european corporate governance institute

ecgi

The Sustainability Wage Gap

Finance Working Paper N° 718/2020
September 2023

Philipp Krueger
University of Geneva, GFRI, SFI and ECGI

Daniel Metzger
Erasmus University, LSE and ECGI

Jiaxin Wu
Stockholm School of Economics

© Philipp Krueger, Daniel Metzger and Jiaxin Wu 2023. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

This paper can be downloaded without charge from:
http://ssrn.com/abstract_id=3672492

www.ecgi.global/content/working-papers

european corporate governance institute

ECGI Working Paper Series in Finance

The Sustainability Wage Gap

Working Paper N° 718/2020
September 2023

Philipp Krueger
Daniel Metzger
Jiaxin Wu

We would like to thank Rui Albuquerque, Bo Becker, AnnChristine Brunen, Claudia Custodio, Robert Dur, Alex Edmans, Daniel Ferreira, Stefan Jaspersen, Jessica Jeffers, Yrjo Koskinen, Diogo Mendes, Thorsten Martin (discussant), Martin Oehmke, Marcus Opp, Paige Ouimet (discussant), Mikael Paaso, Vesa Pursiainen, Marc Roe (discussant), Elena Simintzi, Dirk Schoenmaker, Christian Thomann, Michael Ungeheuer, Roberto Weber, and Chendi Zhang as well as conference and seminar participants at the American Finance Association 2022 (AFA) Meetings, the ECGI Global Corporate Governance Colloquia 2021, the ESG workshop at ESCP Paris 2023, the European Finance Association 2021 (EFA) Meetings, German Economists Abroad Christmas conference 2022, as well as seminar participants at the Madrid Virtual Finance Workshop, Temple University, Bocconi, Nottingham, University of Hamburg, Bayes Business School, Baruch College, Durham Business School, Toulouse School of Economics, Toulouse Business School, University of Nantes, King's College London, NOVA Lisbon, Principles for Responsible Investment, University of Utrecht, Singapore Management University, the Rotterdam School of Management, the University of Geneva, the Stockholm School of Economics, Humboldt University, Korea Advanced Institute of Science & Technology, Durham University, Warwick University, University of Edinburgh Business School, IE Business School Madrid, Liverpool University and Toulouse School of Management. Metzger gratefully acknowledges support from Vinnova.

© Philipp Krueger, Daniel Metzger and Jiaxin Wu 2023. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Abstract

Using administrative employer-employee matched data, we provide evidence that workers earn substantially lower wages in more sustainable firms. We hypothesize that this Sustainability Wage Gap arises because workers with preferences for sustainability accept lower wages to work in more environmentally sustainable firms. Examining both cross-sectional and time-series heterogeneity, we find that the wage gap is larger for high-skilled workers and increasing over time. Using a battery of additional tests, we argue that our results are difficult to reconcile with many alternative interpretations suggested in prior research.

Keywords: Wage differentials; Allocation of talent; Human capital; Sustainability; ESG; CSR

JEL Classifications: J24, J31, Q56, G32

Philipp Krueger
Professor of Responsible Finance
University of Geneva
40, Bd du Pont-d'Arve
1211 Geneva 4, Switzerland
phone: +41 223 798 569
e-mail: philipp.krueger@unige.ch

Daniel Metzger*
Professor of Finance
Erasmus University , Rotterdam School of Management
Burgemeester Oudlaan 50
3062 PA Rotterdam, The Netherlands
phone: +31 10 4088836
e-mail: metzger@rsm.nl

Jiaxin Wu
Researcher
Stockholm School of Economics
Sveavägen 65
113 83 Stockholm, Sweden
phone: +46-8-736 9178
e-mail: jiaxin.wu@phdstudent.hhs.se

*Corresponding Author

s:fi
RESEARCH

Swiss Finance Institute Research Paper Series N°21-17

The Sustainability Wage Gap

Philipp Krueger
University of Geneva and Swiss Finance Institute

Daniel Metzger
Erasmus University Rotterdam, London School of Economics & Political Science, and ECGI

Jiaxin Wu
Stockholm School of Economics

THE SUSTAINABILITY WAGE GAP*

Philipp Krueger
Daniel Metzger
Jiaxin Wu

August 2023

Abstract

Using administrative employer-employee matched data, we provide evidence that workers earn substantially lower wages in more sustainable firms. We hypothesize that this *Sustainability Wage Gap* arises because workers with preferences for sustainability accept lower wages to work in more environmentally sustainable firms. Examining both cross-sectional and time-series heterogeneity, we find that the wage gap is larger for high-skilled workers and increasing over time. Using a battery of additional tests, we argue that our results are difficult to reconcile with many alternative interpretations suggested in prior research.

Keywords: Wage differentials; Allocation of talent; Human capital; Sustainability; ESG; CSR
JEL Codes: J24; J31; Q56; G32

*Krueger is at the University of Geneva, the Swiss Finance Institute, and ECGI; Metzger is at the Rotterdam School of Management, the ECGI, the FMG. and the Swedish House of Finance. Wu is at the Stockholm School of Economics and the Swedish House of Finance. Emails: philipp.krueger@unige.ch; metzger@rsm.nl; jiaxin.wu@phdstudent.hhs.se. We would like to thank Rui Albuquerque, Bo Becker, Ann-Christine Brunen, Claudia Custodio, Robert Dur, Alex Edmans, Daniel Ferreira, Stefan Jaspersen, Jessica Jeffers, Yrjo Koskinen, Diogo Mendes, Thorsten Martin (discussant), Martin Oehmke, Marcus Opp, Paige Ouimet (discussant), Mikael Paaso, Vesa Pursiainen, Marc Roe (discussant), Elena Simintzi, Dirk Schoenmaker, Christian Thomann, Michael Ungeheuer, Roberto Weber, and Chendi Zhang as well as conference and seminar participants at the American Finance Association 2022 (AFA) Meetings, the ECGI Global Corporate Governance Colloquia 2021, the ESG workshop at ESCP Paris 2023, the European Finance Association 2021 (EFA) Meetings, German Economists Abroad Christmas conference 2022, as well as seminar participants at the Madrid Virtual Finance Workshop, Temple University, Bocconi, Nottingham, University of Hamburg, Bayes Business School, Baruch College, Durham Business School, Toulouse School of Economics, Toulouse Business School, University of Nantes, King's College London, NOVA Lisbon, Principles for Responsible Investment, University of Utrecht, Singapore Management University, the Rotterdam School of Management, the University of Geneva, the Stockholm School of Economics, Humboldt University, Korea Advanced Institute of Science & Technology, Durham University, Warwick University, University of Edinburgh Business School, IE Business School Madrid, Liverpool University and Toulouse School of Management. Metzger gratefully acknowledges support from Vinnova.

1 Introduction

Attracting and retaining talent is important not only for a firm's competitiveness, but also for economic development (Murphy, Shleifer, and Vishny 1991). However, what affects the allocation of talent between firms and across sectors? There is mounting evidence that workers care about the environment, or more generally, the environmental, social, and governance (ESG)[1] performance of their employers. For instance, a recent survey by the IBM Institute for Business Value (IBV)[2] found that almost three quarters of survey participants consisting of actual and potential employees stated that environmentally sustainable companies are more attractive employers.

In this paper, we systematically analyse whether workers value the environmental sustainability of the companies or the sectors in which they work. Using detailed employer-employee matched data from Sweden, we uncover and provide novel evidence that workers have preferences for environmental sustainability and are willing to accept lower wages to work in more sustainable firms and sectors. We coin this empirical regularity the *Sustainability Wage Gap*. Our analysis also shows that the Sustainability Wage Gap is larger for more skilled workers and increasing over time, consistent with survey evidence that preferences for protecting the environment are more pronounced among highly talented individuals and younger birth cohorts such as Generation Y (Millennials) and Generation Z. Last, we show that workers in more sustainable sectors are willing to exert more effort measured as the number of working hours per week, which we obtain from a large labour force survey.

We start by motivating our analysis of the Sustainability Wage Gap using an online survey. The survey produces several pieces of evidence consistent with our main hypothesis: first, more than half of the surveyed individuals care about the environmental sustainability of their jobs and these preferences tend to be more pronounced for more skilled individuals. The survey also demonstrates that individuals are willing to accept lower wages to work for more sustainable firms: specifically, the Sustainability Wage Gap is almost 20% conditional on willingness to accept a wage cut to work for a more environmentally sustainable employer and about 10% unconditionally. Using (self-reported) relative academic performance as an indicator for talent

[1] As discussed more comprehensively in Online Appendix (Section 3), Sustainability, Corporate Social Responsibility (CSR), and the recently popularized umbrella concept ESG (Environmental, Social and Governance) are all related and difficult to delineate exactly. We believe that these concepts are ultimately concerned with similar matters, namely how firms address social and environmental issues—or more generally—firms' overall societal impact. In our paper, we assume that measures of sustainability, "ESG", and "CSR" tend to be positively correlated and we choose to refer to them collectively as "Sustainability" or "ESG."

[2] See https://newsroom.ibm.com/2021-04-22-IBM-Study-COVID-19-Pandemic-Impacted-9-in-10-Surveyed-Consumers-Views-on-Sustainability

(or skill), we find that preferences for more sustainable jobs are more pronounced for more talented individuals. Moreover, close to 82% of the participants also state that they would be willing to work harder in more sustainable firms.[3]

While the evidence based on our survey is consistent with the main premise of our paper—i.e., people are willing to work for less in more sustainable organizations—it is not clear if survey responses capture intentions only, or whether stated intentions also translate into true labour market outcomes. To overcome this concern, our main analysis makes use of administrative employer-employee matched data from Sweden. This data contains highly detailed information on wages, standard Mincerian controls such as age and education, as well as information on occupation and detailed measures of cognitive as well as non-cognitive skills from military enlistment tests. To test whether workers do indeed accept lower wages to work in firms that are considered more sustainable, we combine the administrative labour data with different measures of sustainability, both at the firm- and the sector-level. Specifically, we use standard firm-level best-in-class ESG ratings produced by a commercial data provider, industry-level greenhouse gas emissions data from the Swedish Environmental Protection Agency, and a novel survey-based measure that quantifies the environmental sustainability of economic activities.

Using firm-level ESG ratings, which now figure prominently in financial economics research (see, for example, Servaes and Tamayo (2017), Dyck et al 2019, Pedersen, Fitzgibbons, and Pomorski 2021, or Pastor, Stambaugh, and Taylor 2021, 2022), we show that firms with better environmental ratings pay lower wages. We would like to stress that this analysis does not compare *Green Jobs* with *Polluting Jobs* or *Non-Green-task jobs* (see OECD 2023) but rather, compares the wages of otherwise similar workers in the *same* occupation.[4] Specifically, we also focus on "generic jobs", i.e., occupations that are independent of a specific sector and, literally, exist in all firms and sectors. Examples of such occupations are, for instance, secretaries, human resource officers, legal specialists, or IT professionals. We find that, on average, the most sustainable firms in a sector pay between 2-4% less. A potential concern with this finding could be related to unobserved worker heterogeneity. For instance, individuals who self-select to work for more sustainable firms or sectors might be less talented than workers in other firms or sectors, which, in turn, could explain lower wages. Given our detailed employer-

[3] Our survey results are also consistent with a representative labour market survey from the International Social Survey Programme (ISSP). Please refer for more details to Section 7 of the Online Appendix.

[4] Interestingly, the OECD report documents a green-task job wage premium which can almost be fully explained by experience and education. We, however, keep all those dimensions constant and compare two workers in more vs. less environmentally sustainable firms or sectors.

employee matched data, we can control for many worker characteristics such as education and experience as well as for—*usually unobservable*—talent measures such as cognitive and non-cognitive skills from military enlistment tests. In further firm-level tests, we also analyse whether wages react to negative ESG news (or reputational shocks) using data from RepRisk, a data provider specialized in monitoring negative firm-specific ESG news. Using news-based shocks to firms' ESG performance, we document that firms that are subject to negative ESG news tend to increase wages (which include bonus payments) by 6.5% in the year following the negative ESG news incidents. In a last test using firm-level ESG ratings, we provide some suggestive evidence that the Sustainability Wage Gap is relatively larger for the most skilled individuals, consistent with our survey evidence.

However, the use of firm-level ESG ratings has potential limitations. For instance, there are methodological issues with such ratings (see, for example, Berg, Koelbel and Rigobon 2022, Berg, Fabisik, and Sautner 2021, or Gibson, Krueger, and Schmidt 2021). Furthermore, it is not always obvious how these ratings are constructed ("black box") and it remains unclear whether workers in fact know and/or understand firms' ESG ratings. Last, firm-level ESG ratings are generally only available for large and listed firms in the most recent past, which is a limitation as in Sweden the stock market is small and, hence, the cross-section of listed firms relatively small. To overcome these limitations, we complement the previous analysis using two sector-based measures of sustainability.

The first sector-based measure is based on objective greenhouse gas emissions (GHG) data collected by the Swedish Environmental Protection Agency. We use sector-level GHG emissions intensity, which is defined as total GHG emissions of a sector scaled by its total number of employees. The second sector-level sustainability measure comes from a survey that we develop explicitly for the analysis in this paper. To construct this measure, we ask a sample of online survey participants to classify 95 different economic sectors (covering 98% of the Swedish private sector worker population) in terms of their environmental sustainability. We consider this measure particularly suitable for our analysis as, in our setting, the *perceived* sustainability performance of a firm is most relevant, as workers' perceptions are likely to shape their job choices. In contrast to the potential problems with ESG ratings, the survey-based sector-level sustainability measure is based on an intuitive, straightforward, and transparent methodology. Given that it is an industry measure, our perceived sustainability measure is also available for private companies. A key advantage of our survey-based measure is that the environmental sustainability of a firm's main economic activity is likely to be more comprehensible for potential workers than information captured by commercially available

ESG ratings (and to some extent GHG emissions as well). However, we also show consistent results of all main tests using the sector-level measure based on GHG emissions.

In the sector-level tests, we compare two otherwise very similar workers, in the same occupation, in the same year – one who works in a sustainable sector vs. one who works in an unsustainable sector. For instance, when comparing selected occupations that are likely to exist in all sectors (e.g., secretaries, lawyers, or human resource professionals) we find that the Sustainability Wage Gap for these occupations ranges from about -7.2 % for executives and directors to -18.6 % for human resources professionals. In estimations across *all* occupations, we find robust evidence that workers in firms that belong to the most sustainable sectors earn about 9-15% lower wages, a figure that is remarkably similar in magnitude to our survey evidence. Importantly, in all our regressions we also control for cognitive and non-cognitive skills, detailed occupational information, as well as for regional differences addressing the concern that more sustainable industries are clustered in areas with lower living costs, for instance.

In further tests, we also analyse how wages of workers *change* after workers switch sectors. We conduct two types of tests. First, we exploit the panel structure of our data and include worker fixed effects. Second, in an event study type setting, we investigate job switches that happened for arguably more exogenous reasons, i.e., job switches resulting from firms going bankrupt or being subject to mass layoffs. Consistent with our hypothesis, we find that workers who move from more (less) sustainable to less (more) sustainable sectors experience a wage increase (decrease).

We also examine heterogeneity in the documented Sustainability Wage Gap and find that the wage gap is larger for workers with high cognitive or non-cognitive skills. Consistent with the intuitive notion of environmental sustainability having become more important recently, the evidence also points to the widening of the wage gap over time, and even more so for the most skilled workers. Thus, our findings are particularly relevant for firms today as younger cohorts are climbing the corporate ladder. Accommodating the sustainability preferences of these younger workers might be a decisive factor for firms to attract the most talented workers, including workers with high non-cognitive skills, a component of skill that has been found to be of growing importance in the workplace (see Deming 2017).

In a last set of tests, we examine the hypothesis that workers in more sustainable sectors are more willing to exert higher effort. Making use of a large labour force survey, we proxy for effort by the number of hours a worker usually works per week. We find that workers in more sustainable sectors do work more hours per week and are more likely to work more extreme

hours (i.e., more than 50 or 60 hours per week), again consistent with the main premise of our paper. Employing the full sample, we also use the number of sick days or the propensity of being hospitalized as an indirect measure for the stressfulness of a job. Consistent with the survey results on working hours, we find that workers in more sustainable sectors have more sick days and are more likely to end up in the hospital.

While we rely on non-experimental data, we would like to stress that even if there was random assignment of ESG policies to firms or sustainability levels to sectors, an interpretation of the estimated coefficients of ESG/Sustainability on wages or other labour outcomes remain challenging. Indeed, firms may experience other changes because of the new ESG policy, such as higher profitability, that directly affect wages or retention but are unrelated to changes in a worker-value alignment.

We still argue that the proposed Sustainability Wage Gap channel is more difficult to reconcile with reverse causation or other already proposed channels through which sustainability may explicitly (or implicitly) affect wages.

First, many alternative explanations would predict *higher*, or at least not lower wages for workers of firms with better sustainability. Second, our survey reveals heterogeneous preferences for the sustainability of employers among different subpopulations of the labour force (i.e., by skill). Any alternative explanation would need to explain such differences as well. Econometrically, the additional hypotheses exploring cross-sectional differences across worker skill allow us to exploit within firm-year-variation and control for unobserved time-varying firm heterogeneity by including firm-year fixed effects. An example of such firm-year heterogeneity is profitability, for instance. In the tests focusing on worker heterogeneity, we find evidence consistent with the Sustainability Wage Gap hypothesis.

One possibility could be that high sustainability sectors offer non-wage amenities that are associated with lower wages. For instance, workers in more sustainable sectors could benefit from better work-life balance, e.g., by working fewer hours. As discussed before, this is unlikely to be the case given that workers in more sustainable sectors work longer hours. More general, there is a rich literature in labour economics highlighting inter-industry wage differentials (see, for instance, Krueger and Summers (1988), Katz and Summers (1989), Gibbons and Katz (1992)). Ex-ante it is unclear whether well-known wage differentials such as firing risk, hazardous work conditions, work flexibility, or better training opportunities and the environmental sustainability profile of a sector are substitutes or complements. If they were substitutes, a valid concern is that those wage differentials might be correlated with the

sustainability of a sector, and thus driving (or at least biasing) the relation between wages and the sustainability of the sector. We address this concern in several ways.

First, we proxy for known wage differentials at the sector-level using our rich set of demographic information and labour market outcomes. For instance, we calculate the yearly firing rate in each sector to proxy for firing risk. Our results remain robust to the inclusion of these additional controls.

Second, to further address the issue of compensating differentials and alternative explanations for our findings, we leverage our online survey: we explicitly ask the survey respondents to rate sectors in terms of other known compensating differentials (e.g., work-life benefits or career opportunities) to capture other (perceived) job amenities. When we use these survey-based assessments of sector-level compensating differentials alongside our main sustainability measure, we find that that the Sustainability Wage Gap remains highly significant and orders of magnitude larger than the wage gaps (or premiums) associated with the other sector characteristics (e.g., work-life benefits or dangerous working conditions).

Last, and importantly, we would like to stress that the firm-level tests using best-in-class ESG ratings also address the concern of unobserved industry heterogeneity given that in those tests we compare workers within the same sector (at the 3-digit level), further alleviating concerns that the documented wage differences are not driven by sustainability, but rather due to other sectoral differences. Note that in those tests, we can also control for firm-specific differences, i.e., the social or governance dimension of ESG ratings.

The rest of the paper is organized as follows: In the next section, we discuss our contribution to the economics and finance literature. Section 3 uses the data from our online survey to motivate our analysis and develop the main hypotheses. Section 4 introduces the main data sources and explains how we construct our measures for sustainability. Section 5 presents the main evidence on the Sustainability Wage Gap based on firm-level sustainability measures. Section 6 uses sector-level measures of sustainability to investigate labour market consequences of sustainability for the most talented workers and also examines whether there are time trends in the Sustainability Wage Gap. Section 7 takes stock and presents a battery of additional tests aimed at ruling out leading alternative interpretations for our findings. Section 8 concludes.

2 Related literature

In this paper, we contribute to several strands of the economics and finance literature. First, we add to research concerned with the financial performance implications of sustainability by documenting a new channel through which sustainability could potentially affect the bottom

line of firms. Second, we add to the debate on how to measure sustainability at the firm-level by proposing an intuitive and straightforward way of quantifying the sustainability of firms. Our paper also connects to the labour-economics literature on across firm and inter-industry wage differentials and non-monetary incentives as well as the meaning of work.

Our paper contributes to the literature that studies the relation between sustainability policies and firm performance. The evidence in this literature is ambiguous. For example, early meta-studies such as Margolis, Elfenbein, and Walsh (2007) show evidence of positive, negative, and no relation between financial performance and sustainability policies. However, more recent, and more comprehensive meta-studies argue in favour of a predominantly non-negative correlation between financial performance and sustainability characteristics (e.g., Friede, Busch, and Bassen 2015). From a corporate finance perspective, firms' sustainability efforts could translate into higher firm value either by lowering discount rates or by increasing cash flows. Several papers provide evidence that firms with better ESG performance exhibit lower cost of capital (e.g., Chava 2014; Dunn, Fitzgibbons, and Pomorski 2018; Albuquerque, Koskinen, and Zhang 2019; or Oehmke and Opp, 2023). In contrast, prior research has been less able to credibly identify channels and mechanisms through which ESG policies would affect a firm's cash flows. Servaes and Tamayo (2017) and Meier et al. (2023) are notable exceptions in this respect. They provide evidence consistent with the view that consumer facing firms with better ESG policies have higher firm value, possibly due to such firms being able to sustain higher margins if sustainability aware customers are willing to pay higher prices. While more sustainable companies might attract customers with sustainability preferences willing to pay higher reservation prices, it cannot be ruled out that products of more sustainable firms also exhibit higher quality and thus command higher prices. In relation to this literature, our paper identifies another, novel channel through which sustainability can potentially positively affect cash flows, namely through lowering a firm's wage bill.[5] Relative to the abovementioned consumer channel, we can control more directly for the quality dimension given that we have detailed demographic information including cognitive- and non-cognitive skills of the workers.

Another dimension along which we improve on the existing literature is that many of the papers that study the question of whether firms can do well by doing good (see Benabou and Tirole 2010) fail to provide causal evidence of the respective channels. In particular, a simple

[5] While our evidence shows that more sustainable firms face lower labor costs and possibly higher ROA, we cannot observe the net effects of the Sustainability Wage Gap on a firm's profitability as we are unable to observe the direct costs associated with investments in more sustainable policies. This specific limitation is not unique to our setting but applies more generally to research concerned with firms' sustainability practices given that detailed firm-level measures quantifying the costs of improving sustainability do not exist.

reverse causation explanation, i.e., well-performing firms having more financial slack to invest into sustainability, appears to be an alternative explanation that is usually difficult to rule out. The availability of very granular data at the worker-level as well as additional predictions on specific subpopulations, derived from heterogeneity of workers' preferences for jobs in sustainable sectors, allows us to rule out many other explanations. Hence, we believe that our paper makes a step forward in identifying a specific channel through which sustainability can affect cash flows, namely lower labour costs.

Our paper also contributes to the discussion on the measurement of sustainability. There is an ongoing debate about the divergence, opaqueness, and methodological issues concerning commercially available ESG ratings (Berg, Koelbel, and Rigobon 2022; Gibson, Krueger, and Schmidt 2021). Recent research also points to ESG data providers "rewriting history" by changing historical ESG ratings (see Berg, Fabisik, and Sautner 2021). We offer a novel and intuitive sector-wide measure of the environmental sustainability of firms based on a simple survey that can be easily replicated and applied in other, related domains. Using our measure, we also show that individuals form meaningful expectations about the sustainability of different sectors and that those expectations have real consequences.

We also contribute to the rich labour economics literature. A large body of work starting at least with Slichter (1950) documents significant industry-differences in wages paid to workers (Schweitzer 1969; Dickens and Katz 1987; Krueger and Summers 1988; Katz and Summers 1989; Murphy and Topel 1990). Our analysis suggests that some of these inter-industry wage differentials can potentially be attributed to the environmental sustainability characteristics of different industrial sectors, in particular since we explicitly control for typically unobservable ability measures which have been thought to be behind some of the observed wage differences across sectors (Gibbons and Katz, 1992; Gibbons et al. 2005). Other papers in the labour literature have focused more on firm-specific factors related to firm productivity differences (see Syverson 2011; Card et al 2018) or more generally unobserved firm heterogeneity (e.g., Abowd, Kramarz, and Margolis 1999; Card, Heining, and Kline 2013; Card, Cardoso, and Kline 2015; Song et al, 2019) in driving wage differentials. Our analysis suggests that some of these observable and unobservable firm effects are related to sustainability. In a recent paper, Card et al. (2018) synthesize insights from the literature on rent-sharing and the literature emphasizing two-way fixed effects models (Abowd, Kramarz, and Margolis 1999) and proposes a theory of wage setting in which workers have idiosyncratic tastes for different workplaces. Our paper is strongly related to this modelling approach, since our paper suggests that one dimension of these idiosyncratic tastes is the environmental sustainability of the firm

itself, or sustainability of the firm's main activity. We also contribute to the labour literature on compensating differentials, which goes back at least to Adam Smith (see Rosen 1986). In a recent paper, Sorkin (2018) estimates that compensating differentials account for over half of the firm component in the variance of wages. Our analysis suggests that firm- or industry-level environmental sustainability is an important compensating differential that is not captured by more established compensating differentials such as work-life benefits, firing risk, health risk, or the flexibility to move to other sectors.

Last, we also add to a large literature on non-monetary incentives and the meaning of work or status in labour economics. In a sense the environmental sustainability of an employer could be seen as a component of meaning or status of a job. Ex-ante it is not clear whether meaning of work (or the status of a job) and monetary compensation are substitutes or complements. For instance, high pay in environmentally sustainable jobs may weaken the signal that an individual cares for the environment (e.g., Frey 1997, Bénabou and Tirole 2006, or Ariely, Bracha, and Meier 2009). On the contrary, the economic literature on status typically assumes that the value of an extra dollar (or consumption) is higher for workers with higher status (e.g., Ferreira and Nikolowa 2023, Hopkins and Kornienko (2004), Becker, Murphy, and Werning (2005), Auriol and Renault (2008), Ray and Robson (2012), and Auriol, Friebel, and von Bieberstein (2016)). Cassar and Meier (2018) summarize the literature and point out that, "in principle, job meaning could be either a substitute or a complement to monetary compensation, which in turn will influence whether people accept lower pay for a meaningful job, or whether job meaning and pay tend to rise together. The evidence on this point is mixed." Our findings show that workers accept lower wages to work for more environmentally sustainable employers, suggesting that in our setting *meaning* or *status*—as proxied by the environmental sustainability of the job—acts as a substitute to wages.

Dur and van Lent (2019) show that most workers care about having a socially useful job and suffer when they consider their job useless. We show that workers are willing to "pay" to work in a more environmentally useful job by accepting lower wages and thus foregoing compensation. Our paper is also closely related to Burbano (2016), Hedblom, Hickman, and List (2022), Bunderson and Thakor (2020), or Schneider, Brun, and Weber (2020) who use mainly surveys and experiments to show that workers are willing to give up parts of their wages to work in more sustainable, more meaningful, or less immoral jobs. For instance, Hedblom, Hickman, and List (2022) make use of a very rich natural field experiment to show, among other results, that workers in socially responsible firms are more productive. Our analysis using observational data is complementary to their analysis and shows consistent results. One reading

of our findings is that more sustainable firms are able to recruit better (that is, more talented) workers, for the same wage. This is also broadly consistent with recent work by Cen et al. (2022) who show that socially responsible firms are better at retaining workers. Burbano (2016) uses an online experiment to show workers accept 44% lower wage bids for the same job after learning about the employer's social responsibility. Her paper provides causal empirical evidence of revealed preferences for social responsibility in the workplace and of workers' willingness to give up pecuniary benefits for nonpecuniary benefits. She also shows stronger social preferences among the highest performers, a point that our analysis also makes. While the internal validity of such experiments is high, those existing ones also face two main challenges. First, even if there was random assignment of social responsibility policies to firms, an interpretation of changes in wages or retention, for instance, remains challenging. Indeed, firms may experience (expectations in) changes unrelated to a worker-value alignment of the new policy, such as higher profitability, that affect wages or retention. Second, it remains unclear whether these findings generalize and transfer to workers in fact accepting lower wages. Our paper uses non-experimental data from the whole Swedish private sector working population to show the external validity of such preferences for sustainable jobs. At the same time, the internal validity of our analysis remains arguably high as we can include a set of very detailed worker-, occupation-, and sector-level controls, including detailed measures of talent. Moreover, we make use of an online survey to uncover important heterogeneities in the preferences for sustainable jobs. We believe that documenting these heterogeneities is already a contribution in itself but most important for us, the insights on heterogeneous preferences for sustainable jobs also generate additional predictions regarding the Sustainability Wage Gap channel that we can test in our administrative wage data, and which are more difficult to reconcile with alternative explanations. On the empirical side, we make use of unique and granular measures of different dimensions of skills to show that the Sustainability Wage Gap is higher for workers with high cognitive, but also with high non-cognitive skills, a component of skill that has been found to be of growing importance in the workplace (see Deming 2017).

3 The Sustainability Wage Gap – Survey evidence and hypotheses development

We argue that firms' sustainability policies can benefit their bottom lines by lowering labour costs. The main idea is that more sustainable firms can hire workers with explicit sustainability preferences at lower wages, or, equivalently, by offering a certain wage, they can hire workers that are more talented. Two central assumptions underlying our main hypothesis are that

(i) workers exhibit preferences for the environmental sustainability of their jobs and

(ii) these preferences affect their labour market choices.

To motivate our analysis and illustrate that workers do indeed have preferences for the environmental sustainability of their jobs consistent with our main hypothesis we use data for 300 participants collected through a Prolific survey, which we ran in November 2021.[6]

Table 1 reveals that workers exhibit sustainability preferences related to their labour choices. In the survey, we ask participants in Question 7 how important it is for them to have an environmentally sustainable job. Our analysis reveals that 65% of the respondents state that it is either *Very important* or *Important* to them. Second, we demonstrate that individuals also display labour choices consistent with our main hypothesis. We do so by asking survey participants if they would consider accepting a lower wage to work for a more environmentally sustainable firm. We also ask the survey participants if they would be willing to work harder for an environmentally sustainable firm. The analysis shows that about 52% of the participants state that they would be willing to accept a wage cut to work for a more environmentally sustainable firm. The average wage concession is almost 20% (median of 15%) conditional on willingness to accept a wage cut and about 10% unconditionally. Consistent with the evidence from the Prolific survey we formulate our first hypothesis on the Sustainability Wage Gap:

Hypothesis 1: Workers in more sustainable firms are paid less.

Using our survey, we now also show that preferences for sustainability aspects of employers are systematically related to the skill of workers. We posit that more highly skilled workers care more about the environmental sustainability of their jobs. Documenting such heterogeneity would be interesting for two reasons. First, accommodating the preferences of more skilled workers to attract and retain the most talented workers is increasingly important for firms to remain competitive, in particular in today's knowledge-based economy. Second, heterogeneity in sustainability preferences leads to additional predictions which we can test in the administrative wage data, and which allow us to rule out possible alternative explanations.

Indeed, our survey provides evidence that preferences for environmental aspects of jobs are systematically related to the talent (or skill) of a worker. To measure the talent of our survey

[6] The main hypotheses can also be motivated using the representative labour market survey from the International Social Survey Programme (ISSP). The ISSP is a cross-national collaboration that runs annual surveys on topics important to the social sciences and includes the Work Orientations Survey, which seeks to collect data on attitudes toward work and working conditions (see Dur and van Lent 2019). For brevity, we explain this data and our tests in detail in Section 7 of the Online Appendix.

respondents we ask them to answer the following two questions: "In high school, how was your academic performance relative to your classmates?" (Q5) and "Where did you rank in terms of your grades in high school?" (Q6). When conditioning responses to the question of "How important is it to have a job that is environmentally sustainable" (Q7) on high values of the survey-based proxies for talent, we generally find that more talented respondents also exhibit stronger environmental preferences for their jobs. For instance, Table1, Panel B shows that 78.5% of respondents who stated to have ranked in the Top 10 of their high-school class answered that it is important or very important to have an environmentally sustainable job. This figure is only 61.7% in the group of respondents outside of the Top 10. The difference in the responses between the two groups is significant at the five percent level. Secondly, the respondents who state that their academic performance in high school was much better relative to their classmates also attach more importance to the environmental sustainability of jobs. While 77.1% of respondents with above average high-school performance state that it is important or very important that their job is environmentally sustainable, this figure is only 47.9% in the group of respondents with below average performance. The difference in responses is statistically significant. Based on this, we formulate

Hypothesis 2: The Sustainability Wage Gap (Hypothesis 1) is larger for workers that are more talented.

Next, we explore the issue of trends in the Sustainability Wage Gap. For instance, anecdotal evidence suggests that firms find it increasingly difficult to retain talent and that Generation Y ("Millennials") and Z (i.e., cohorts born after 1990) have strong preferences for the meaning or purpose in their jobs. While we would like to test the prediction that environmental preferences vary across birth cohorts in the Prolific survey data, we do not have enough variation in terms of birth cohorts: the median age of our respondents is 24 years (see Online Appendix Table B.1) and the 95 percentile is 45 years. Given that we only have one single survey run, we can also not compare changes in sustainability preferences over time. However, other research suggests that environmental issues, in particular those related to climate change, have become more important over time. For example, Sautner et al. (2023) provide evidence that since the early 2000s, the extent to which climate change issues are discussed in corporate earnings conference calls has increased. In addition, our analysis of a representative labour market survey from the International Social Survey Programme (ISSP) (see the Online Appendix Section 7) also

provides evidence that is consistent with the notion that preferences for sustainability of jobs have increased over time. In line with this evidence, we state the following hypothesis:

Hypothesis 3: The Sustainability Wage Gap is increasing over time.

Last, the survey evidence also reveals that an economically large fraction of 82% state that—for the same wage—they would be willing to work harder for an environmentally sustainable firm (see Table 1, Panel A). Accordingly, we hypothesize that

Hypothesis 4: Workers in more sustainable firms work harder.

While the evidence from the Prolific survey on the Sustainability Wage Gap hypothesis is suggestive (and also consistent with additional analysis of a representative labour market survey from the International Social Survey Programme (ISSP))[7], it is not clear whether survey responses capture intentions only, or whether they also translate into true labour market outcomes. Thus, we will test Hypothesis 1 and to a certain extent Hypothesis 2 using detailed employer-employee matched data from Statistics Sweden and firm-level ESG ratings. We will then test all four hypotheses using two complementary, sector-level measure of sustainability (our own survey-based measure of sustainability and administrative data on greenhouse gas emissions across different sectors) in the entire population with a longer time-series component (Hypotheses 1 to 3) and making use of a representative labour force survey with information on working hours (Hypothesis 4).

4 Sustainability measures and administrative data

4.1 Measuring the sustainability of firms and sectors

In our empirical analysis, we use different ways to quantify the sustainability of firms and sectors. While we are agnostic about the precise definition of sustainability (see also our discussion in Section 3 of the Online Appendix), we do think that an increasingly important component of sustainability is about the impact of firms on the environment. Indeed, Hartzmark and Sussman (2019) run a survey on MTurk to examine which elements of a company's business practices are most related to the concept of "sustainability." According to their survey, most respondents believe that the sustainability of a firm's business practices relates primarily to a firm's environmental impact (79%). We build on this idea and focus our analysis primarily

[7] See Section 7 of the Online Appendix.

on the environmental dimension of sustainability. In total, we use three different types of sustainability measures: First, we rely on traditional ESG data from commercial data providers that cover large and mostly listed firms. Second, we use our own survey in which participants evaluate sectors in terms of their environmental sustainability. Given its availability, simplicity, and its construction, we consider the survey-based measure most relevant for the decision making of workers and use it as our main measure. Last, we use objective greenhouse gas emissions data at the sector-level to distinguish sustainable and unsustainable sectors. In the following, we introduce the different measures and discuss the advantages and disadvantages of the various measures in more detail at the end of this section.

4.1.1 Commercial ESG data and shocks to firms' ESG profiles

We start our analysis of the administrative wage data using standard commercial ESG ratings. These measures aim to evaluate if firms' policies and practices are compliant with ESG considerations. There are now many commercial data providers that rank and score firms in terms of their ESG policies, practices, and processes. Typically, these measures are "best in class", meaning that ESG policies of firms are examined relative to industry peers.

Despite the recognition that ESG ratings for the same firm can disagree across data providers (see Gibson, Krueger, and Schmidt 2021; Berg, Koelbel, and Rigobon 2022) such measures have been used in prior economics and finance research (see, for example, Hong and Kostovetsky 2012; Lins, Servaes, and Tamayo 2017; Liang and Renneboog 2017). In our empirical tests, we use ESG ratings from MSCI. We focus on MSCI for two reasons: Studying the extent to which U.S. mutual funds holdings with an explicit ESG mandate are related to ESG ratings from five different data providers, Berg, Heeb, and Koelbel (2022) find that MSCI is one of, if not the most influential ESG rating provider. We do not use Refinitiv, because Berg, Fabisik, and Sautner (2021) find that the Refinitiv data is subject to backfilling issues. One limitation of the MSCI ratings is that they are generally only available for publicly listed companies and in more recent periods. Note, however, that this criticism applies generally for most ESG ratings and is not unique to those issued by MSCI. Panel A of Table 2 reveals that depending on the granularity of the sector definition of peer firms (2 or 3 digits) we have between 227 and 400 firm-years of data. One big advantage of our sector-level measure(s), which we will discuss later in this section, is that we can use data on thousands of firms, covering 98% of our employment data.

In a final set of tests leveraging commercial firm-level ESG data we use "event-driven" ESG news data from RepRisk. This company identifies and tracks negative news related to

firms' ESG policies reported by third parties. The information is collected from media sources including newspapers, social media, online news, blogs, and NGOs using artificial intelligence and human analysis. Using proprietary methodology, Reprisk combines these news and event data into a reputational risk index (RRI) which falls in the interval of 0 and 100. The index increases when negative ESG news is reported for a firm. Higher values indicate higher negative ESG news flow. In case no further negative ESG news is published, the RRI decays naturally over time until it reaches zero. We use this data to identify negative "shocks" to a firm's ESG performance.

4.1.2 Survey based measure of the environmental sustainability of economic activities

One way of assessing a firm's sustainability performance is through assessing the quality of the firm's ESG policies and practices. Another way of thinking about a firm's sustainability is to examine whether a firm's primary economic activity is harmful to the environment. For instance, an oil company might obtain a good best in-class ESG rating. Yet, the primary economic activity of drilling oil is arguably environmentally unsustainable in the long run. To assess the environmental sustainability of economic activities we make use of on an online survey via Prolific, a participant recruitment tool for online surveys. In the survey, which we run in November 2021, participants are primarily asked to (i) answer several questions regarding the importance of environmental aspects in choosing an employer and (ii) classify economic sectors in terms of their environmental sustainability (1=unsustainable, 5=sustainable).

In Online Appendix Table A.5, we show some demographic and other information of the survey participants. In total, we recruit 300 survey participants and balance male and female participants ex-ante. Our sample of 300 survey participants contains 50.33% male and 47.33% female participants. About 2.34% identify as Non-binary or Other in terms of gender. The mean age of the participants is 26 years. The respondents are mainly from developed countries (as defined by the OECD). On average, the respondents take about 26 minutes to complete the survey.

In Panel A (B) of Online Appendix Table A.6, we provide an overview of the ten most sustainable (unsustainable) industries according to the 300 survey participants. We focus on 95 economic sectors that cover 98% of employment in our matched worker-firm data. Section 4.2 in the Online Appendix shows the survey questions. Each survey participant is asked to classify 30 randomly drawn economic sectors in terms of sustainability, which leads to about 90 survey responses for each sector. Hence, we use about 90 individual survey responses to calculate the averages at the sector-level. The average responses are highly plausible with mostly

unsustainable activities such as extraction of crude petroleum and natural gas, manufacture of rubber and plastic products, or mining of coal being classified as unsustainable. In contrast, activities such as recycling of metal waste and scrap as well as education are classified as being more sustainable.[8]

Classifying sectors in terms of environmental sustainability might be obvious for some economic activities, but difficult for others. Therefore, we always allow survey participants to choose the response "Do not know" (DNK). We examine the issue of DNK responses more systematically by plotting the percentage of DNK answers for a given sector against the average sustainability of the sector. Intuitively, the chart displayed in Online Appendix Figure A.3 suggests a hump-shape, indicating that sectors that end up in the middle of the environmental sustainability distribution are more difficult to classify in terms of their environmental sustainability (i.e., exhibit a higher fraction of DNK responses). In contrast, there is less uncertainty about the most sustainable and unsustainable sectors in the tails, as evidenced by a lower fraction of DNK answers. In particular, survey respondents appear most certain (low percentage of DNK answers) about the most sustainable industries (right tail). Hence, our empirical analysis will use primarily specifications that focus on the tails and thus the most informative parts of the distribution of the survey-based environmental sustainability measure.

In the survey, we also explicitly ask the respondents to characterize sectors in terms of potential compensating differentials. Similar in spirit to the sector-level sustainability classifications, each survey respondent is asked to rate ten randomly selected sectors in terms of several other dimensions. Section V of the survey (see Section 4.2. of the Online Appendix) lists the dimensions the survey respondents were asked to evaluate. For instance, we ask respondents to state their agreement (or disagreement) with statements like *Working in sector [xyz] is physical demanding or dangerous (high risk of accidents)* or *working in sector [xyz] allows for a good work-life balance.* We also ask the survey participants to evaluate the corporate governance or social responsibility of the sectors. Given that it could be difficult for survey respondents to rate certain sectors in terms of these other dimensions, we again allow

[8] We also ran pilot surveys on a sample of second year Bachelor students in Economics and Management enrolled in a Corporate Finance lecture in December 2019 and 2020. Online Appendix Figure A.1 in Online Appendix shows a scatterplot of the sector-level sustainability measures obtained from the 2019 and 2020 student populations. We find that the assessments of the sustainability of different industries is very stable across the 2019 and 2020 student cohorts, with the correlation being 0.92. Online Appendix Figure A.2 shows a scatter plot between the average industry classifications resulting from the student surveys in 2019 and 2020 and the Prolific sample in 2021. The correlation between the sustainability classifications from the Prolific and the student populations is also high (0.9136). Overall, our analyses of industry classifications resulting from different survey populations show that classifications do not vary much across samples, suggesting relatively high external validity of our survey-based approach to measuring the sustainability of economic activities.

for the answer of "Do not know". Based on about 30 survey evaluations per sector and evaluated dimension, we calculate the average sector characteristics, which we use as controls in some of the wage regressions later on.

4.1.3 Greenhouse gas emissions data

Last, we also use greenhouse gas emissions data to construct an alternative measure of the environmental sustainability of a sector. There are several different greenhouse gases (e.g., carbon dioxide (CO2), nitrous oxide (N2O), Methane (CH4), Sulphur hexafluoride (SF6), etc.). These greenhouse gases have different "Global Warming Potential" (GWP). The concept of GWP was developed to allow comparisons of the global warming impacts of different gases. Typically, greenhouse gases are measured in metric tons of CO2e (MTCO2e), where CO2e stands for "CO2 equivalent". CO2e is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO2 that would have the same GWP.

The Swedish Environmental Protection Agency produces statistics on territorial emissions and removals of greenhouse gases. This data is available from Statistics Sweden (SCB). More specifically, the greenhouse gas emissions data is available from both a consumption and a production perspective. The consumption perspective considers emissions caused directly and indirectly by consumption. This could also include emissions that occur outside of Sweden. In contrast, from the production perspective, emissions are reported by the industry in which they occur. GHG emissions data typically aggregate various greenhouse gases and is standardized using GWP and measured in MTCO2e (Metric tons of carbon dioxide equivalents). In this paper, we use total greenhouse gas emissions from the production perspective as our primary variable. We focus on total emissions by 57 two-digit industries for which data is available for the years 1990 to 2021.

Emissions can be expressed in absolute or relative terms. Absolute measures quantify emissions in metric tons of CO2 equivalents and provide an indication of the total amount of GHG emissions for which a sector is responsible. To adjust for the size of an economic sector, we calculate relative emissions (or intensities) as total greenhouse gas emissions scaled by employees at the sector-level.

4.1.4 Discussion of the different sustainability measures

As outlined above, we use several different ways of quantifying sustainability. In this section we provide additional discussion on the relative merits of each.

One of the main advantages of our survey measure (relative to ESG ratings and sector-level GHG emissions) is that it quantifies the perceived environmental sustainability of a sector.

However, our survey-based measure also has other important advantages. For example, our measure captures the overall environmental impact of a sector, whereas sector-level GHG emissions focus only on measuring the climate impact of a sector. It turns out that some sectors are relatively good in terms of our survey-based environmental measure but exhibit high GHG emissions. An example of such a sector is "Water collection and purification".

Another reason why our survey measure is better than GHG emissions at capturing the environmental performance of a sector is related to supply chain issues. For instance, some sectors that score poorly in terms of our survey measure (e.g., "Manufacturing of Plastic and Rubber Products") have relatively low sector-level GHG emissions, but primarily because the GHG emissions occur at upstream suppliers. The GHG emissions resulting from plastics production are due to energy consumption and are thus only imperfectly captured by the GHG emissions of the sector, since emissions occur at entities separate from the plastic producers (i.e., energy suppliers). Another reason for our measure being better is that GHG emissions rarely capture the emissions generated by usage of the products and services produced by a sector. For example, the sector "Manufacturing of cars" scores poorly according to our measure, but, at the same time, exhibits low GHG emissions, because the GHG emissions of the automotive sector does not include emissions that occur downstream or later in the product cycle due to product use.

Despite the abovementioned shortcomings of the sector-level GHG emissions measure and the limitations of the firm-level ratings, we do think that using several different measures has advantages given that they capture different dimensions. For instance, using ESG ratings allows us to compare workers from firms within the same sector, ruling out that the Sustainability Wage Gap is primarily driven by sector differences. Using sector-level GHG emissions allow us to zoom in on an arguably increasingly important subdimension of a sector's environmental performance, which is likely to be increasingly relevant to employees, especially younger ones.

4.2 Worker and wage data

Our main data source for the administrative worker information is the Longitudinal Integration Database for Health Insurance and Labor Market Studies (LISA), provided by Statistics Sweden (SCB). LISA contains employment information (such as employment status, the identity of the employer, and occupation), tax records (including labour and capital income), and demographic information (such as age, education, and family composition) for all individuals 16 years of age and older, domiciled in Sweden, starting in 1990. Our main analysis focuses on male workers for which we have skill measures from a military enlistment test and on the period after 2000

as our tests make use of detailed occupational information which is not available for the period between 1991 and 2000. However, we show that our results hold also for the sample of female workers in which we predict their cognitive skills based on detailed schooling information such as grades.[9] We also exclude workers in the public sector from our analysis given that it may be special with respect to wage setting and job security, for instance.[10] In LISA, the sector in which an individual works is reported according to the Swedish Standard Industrial Classification (SNI) code at the level of the establishment at which they are employed. Note that a firm can have establishments in different sectors, for instance, if it is a multi-segment firm. For labour income, we use reported annual earnings before tax. Importantly, this information is not censored or top-coded, and includes bonus payments.

We also make use of talent measures consisting of estimates of cognitive and non-cognitive abilities from military aptitude tests. Cognitive ability (similar to IQ) was assessed through subtests covering logic, verbal, spatial, and technical comprehension. The four test results were aggregated into an overall integer valued score ranging from 1 (lowest) to 9 (highest), according to a Stanine (standard nine) scale that approximates a normal distribution with a mean of about 5 and standard deviation of about 2. A certified psychologist assessed the non-cognitive ability score through a 25-minute semi-structured interview. The individual was graded on his willingness to assume responsibility, independence, outgoing character, persistence, emotional stability, and power of initiative. The psychologist would weigh these components together and assign an overall non-cognitive score on a 1 to 9 Stanine scale. We complement these measures with detailed information on secondary education, including high-school grades and track choices, which enables us to impute a corresponding talent measure for women. Please refer to Böhm, Metzger, and Strömberg (2023) for more information on the imputed ability scores for women as well as for a more extensive discussion on the Swedish data in general.

We also use additional data from the Swedish Labor Force Survey (LFS) that collects data on actual working hours. Please note that these data cannot be linked to the other administrative data and, hence, we have more limited information of workers in this sample.

Table 2, Panel A provides descriptive statistics of the at the worker and firm level. All variables are defined and described in Appendix Table A.1. The employer-employee matched data is described in further detail in Section 8 of the Online Appendix.

[9] See Table A.4 in the Online Appendix.
[10] When we do include the public sector in the analysis, it increases the magnitude of the Sustainability Wage Gap estimates.

5 The Sustainability Wage Gap: Do more sustainable firms pay lower wages?

We start our analysis by running some basic tests relating wages to firm-level ESG ratings. We complement the tests based on firm-level ESG ratings with tests using "event-driven" ESG data by RepRisk that identifies and tracks negative news related to firms' ESG policies. This allows us to analyse how wages of workers change because of to negative firm specific "ESG shocks".

5.1 Do More Sustainable firms pay lower wages than their peers?

Given our main hypothesis, in our firm-level tests using ESG ratings of MSCI, we focus on the environmental pillar. Indeed, we believe that it is more straightforward to objectively quantify the quality of a firm's environmental policies and practices since aspects such as water and energy use or greenhouse gas emissions can be measured. In contrast, scoring firms regarding social and governance aspects requires more value judgements and is thus inherently more subjective. Moreover, as we discuss in more detail below, the impact of the social (S) or the governance score (G) on wages is not obvious.

As pointed out before, ESG ratings are relative to industry and geographical peer groups. We observe that the granularity of the industry peer-groups for MSCI ESG ratings lies somewhere between a 2- or 3-digit industry classification. In our regressions, we use peer firms in the same 3-digit industry as our main specification, but we also investigate peer groups at the 2-digit level.

In Panel A of Table 2, we show summary statistics for the individual components (or pillars) of the ESG ratings of MSCI. We use simple dummy variables as regressors. Specifically, the dummy variables identify for each industry-year combination the firm with the highest ESG score. For instance, the variable *Environ. (high, 3d)* marks the firms each year that have the highest environmental ratings relative to their 3-digit industry peers. The mean of *Environ. (high, 3d)* is 42% for MSCI suggesting that there are about two to three firms available in each industry-year cell. This implies that in the regressions, we are going to compare the best-in-class firm with one or two firms in the same sector.[11]

Panel B shows the results from the wage regressions using the ratings from MSCI. In column (1), we regress the *Log(Wages)* on standard Mincerian controls, and the best-in-class dummy in terms of environmental sustainability *Environ. (high, 3d)*. Our specifications include occupation-year fixed effects, dummy variables for each level of cognitive and non-cognitive

[11] If we broaden the definition of industries to the two digit-level, there are, on average, four firms in an industry-year cell. We report basic tests on the two-digit industry-level as well but use the tighter definition at the three digit-level as our main specification.

skills, as well as industry-year fixed effects. This means we are comparing two workers with the same level of education, with the same cognitive and non-cognitive skills, working in the same year in the same occupation and industry. One worker is working for the highest rated firm in terms of the environmental pillar of the MSCI ESG rating and the other in one of the peer firms. The best firms in terms MSCI's environmental score pay about 2.1% lower wages. We repeat this analysis in column (2) by restricting the sample to "generic occupations", i.e., occupations that are most likely independent of an industry. Examples of such occupations include, but are not limited to, secretaries, lawyers, human resource specialists, or IT managers. We calculate "generic occupations" by calculating the concentration of an occupation with respect to 3-digit industries, i.e., we compute the corresponding Herfindahl–Hirschman index (HHI). We code an occupation as "generic" if the HHI is below 10%. Focusing our analysis on generic occupations addresses the concern that i) specific occupations and industries may be interlinked and cannot be separated (e.g., think of a nurse and the medical sector) and ii) that workers in more sustainable firms may have fewer outside options, possibly affecting wages.[12] Interestingly, the point estimate is even bigger when restricting the sample to generic occupations: -4.4%. In columns (3) and (4), we include the "social pillar" and the "governance pillar" of the ESG rating as additional controls. While the point estimates remain largely unchanged for the environmental dummy (-0.021 vs -0.021 and -0.044 vs -0.039), results are statistically not or less significant, respectively. This is likely to be driven by the positive correlation of the different pillars and power issues given our relatively small sample of firms. The coefficient on *Social (high, 3d)* is small and non-significant. Theoretically, the correlation between the social pillar and wages is ambiguous. On the one hand, workers might be willing to give up parts of their wage to work for a company that is doing well in terms of social policies (e.g., does not engage in child labour). On the other hand, the S score could explicitly include (expected) wages.

The governance pillar appears to be economically more important, and also statistically more significant. The point estimate is 0.01 and 0.032, respectively, suggesting that well-governed firms pay higher wages. While we cannot be affirmative, we do *not* believe that the higher wages for firms with better governance are driven by preferences (i.e., preferences *against* good governance). It is more likely, that other mechanisms explain this association. For instance, we know from a large literature on corporate governance that good corporate

[12] Please note that this concern is more relevant in our later tests that use sector-level definitions of sustainability. In this section, we compare workers within the *same* sector. Nevertheless, the general concern might also translate to the firm-level analysis if certain occupations are more likely to exist in more sustainable firms.

governance is associated with higher firm performance (e.g., Gompers Ishii, and Metrick 2003 or Bebchuk, Cohen, and Ferrell. 2009), maybe because good governance is causing high performance (Cunat, Gine, and Guadalupe 2012) or maybe because of omitted variables or reverse causation (Hermalin and Weisbach 1998; Adams, Hermalin, and Weisbach 2010). In any case, the positive association between the G component of the ESG score and the wages might be reflective of the high performance of firms with high governance ratings.

In specifications (5) and (6), we change the granularity of the industry classifications (2-digits compared to 3-digits of before). In specification (5), we only broaden the peer group definition to 2-digits and by doing so we include additional control firms as well. In specification (6), we use 2-digit peer firms but keep the same sample of firms as in our main specifications. The coefficient estimates are very similar in magnitude, and if anything, standard errors are slightly smaller, which seems intuitive given that we have more power in these regressions given that the sample increases somewhat.

Overall, the evidence using a firm-level best-in-class measure of the quality of a firm's environmental policies is consistent with the main hypothesis of the Sustainability Wage Gap. An important implication of the firm evidence of this section is that firms can attract talent at lower wages by investing into environmentally friendly policies, and thus might be able to "do well by doing good."

5.2 How do wages react to negative ESG shocks?

In the next set of tests leveraging firm-level ESG data, we use data capturing negative ESG incidents using data from RepRisk. The data is available for nine years, i.e., between 2007 and 2015 and for a mix of public and private firms. Panel A of Table 2 shows that we have on average about 190 firms per year (1,708/9) for which the RRI measure is available. We define a dummy which identifies firm-years with a positive change of that index, which we denote as *Negative ESG news (d)*. We see that approximately 23% of the firm-year observations are subject to positive increases in the index. Given the shock nature of the variable, we are interested in examining if increases in the RRI index are associated with *increases* in wages. Hence, we use wage changes (difference of log wages) of individual workers as the dependent variable. Consistent with the Sustainability Wage Gap channel, Panel C of Table 2 shows that wages increase in years following positive shocks to the RRI (i.e., shock induced deterioration of a firm's ESG profile) by 6.8%. Please note that our wages include bonus payments as well. In other words, firms adjust wages upwards after they are hit by negative ESG news, which is

consistent with the view that they need to pay higher wages to attract and retain workers given that their ESG performance has deteriorated.

While existing research suggests that negative ESG-related news are associated with *lower* future firm performance (see, e.g., Krüger 2015 or Derrien et al 2022), the opposite might be true as well (at least in the short-run, using accounting-based measures).[13] To be specific, there is the concern that some firms might have engaged in unethical or environmentally damaging behaviour or policies that could have led to higher profits and, at the same time, triggered the negative ESG shock. The increase in profits could then also explain the increase in wages. Hence, in columns (2) and (3), we control directly for changes (and lagged changes) of log of value added over total assets. The coefficient on changes in value added is close to zero and not significant when analysing contemporaneous changes and positive and significant when considering lagged changes. Most importantly, the coefficient on the ESG shock remains largely unchanged in these additional specifications.

5.3 Is there heterogeneity in the Sustainability Wage Gap?

Last, we provide some evidence in support of Hypothesis 2, i.e., that the Sustainability Wage Gap is larger for workers that are more talented. However, our evidence is merely suggestive due to the limitations of our data (i.e., the relatively small sample of firms for which ESG ratings are available). We test and discuss this hypothesis (together with Hypotheses 3 and 4)[14] more rigorously in the next section where we use sector-wide measures of sustainability allowing us to employ the full population of Swedish workers.

As discussed in Section 3, there exists substantial heterogeneity among workers with respect to preferences towards sustainability. Our survey suggests that more talented people care more about the environmental aspects of their jobs. In our analysis, we proxy for talent by using measures for cognitive and non-cognitive skills. Compared to using the achievement of a university degree as a crude measure of talent, an advantage of the skill-based talent measures is that they are sufficiently detailed to allow analysis of the upper percentiles of the talent distribution. Another benefit of these detailed skills measures is that they are comparable over time since the distributions in the population are the same across cohorts.[15] Moreover, it has

[13] Temporary higher accounting profits (or value added) due to unsustainable behavior can still lead to a lower market value if investors expect lower profits in the future.

[14] Please note that we are unable to test Hypotheses 3 and 4 in this sample due to the short time-series component of the data and the lack of overlap with the Labor Force Survey (LFS) which includes our main measure of effort (number of hours worked per week).

[15] As pointed out by Böhm, Metzger, and Strömberg (2023), using educational attainment as a proxy for talent is problematic in time-series comparisons. Due to a large expansion of education, the cohort of university graduates has increased sharply over the last decades, resulting in a substantial decline of average talent in the group of

been documented that especially non-cognitive skills have been of growing importance in the workplace (see Deming 2017). We define dummy variables *Cog89 (Noncog89)* that are equal to one if cognitive skills (non-cognitive skills) are either 8 or 9, corresponding approximately to the top 10% of workers according to the skills distributions in the whole population.[16]

Panel D of Table 2 shows the results. Specifications (1) to (3) analyse the heterogeneity of the Sustainable Wage Gap with respect to non-cognitive skills, while specifications (4) to (6) with respect to cognitive skills. The specifications differ by the granularity of the included fixed effects. Specifications (1) and (4) include industry-year fixed effects, specifications (2) and (5) add occupation-year[17] fixed effects, and specifications (3) and (6) include firm-year fixed effects. In all specifications, the point estimates of the interaction terms between the best-in-class dummy, and the skills measures are negative, and, hence, in line with Hypothesis 2. However, the estimates are mostly statistically insignificant. Thus, those results need to be interpreted with caution and should be treated as being merely indicative. We will revisit this hypothesis in the next section, employing the full sample of the Swedish work population allowing for higher-powered tests.

6 The Sustainability Wage Gap II: Do sustainable sectors pay lower wages?

In the previous sections of the paper, we used commercially available ESG data to construct measures of sustainability at the firm-level. In this section, we will now move to sector-level measures of sustainability allowing us to employ the full population of Swedish firms and workers. As described in Section 4, we use a survey-based sector-level measure of sustainability as our baseline, but we will also make use of a sector classification that is based on greenhouse gas emissions.

While using firm-level ESG data has several advantages, it also comes with limitations. On the positive side, using firm-level ESG ratings (compared to sector-level measures) allows us to compare workers within the same sector, alleviating concerns that the sector-wide measures of sustainability may capture other sectoral differences, unrelated to sustainability. Indeed, the tests based on firm-level ESG ratings and ESG news shocks compare firms within the same sector, with different ESG ratings. The analysis using ESG-related news shocks compares

university graduates. For instance, as shown in Böhm, Metzger, and Strömberg (2023), during 1990–2014, post-secondary attainment rose from 21 % to 37% accompanied by a decline in average cognitive ability of more than a fifth of a standard deviation in the working population.

[16] Note that the in the firm sample skills, especially cognitive skills, are higher compared to the general population.

[17] We employ Swedish Standard Classification of Occupations (SSYK) at its finest level (*Ssyk4*, 4-digit), which corresponds to 354 unique occupations.

workers within the same firm before and after salient episodes of deterioration of a firm's ESG policies.

However, using our sector-based measure has important advantages. First, the sustainability of sectors (compared to individual firms) can be easily assessed and judged by potential employees. Second, the methodology we used for the assessment of the sustainability of economic sectors is transparent. The interpretation of commercially available ESG ratings, on the contrary, is not always straightforward: such ratings are complex, their methodologies are often opaque ("black box"), and the ratings rely to a large extent on self-reported data by firms. Third, there is increasing evidence of relatively low correlations between the ESG ratings from different data providers (see Gibson, Krueger, and Schmidt 2021 or Berg, Koelbel, and Rigobon 2022). Fourth, recent research has also documented changes to the historical ratings by some ESG data providers (Berg, Fabisik, and Sautner 2021). Finally, historic data on firm-level ESG ratings are available for publicly listed firms only, with the data often being available only for a relatively small number of years, which restricts the sample in both the time-series and the cross-section. In contrast, our survey-based measure allows us to cover firms representing 98% of Swedish private-sector employment. Moreover, using the survey-based measure allows us to complement the worker data with information from a large labour force survey including information on working hours which we use as a proxy for effort. In particular, the latter points allow us to test Hypotheses 2 to 4, which was not (or only partially) feasible using firm-level ESG data.

6.1 Do more sustainable sectors pay lower wages?

To test the main hypothesis that workers are willing to work for lower wages in more sustainable sectors, we again run standard Mincerian wage regressions augmented by an indicator variable capturing the environmental sustainability of the sector of employment of the individual. The dummy variable *Sustain. (high)* equals one if the sector belongs to the top sustainability quintile of all sectors, either based on our survey measure or based on sector-level greenhouse emissions. To set the stage, we estimate in Panel A of Table 4 the Sustainability Wage Gap for a selected set of occupations which exist in virtually all sectors (e.g., receptionists and secretaries, human resource professionals, or accountants, among others) using the survey-based measure of sustainability. The estimates show sustainability wage gaps ranging from about -7.0% for IT professionals to -16.2% for legal professionals. These regressions also include residential municipality-year fixed effects addressing the concern that more sustainable sectors might be clustered in regions with cheaper living costs, for instance.

In our main regression analysis (see Panel B, Table 4) we use the full sample of occupations as well as our more systematic approach to define "generic occupations", i.e., occupations that virtually exist in all sectors[18]. Focusing our analysis on generic occupations addresses the concern that specific occupations and industries may be interlinked and cannot be separated, like for instance nurses and the medical sector. Please note that, although we control for education and experience, there is the concern that other omitted factors explain why workers or occupations in more sustainable sectors are less productive. For instance, education is a very broad measure of ability and there might be considerable variation among university graduates. Hence, like before, we also control for cognitive and non-cognitive skills from military enlistments tests. These measures have been found to be highly informative for labour related outcomes and (see Lindqvist and Vestman 2011 or Böhm, Metzger, and Strömberg 2023). We also include occupation-year fixed effects controlling for occupation-specific, time-varying heterogeneity. Hence, we compare two otherwise very similar workers, in the same occupation, located in the same municipality, in the same year who work in a sustainable versus an unsustainable sector.

Consistent with Hypothesis 1 (and the firm-level evidence presented before), Column (1) in Panel B of Table 4 shows that male workers in generic occupations earn about 12.6% less if they work in sectors considered to have high environmental sustainability.[19] To explore the functional form of the relation and possible non-linearities, we split, in Column (2), the continuous variable into quintiles. This analysis reveals two interesting facts: i) the wage difference is growing (in absolute terms) almost monotonously; ii) the results are mostly driven by the highest rated sectors (and to a certain extent by the sectors that are least sustainable). For instance, in Column (2) we see a sizeable difference between the least sustainable sectors (the omitted category) and the sectors in the middle of the distribution (-0.024 to -0.055). We then observe another, even bigger, jump between the most sustainable sectors and the other ones. The point estimate for the dummy identifying the most sustainable sectors is -0.159, suggesting a jump of about 10 percentage points between the most sustainable sectors and the sectors in the second most sustainable category.

In specifications (3) and (4), we include all occupations in the estimation. The results remain qualitatively unchanged, the point estimates are slightly smaller though: on average, workers in more sustainable sectors earn about 8.7% lower wages.

[18] Please refer to Section 5.1 on how we define generic occupations.

[19] We cluster standard errors at the firm-level. In Online Appendix Table A.2, we take several alternative structures for the error terms into consideration. Our results remain robust to various ways of clustering.

We believe that our survey-based measure of sustainability captures the *perceived* sustainability of a sector best. However, a dimension that is likely to be increasingly relevant for workers making job-related decisions is a sector's climate impact through GHG emissions. Hence, we also make use of an "objective" or "scientific" measure of sector-wide sustainability. We base this measure on sector-level greenhouse gas emissions. Specifications (5) and (6) in Panel B of Table 4 show the corresponding tests using that measure, in which the dummy variable *Sustain. (high)=1* identifies the sectors with the lowest greenhouse gas emissions. Note that GHG emissions are not available for all industries, and we end up with a smaller sample. Workers in industries that exhibit the lowest greenhouse gas emissions earn on average 5.7% lower wages compared to workers in the other industries. Allowing for non-linearities and using quintile dummies, we also see monotonic decreasing wages when moving from industries with relatively high greenhouse gas emissions to industries with low levels: workers in the quintile with the lowest level of greenhouse gas emissions (*Sust. quintile = 5*) earn about 12.4% lower wages compared to otherwise similar workers in sectors that fall in the quintile with the highest level of greenhouse gas emissions.

As a last test, we combine the survey-based measure with the measure that is based on greenhouse gas emissions by interacting both. Specification (7) (See Table 4 Panel C) shows the results. The Sustainability Wage Gap is biggest if both measures agree that a sector belongs to the top quintile of the corresponding sustainability distribution. Workers in those sectors earn 11% lower wages compared to otherwise similar workers in sectors which both measures consider non-sustainable (baseline category). The Sustainability Wage Gap is about 9.9% (4.7%) if only one of the measures, the survey-based (emission-based) measure considers a sector sustainable. As explained in Section 4.1.4 the two measures differ in a few important dimensions which can also explain the differences in the wage gap. First, the emission-based measure ignores other non-greenhouse emissions such as chemical waste. As an example, the manufacturing of rubber and plastic products is considered sustainable using emission data, but survey participants classify it as non-sustainable. Second, while the emission-based measure might be more scientific and objective, it is the *perceived* sustainability that is likely to matter most for workers' labour decisions. Consequently, we use the survey-based measure as our baseline but "replicate" and report key analyses with the emission-based measure in Online Appendix Table A.2.

6.2 What happens to wages of workers who move across sectors?

One advantage of the sector-level measure of sustainability is the broader coverage of workers, which allows us to track workers over time and across firms. The richer data allows to exploit within-worker variation, analysing job changes across sectors. In Column (1) of Table 5, we include worker fixed effects. The coefficient of working in a high sustainability sector is -5.6%, a bit smaller than the OLS results but still very sizeable. One concern with this specification is that it implicitly assumes that workers randomly move between firms and sectors. This assumption is unlikely to be true in general and is particularly difficult to defend in our setting. The (timing of) job changes across different sectors might be correlated with some time-varying characteristics of workers such as expected changes in household compositions or changes of preferences (e.g., due to a "midlife crisis"). We discuss the issue that job changes are non-random and predictable using important life-events in Section 5 of the Online Appendix. Specifically, the analysis shows that workers are more likely to move into *unsustainable* sectors when getting married or becoming parents and are more likely to move into a more *sustainable* sector around a divorce.

However, we partly address the concerns that moves between firms and sectors are not random by looking at "more" exogenous job changes. We focus on workers who had to change jobs because of their firms going bankrupt in the previous year (see Columns (2) and (3), Table 5) or because their firms experienced a massive layoff of more than 75% of their workforce (see Columns (4) and (5), Table 5). We analyse the wage changes (difference of log wages) of those workers by comparing the wage the worker received in the job he got laid off from and the wage he received in the new job. This means that we condition on workers who lost their job but had a smooth transition to the next job. Please also note that while the timing of changing jobs is reasonably exogenous, the decision which sector to join is endogenous and might still depend on time-varying omitted variables. We regress the wage changes on a variable that measures the changes in the sustainability of the firms between which the worker is switching. The variable takes the value of 1 if a worker moves from an unsustainable firm to a sustainable firm, the value of -1 if the worker moves from a sustainable firm to an unsustainable one, and the value of 0 if the level of sustainability remains the same. We denote this variable as *Ch. in sustainability* We also analyse increases/decreases in terms of sustainability using separate dummy variables. Columns (2) and (4) of Table 5 show that moving to a more sustainable (unsustainable) sector is, on average, related with a wage decrease (increase) of 4.3 – 6.5%. This holds for workers who changed jobs because their company went bankrupt (column 2) or

underwent a mass layoff (column 4). When we investigate increases/decreases separately (columns 3 and 6), we observe that workers who move to more sustainable firms afterwards, experience a wage decrease of between 6.1 – 7.4% relative to workers who moved across firms of similar sustainability (omitted category). Workers who move to firms in less sustainable sectors, on the contrary, experience a wage increase of 2.4 – 4.9% relative to the omitted category. Overall, our switcher analysis shows robust evidence that workers in more sustainable firms earn less, exploiting within-worker variation.

6.3 The Sustainability Wage Gap for Highly Educated Workers and its Evolution over Time

As discussed in Section 3, we hypothesize that there exists substantial heterogeneity among workers with respect to preferences towards sustainability (Hypothesis 2) and over time (Hypothesis 3). Indeed, our survey suggests that more talented people care more about environmental aspects of their jobs, and we have documented suggestive evidence using firm-level measures of sustainability in Section 5.3 (see Table 2, Panel D). These hypotheses lead to additional predictions, which we can test in our administrative data. We believe these tests are informative and important for at least three reasons.

First, they are helpful in terms of more credibly identifying the effect of sustainability on wages as any alternative explanation would also need to explain possible heterogeneity in the effect. For instance, if firing risk or hazardous work conditions were driving the results, it remains unclear why higher educated workers would be more affected by those. If anything, one would expect that higher educated workers could more easily find a new job or have white-collar jobs that expose them less to hazardous work conditions. Moreover, it remains unclear and would need to be explained why alternative channels such as firing risk or hazardous work conditions are becoming more important over time. Second, econometrically speaking, the tests exploiting cross-sectional worker heterogeneity are important because we can include firm or firm-year fixed effects in some of our tests, addressing the concern that time-varying unobserved variables (e.g., profitability) at the firm-level explain our findings. Third, if preferences towards sustainability were indeed more relevant for younger cohorts, our findings are expected to become even more important for firms in the future. Younger cohorts (e.g., Generation Y (Millennials) and Generation Z) have entered the labour market and are climbing up the corporate ladder and, hence, accommodating their preferences might become increasingly important for firms to attract and retain the most talented workers. In other words, given the generational changes in the composition of the worker population our analysis carries policy implications of increasing relevance in the future.

In the analysis exploiting heterogeneity, we again proxy for talent using our measures of cognitive and non-cognitive skills. In Table 6, we examine differential effects for groups with different levels of skills, and also explore time series variation in these effects. Columns (1) and (2) of Panel A test whether there are differences in the Sustainability Wage Gap for high vs. low-skilled workers. Given that there are workers with different levels of skills within the same firm-year, we can now also include firm-year fixed effects in our specifications, absorbing any time-varying firm-heterogeneity.[20] We define dummy variables *Cog89* (*Noncog89*) that are equal to one if cognitive skills (non-cognitive skills) are either 8 or 9, corresponding approximately to the top 10% of workers according to the skills distributions. Please note that we estimate positive and sizeable coefficients for the main effects of skills. The interaction term between the dummy variable identifying high-skilled individuals in terms of cognitive skills *(Cog89)* and sustainability (*Sustain. (high)=1*) is -1.6%, suggesting a larger Sustainability Wage Gap (in absolute terms) for the most highly skilled individuals (see Column 1). In a similar spirit, the interaction between the sustainability dummy and high non-cognitive skills is -1.0% (see Column 2). Summing up, the evidence is consistent with Hypothesis 2, which states that the Sustainability Wage Gap is more pronounced for more talented workers.

In Column (3), we investigate whether, as stipulated in Hypothesis 3, the documented Sustainability Wage Gap is indeed increasing over time. To test this hypothesis, we interact our sustainability dummy with time dummies for the periods 2001-2004 (omitted), 2005-2008, 2009-2012, and 2013-2017. The interaction terms are negative and increasing in absolute terms over time, implying that the Sustainability Wage Gap is increasing by about 2 percentage points per decade.

Given our previous findings and the growing importance of skill (especially, of non-cognitive skills (see Deming 2017), we also test whether the wage gap for the most skilled workers is higher in more recent periods. To this end, in Panel B of Table 6, we include besides the main effects, double and triple interaction terms between talent, our sustainability dummy, and the time period indictors. For space reasons, we only show the coefficients of the triple interaction terms. We document significantly negative estimates on the triple interaction terms, both for the cognitive skills measures (Column 4) and the non-cognitive measures (Column 5). For cognitive skills the effects are monotonously increasing over time, suggesting that the wage gap has become more important recently. We observe a similar pattern, albeit less monotonous

[20] We obtain consistent results when we use firm fixed effects instead of firm-year fixed effects.

pattern, for non-cognitive skills. Overall, the evidence is consistent with the intuitive notion that the Sustainability Wage Gap for the most skilled people has grown over time.

Taken together the results of Table 6 are supportive of the hypotheses that more talented workers have stronger preferences toward sustainability and are willing to accept lower wages and that these effects are growing over time. These findings increase our confidence in a causal interpretation of the Sustainability Wage Gap as any alternative explanations would need to explain the documented heterogeneities as well. For instance, why would the Sustainability Wage Gap for the most highly skilled people increase over time? Importantly, from an identification perspective, the tests in Table 6 also allow us to include firm-year fixed effects, controlling for time-varying, unobserved variables at the firm-level such as profitability, for instance.

6.4 Do Workers in More Sustainable Sectors Work Harder?

As a last test, we examine the hypothesis that workers in more sustainable sectors are willing to work harder (Hypothesis 4). To test this hypothesis, we make use of a labour force survey (LFS) collecting data on actual hours worked per week. Please note that the data is only available for a smaller sample and cannot be matched with the other administrative data. This means that we cannot control for cognitive and non-cognitive skills in those tests. We focus on workers with full-time employments. Column (1) of Table 7 shows that workers in more sustainable sectors do work more than workers in unsustainable sectors. The estimate suggests that these workers work 0.5% hours more per week – economically, this number seems relatively small. We also analyse whether workers in more sustainable sectors are more likely to work extreme working hours per week (i.e., more than 50 or 60 hours per week). Columns (2) and (3) show that this is indeed the case. Workers in more sustainable sectors are more likely to work more extreme hours. The likelihood of working more than 50 hours (60 hours) is 1.4 percentage points (1.6 percentage points) higher than for workers in less sustainable sectors. These effects are economically sizeable, especially for working very extreme hours of 60h or above. Workers in more sustainable sectors are about 25% more likely to work more than 60 hours compared to workers in unsustainable sectors.

We complement this analysis by using more indirect measures of effort but by employing the full sample again. We use the number of sick days and the probability of being hospitalized as further proxies for work effort, the idea being that exerting more effort at work increases the likelihood of being overworked and ending up ill. Columns (4) and (5) show that workers in

the most sustainable sectors are subject to more sick days (0.75 days) and face a higher incidence of hospitalization.

Overall, we find direct and indirect support of the hypothesis that workers in more sustainable sectors are willing to work harder (Hypothesis 4). Those findings do also address the concern that compensating differentials may explain our findings. We discuss the issue of other compensating differentials further in the next section.

7 Interpretation and alternative explanations

In this section, we would like to take a step back and discuss potential interpretations and alternative explanations for our findings.

First, the decision for working in more sustainable firms or sectors might be driven by intrinsic preferences, considering work as a *source of meaning* (see Cassar and Meyer, 2018). It might also be the case that preferences for working in sustainable firms or sectors is driven by external rewards within society, i.e., working in those types of firms or sectors comes with some kind of *status* or prestige. While our previous results on effort hint towards an intrinsic motivation (if one believes that working hours are not perfectly observable for outsiders), we are generally agnostic regarding those two interpretations as i) they are likely to be non-mutually exclusive and ii) our setup does not allow to clearly disentangle the two.

Second, as discussed in more detail in the literature section, we would like to note that ex-ante it is not clear whether meaning/status of a job and monetary compensation are substitutes or complements. It might even be the case that low pay increases the status of a sustainable job.

Third and relatedly, a remaining source of concern with our analysis could be that heterogeneity at the worker-, job-, or industry-level might explain our findings.[21] For instance, workers employed in more sustainable sectors might be exerting less effort or might generally be less productive. Similarly, there might still be other aspects of working in these sectors that could possibly explain lower wages but are unrelated to environmental sustainability. For example, there could be compensating wage differentials such as firing risk, hazardous work conditions, work flexibility, or better training opportunities, which after all explain the Sustainability Wage Gap.

[21] As discussed before (in the Introduction and the Literature Review), we would like to remark that even if there was random assignment of ESG policies to firms, it would still remain unclear to what extent changes in the worker value alignment drive changes in labour outcomes and to what extent those changes might be driven by other changes on firm-level. For instance, changes in ESG policies may indeed affect firm profitability with direct implications for wages or retention.

The evidence presented so far suggests that this is *not* the case. We have already seen that workers in more sustainable sectors do *not* work fewer hours. On the contrary, and in line with Hypothesis 4, those workers in fact work longer hours and are more likely to work extreme hours. Moreover, we made use of our detailed administrative data to control for worker characteristics that are expected to be correlated with productivity: on top of standard Mincerian controls, we controlled for detailed cognitive and non-cognitive skills measures from military enlistment tests, variables that have been found to be highly informative in explaining labour market outcomes (see Lindqvist and Vestman 2011 and Dal Bo et al. 2017, for instance). Moreover, using firm-level ESG ratings we have compared workers of firms within the same 3-digit industrial sector, working in the same 4-digit occupation. We also analysed job switchers and exploited shocks to the sustainability of firms, keeping the worker-firm match constant.

Moreover, in the sector-level tests, exploiting heterogeneity in workers' preferences for sustainability, we compared workers within the same firm, controlling for unobserved heterogeneity at the firm- or firm-year level and showed that the Sustainability Wage Gap is more pronounced for more skilled workers and increasing over time. Any alternative explanation would need to explain those heterogeneities as well.

As a last step, we now conduct several additional tests to explicitly rule out alternative explanations related to compensating differentials such as lower firing risk, better work-life balance, better career opportunities, or lower health risk driving the wage differences we document. In the first test, we calculate proxies for different compensating differentials at the industry-level. For instance, we calculate firing rates to proxy for sector-level firing risk. We calculate the average number of sick days and the propensity of ending up in the hospital as proxies for health risk or work-life-balance. Similarly, we compute marriage and divorce rates, the average number of children, and the number of parental leave days as further proxies for a good work-life-balance (see, for example, Liu et al. (2023)). We then include those industry averages (and their squares) as additional sector-level controls in our regression. Column (1) of Table 8 shows the results. The coefficient on Sustainability is -6.9%, a bit smaller than in our baseline regression but still very sizable.

In a second series of tests, we further leverage the survey data collected through Prolific. In the survey, we explicitly ask the respondents to characterize industrial sectors in terms of other dimensions related to compensating differentials. Similar in spirit to our sector-level sustainability classifications, each survey respondent was asked to rate ten randomly selected sectors in terms of issues such as whether working in the sector would, for instance, be considered physically demanding or allowed for good work-life balance (see Section V of the

survey instrument in Online Appendix Section 4 for further background). In this series of tests, we use these sector-level assessments (or ratings) alongside our main sustainability measure in Mincerian wage regressions as explanatory variables. Running these "horse-race" type regressions allows us to further rule out alternative explanations. Columns (2) to (4) of Table 7 report those tests. In specification (2), we include dummy variables identifying the sectors which the survey participants rated as having the highest job security, best career opportunities, best work-life balance or providing the most physically demanding work. The point estimate of the sustainability dummy is -10.4%, even slightly higher than in the baseline specification. Jobs in industries which our survey participants consider having better training opportunities pay about 3.5% higher wages on average. Interestingly, sectors with higher job security also pay 1.4% higher wages on average. Note that those numbers are 3-8 times smaller in absolute terms compared to the indicator on sustainability, suggesting that the Sustainability Wage Gap is several orders of magnitude larger than the other compensating differentials. Other indicators for compensating differentials are close to zero and not significant.

In Column (4), we also explore two other dimensions, namely the perceived social responsibility of the sector in which a company operates and the sector's perceived corporate governance. The tests on the social responsibility of the sector also help to connect our findings to the literature documenting that companies included in the list of the "Best companies to work for" (BC) outperform other companies (see Edmans 2011 and Edmans, Li, and Zhang 2023). The predictions of being a BC (or a firm being "socially responsible") on wages are ambiguous. First, a company might be voted a BC by its workers because it pays higher wages. In that case, lower wages in more sustainable sectors are thus inconsistent with the hypothesis that our measure of sustainability is a proxy for BC.[22] Alternatively, it might also be the case that firms end up on the list of "Best companies to work for" because their employees like working in more environmentally sustainable firms. That would be fully consistent with our hypothesis of the Sustainability Wage Gap. However, BCs may also treat their workers better in non-pay dimensions, allowing these companies to pay lower wages. For instance, they may provide employees with mentorship, skills development, opportunities to step up, or a great corporate culture. We have already tested for some of these alternative explanations to the extent that those dimensions are correlated with our measures of compensating differentials. When we examine how wages are related to the perceived social responsibility of the sector, we find

[22] Interestingly, however, we do not find a positive correlation between "Best companies to work for" and being a highly sustainable company. When we compare "Best companies to work for" (BC) to the universe of the Swedish public companies, we document negative correlations between BC and sustainability.

evidence consistent with the view that otherwise similar workers earn about 1.4% lower wages in high responsibility sectors. However, the effect is much smaller than the Sustainability Wage Gap, which we estimate to be -12.4% in the same specification.

Firms in sectors with perceived good governance seem to pay 6.5% higher wages. This might be related to firms with good governance also being more profitable. Interestingly, when we relate wages to commercially available firm-level governance ratings in Section 4.1.1 of the paper we find similar patterns of wages being positively related to the governance ratings of the firms. Potentially, the similarity of the results across different measures for governance could be seen as a validation test for our survey approach to quantifying sustainability.

In Column (3), we add all survey-based measures jointly as controls. The point estimate of sustainability is -11.6%, largely unchanged. Overall, we conclude that compensating differentials along the investigated dimensions are unlikely to explain the Sustainability Wage Gap.

Last, there is a large literature in financial economics suggesting different channels through which sustainability or more generally ESG policies can affect financial performance: increased cash flows, lower discount rate, or a generally larger "corporate pie" to be shared between all stakeholders (see Edmans, 2020). Moreover, reverse causation, i.e., well performing firms being more able to invest into improving ESG policies, appears also consistent with most evidence presented in the previous literature. All those channels may also affect wages. However, most of those alternative channels would predict higher wages (or at least not lower wages) for workers in high ESG industries or firms and, in the case of risk reduction, they are not consistent with our heterogeneity results or additional tests.[23]

Overall, we conclude that the alternative interpretations discussed in this section are more difficult to reconcile with the full set of presented results. On the contrary, the results are fully consistent with the set of hypotheses derived from worker preferences toward sustainability and their heterogeneities.

8 Conclusion

In this paper, we hypothesize that workers value the environmental sustainability of their jobs and accept lower wages to work in more environmentally sustainable firms and sectors. Using administrative employer-employee matched data from Sweden and both firm-level and sector-

[23] In Section 6 of the Online Appendix, we discuss those potential alternative explanations in more detail. Moreover, in unreported tests, we also find that firing rates of workers in more sustainable sectors are *not* lower as expected if risk was driving the results.

level sustainability measures, we provide evidence that firms with better sustainability characteristics tend to pay lower wages. We coin this empirical regularity as the Sustainability Wage Gap.

Consistent with anecdotal and survey evidence, we argue that workers are willing to give up part of their financial compensation because they derive nonpecuniary benefits related to their preferences to work in more sustainable firms or sectors. Those preferences are more pronounced for highly skilled workers. Consistent with the evidence from an online survey on heterogeneous preferences for sustainable jobs across the talent distribution, we then document important heterogeneities in the Sustainability Wage Gap itself: we show that the wage gap is indeed more pronounced for workers that are more highly skilled and increasing over time. Providing a battery of additional tests, we argue that our results are difficult to reconcile with many alternative interpretations suggested in prior research.

The Sustainability Wage Gap carries important implications for firm value. While many prior studies document a positive correlation between a firm's sustainability characteristics and its financial performance, few studies manage to credibly identify actual mechanisms through which sustainability translates into higher financial performance. We believe to provide evidence of a specific mechanism through which sustainability can positively affect firms' bottom line, namely through lowering a firm's wage bill. We argue that most other explanations such as a customer awareness channel are not consistent with the presented evidence on wages.

Our findings are particularly relevant for firms today as younger cohorts such as generations Y (Millennials) and Z are entering the labour market and climbing the corporate ladder. Accommodating the sustainability preferences of these younger workers—who arguably care more about sustainability aspects than preceding generations such as Baby Boomers or the Silent Generation—might be a decisive factor for firms to attract and retain the most talented workers and hence remain competitive in the future.

References

Abowd, J., Kramarz, F., and Margolis, D., 1999, High Wage Workers and High Wage Firms, Econometrica, vol. 67, no. 2, pp. 251–333.

Adams, R. B., B. E. Hermalin, and M. S. Weisbach, 2010, The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey, Journal of Economic Literature 48, 58-107.

Albuquerque, R., Y. Koskinen, and C. Zhang, 2019, Corporate Social Responsibility and Firm Risk: Theory and Empirical Evidence, Management Science 65, 4451-4469.

Ariely, D., Bracha, A. and Meier, S., 2009. Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. American economic review, 99(1), pp.544-555

Auriol, E., Friebel, G. and Von Bieberstein, F., 2016. The firm as the locus of social comparisons: Standard promotion practices versus up-or-out. JEBO, 121, pp.41-59.

Auriol, E. and Renault, R., 2008. Status and incentives. The RAND Journal of Economics, 39(1), pp.305-326.

Bebchuk, L.A., A. Cohen, and A. Ferrell, 2009, What Matters in Corporate Governance?, 22 Rev. Fin. Stud. 783.

Becker, G.S., Murphy, K.M. and Werning, I., 2005. The equilibrium distribution of income and the market for status. Journal of Political Economy, 113(2), pp.282-310.

Bénabou, R. and Tirole, J., 2006. Incentives and prosocial behavior. American economic review, 96(5), pp.1652-1678.

Bénabou, R. and J. Tirole, 2010, Individual and Corporate Social Responsibility, Economica, 77, 1-19.

Berg, F., Fabisik, K. and Sautner, Z., 2021, Rewriting History II: The (Un)Predictable Past of ESG Ratings, Available at SSRN.

Berg, F., Heeb, F. and Kölbel, J.F., 2022. The economic impact of ESG ratings. Working paper.

Berg F., JF. Koelbel, and R. Rigobon, 2022, Aggregate confusion: the divergence of ESG ratings, Available at SSRN.

Böhm, M. J. and Metzger, D. and Strömberg, P., 2023, 'Since You're So Rich, You Must Be Really Smart': Talent and the Finance Wage Premium, Review of Economic Studies.

Bunderson, S., and A. V. Thakor, 2020, Personal and Organizational Higher Purpose, Corporate Governance and Shareholder Value: Survey Results, Corporate Governance and Shareholder Value: Survey Results.

Burbano, V. C., 2016, Social Responsibility Messages and Worker Wage Requirements: Field Experimental Evidence from Online Labor Marketplaces, Organization Science 27(4): 1010–28.

Card, D. E. and A. Cardoso and P. Kline, 2018, Firms and Labor Market Inequality: Evidence and Some Theory, Journal of Labor Economics, vol 36(S1), pages S13-S70.

Card, D. E., A. Cardoso, and P. Kline, 2015, Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women, The Quarterly Journal of Economics, Volume 131, Issue 2, Pages 633–686.

Card, D. E., J. Heining and P. Kline, 2013, Workplace Heterogeneity and the Rise of West German Wage Inequality, The Quarterly Journal of Economics, Volume 128, Issue 3, Pages 967–1015.

Cassar, L. and S. Meier, 2018, Nonmonetary Incentives and the Implications of Work as a Source of Meaning. Journal of Economic Perspectives, 32(3), 215-38.

Cen, X. and Y. Qiu and T.Y. Wang, 2022. Corporate Social Responsibility and Employee Retention. Working paper.

Chava S., 2014, Environmental Externalities and Cost of Capital, Management Science, vol. 60, issue 9, 2223-2247.

Cunat, V., Gine, M. and Guadalupe, M., 2012, The Vote Is Cast: The Effect of Corporate Governance on Shareholder Value. The Journal of Finance, 67: 1943-1977.

Dal Bó, E., F. Finan, O. Folke, T. Persson and J. Rickne, 2017, Who Becomes a Politician?, The Quarterly Journal of Economics, Oxford University Press, vol. 132(4), pages 1877-1914.
Deming, D. J., 2017, The growing importance of social skills in the labor market. The Quarterly Journal of Economics, 132(4), 1593-1640.
Derrien, F., Krueger, P., Landier, A. and Yao, T., 2022., How Do ESG Incidents Affect Firm Value?. Working paper.
Dickens WT, Katz LF., 1987, Interindustry Wage Differences and Industry Characteristics. In: Lang K, Leonard J Unemployment and the Structure of Labor Markets. Blackwell, pp. 48-89.
Dunn, J., Fitzgibbons, S., and Pomorski, L., 2018, Assessing risk through environmental, social and governance exposures, Journal of Investment Management, 16(1), 4-17.
Dur, R. and van Lent, M., 2019, Socially Useless Jobs. Ind Relat, 58: 3-16.
Dyck, A., K. V. Lins, L. Roth and H. F. Wagner, 2019, Do institutional investors drive corporate social responsibility? International evidence, Journal of Financial Economics, Volume 131, Issue 3, Pages 693-714.
Edmans, A., 2011, Does the stock market fully value intangibles? Employee satisfaction and equity prices, Journal of Financial economics, 101(3), 621-640.
Edmans, A., 2020, Grow the Pie: How Great Companies Deliver Both Purpose and Profit, Cambridge University Press, Cambridge.
Edmans, A., Li, L., Zhang, C., 2023, Employee satisfaction, labor market flexibility, and stock returns around the world (No. w20300), forthcoming at Management Science
Ferreira, D. and Nikolowa, R., 2021, Prestige, promotion, and pay. Promotion, and Pay, Forthcoming Journal of Finance
Frey, B.S., 1997, Not just for the money (Vol. 748, p. 204). Cheltenham: Edward elgar.
Friede, G., T. Busch, and A. Bassen, 2015, ESG and financial performance: aggregated evidence from more than 2000 empirical studies, Journal of Sustainable Finance & Investment 5, 210-233.
Gibbons R., L. Katz, 1992, Does Unmeasured Ability Explain Inter-Industry Wage Differentials?, The Review of Economic Studies, Volume 59, Issue 3, Pages 515–535.
Gibbons R., L. F. Katz, T. Lemieux, and D. Parent, 2005, Comparative advantage, learning, and sectoral wage determination, Journal of Labor Economics 23(4): 681-724.
Gibson B.R., P. Krueger and P.S. Schmidt, 2021, ESG rating disagreement and stock returns. Financial Analysts Journal, 77(4): 104-127.
Gompers, P., J. Ishii, A. Metrick, 2003, Corporate Governance and Equity Prices, The Quarterly Journal of Economics, Volume 118, Issue 1, 107–156.
Hartzmark, S. M., & Sussman, A. B., 2019, Do investors value sustainability? A natural experiment examining ranking and fund flows. The Journal of Finance, 74(6), 2789-2837.
Hedblom, D., Hickman, B. R., & List, J. A., 2022, Toward an understanding of corporate social responsibility: Theory and field experimental evidence, National Bureau of Economic Research.
Hermalin, B. E., and M. S. Weisbach, 1998, Endogenously Chosen Boards of Directors and Their Monitoring of the CEO, The American Economic Review 88, 96-118.
Hong, H. and L. Kostovetsky, 2012, Red and blue investing: Values and finance, Journal of Financial Economics, 103, (1), 1-19.
Hopkins, E. and T. Kornienko, 2004, Running to Keep in the Same Place: Consumer Choice as a Game of Status, American Economic Review 94, 1085-1106.
Katz LF, Summers LH., 1989, Industry Rents: Evidence and Implications. Brookings Papers on Economic Activity: Microeconomics: 209-90.
Krüger, P., 2015, Corporate goodness and shareholder wealth. Journal of financial economics, 115(2), pp.304-329.
Krueger, A.B. and Summers, L.H., 1988, Efficiency wages and the inter-industry wage structure. Econometrica: Journal of the Econometric Society, pp.259-293.

Liang, H., L. Renneboog, 2017, On the Foundations of Corporate Social Responsibility, Journal of Finance, American Finance Association, vol. 72(2), pages 853-910.
Lins, K. V., Servaes, H., and Tamayo, A., 2017, Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. The Journal of Finance, 72(4), 1785-1824.
Lindqvist, E., and R. Vestman, 2011, The Labor Market Returns to Cognitive and Noncognitive Ability: Evidence from the Swedish Enlistment, American Economic Journal: Applied Economics, 3 (1): 101-28.
Liu, T., Makridis, C.A., Ouimet, P. and, Simintzi, E., 2023, The Distribution of Nonwage Benefits: Maternity Benefits and Gender Diversity, The Review of Financial Studies, Volume 36, Issue, 1 Pages 194–234.
Margolis, J. D., Elfenbein, H. A., and Walsh, J. P., 2007, Does It Pay to Be Good? A Meta-Analysis and Redirection of Research on the Relationship between Corporate Social and Financial Performance. Ann Arbor, 1001, 48109-1234.
Meier, J.-M., Servaes, H., Wei, J. and Xiao, S. C., 2023, Do Consumers Care About ESG? Evidence from Barcode-Level Sales Data, ECGI Working Paper.
Murphy K.M., Topel R.H., 1990, Efficiency Wages Reconsidered: Theory and Evidence. In: Weiss Y., Fishelson G. (eds) Advances in the Theory and Measurement of Unemployment. Palgrave Macmillan, London.
Murphy, K. M., A. Shleifer, and R.W. Vishny, 1991, The Allocation of Talent: Implications for Growth, The Quarterly Journal of Economics, vol. 106, no. 2, 1991, pp. 503–530.
OECD, 2023, Job Creation and Local Economic Development 2023: Bridging the Great Green Divide, OECD Publishing.
Oehmke, M. and Opp, M. M., 2023, A Theory of Socially Responsible Investment, Swedish House of Finance Research Paper No. 20-2.
Pastor, L., Stambaugh, R.F. and Taylor, L.A., 2021, Sustainable investing in equilibrium. Journal of Financial Economics, 142(2), pp.550-571.
Pastor, L., Stambaugh, R. F., & Taylor, L. A., 2022, Dissecting green returns. Journal of Financial Economics, 146(2), 403-424.
Pedersen, L.H., Fitzgibbons, S. and Pomorski, L., 2021, Responsible investing: The ESG-efficient frontier. Journal of Financial Economics, 142(2), pp.572-597.
Ray, D. and Robson, A., 2012, Status, intertemporal choice, and risk-taking. Econometrica, 80(4), pp.1505-1531.
Rosen, S., 1986, Chapter 12 The theory of equalizing differences, Handbook of Labor Economics, Elsevier, Volume 1, Pages 641-692.
Sautner, Z., van Lent, L., Vilkov, G. and Zhang, R., 2023, Firm-level climate change exposure. Journal of Finance, forthcoming.
Schneider, F., Brun, F., and Weber, R. A., 2020, Sorting and wage premiums in immoral work. University of Zurich, Department of Economics, Working Paper, (353).
Schweitzer SO., 1969, Factors Determining the Interindustry Structure of Wages. ILR Review, 22(2):217-225.
Servaes, H., and Tamayo, A., 2013, The impact of corporate social responsibility on firm value: The role of customer awareness, Management science, 59(5), 1045-1061.
Slichter, S. H., 1950, Notes on the Structure of Wages. The Review of Economics and Statistics, 32:80.
Song, J., D. J Price, F. Guvenen, N. Bloom, and T. von Wachter, 2019, Firming Up Inequality, The Quarterly Journal of Economics, Volume 134, Issue 1, Pages 1–50.
Sorkin, I., 2018, Ranking Firms Using Revealed Preference, The Quarterly Journal of Economics, Volume 133, Issue 3, Pages 1331–1393.
Syverson, C., 2011, What Determines Productivity?, Journal of Economic Literature, 49 (2): 326-65.

Tables

Table 1: Survey responses: Labour choices and wages

Panel A of the table summarizes responses to selected survey questions related to labour choices and wages. Dummy Question 7 is a dummy variable based on the responses to *Question 7 - How important is it for you that your job is environmentally sustainable?* Responses to Question 8 and 9 can take on values of 0 (No) and 1 (Yes). Responses to Questions 8a range from 0 to 100 %. Panel B shows mean difference tests, which test if responses to survey responses differ across skill levels. Skill is assessed using responses to the following two survey questions: *Question 5 - In high school, how was your academic performance relative to your classmates? Question 6 - Where did you rank in terms of your grades in high school.* The group *Top* contains responses from individuals who state that their academic performance in high school was much better than average or who state to have ranked in the Top10 in relation to the second question. We test if the average response to a selection of questions in Panel A differs for the group *Top* relative to the rest.

Panel A: Questions related to labour choices and wages

	Count	Mean	Median
Dummy Question 7: Dummy variable equal to 1 if the answer to Question 7 is either Very important or Important.	300	0.65	1.00
Question 8: Would you consider accepting a lower wage to work for a firm that is environmentally sustainable?	300	0.52	1.00
Question 8a: If yes, what is the maximum reduction in wage you would accept in order to work for environmentally sustainable ("green") firm versus an environmentally unsustainable ("brown") firm (from 0% to 100%)? (Conditional responding yes to Question 2)	156	19.60	15.00
Question 9: For the same wage, would you be willing to work harder for an environmentally sustainable ("green") firm versus an environmentally unsustainable ("brown") firm?	300	0.82	1.00

Panel B: Mean difference tests: Labour choices and wages by different skills/talent group

	Grade performance is at the Top 10% (Q6)			Academic performance is much better than average (Q5)		
	Top	Rest	Diff	Top	Rest	Diff
Question 7: How important is it for you that your job is environmentally sustainable?						
Very important or important	78.50%	61.70%	16.8**	77.10%	47.90%	29.2***
Very important	32.30%	21.70%	10.6*	26.30%	20.70%	5.6
Question 8: Would you consider accepting a lower wage to work for a firm that is environ. sustain?						
Yes	61.50%	49.40%	12.2*	54.20%	48.80%	5.4
	65	235		179	121	

Table 2: Firm-level ESG data (MSCI / Reprisk) and wages

This table shows summary statistics for the firm-level ESG data from MSCI and Reprisk, as well as regression results relating wages to firm-level ESG measures. Panel A displays summary statistics of the ESG data for each data provider. The sample period for the data runs from 2002 to 2017 for the MSCI data, and 2007-2015 for Reprisk. Panel B shows Mincerian-like wage equations in which we relate wages to the ESG ratings from MSCI. In Panel B we use best-in-class dummy variables that identify the firm with the highest ESG score in a given industry. In columns (1) and (2) the main independent variable is best-in-class dummy based on the environmental pillar score. Columns (3) and (4) also include best-in-class dummy variables based on MSCI social and governance pillar ratings. In columns (5) and (6), we change the level of granularity of the industry classification from three to two digits (in specification (6), we keep the same sample based on three digits as of before). All regressions include *Year-Occupation* fixed effects, which are based on the 4-digit classification *Ssyk4*, corresponding to 354 unique occupations. The regressions also control for skill (cognitive and non-cognitive skills) categories. In Panel C, the main independent variable is a dummy variable that takes on the value of 1 if Reprisk's RRI exhibits positive changes. In Panel D, we interact the Best-in-Class dummy with variables marking the most talented workers. *Cog89* (*Noncog89*) identify roughly top 10% of workers according to the skills distributions in the whole population. All variables are defined in Online Appendix Table A.1. Standard errors are clustered at the firm-level. ***, **, * indicates statistical significance at the 1, 5 and 10% level, respectively.

Panel A: Summary statistics

MSCI - Worker:	Obs	mean	sd	p10	p25	p50	p75	p90
Age	539793	42.79	10.16	29.00	35.00	43.00	51.00	56.00
Schooling	539793	12.65	2.35	10.50	10.50	12.00	16.00	16.00
Pot. Exp.	539793	23.51	10.53	9.00	15.00	23.50	32.00	38.00
Cog. Skills	539793	5.44	1.82	3.00	4.00	5.00	7.00	8.00
Cog. = 8 or 9 (d)	539793	14%	34%	0%	0%	0%	0%	100%
Non-cog. Skills	539793	5.33	1.64	3.00	4.00	5.00	7.00	7.00
Non-cog. = 8 or 9 (d)	539793	9%	28%	0%	0%	0%	0%	0%
Ln(Wages)	539793	8.22	0.54	7.77	7.96	8.17	8.47	8.79
Environ. (high, 3d)	539793	45%	50%	0%	0%	0%	100%	100%
Social (high, 3d)	539793	46%	50%	0%	0%	0%	100%	100%
Gov. (high, 3d)	539793	42%	49%	0%	0%	0%	100%	100%

MSCI - Firms:	Obs.	mean	sd	p10	p25	p50	p75	p90
Environ. (high, 3d)	227	42%	50%	0%	0%	0%	100%	100%
Social (high, 3d)	227	41%	49%	0%	0%	0%	100%	100%
Gov. (high, 3d)	227	41%	49%	0%	0%	0%	100%	100%
Environ. (high, 2d)	400	37%	48%	0%	0%	0%	100%	100%
Social (high, 2d)	400	37%	48%	0%	0%	0%	100%	100%
Gov (high, 2d)	400	37%	48%	0%	0%	0%	100%	100%

Reprisk - Firms:	Obs.	mean	sd	p10	p25	p50	p75	p90
RRI index	1708	4.06	7.46	0	0	0	5.25	16.5
ΔRRI index	1504	0.79	6.28	-5.5	0	0	0	10.17
Negative ESG news	1504	23%	42%	0%	0%	0%	0%	100%
Δln(Value added)	1110	-0.03	1.09	-0.83	-0.23	0	0.19	0.72
Lag Δln(Value added)	933	-0.06	1.09	-0.9	-0.24	-0.01	0.17	0.71

Panel B: Sustainability Wage Gap (Firm-level, MSCI)

	Ln(Wages)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Environ. (high, 3d)	-0.021*	-0.044**	-0.021	-0.039**	-0.022**	-0.030**
	(0.012)	(0.017)	(0.015)	(0.018)	(0.009)	(0.013)
Social (high, 3d)			0.001	-0.004		
			(0.017)	(0.017)		
Gov. (high, 3d)			0.010	0.032**		
			(0.019)	(0.013)		
Schooling	0.034***	0.054***	0.034***	0.054***	0.031***	0.034***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.005)	(0.004)
Potential Experience	0.050***	0.057***	0.050***	0.057***	0.048***	0.050***
	(0.006)	(0.004)	(0.006)	(0.004)	(0.004)	(0.006)
Pot. exp. (squared)	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	539196	101681	539196	101681	787950	539196
Peer-group	Ind3				Ind2	
Sample	All	Generic	All	Generic	All	All (Ind3)
Occupation f.e.	Occ4 - Year					
Skills f.e.	Cog./Non-cog.					
R-squared	0.468	0.506	0.468	0.506	0.473	0.468

Panel C: Reaction of wages to (negative) sustainability news (Firm-level, Reprisk)

	ΔLn(Wages)		
	(1)	(2)	(3)
Negative ESG news (d)	0.068***	0.068***	0.065***
	(0.018)	(0.018)	(0.017)
ΔLn(VA/Assets)		-0.006	-0.004
		(0.010)	(0.008)
Lag ΔLn(VA/Assets)			0.236**
			(0.097)
Schooling	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)
Potential Experience	-0.010***	-0.010***	-0.010***
	(0.002)	(0.002)	(0.002)
Pot. exp. (squared)	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Obs	159,226	159,226	159,226
Sample	All		
Occupation f.e.	Occ4 - Year		
Skills f.e.	Cog./Non-cog.		
R-squared	0.059	0.059	0.061

Panel D: Heterogeneity of the Sustainability Wage Gap with respect to talent and time (Firm-level, MSCI)

	Ln(Wages)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Environ. (high, 3d)	-0.012	-0.019*		-0.012	-0.019*	
	(0.014)	(0.011)		(0.014)	(0.011)	
Noncog89=1	0.206***	0.137***	0.131***			
	(0.022)	(0.026)	(0.024)			
Noncog89=1 # Environ. (high, 3d)	**-0.036***	**-0.026**	**-0.021**			
	(0.020)	**(0.025)**	**(0.023)**			
Cog89=1				0.099***	0.072***	0.067***
				(0.012)	(0.017)	(0.016)
Cog89=1 # Environ. (high, 3d)				**-0.025**	**-0.014**	**-0.007**
				(0.018)	**(0.019)**	**(0.018)**
Schooling	0.080***	0.039***	0.039***	0.079***	0.039***	0.038***
	(0.003)	(0.005)	(0.005)	(0.003)	(0.005)	(0.005)
Potential Experience	0.074***	0.050***	0.050***	0.074***	0.050***	0.050***
	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
Pot. exp. (squared)	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	583195	539196	539196	583195	539196	539196
Peer-group	Ind3					
Sample	All					
Occupation f.e.	No	Occ4 - Year	Occ4 - Year	No	Occ4 - Year	Occ4 - Year
Firm-year f.e.	No	No	Yes	No	No	Yes
R-squared	0.324	0.464	0.473	0.317	0.461	0.471

Table 3: Descriptive statistics (Administrative employer-employee matched data)

This table reports descriptive statistics of the main variables used in the worker-level analysis. Public sector workers are excluded. Panel A examines the wage-related data for the sample of the whole universe of private sector firms for which our survey measure of sustainability is available. Panel B shows corresponding summary statistics for the sample of firms for which we have sector-level greenhouse gas emission data. Please note emission data is only available for a subset of 57 two-digit sectors. Detailed definitions and explanations of all variables are provided in Online Appendix Table A.1.

Panel A: Demographic and education variables (Survey sample)

	Obs in millions	**mean**	**sd**	**p10**	**p25**	**p50**	**p75**	**p90**
Age	17.15	41.26	10.60	27.00	33.00	41.00	49.00	56.00
Schooling	17.15	12.24	2.39	9.00	10.50	12.00	13.50	16.00
Pot. Exp.	17.15	22.20	10.72	8.00	14.00	22.00	30.50	37.00
Cog. Skills	17.15	5.20	1.89	3.00	4.00	5.00	7.00	8.00
Cog. = 8 or 9 (d)	17.15	12%	33%	0%	0%	0%	0%	100%
Non-cog. Skills	17.15	5.11	1.70	3.00	4.00	5.00	6.00	7.00
Non-cog. = 8 or 9 (d)	17.15	8%	26%	0%	0%	0%	0%	0%
Ln(Wages)	17.15	7.92	0.57	7.32	7.70	7.95	8.21	8.52
Sustain. (high)	17.15	31%	46%	0%	0%	0%	100%	100%
Sustain. (quint.)	17.15	3.37	1.36	2.00	2.00	3.00	5.00	5.00
Physical demanding. (high)	17.15	13%	34%	0%	0%	0%	0%	100%
Work-life balance (high)	17.15	34%	47%	0%	0%	0%	100%	100%
Career opportunities (high)	17.15	33%	47%	0%	0%	0%	100%	100%
Job safety (high)	17.15	38%	49%	0%	0%	0%	100%	100%
Governance (high)	17.15	37%	48%	0%	0%	0%	100%	100%
Social responsibility (high)	17.15	33%	47%	0%	0%	0%	100%	100%

Panel B: Demographic and education variables (Emission sample)

	Obs in millions	**mean**	**sd**	**p10**	**p25**	**p50**	**p75**	**p90**
Age	10.81	43.54	10.49	29.00	36.00	44.00	52.00	58.00
Schooling	10.81	12.36	2.40	9.00	10.50	12.00	13.50	16.00
Pot. Exp.	10.81	24.42	10.72	9.50	16.00	25.00	33.00	39.00
Cog. Skills	10.81	5.21	1.88	3.00	4.00	5.00	7.00	8.00
Cog. = 8 or 9 (d)	10.81	12%	33%	0%	0%	0%	0%	100%
Non-cog. Skills	10.81	5.10	1.69	3.00	4.00	5.00	6.00	7.00
Non-cog. = 8 or 9 (d)	10.81	7%	26%	0%	0%	0%	0%	0%
Ln(Wages)	10.81	8.01	0.54	7.47	7.80	8.02	8.28	8.58
Sustain. (high)	10.81	26%	44%	0%	0%	0%	100%	100%
Sustain. (quint.)	10.81	2.58	1.11	1.00	2.00	3.00	4.00	4.00

Table 4: The Sustainability Wage Gap – Baseline results

The table shows results from estimating Mincerian-like wage regressions. The dependent variable is log of wage. The main independent variable is the dummy variable *Sustain. (high)* which equals one if the industry belongs to the top quintile of the sustainability distribution (i.e., most sustainable sectors) in terms of our survey measure or based on sector-level greenhouse gas emissions. Panel A estimates the Sustainability Wage Gap for a selected set of occupations that exist in virtually all sectors (e.g., secretaries or receptionists, human resource professionals, accountants, etc.). In the regressions, we control for years of schooling and potential experience, year fixed effects, and fixed effects capturing different levels of cognitive and non-cognitive skills. Panel B uses the full sample of male workers. In columns (1) to (4), the sustainability dummy is based on our survey measure. In columns (5) and (6) on sector-level GHG emissions. In Panel C we use individual dummies *Survey=1* and *Emission=1* (and their interactions) that identify whether the sector belongs to the top sustainability sectors based on the survey and the greenhouse gas emissions measures. All variables are described and explained in Online Appendix Table A.1. Standard errors are clustered at the firm-level. ***, **, * indicates statistical significance at the 1, 5 and 10% level, respectively.

Panel A: Selected occupations

	Ln(Wages)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Sustain. (high)=1	-0.127***	-0.190***	-0.070***	-0.113***	-0.162***	-0.115***
	(0.018)	(0.016)	(0.027)	(0.016)	(0.024)	(0.012)
Schooling	0.014***	0.026***	0.023***	0.049***	0.037***	0.094***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.005)	(0.002)
Potential Experience	0.059***	0.051***	0.054***	0.066***	0.067***	0.073***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Pot. Exp. (squared)	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	40103	41656	31888	91919	24420	156026
Sustain. Measure	Survey					
Sample	**Receptionists**	**HR**	**IT**	**Accountants**	**Legal**	**Executives**
Municipality f.e	Municipality – Year					
Skills f.e.	Cog./Non-cog.					
R-squared	0.359	0.377	0.422	0.287	0.293	0.277

Panel B: Full sample

	Ln(Wages)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Sustain. (high)=1	-0.126***		-0.087***		-0.057***	
	(0.008)		(0.005)		(0.007)	
Sust. Quintile = 2		-0.030***		-0.037***		-0.025***
		(0.008)		(0.007)		(0.008)
Sust. Quintile = 3		-0.024***		-0.037***		-0.062***
		(0.008)		(0.007)		(0.007)
Sust. Quintile = 4		-0.055***		-0.073***		-0.088***
		(0.009)		(0.008)		(0.007)
Sust. Quintile = 5		-0.159***		-0.133***		-0.124***
		(0.010)		(0.009)		(0.009)
Schooling	0.047***	0.047***	0.027***	0.027***	0.024***	0.024***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Potential Experience	0.052***	0.052***	0.046***	0.046***	0.044***	0.044***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Pot. Exp. (squared)	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	2538809	2538809	17148693	17148693	10813955	10813955
Sustain. Measure	Survey		Survey		Emission	
Sample	Generic		All		All	
Occupation f.e.			Occ4 – Year			
Municipality f.e			Municipality – Year			
Skills f.e.			Cog./Non-cog.			
R-squared	0.466	0.466	0.429	0.430	0.383	0.384

Panel C: Combination of survey and emission measure

	Ln(Wages)
	(7)
Survey = 1 & Emission = 1	-0.110***
	(0.008)
Survey = 1 & Emission = 0	-0.099***
	(0.006)
Survey = 0 & Emission = 1	-0.047***
	(0.008)
Schooling	0.025***
	(0.001)
Potential Experience	0.044***
	(0.000)
Pot. Exp. (squared)	-0.001***
	(0.000)
Obs	10603425
Sample	All
Occupation f.e.	Occ4 – Year
Municipality f.e	Municipality – Year
Skills f.e.	Cog./Non-cog.
R-squared	0.388

Table 5: The Sustainability Wage Gap – Fixed Effects & Turnovers

In column (1), we estimate a worker fixed-effects model. The dependent variable is log of wage which is regressed on the dummy variable *Sustain. (high)*, which equals one if the industry belongs to the top quintile of the sustainability distribution (i.e., most sustainable sectors). In columns (2) to (4) we examine job switchers after bankruptcies and mass layoffs. The dependent variable is the change in log wage. *Ch. in sustainability* is a variable that takes on the value of -1 if a worker moves into a sector of lower sustainability, 0 if the worker remains in a sector of the same sustainability, and +1 if the worker moves into a sector of higher sustainability. *Sustain. (high) – up* is a dummy variable that takes on the value of 1 if the worker switches to a sector of higher sustainability and 0 otherwise. *Sustain. (high) – down* is a corresponding dummy variable which is equal to one if following the bankruptcy or layoff the worker switches into a sector of lower sustainability. All variables are described and explained in Online Appendix Table A.1. Standard errors are clustered at the firm-level. ***, **, * indicates statistical significance at the 1, 5 and 10% level, respectively.

	Ln(Wages)	**Change in wages (log-diff,[-1,+1])**		**Change in wages (log-diff,[-1,+1])**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Sustain. (high)=1	-0.056***				
	(0.003)				
Ch. in sustainability		-0.043***		-0.065***	
		(0.002)		(0.019)	
Sustain. (high) - up			-0.061***		-0.074***
			(0.004)		(0.025)
Sustain. (high) - down			0.024***		0.049*
			(0.003)		(0.027)
Schooling	0.044***	0.002***	0.002***	-0.005	-0.005
	(0.003)	(0.000)	(0.000)	(0.004)	(0.004)
Potential Experience	-0.008***	-0.010***	-0.010***	-0.004	-0.004
	(0.003)	(0.000)	(0.000)	(0.003)	(0.003)
Pot. exp. (squared)	-0.001***	0.000***	0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	17055018	439991	439991	11800	11800
Sustain. measure			Survey		
Sample			All		
Event	No	First position after mass layoff		First position after bankruptcy	
Occupation f.e.			Occ4 - Year		
Municipality f.e			Municipality - Year		
Skills f.e.	No		Cog./Non-cog.		
Person f.e.	Yes		No		
R-squared	0.710	0.049	0.050	0.316	0.316

Table 6: Skills and cohort effects

This table explores cross-sectional and time-series heterogeneity in the Sustainability Wage Gap. Specifically, the table displays differential effects of sustainability on wages for groups with various skill levels and over time. Panel A focuses on groups of different levels of cognitive and non-cognitive skills (columns 1 and 2) and over time (column 3). The dummy variables *Cog89* (*NonCog89*) identify the 5% workers with the highest cognitive (non-cognitive) skills. *2005-2008*, *2009-2012*, and *2013-2017* are time period indicators (*2001-2004* is the omitted period). In Panel B, we estimate specifications with triple interactions to test the hypothesis that the Sustainability Wage Gap for highly talented workers is increasing over time. All variables are defined and explained in Online Appendix Table A.1. Standard errors are clustered at the firm-level. ***, **, * indicates statistical significance at the 1, 5 and 10% level, respectively.

Panel A: The Sustainability Wage Gap for talented workers *and* over time

	Ln(Wages)		
	(1)	**(2)**	**(3)**
Cog89=1	0.023***		
	(0.002)		
Cog89=1 # Sustain. (high)=1	**-0.016*** **		
	(0.004)		
Noncog89=1		0.071***	
		(0.002)	
Noncog89=1 # Sustain. (high)=1		**-0.010*** **	
		(0.003)	
2005-2008 # Sustain. (high)=1			**-0.015*** **
			(0.003)
2009-2012 # Sustain. (high)=1			**-0.022*** **
			(0.004)
2013-2017 # Sustain. (high)=1			**-0.033*** **
			(0.005)
Schooling	0.023***	0.023***	0.021***
	(0.001)	(0.001)	(0.001)
Potential Experience	0.045***	0.045***	0.044***
	(0.000)	(0.000)	(0.000)
Pot. exp. (squared)	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
Obs	16834253	16834253	17026993
Sustain. measure	Survey		
Sample	All		
Occupation f.e.	Occ4 - Year		
Municipality f.e	Municipality - Year		
Skills f.e.	No	No	Yes
Firm-year f.e.	Firm-year		Firm
R-squared	0.577	0.578	0.557

Panel B: The Sustainability Wage Gap for talented workers over time

	ln(Wages)	
	(4)	(5)
Cog89=1 # Sustain. (high)=1	**-0.007**	
	(0.006)	
Cog89=1 # Sustain. (high)=1 # 2005-2008	**-0.007****	
	(0.003)	
Cog89=1 # Sustain. (high)=1 # 2009-2012	**-0.011*****	
	(0.004)	
Cog89=1 # Sustain. (high)=1 # 2013-2017	**-0.015*****	
	(0.006)	
Noncog89=1 # Sustain. (high)=1		**-0.001**
		(0.004)
Noncog89=1 # Sustain. (high)=1 # 2005-2008		**-0.010****
		(0.004)
Noncog89=1 # Sustain. (high)=1 # 2009-2012		**-0.010****
		(0.004)
Noncog89=1 # Sustain. (high)=1 # 2013-2017		**-0.012*****
		(0.005)
Obs	16211824	16211824
Sustain. measure	Survey	
Sample	All	
Occupation f.e.	Occ4 – Year	
Municipality f.e	Municipality – Year	
Skills f.e.	No	
Firm-year f.e.	Firm-year	
R-squared	0.565	0.566

Table 7: Effort

This table presents evidence on the relation between hours worked and indirect proxies of effort and our sector-level sustainability measure. The data on hours worked used in columns (1)-(3) comes from a large labour force survey. The data on illness and hospitalization used in columns 4 and 5 comes from administrative data. In Column (4) the dependent variable is the number of days a worker has been ill in a year (*Days (ill)*) and in column (5) the dependent variable is a dummy if a worker has been hospitalized. All variables are described and explained in Online Appendix Table A.1. Standard errors are clustered at the firm-level. ***, **, * indicates statistical significance at the 1, 5 and 10% level, respectively.

	Ln(hours)	**>50h (d)**	**>60h (d)**	**Days ill**	**Hospital. (d)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Sustain. (high)=1	0.005***	0.014***	0.016***	0.724***	0.001***
	(0.001)	(0.003)	(0.002)	(0.055)	(0.000)
Schooling	0.007***	0.018***	0.004***	-0.207***	-0.000***
	(0.001)	(0.001)	(0.001)	(0.009)	(0.000)
Potential Experience	0.004***	0.010***	0.004***	0.237***	0.000***
	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)
Pot. Exp. (squared)	-0.000***	-0.000***	-0.000***	0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	487,584	487,584	487,584	16,497,904	16,497,904
Sustain. Measure	Survey			Survey	
Sample	Labour force survey			All	
Skills f.e.	N/A			Cog./Non-cog.	
Occ. - year f.e.	/Husky4			Ssyk4	
R-squared	0.125	0.111	0.066	0.014	0.002

Table 8: Compensating differentials and alternative explanations

In this table we address compensating differentials and alternative explanations. In Column (1) we include proxies for different compensating differentials at the industry-level. We calculate the average firing rate at industry-level. We also calculate, at the industry-level, the average number of sick days and the propensity of ending up in the hospital as proxies for health risk or work-life-balance. Finally, we compute marriage and divorce rates, the average number of children, and the number of parental leave days as proxies for a good work-life-balance. We then include the industry averages (and their squares) of all these measures as additional sector-level controls in the regression in column (1). In columns (2)-(4) we control for survey-based measures for known compensating differentials. These measures are collected through our Prolific survey. In the survey, we ask the respondents to characterize sectors in terms of other compensating differentials. Similar in spirit to the sector-level sustainability classifications, each survey respondent is asked to rate ten randomly selected sectors in terms of issues such as whether working in the sector would, for instance, be considered physically demanding or allowed for good work-life balance (see Section V of the survey instrument in Online Appendix Section 4 for further background). We include these sector-level assessments (or ratings) as additional control variables All variables are described and explained in Online Appendix Table A.1. Standard errors are clustered at the firm-level. ***, **, * indicates statistical significance at the 1, 5 and 10% level, respectively.

	Ln(Wages)			
	(1)	**(2)**	**(3)**	**(4)**
Sustain. (high)=1	-0.069***	-0.104***	-0.124***	-0.116***
	(0.007)	(0.006)	(0.007)	(0.007)
Job security (high)=1		0.014***		0.008
		(0.005)		(0.005)
Career opportunities (high) =1		0.035***		0.017***
		(0.005)		(0.006)
Physical demand. (high) =1		-0.003		-0.001
		(0.004)		(0.004)
Work-life balance (high) =1		-0.005		-0.025***
		(0.005)		(0.005)
Governance (high) =1			0.065***	0.061***
			(0.006)	(0.007)
Social responsibility (high) =1			-0.014**	-0.031***
			(0.006)	(0.007)
Schooling	0.026***	0.027***	0.027***	0.027***
	(0.001)	(0.001)	(0.001)	(0.001)
Pot. exp.	0.045***	0.046***	0.046***	0.046***
	(0.000)	(0.000)	(0.000)	(0.000)
Pot. exp. (sq.)	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Obs	16497904	17148693	17148693	17148693
Sustain. measure		Survey		
Sample		All		
Industry controls	Polyn. of ind. avg.	Survey		
Occupation f.e.		Occ4 - Year		
Municipality f.e		Municipality - Year		
Skills f.e.		Cog./Non-cog.		
R-squared	0.415	0.430	0.430	0.430

Swiss Finance Institute

Swiss Finance Institute (SFI) is the national center for fundamental research, doctoral training, knowledge exchange, and continuing education in the fields of banking and finance. SFI's mission is to grow knowledge capital for the Swiss financial marketplace. Created in 2006 as a public–private partnership, SFI is a common initiative of the Swiss finance industry, leading Swiss universities, and the Swiss Confederation.

swiss:finance:institute

c/o University of Geneva, Bd. Du Pont d'Arve 42, CH-1211 Geneva 4
T +41 22 379 84 71, rps@sfi.ch, www.sfi.ch

european corporate governance institute

about ECGI

The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities.*

The ECGI will produce and disseminate high quality research while remaining close to the concerns and interests of corporate, financial and public policy makers. It will draw on the expertise of scholars from numerous countries and bring together a critical mass of expertise and interest to bear on this important subject.

The views expressed in this working paper are those of the authors, not those of the ECGI or its members.

www.ecgi.global

european corporate governance institute

ECGI Working Paper Series in Finance

Editorial Board

Editor	Mike Burkart, Professor of Finance, London School of Economics and Political Science
Consulting Editors	Renée Adams, Professor of Finance, University of Oxford Franklin Allen, Nippon Life Professor of Finance, Professor of Economics, The Wharton School of the University of Pennsylvania Julian Franks, Professor of Finance, London Business School Mireia Giné, Associate Professor, IESE Business School Marco Pagano, Professor of Economics, Facoltà di Economia Università di Napoli Federico II
Editorial Assistant	Asif Malik, Working Paper Series Manager

www.ecgi.global/content/working-papers

european corporate governance institute

Electronic Access to the Working Paper Series

The full set of ECGI working papers can be accessed through the Institute's Web-site (www.ecgi.global/content/working-papers) or SSRN:

Finance Paper Series	http://www.ssrn.com/link/ECGI-Fin.html
Law Paper Series	http://www.ssrn.com/link/ECGI-Law.html

www.ecgi.global/content/working-papers