that the birth country health variable is from a survey different from the survey measuring individual health and occupational status. Moreover, the birth country health survey waves mostly predate the individual data survey waves, see the Data sub-section for further details.

For the estimated IV model to produce a Local Average Treatment Effect (LATE) it must satisfy non-weakness, exogeneity, and monotonicity. Non-weakness is examined through the first stage strength (the F-statistic for the exclusion of the instrument exceeding 10). Exogeneity is argued through theoretical reasoning and extensive robustness checks. Monotonicity is harder to establish in our case with both continuous instrument and variable of interest. Yet, focusing on weak monotonicity Chaisemartin (2017) finds that it holds if there are more 'compliers' than 'defiers' in the data. The estimated effect can then be interpreted as a LATE. This condition appears to be satisfied in our data. Health of migrants is on average better than the stayers in their birth country indicating that migrant's health increase with birth

country mean health.[5] Migrants with better health than the birth country average outnumber those with lower health than the birth country average by almost ten to one. Related is the strength of the first stage, where birth country mean health strongly and positively predicts migrants' health, indicating that a majority of migrants can be seen as compliers. Recognizing that causal effects can never be established with certainty, we consider it plausible that our analysis could measure the causal effect of health on occupational status.

One of the problems of cross-country comparisons of self-reported data, as self-reported health in this study, is that they may understate the health effects of increased SES if individuals across countries exhibit different reference points (as to what qualifies as a specific health status). To overcome those limitations, research has focused on identifying a homogeneous population. Specifically, the Whitehall II data has been used because it is argued to account for standardized populations of white collar civil servants working in London (Marmot et al, 2003, Anderson and Marmot, 2011). However, these studies do not account for the endogeneity of occupational status to health, and the homogenous sample can potentially limit their external validity. Our sample of immigrants is similar to a general sample of natives, as discussed below, so the results may be more generalizable than those based on homogenous populations. Moreover, we employ our analysis within occupations to

[5] The opposite may be expected if 'defiers' dominate, that is, if migrants would predominantly be drawn from the bottom of the birth country health distribution.

comprise the abovementioned concerns. We endeavour to study a representative sample while accounting for within occupation particularities, as well as addressing reverse causality.

4. Data

The main data set is assembled from the European Social Survey (ESS). The ESS is a rich and representative sample of European countries for 2002-2012. The sample is complete and covers each country and biannual round. The survey includes information on the country of birth of the respondent. From this it is possible identify immigrants and which countries they originate from. Looking at 30 European countries of residence reduces the concern that the results are driven by conditions of one country. Individuals with ancestry from 91 countries across all continents are observed. The broad range of immigrants reduces the concern that the results are particular to a small number of ancestral backgrounds. The summary statistics are presented in Table 1. The immigrants are similar to the general population on observables including their self-reported health and well-being. There are some differences with more migrants having a higher education (while slightly fewer have an upper secondary degree) and more Muslims relative to other denominations. Ljunge (2016) find no evidence of a healthy immigrant effect in Europe; both health levels and the socioeconomic gradient of health are similar for immigrants and natives. The possible exception is Muslim immigrants who have worse health. We

address potential selection in this dimension by accounting for religious denominations.

The cumulative first to sixth round ESS file is used. The first round was collected in 2002; second round in 2004; the third round in 2006; the fourth round in 2008; the fifth round in 2010; and the sixth round in 2012. The residence countries included are Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom. Extensive documentation of the data is available at http://ess.nsd.uib.no/.

(Table 1 about here. Summary statistics)

4.1 Supervising role

The individual being in a supervising role or not at work measures the external occupational status. The survey question is "In your main job, do/did you have any responsibility for supervising the work of other employees?" The answers are "Yes," coded as 1, and "No," coded as 0. This occupational status, as are the following, is coded as in the survey. The measures are recorded both for those currently working as well as those who are not.

4.2 Organize work tasks

Individuals are asked to "please say how much the management at your work allows/allowed you" The answers are given on a ten point scale from "I have no control," coded as 0, to "I have complete control," coded as 10.

4.3 Influence over policy

Individuals are asked to "say how much the management at your work allows/allowed you". The answers are given on a ten point scale from "I have no influence," coded as 0, to "I have complete control," coded as 10.

4.4 Occupational status (principal component)

A summary measure of occupational status is created by extracting the first principal component of the three individual occupational status variables: Supervising role, Organize work tasks, and Influence over policy. The principal component is only computed for individuals who report all three measures. The principal component is standardized by dividing by the standard deviation.

4.5 Individual Variables

Age, gender, marital status, education, income, employment status, and religious affiliation are recorded in the ESS. Two dummies measures whether the respondent is married and never married, with widowed and divorced being the excluded category. Education is captured by one dummy for tertiary (university) degree and above, and one dummy for upper secondary as the highest attained degree. Lower education is the excluded category. One dummy identifies whether the respondent income falls within the top three deciles, High Income, and one dummy for the middle four

deciles, Middle Income. One dummy measures whether individuals are out of the labour force (students, not employed and not looking for work, and retired) and another dummy for unemployed who look for work. Those employed is the omitted category. Religion dummies for being Catholic, Protestant, or Muslim are included while other denominations are the excluded category. Employment sector dummies are created at the one digit level, based on the ISCO88 classification scheme. Nine sector dummies are included in the analysis.

4.6 Self-reported Health

Self-reported health is measured by one question in the ESS. The interviewer asks "How is your health in general? Would you say it is ..." and reads out the categories "Very good," "Good," "Fair," "Bad," "Or, very bad." "Very good" is coded with a 5 and each following category with a lower digit.

4.7 Health Assessments in the Country of Birth

Average health assessment in the country of birth is the health measure used which is not endogenous to the migrant's current occupational status. The birth country health measure is computed in the integrated European Values Study and the World Values Survey (EVS/WVS). This data covers about three times as many countries of origin compared to the ESS. The EVS/WVS health data is available for immigrants from 91 nations covering all inhabited continents. Detailed documentation is found at www.worldvaluessurvey.org.

The health assessment question in the EVS/WVS is as follows, “All in all, how would you describe your state of health these days? Would you say it is...” The coding of the answers are 1 for “Very poor,” 2 “Poor,” 3 “Fair,” 4 “Good,” and 5 “Very good.” In order to capture persistent mean health assessments averages are computed for all countries and across the first five waves (the waves collected 1981-84, 1990-94, 1995-98, 1999-2004, and 2005-2009).

4.8 Additional Birth Country Characteristics

Birth country health, the variable of main interest in the analysis below, is related to other ancestral country characteristics. Health and economic development have a positive relationship across countries. The effect of ancestry from a more developed country should not be confounded with the effect of a better health country. The logarithm of gross domestic product (GDP) per capita in the birth country is used to measure the influence of country of origin development. Birth country cognitive skills are accounted for by IQ scores using data from Lynn, Harvey, and Nyborg (2009), and we control for differences birth country health outcomes, institutional and cultural dimensions described by Hofstede et al. (2010) such as masculinity, power distance, and individualism vs collectivism. A description of all of them can be found in the in the appendix.

5. Results

Results in Table 2 report the estimates of the effect of health status (birth country average) on the different occupation status dimensions available in the dataset. We have first estimated a model where we only control for age and gender, and then add a list of other controls that the literature has considered to ascertain whether there is any evidence of health affecting occupational status. The estimates on health are positive and significant in all the regressions. The health measure is average health in the immigrant's birth country. Since we argue, and show evidence of below, that individual health is in part determined in the birth country, the average health in the birth country provides a measure the individual's health.

[Insert Table 2 about here]

Among the individual characteristics, occupational status increases with age and, as expected, it increases with education, and income. Both women and individuals upholding Muslim faith exhibit a significantly lower occupational status in European countries along all dimensions. Catholics exhibit significantly lesser autonomy in performing work tasks. Finally, marital status exhibits only a weak association with occupational status.

To ease the interpretation of the coefficients' magnitudes standardized coefficients estimates are presented in Table 3. The standardized coefficients are obtained by multiplying the estimate in Table 2 with the standard deviation of the respective independent variable and dividing it by the standard deviation of the dependent variable (the occupational status measure). The standardized coefficients hence express a standard deviation change in the independent variable as a share of the standard deviation of the outcome variable, that is, they provide us with effects sizes to compare the impact of different variables.

[Insert Table 3 about here]

The effects sizes suggest that for working in a supervising role a standard deviation change of health status corresponds to the effect of a standard deviation change in age (which is 17 years). In the other categories of occupational status, the effect size of health is larger than for the supervising role, although it is not as large as the effect size for age. In most cases the effect size of health status is larger than that of an upper secondary education, or roughly similar to the difference between an upper secondary and a tertiary education. It is worth noting that health exerts a larger effect on the public dimension of occupational status (influence over policy). The latter might in part be the result of that for other measures of occupational status health exerts effect on income which we hold constant in the regressions.

Nonetheless, some of these exert could be the result of specific country of birth factors besides health. Hence, next we proceed to account for other birth country characteristics as these could affect the health and decisions of the immigrant in the destination country. The gross domestic product per capita captures economic and institutional development. Cognitive skills are captured by IQ, while life expectancy at birth captures social development. The Gini coefficient of income captures inequality. Institutional differences are captured by the variable Regulatory quality. Cultural differences, which also measure facets of non-cognitive skills, are captured by the variables Masculinity vs Femininity, Power distance, and Individualism vs Collectivism from Hofstede et al. (2010). These three cultural factors capture potentially important non-cognitive facets relevant for the labour market. Masculinity measures focus on achievement and material rewards (rather than getting along socially), power distance capture attitudes toward hierarchical relationships, individualism capture a focus on fulfilling individual desires (rather than adhering to the group). These eight birth country characteristics capture a wide array of differences across countries. The variables are added to the baseline model with extensive individual controls and the results are presented in Table 4a.

[Insert Tables 4a and 4b about here]

The estimates on health are similar to the baseline when the additional birth country factors are included as seen in Table 4a. Most of the additional factors are insignificant. There are a few exceptions; power distance that adds predictive power in some of the occupational status measures. Regulatory quality and the Gini have some predictive power in the first specification. The additional birth country estimates indicate that individuals from less hierarchical backgrounds (lower values on the Power Distance measure) tend to have higher occupational status. Overall, the significance of the health coefficient for each dimension of occupational status is comparable to that of previous estimates.

Another interesting issue to examine is how health may influence occupation status within employment sectors. The Whitehall study discussed above restricts the sample to public servants, a very specific group. By adding employment sector fixed effects our study becomes more comparable to the Whitehall studies. Sector fixed effects are added to the baseline model. The sector fixed effects focus attention to explaining occupational status variation within employment sector by accounting for average occupational status differences across sector through the fixed effects.[6] The sector fixed effects account for sector specific characteristics such as the human capital usually required. The results are presented in Table 4b.

[6] Occupational status tends to be higher in higher skilled occupations.

We can assess how much of the health effect operates through choice of sector and what share is due to effects within sector by comparing the estimate in Table 4b with sector fixed effects to the baseline estimate without such fixed effects. Considering the occupational status variable, the estimate with sector fixed effects is two thirds of the baseline estimate. This indicates that one third of the health effect on occupational status operates through sector choice and the remaining two thirds operates within sector. This indicates that studies that restrict the sample to a specific occupational group are limited in their ability to assess the influence of health on occupational status as they are not able to capture a non-negligible part of how health may influence occupational status, that is, through sector choice. Specific occupational sample studies may be better suited for studies of how occupational status affects health, yet they need to recognize the simultaneity of health and occupational status in observational data.

5.1 Health transmission

The analysis in the previous section builds on the idea that immigrants bring their health with them to the destination country. Is there evidence to support this? We find that immigrants' current health is positively predicted by health in their birth country.[7]

[7] Similar evidence is found in Ljunge (2016).

The evidence is presented in Table 5 where the independent variable is the individual's health (subjective).

[Insert Table 5 about here]

The estimates on birth country health are positive and significant throughout the specifications that account for different combinations of individual characteristics, birth country characteristics, and sector fixed effects. The point estimates are similar across specifications, indicating that the health portability does not depend on individual characteristics or employment sector. Notable is that birth country income inequality does not predict the health immigrants bring with them, providing additional evidence to the debate about inequality and health stimulated by Wilkinson and Pickett (2009).

Table 5 illustrates robust evidence of health portability. It also illustrates the first stage of a two-stage model where birth country health is used as an instrument for individual health, which in turn may affect occupational status. Such an analysis is presented in the next section.

As we are studying migrants, selection on health could be an issue as migrants to North America has been found to have better health than natives. However, Ljunge (2016) find that migrants' health and socioeconomic gradient of health to be similar to natives using the same European data as in this study. Hence, selection on health does not appear to be pertinent in our sample.

To the extent that migrants' health converges to native's, it would reduce the association between migrant health and birth country health in the first stage regression as well as the reduced form regressions (Table 2). The health transmission estimates in Table 5 indicate both a fair amount of convergence, estimates are less than one, and substantial persistence as estimates are significantly larger than zero.[8] Our empirical strategy relies on significant persistence of health in the sample, which is demonstrated in Table 5, not the rate of convergence to natives.

5.2 Instrumental variables

Table 6 presents the second stage estimates of the instrumental strategy where individual health is instrumented with birth country mean health.[9] Estimates are

[8] Estimates not different from zero would not reject full convergence.

[9] The second stage of the model regresses occupational status on individual health, and the in the first stage individual health is instrumented for with birth country health.

positive and significant indicating that health improves occupational status. Point estimates and effect sizes are larger in the two-stage model compared to the reduced form (Table 2 and 3). This may be expected as the individual health measure may be more closely connected to individual occupational status compared to birth country health. The estimates also indicate that the persistent component of health, the health variation that is ported from the birth country, is very influential in explaining occupational status. The effect size on policy influence (public status) is 1.9 while for worker autonomy (internal status) it is 1.6.

[Insert Table 6 about here]

The first stage regressions corresponding to the four specifications in Table 6 are presented in the lower panel of Table 6. The F-tests indicate that the instrument is strong in all cases.[10]

Accounting for occupation specific human capital through sector fixed effects and restricting attention to within occupation comparisons yields results similar to the

[10] The specifications in Table 7 only differ in the sample size to correspond to the second stage specifications in Table 6.

reduced form findings. Point estimates on health are somewhat lower when accounting for sector fixed effects in Table 7 compared to Table 6. This indicates that some of health influence may work through sector choice as found in the reduced form models in Table 2 and Table 4b. The coefficient magnitudes are roughly in line with the previous finding that one-third of the health influence operates through sector choice and two-thirds operate within sector.

[Insert Table 7 about here]

Moreover, the two-stage model is robust to accounting for additional birth country characteristics. The first stages also remain strong. The results are presented in Table 8.

[Insert Table 8 about here]

The health estimates' magnitudes are a bit lower in this specification compared to the baseline 2SLS model; effect sizes are about one third lower. Yet, considering the standard errors the point estimates on health in Table 8 does not appear significantly different from Table 6. There is no evidence that home country cognitive skills, as

measured by birth country IQ, influence occupational status conditional on the other controls. Among the cultural values, which may capture some non-cognitive skills, power distance is a strong predictor of occupational status in the third specification. Birth country life expectancy, a measure of social development, positively predicts occupational status in the comprehensive two stage model.

The estimated effect of health on occupational status is robust to accounting for a wide array of birth country differences as seen in Table 8. A causal interpretation of the health estimate of course relies on the untestable exclusion restriction that birth country health only affects the migrant's occupational status through his health. The reader may assess the evidence and make the appropriate interpretation of the results. Yet, the robustness of the results in Tables 7 and 8 combined with the fact that health is a robust predictor of occupational status across specifications provide some plausibility to the assumption underlying a causal interpretation.[11]

5.2.1 Additional robustness checks

[11] If one thinks there are additional variables that positively predict occupational status then the estimates in Table 9 could be seen as upper bounds of the true effect.

This section examines a set of potential concerns, presents new estimates to address them, and discusses how they may influence the interpretation of the results. Focus is on the summary measure of occupational status, the principal component of the three individual measures being a supervisor, worker autonomy, and influence.

One concern is that migrants could influence conditions in their birth countries through remittances.[12] If migrants with better health tend to remit more it could conceivably influence average health in the birth country and raise an endogeneity issue. First, note that the results are robust to accounting for a range of additional birth country characteristics including GDP per capita, a measure remittances might be more directly related to. Second, remittances are concentrated to countries in Africa and Asia (maybe primarily South Asia). As a check on our results we have restricted the sample to exclude migrants from Africa and Asia (restricting the exclusion to South Asia yields similar results). See the first model in Table 9.

There may also be concerns that migrants originating further away from Europe would have a harder time in the European labour market. For example, if migrants from poor countries tend to end up in the informal sector or in low skilled jobs, and

[12] See for example Ponce et al. (2011), Frank et al. (2009), and Valero-Gil (2009).

poor countries also have worse health, we might confound our health effect with a poverty effect. Note though, that our results are robust to accounting for several measures of poverty such as GDP per capita, Gini, and the regulatory quality (institutional quality).

To further focus the sample on a more homogenous population that is close to Europe geographically and culturally we have estimated the model using European migrants only (excluding all migrants with non-European birth countries). Results are similar in this homogenous sample as seen in Table 9 (as is the case when adding the four New World countries the U.S., Canada, Australia, and New Zealand, which are culturally close to Europe). Note also that in particular the Hofstede variables in Table 8 measure cultural closeness, regulatory quality measures institutional closeness, and GDP measures similarity in economic development. Given the robustness of the results when adding this range of birth country characteristics, it may not be altogether surprising to find similar results when restricting the sample to Europeans.

To account for differences across ancestries and distance to Europe we have included birth continent fixed effects. Results are robust to such controls, see model 3 in Table 9, indicating that the results are not due to differences across continents as

they hold also comparing migrants within continents.[13] Results are similar using World Bank region dummies rather than geographic continents. [14]

Migrants are a diverse group in many dimensions, one being how long they have lived in the destination country. Studying more recent migrants may be informative for at least two reasons. First, the influence of birth country health could be stronger as they have spent less time in the new environment compared to those who have lived many decades on the destination country. Second, our birth country health measure is more likely to predate the migration among more recent migrants.

Restricting the sample to migrants with up to ten years residence in the destination country yields a much more precise estimate in the second stage, as the standard error is almost half the magnitude in the baseline sample with all migrants; see model 4 of Table 9. The first stage is also much stronger, as indicated by the F-statistic, supporting the idea that birth country health is a better predictor of health among

[13] This model also adds evidence against the concern related to remittances discussed above as most of the remittances are made to non-European countries.

[14] The World Bank regions cut across geographic continents. They separate South and East Asia and include the Middle East and North Africa (MENA) region.

recent migrants. The point estimate in the second stage is lower than the baseline although it is not clear the difference is significant given the standard errors of both estimates. This restricted sample hence produces similar findings as the full sample.

The birth country health measure is average across the five EVS/WVS waves to capture persistent differences. The last EVS/WVS wave overlaps with the first waves of the ESS. To examine if this overlap influences our findings the ESS sample is restricted to include only the last two waves collected in 2010 and 2012. All the individual data then postdates the EVS/WVS data that was collected up through 2009. Results are similar in this restricted sample as seen in model 5 in Table 9, although precision is a bit lower in this smaller sample.

We have accounted for the possibility that migrants from certain backgrounds sort into different occupations, for example that migrants from with low health and development sort into low skilled occupations. Accounting for birth country development and a range of other characteristics in Table 8 did not change our findings. Moreover, studying influences within occupations was done in Table 7.

To further examine this issue, we restrict the sample to the three occupational categories corresponding to the two highest skill groups (the occupational groups are

Managers, Professionals, and Technicians and Associate Professionals). The health influence is more precisely estimated in this more homogenous sample, as seen in model 6 of Table 9. The point estimate is lower, but is again hard to distinguish significant differences across groups.

The most precisely estimated health effects are found among recent migrants and those working in the more skilled occupations. On the flip side, there is less precision in the estimates for those who have spent more than a decade in the destination country and who work in less skilled occupations. This indicates greater heterogeneity in the health effects in these groups.

There is a literature documenting the importance of early childhood conditions for health later in life.[15] We account for a range of individuals factors that may proxy for the early childhood environment. Education may be the most important, but also accounting for income, labour market and marital status have this effect as such factors could be driven by early childhood factors. We also account for a range of social factors in the birth country in Table 8, such as development, inequality,

[15] See for example Black et al. 2007; Currie and Moretti 2007; Almond et al. 2010; Almond and Currie 2011

institutions, and three cultural dimensions (that may be seen as non-cognitive skills). These could also shape early childhood environments and later development of the individual.

As education stands out as an indicator of early childhood circumstances we have added one check on our results. We account for education of the mother and father through indicators of them having an upper secondary or tertiary degree. This would be the most direct measure of the early childhood environment available in the data. Accounting for parental education has a very small influence on our estimate as seen in model 7 of Table 9. It indicates that our model is not sensitive to accounting for this arguably important early life influence of parental human capital. It indicates that our model satisfactorily accounts for early childhood conditions through the included controls.

The results are not unique to our birth country health measure; we get similar results when using life expectancy in the birth country indicating that the findings relate more broadly to birth country health measures. Yet, the mean health measure is a stronger predictor of migrants' health and hence preferred in the first stage that focuses on prediction of health.

That more than one measure of birth country health predicts migrants' health makes it possible to further examine the validity of the instrument. Using both our usual mean health measure and life expectancy in the birth country as instruments allow us to test the overidentification restriction. Reassuringly, the Hansen J statistic does not raise concerns about endogeneity as the associated p-value is well above the level to reject the over-identification restriction.

An additional concern relates to the measurement of education, which is imperfect as quality may differ across countries. If birth country education quality correlates with birth country health, and if education quality influencing occupational status, this may indicate an unmodelled transmission channel challenging the interpretation of the estimated model. To examine this concern, we have performed a falsification exercise where education is the dependent variable (instead of occupational status). If the coefficient on health, instrumented with birth country health, is insignificant exogeneity cannot be rejected. Three measures of education are examined; years of education,[16] seven harmonized educational categories, and an indicator of a tertiary degree. The estimate on health is far from significant in all three cases, as seen in Appendix Table A1, hence suggesting no evidence for this alternative interpretation.

6. Conclusion

[16] Years of education have been top-coded at 25 years but results are similar without top-coding or if individuals with very high values are excluded from the analysis.

The effects of health on occupational status - which we define as 'healthy worker effect' - has received a limited attention in the literature are far. However, identifying the effect of health status on occupational status faces the challenge of circumventing the potential endogeneity (reverse association) between health and occupational status. The literature has partially addressed such endogeneity in different studies that draw on diverse strategies (Rablen and Oswald 2008, Deaton, 2003, Redelmeier and Singh 2001, Smith 1999).

This study contributes to the literature by drawing on an instrumental variable strategy that allows identifying a source of variation in employees' health (ancestral health) that is not endogenous to the individuals' occupational status, and addresses reverse causality concerns. The results shed light on the mechanisms that explain the effects of health investments on labour market outcomes. We employ data from immigrants to European countries and we use data on health status in the country of origin as an instrument for individual health. We find evidence of a positive effect of health. These results are robust to the inclusion of a battery of checks, do not seem to be driven by cognitive and non-cognitive skills, and overall suggest that the estimated effect size of health compares to that of an upper secondary education (compared to less education). Finally, the estimate was somewhat larger for dimensions of occupational status that exerted effects on policy influence as compared to dimensions of internal and external status in the company.

The focus on migrants raise questions about non-random selection. However, we observe no evidence of migrant selection on health in the European sample studied here. Indeed, Ljunge (2016) finds that average health and the socio-economic gradient of health is similar for migrants and natives. This data suggests weak evidence of selection on health, and hence that the results in this paper also could apply to natives. However, given the self-reported measure of health employed, it remains as a possibility that ancestral health affects the way health is perceived (subjected to some self-reporting bias) and not objective health.

Policy implications of these findings indicate that human capital investments exhibit returns in terms of occupational status. Hence, policies aiming at improving career prospects of individuals, and more generally the efficiency of organisations, should focus more on improving the health of their employees. One potential mechanism for our results is that good health can be used as a signal of valuable features influencing productivity that employers can observe and reward (Hymel et al. 2011, Loeppke, 2008), and more specifically, the probability of climbing up the occupational ladder.

7. References

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Table 1. Summary statistics.

Variable	Mean	Std. Dev.
Supervising role at work	0.297	0.457
Organize work tasks	5.709	3.664
Influence over policy	3.821	3.656
Occupational status	0.015	1.001
Health (average), birth country	3.630	0.330
Health	3.755	0.976
Age	48.832	17.040
Female	0.543	0.498
Upper secondary degree	0.436	0.496
College/university degree	0.359	0.480
Out of labor force	0.410	0.492
Unemployed	0.054	0.227
Middle income	0.317	0.465
High income	0.146	0.353
Married	0.593	0.491
Never married	0.193	0.395
Catholic	0.223	0.416
Protestant	0.072	0.259
Muslim	0.071	0.257

Notes: Data from the European Social Survey, rounds 2 through 6. The sample is immigrants and refers to individuals born in a different country than the country of residence.

Table 2. Occupational status and health. Baseline results.

Dependent variable:	Supervising role at work (1=Yes, 0=No)		Organize work tasks (10=I have complete control 0=I have no control)		Influence over policy (10=I have complete control 0=I have no influence)		Occupational status (prinicpal component of three previous measures, standardized)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Health (average), birth country	**0.095**	**0.101**	**1.066**	**1.177**	**1.238**	**1.362**	**0.362**	**0.399**
	(0.023)***	(0.017)***	(0.270)***	(0.178)***	(0.252)***	(0.185)***	(0.079)***	(0.056)***
Age	0.009	0.002	0.135	0.047	0.108	0.033	0.037	0.012
	(0.001)***	(0.002)	(0.013)***	(0.018)**	(0.015)***	(0.016)**	(0.004)***	(0.006)**
Age squared/100	-0.007	0.001	-0.121	-0.022	-0.093	-0.011	-0.032	-0.004
	(0.001)***	(0.001)	(0.011)***	(0.017)	(0.013)***	(0.013)	(0.004)***	(0.005)
Female	-0.141	-0.142	-0.327	-0.268	-0.630	-0.607	-0.228	-0.219
	(0.012)***	(0.011)***	(0.068)***	(0.053)***	(0.067)***	(0.055)***	(0.020)***	(0.015)***
Upper secondary		0.075		0.694		0.459		0.189
		(0.010)***		(0.059)***		(0.064)***		(0.019)***
College or university		0.191		1.715		1.552		0.543
		(0.013)***		(0.157)***		(0.127)***		(0.044)***
Middle income		0.048		0.381		0.105		0.093
		(0.009)***		(0.049)***		(0.059)*		(0.015)***
High income		0.162		0.967		0.829		0.343
		(0.017)***		(0.095)***		(0.108)***		(0.033)***
Out of the labor force		-0.005		-0.841		-0.619		-0.186
		(0.010)		(0.062)***		(0.093)***		(0.017)***
Unemployed		-0.019		-0.983		-0.856		-0.232
		(0.016)		(0.137)***		(0.135)***		(0.035)***
Married		0.011		0.076		0.092		0.033
		(0.006)*		(0.061)		(0.089)		(0.018)*
Never married		-0.020		-0.059		-0.174		-0.044
		(0.011)*		(0.111)		(0.121)		(0.035)
Catholic		-0.003		-0.230		-0.137		-0.047
		(0.009)		(0.073)***		(0.101)		(0.025)*
Protestant		0.007		-0.105		-0.123		-0.028
		(0.012)		(0.085)		(0.124)		(0.029)
Muslim		-0.063		-1.191		-0.914		-0.314
		(0.020)***		(0.164)***		(0.177)***		(0.053)***
Country and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R−squared	0.057	0.116	0.086	0.170	0.114	0.176	0.099	0.204
Observations	19455	18832	17956	17371	16326	15801	16227	15705

Notes: The sample is immigrants. The main independent variable is mean health (self-assessed) in the birth country. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 3. Occupational status and health. Baseline model standardized effect sizes.

Dependent variable:	Supervising role at work (1=Yes, 0=No)	Organize work tasks (10=I have complete control 0=I have no control)	Influence over policy (10=I have complete control 0=I have no influence)	Occupational status (prinicpal component of three previous measures, standardized)
	(1)	(2)	(3)	(4)
Health (average), birth country	0.07	0.11	0.13	0.13
Age	0.07	0.22	0.16	0.20
Female	-0.16	-0.03	-0.08	-0.11
Upper secondary	0.08	0.09	0.06	0.09
College or university	0.20	0.22	0.20	0.26
Middle income	0.05	0.05	0.01	0.05
High income	0.08	0.06	0.05	0.08
Out of the labor force	-0.01	-0.11	-0.08	-0.09
Unemployed	-0.02	-0.09	-0.08	-0.08
Married	0.01	0.01	0.01	0.02
Never married	-0.02	0.00	-0.02	-0.02
Catholic	0.00	-0.03	-0.02	-0.02
Protestant	0.00	-0.01	-0.01	-0.01
Muslim	-0.04	-0.09	-0.07	-0.08
Observations	18811	17354	17354	17354

Notes: The sample is immigrants. The main independent variable is mean health (self-assessed) in the birth country. Data is from the second to sixth waves of the European Social Survey. The table displays standardized coefficients computed by multiplying the estimate by one standard deviation of the independent variable and dividing by one standard deviation of the dependent variable.

Table 4a. Robustness to birth country factors.

Dependent variable:	Supervising role at work (1=Yes, 0=No)	Organize work tasks (10=I have complete control 0=I have no control)	Influence over policy (10=I have complete control 0=I have no influence)	Occupational status (prinicpal component of three previous measures, standardized)
	(1)	(2)	(3)	(4)
Health (average), birth country	**0.069**	**0.812**	**1.036**	**0.278**
	(0.028)**	(0.258)***	(0.217)***	(0.071)***
GDP per capita (log), birth country	-0.006	0.006	-0.187	-0.027
	(0.013)	(0.108)	(0.115)	(0.033)
IQ, birth country	-0.002	-0.005	0.016	-0.000
	(0.002)	(0.011)	(0.017)	(0.004)
Life expectancy, birth country	0.002	0.015	0.012	0.005
	(0.002)	(0.019)	(0.015)	(0.005)
Gini coefficient, birth country	-0.001	-0.002	0.001	-0.001
	(0.001)*	(0.006)	(0.006)	(0.002)
Regulatory quality, birth country	0.020	0.127	0.026	0.037
	(0.008)**	(0.083)	(0.124)	(0.030)
Masculinity vs. Femininity,	0.000	0.002	0.002	0.001
birth country	(0.000)	(0.002)	(0.003)	(0.001)
Power distance, birth country	0.000	-0.006	-0.011	-0.002
	(0.000)	(0.003)*	(0.003)***	(0.001)**
Individualism vs. Collectivism,	-0.000	0.002	0.003	0.000
birth country	(0.000)	(0.003)	(0.004)	(0.001)
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.118	0.165	0.170	0.209
Observations	14438	13302	12084	12011

Notes: The sample is immigrants. The main dependent variable is mean health (self-assessed) in the birth country. Individual controls include age, gender, education, income, religion, labor force and marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 4b. Within occupation comparisons.

Dependent variable:	Supervising role at work (1=Yes, 0=No)	Organize work tasks (10=I have complete control 0=I have no control)	Influence over policy (10=I have complete control 0=I have no influence)	Occupational status (prinicpal component of three previous measures, standardized)
	(1)	(2)	(3)	(4)
Health (average), birth country	**0.051**	**0.818**	**0.972**	**0.258**
	(0.016)***	(0.162)***	(0.166)***	(0.047)***
Sector fixed effects	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.205	0.219	0.254	0.32
Observations	18580	17133	15602	15521

Notes: The sample is immigrants. The main dependent variable is mean health (self-assessed) in the birth country. Individual controls include age, gender, education, income, religion, labor force and marital status. Sector fixed effects are based on the one digit level of employment according to the ISCO88 scheme. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 5. Health transmission.

Dependent variable: Health, individual's own

	(1)	(2)	(3)	(4)	(5)
Health (average), birth country	**0.193**	**0.216**	**0.215**	**0.191**	**0.182**
	(0.069)***	(0.049)***	(0.048)***	(0.047)***	(0.050)***
GDP per capita (log), birth country			0.028		0.015
			(0.035)		(0.035)
IQ, birth country			0.007		0.006
			(0.004)*		(0.004)
Life expectancy, birth country			-0.008		-0.007
			(0.004)**		(0.004)*
Gini coefficient, birth country			0.002		0.002
			(0.002)		(0.002)
Regulatory quality, birth country			0.007		0.021
			(0.033)		(0.035)
Masculinity vs. Femininity,			0.001		0.001
birth country			(0.000)**		(0.000)**
Power distance, birth country			0.000		0.000
			(0.001)		(0.001)
Individualism vs. Collectivism,			0.000		0.000
birth country			(0.001)		(0.001)
Age, age sq., female	Yes	Yes	Yes	Yes	Yes
Education, LF and marital status, income, religion		Yes	Yes	Yes	Yes
Sector fixed effects				Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.291	0.323	0.320	0.322	0.321
Observations	21367	20688	15732	18646	14309

Notes: The sample is immigrants. The main dependent variable is mean health (self-assessed) in the birth country. Individual controls include age, gender, education, income, religion, labor force and marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 6. Occupational status and health. 2SLS results.

Second stage Dependent variable:	Supervising role at work (1=Yes, 0=No)	Organize work tasks (10=I have complete control 0=I have no control)	Influence over policy (10=I have complete control 0=I have no influence)	Occupational status (prinicpal component of three previous measures, standardized)
	(1)	(2)	(3)	(4)
Health, individual's own	**0.4710**	**6.0170**	**7.0770**	**2.0030**
	(0.157)***	(1.595)***	(1.775)***	(0.566)***
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
Effect size of health	1.01	1.60	1.89	1.95
F-value for exclusion of instrument	19.81	24.08	19.44	19.74
Observations	18811	17354	15786	15690
First stage Dependent variable:	Health, individua	Health, individual's	Health, individual's	Health, individual's
	(1)	(2)	(3)	(4)
Health (average), birth country	**0.208**	**0.202**	**0.190**	**0.1920**
	(0.047)***	(0.041)***	(0.043)***	(0.043)***
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
Observations	18811	17354	15786	15690

Notes: The upper panel presents the second stage estimates. The lower panel presents the corresponding first stage estiamtes. Variation in the number of observations across models is due to data availabilityof the outcome variable in the second stage. The sample is immigrants. The main dependent variable is individual health (self-assessed) . Individual health is instrumented with mean health in the immigrant's birth country. Individual controls include age, gender, education, income, religion, labor force and marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. The effect sizes (standardized coefficients) are computed bymultiplying the estimate by one standard deviation of the independent variable (h ealth) and dividing by one standard deviation of the dependent variable. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 7. Within sector comparisons. 2SLS results with sector fixed effects.

Dependent variable:	Supervising role at work (1=Yes, 0=No)	Organize work tasks (10=I have complete control 0=I have no control)	Influence over policy (10=I have complete control 0=I have no influence)	Occupational status (prinicpal component of three previous measures, standardized)
	(1)	(2)	(3)	(4)
Health, individual's own	**0.266**	**4.436**	**5.625**	**1.474**
	(0.123)**	(1.409)***	(1.630)***	(0.491)***
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
Sector fixed effects	Yes	Yes	Yes	Yes
F-value for exclusion of instrument	17.56	21.21	16.49	16.93
Observations	18560	17116	15587	15506

Notes: The sample is immigrants. The main dependent variable is individual health (self-assessed) . Individual health is instrumented with mean health in the immigrant's birth country. Individual controls include age, gender, education, income, religion, labor force an d marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 8. Robustness to birth country factors. Full model (2SLS) results.

Dependent variable:	Supervising role at work (1=Yes, 0=No)	Organize work tasks (10=I have complete control 0=I have no control)	Influence over policy (10=I have complete control 0=I have no influence)	Occupational status (prinicpal component of three previous measures, standardized)
	(1)	(2)	(3)	(4)
Health, individual's own	**0.338**	**4.157**	**5.334**	**1.419**
	(0.172)*	(1.736)**	(1.935)***	(0.541)***
GDP per capita (log), birth country	-0.011	-0.085	-0.315	-0.065
	(0.020)	(0.173)	(0.232)	(0.062)
IQ, birth country	-0.004	-0.025	-0.014	-0.008
	(0.002)*	(0.017)	(0.025)	(0.006)
Life expectancy, birth country	0.005	0.043	0.044	0.014
	(0.002)**	(0.020)**	(0.021)**	(0.006)**
Gini coefficient, birth country	-0.002	-0.010	-0.009	-0.004
	(0.001)**	(0.010)	(0.011)	(0.003)
Regulatory quality, birth country	0.014	0.091	-0.006	0.036
	(0.015)	(0.158)	(0.252)	(0.062)
Masculinity vs. Femininity,	-0.000	-0.002	-0.003	-0.000
birth country	(0.000)	(0.003)	(0.004)	(0.001)
Power distance, birth country	0.000	-0.005	-0.011	-0.002
	(0.000)	(0.004)	(0.005)**	(0.001)
Individualism vs. Collectivism,	-0.000	0.001	0.002	0.000
birth country	(0.001)	(0.005)	(0.006)	(0.002)
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
F-value for exclusion of instrument	18	15.58	14.41	15.68
Observations	14424	13289	12072	11999

Notes: The sample is immigrants. The main dependent variable is individual health (self-assessed) . Individual health is instrumented with mean health in the immigrant's birth country. Individual controls include age, gender, education, income, religion, labor force and marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Table 9. Additional robustness checks.

Dependent variable:	Occupational status (principal component, standardized)			
Model variation:	African and Asian immigrants excluded	European immigrants only	Birth continent fixed effects	Migrated 10 or less years ago
	(1)	(2)	(3)	(4)
Health, individual's own	**1.929**	**2.696**	**2.323**	**1.161**
	(0.498)***	(0.712)***	(0.585)***	(0.317)***
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
F-value for exclusion of instrument	24.4	16.64	23.78	51.71
Observations	12384	11292	15546	2056

Model variation:	Last two survey waves only	Highest skilled occupations only	Parental education accounted for	Overidentification test
	(5)	(6)	(7)	(8)
Health (average), birth country	**2.265**	**0.710**	**1.996**	**2.169**
	(0.912)**	(0.272)***	(0.549)***	(0.605)***
Individual controls	Yes	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes	Yes
F-value for exclusion of instrument(s)	9.7	26.26	24.32	9.6
Overidentification test (p-value)				**0.283**
Observations	7001	5753	15690	14897

Notes: The table presents the second stage estimates. The sample is immigrants. The main dependent variable is individual health (self-assessed). Individual health is instrumented with mean health in the immigrant's birth country. Model 1 excludes migrants born in Africa and Asia, model 2 includes only migrants born in Europe. Model 3 includes fixed effects for birth continents. Model 4 includes only migrants who report migrating in the last 10 years. Model 5 includes only ESS survey waves 5 and 6 collected in 2010 and 2012. Model 6 includes individuals in occupational categories 1, 2, or 3 (ISCO-88) only, corresponding to the two highest skill categories. Model 7 includes indicators for upper secondary degree and tertiary degree for the mother and father, respectively. Model 8 adds birth country life expectancy as an instrument in the first stage. Individual controls include age, gender, education, income, religion, labor force and marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Appendix 1. Falsification Test.

Table A1. Education as outcome; a falsification exercise.

Dependent variable:	Years of education	Education categories (harmonized)	Tertiary degree
	(1)	(2)	(3)
Health, individual's own	**1.198**	**0.141**	**-0.144**
	(2.512)	(1.417)	(0.345)
Individual controls	Yes	Yes	Yes
Country and year fixed effects	Yes	Yes	Yes
F-value for exclusion of instrument	14.9	15.3	13.1
Observations	20355	15394	20688

Notes: The table presents the second stage estimates. The sample is immigrants. The dependent variable in model 1 is years of education (top-coded at 25 years). Individual health is instrumented with mean health in the immigrant's birth country. Model 2 has educational categories as the dependent variable (7 harmonized categories according to EISCED classification). In model 3 the dependent variable is an indicator of a tertiary degree. Individual controls include age, gender, income, religion, labor force and marital status. Data is from the second to sixth waves of the European Social Survey. Standard errors in parenthesis. Standard errors allow for clustering on the individual's birth country. Significance stars, * p<0.1, ** p<0.05, *** p<0.01.

Appendix 2. Birth country health outcomes, institutional and cultural dimensions

Birth country health outcomes could be relevant and this is accounted for by life expectancy at birth, a measure that also proxies for social development. Inequality is accounted for by using the Gini of income coefficient. All the mentioned variables are from the World Development Indicators (WDI) made available by the World Bank. For documentation consult http://data.worldbank.org/data-catalog/world-development-indicators.

Institutional differences across birth countries are captured by a measure provided by the World Bank Governance Indicators. Regulatory quality measure how the government interacts with the market, for example through price controls or banking restrictions. The measure is increasing with more liberal regulations of market activities, meaning higher values capture less market interventions. Documentation is available; http://info.worldbank.org/governance/wgi/index.aspx.

Cultural differences, and the resulting institutional differences, are measured by Hofstede et al. (2010) dimensions such as masculinity, power distance, and individualism vs collectivism. These variables identify distinct differences across countries. The cultural differences also capture facets of non-cognitive skills such as attitudes regarding material rewards, hierarchy, and conformism; all of which may be relevant in labour markets with occupational hierarchies. The three dimensions only display low correlations; hence they can all be included in the analysis.

Masculinity vs femininity (Hofstede et al. 2010). The masculinity side of this dimension represents a preference in society for achievement, heroism, assertiveness and material rewards for success. Society at large is more competitive. Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. Society at large is more consensus-oriented.

In feminine countries, it is important to keep the life/work balance and you make sure that all are included. An effective manager is supportive to his/her people, and decision making is achieved through involvement. Managers strive for consensus and people value equality, solidarity and quality in their working lives. Conflicts are resolved by compromise. In masculine countries people “live in order to work”, managers are expected to be decisive and assertive, the emphasis is on equity, competition and performance and conflicts are resolved by fighting them out.

Power distance expresses the degree to which the less powerful members of a society accept and expect that power is distributed unequally. The fundamental issue here is how a society handles inequalities among people. People in societies exhibiting a large degree of power distance accept a hierarchical order in which everybody has a place and which needs no further justification. In societies with low power distance, people strive to equalize the distribution of power and demand justification for inequalities of power.

Societies with a low score on ‘power distance’ are characterized by: being independent, hierarchy for convenience only, equal rights, superiors accessible, coaching leader, management facilitates and empowers. Power is decentralized and managers count on the experience of their team members. Control is disliked and

attitude towards managers are informal and on first name basis. Societies with a high score believe hierarchy should be respected and inequalities amongst people are acceptable. Similarly, we classify countries in a scale of individualism vs collectivism used in Hofstede et al. (2010). The high side of this dimension, called individualism, can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. In individualistic societies, the employer/employee relationship is a contract based on mutual advantage, hiring and promotion decisions are supposed to be based on merit only, management is the management of individuals. Its opposite, collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. In collectivist societies people from birth and onwards are integrated into strong, cohesive groups (especially represented by the extended family) which continues protecting its members in exchange for loyalty.