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How Much Does It Matter?**

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ABSTRACT

Organisational Leadership: How Much Does It Matter?*

We study the influence of leadership on organisational performance and worker wellbeing using data from the 2004 and 2011 Workplace Employment Relations Survey (WERS). Our most conservative estimates from fixed effects regressions on a panel of organisations reveal that virtuous leadership is significantly and positively linked to an upbeat assessment of organisational performance, and an increase in worker wellbeing. Specifically, the estimates reveal that an increase in leadership quality by one standard deviation increases organisational performance and worker job satisfaction by 0.27 and 0.73 standard deviations, respectively, while it leads to a fall in worker job anxiety by 0.13 standard deviations. The results support the hypothesis that good leadership is vital for the success of business including worker wellbeing, which organisational policy makers ought to heed. There is a dearth of evidence on organisational leadership as an institution and its influence on organisational outcomes, which this paper aims to address.

JEL Classification: I31, J28, J5, L2, M5

Keywords: leadership, organisational performance, worker wellbeing, linked data, Britain

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1. Introduction

There is some evidence linking organisational leadership (hereinafter leadership) to sustained competitive advantage and superior organisational performance. Early research in psychology and management (see, for example, Schein 1985; Barney, 1986) identified core managerial values, which yield sustained superior financial performance. These values, which include how bosses treat their employees, customers, and suppliers, were thought to achieve superior performance through engendering innovativeness and flexibility. Economists had shunned research on the role of leadership until Hermalin (1998; 2013) developed a theory of leadership, where he showed how leaders may get followers and highlighted the important role leadership plays in shaping the fate of organisations. Martinez *et al.* (2015) also stressed on the important theoretical and empirical work economists can do on leadership and its link with performance while Gibbons and Roberts (2015) identified the nature and role of leadership as one of the key outstanding issues for organisational economics to address.

More recently, Artz *et al.* (2020) highlighted the gap in the literature amply when they emphasised the central role bosses play in the operations of organisations and “yet, almost nothing is known about an important and basic question in labor economics and industrial relations. Are the right people promoted to be supervisors, team leaders, and managers?” (p. 3). Workers have been shown to value the intrinsic aspects of their jobs including good leadership. Casser and Meier (2018) show the growing body of evidence, which highlighted nonmonetary factors including leadership being important for worker motivation and productivity. Contrary to economists’ usual assumption that work involves an exchange of time and effort for money, they argued, workers do care about more than just monetary incentives. Hermalin (2013) identified two such nonmonetary or ‘informal factors’, which are essential in the operation of organisations – leadership and corporate culture – while Schein (1985; 2004) stressed the vital role leadership played in setting the tone for corporate culture.

This paper examines if the quality of leadership has any bearing on organisational performance and worker wellbeing by conducting organisation- and worker-level analysis. As detailed in Section 3, we measure the quality of leadership based on workers' perceptions of leadership quality. The performance outcome is derived from managers' responses on perceptions of their organisations' performances in terms of finance, labour productivity, and product or service quality vis-à-vis comparable organisations in the same industry. Worker wellbeing is measured in terms of job satisfaction and job anxiety, which are derived from workers' responses. Establishing the link between leadership and organisational performance and worker wellbeing may prove vital particularly in Britain. In a recent study, Isham *et al.* (2020) noted that Britain faces two socio-economic challenges currently, which are: (i) low levels of mental and physical health of the working population, and (ii) the persistently low growth in labour productivity. These challenges are inter-related as previous research (for example, Oswald *et al.*, 2015) has clearly shown. Whilst there is a large body of research into what Hermalin (2013) dubbed "*the formal rights and rules*", there is still a dearth of research on "*the informal means*" in organisations. Research in this area may therefore inform organisational and public policy on the role leadership plays in influencing worker wellbeing and organisational performance, potentially addressing the twin challenges identified.¹

The remainder of the paper is organised as follows. Section 2 provides theoretical background and a review of the evidence linking leadership to worker wellbeing and organisational performance. Section 3 provides details on the data used, the employee and establishment samples studied, as well as the outcome and independent variables used in the analysis conducted. Section 4 sets out the empirical framework employed. Section 5 presents the estimation results and their discussion. The final section provides a summary of the study

¹ Subjective wellbeing has already been identified as an important goal of public policy (see, for example, Layard 2005).

and concludes the paper highlighting potential policy measures and some caveats to the current study.

2. Theory and literature

2.1 Background: Leadership

In the social sciences, leadership has long been regarded as vital both in moulding new organisational culture and in adaptively evolving existing ones. Schein (2004) argued that “cultures begin with leaders who impose their own values and assumptions on a group” (p. 2). Hermalin (1998; 2013) noted that much of the economics of organisation focused on formal contractual relationships, neglecting the vital roles leadership plays in determining the operation of organisations.² In a pioneering work, which provided a formal economic analysis of leadership distinguishing it from authority, he showed that leadership has voluntary following. He argued that leaders may induce a following if followers conclude that they are better off following the leader than not. This may happen if followers become convinced that: (i) the leader has superior information than they have, and (ii) the leader informs them honestly, even in the face of incentives to mislead. The honesty of the leader may be “achieved by the leader convincingly signalling her information either by sacrificing or by setting an example” (p. 1199).³

Hermalin (2013) showed leaders having three key roles as *judges*, *experts*, and *coordinators*. As a *judge*, a single individual may be selected if: (i) the group anticipates *ex ante* less risk and uncertainty about how cases may be resolved by the individual; (ii) the impartiality and incorruptibility of the individual is known; (iii) there are economies of scale

² Gibbons and Roberts (2015) provide the evolution of organisational economics detailing the contributions of several distinguished economists over the first two centuries of the discipline, but they noted that “the profession as a whole paid scant attention to organizations” (p. 1).

³ There is a burgeoning recent literature on followers and followership theory (see, for example, Uhl-Bien *et al.* (2014), which we are not treating in this paper.

in having a judge and committing relevant investments to that end; and (iv) having a leader helps overcome the problem of free riding, which may happen if no one were to monitor the behaviour of group members and to pass on some judgement. As an *expert*, a leader may attract following if group members believe the leader is best placed to know what should be done, which they signal via: (i) their endowment of relevant expertise, (ii) activities they undertake to acquire relevant knowledge, and (iii) their candour. As a *coordinator*, a leader can either help select a particular equilibrium game among games with multiple equilibria or, where coordination is not necessarily warranted, cause coordination to happen via an informational cascade or causing herding.

2.2 Leadership and Performance

As noted in Section 1, Hermalin (1998) pioneered formal economic treatment of the role of leadership. Several influential economics articles have since provided empirical evidence on the role played by leadership. Bloom and Van Reenen (2007), for example, showed management practice having strong association with several firm-level outcomes including productivity, profitability, Tobin's Q, and survival rates. Bloom *et al.* (2012) also showed that social capital, which they proxied by organisational trust, enhanced aggregate productivity by influencing firms' internal organisation. In a study of the top-100 US hospitals, Goodall (2011) found a strong positive association between hospital performance and hospital leaders being physicians. In another study, Goodall *et al.* (2011) showed the influential role a leader's expert knowledge played in the performance of a team in the context of US professional basketball. Jacobs *et al.* (2013) examined the link between senior management team culture, which they measured using a validated culture rating instrument, and organisational performance in English acute hospitals. They found that leadership, which varied across hospitals and over time, consistently predicted routine measures of hospital performance. They concluded that this provided evidence on the leadership-performance link.

Boyce *et al.* (2015) noted that prior research linking organisational culture, which has leadership at its heart, and performance fell short of establishing causality. They conducted a longitudinal analysis using data from 95 automobile dealerships spanning over 6 years to establish the direction of causality in the leadership-performance relationship. They found that leadership consistently predicted subsequent customer satisfaction ratings and vehicle sales. They concluded that leadership came first. Lazear *et al.* (2015) examined how and by how much supervisors enhanced the productivity of workers in a large technology-based services provider company. In their theoretical formulation, they argued that a good boss may either teach or motivate workers. The former may promote employees' productivity by enhancing their skills through training and guidance, which works primarily via the boss's skill level. The motivational effect on worker productivity works primarily through the boss's effort and their setting an example, which is a similar stipulation to Hermalin (1998). They conducted empirical analysis using daily worker output data spanning over four years, which was linked data on bosses to which the worker would be assigned to on each day. Based on 5.7 million worker-days data, they found that replacing a boss deemed to be in the lower 10% of boss quality with another boss deemed to be in the top 10% of boss quality increased a team's productivity by more than adding one worker to a nine-member team would yield. They concluded that boss effects were large and significant, which they thought validated the fundamental role assigned to supervision and management in personnel economics and in the theory of the firm. Heinz *et al.* (2017) conducted a field experiment to examine how workers' productivity is impacted by leaders' unfair treatment of co-workers. They used two work shifts as part of their experiment. In one treatment, they laid off 20% of employees between shifts in a manner that would be perceived as unfair treatment. They reported that in the layoff treatment, the productivity of unaffected workers dropped by 12%, which they attributed to

the unfair behaviour of employers towards co-workers rather than due to peer effect, workers altered beliefs about their job, or managers' competence.

2.3 Leadership and worker wellbeing

Worker wellbeing is an important outcome in and of itself. This is so particularly in Britain, where the current state of mental health and its prognosis appear to be dire. Stress, depression, and anxiety have become the most frequently self-reported work-related ill health in Britain costing businesses tens of billions of pounds per year (see, for example, HSE, 2020a; HSE, 2020b; Krekel *et al.*, 2019; Vickerstaff *et al.*, 2012).⁴ There is considerable public policy interest on the role leadership may play in influencing worker wellbeing.

Kahneman *et al.* (2004), using the daily reconstruction method to measure affective experiences, showed that: (i) workers' happiness varied markedly depending on whether they feel pressured to work quickly, and (ii) being with one's boss while at work being the worst time of all in wellbeing terms. Bryson and MacKerron (2016) used a similar approach, where 20 thousand individuals recorded their momentary wellbeing using a smartphone app at random points in time on a given day. They found that paid work represented the lowest level of wellbeing than any of the other 39 activities respondents were engaged in, barring being sick in bed. If so and given the evidence in Kahneman *et al.* (2004), this may suggest leadership being a key contributor to the poor wellbeing status of those in paid work. Krekel *et al.* (2019) attempted to establish which organisational characteristics maybe linked to worker job satisfaction. Based on cross-sectional data from 37 countries around the world, they reported that good relationships with management had the strongest positive association with how

⁴ Worker wellbeing has long been linked to broader economic and labour market outcomes including quits and absenteeism (Artz, 2021; Levy-Garboua *et al.*, 2007; Clark *et al.*, 1998; Hamermesh, 2001; Akerlof *et al.*, 1988; Freeman, 1978), job performance and productivity (Oswald *et al.*, 2015; Layard, 2013; Judge *et al.*, 2001), organisational performance (Bryson *et al.*, 2017; Ostroff, 1992), economic growth (Bartolini, 2019; Easterline 1974); and even physical health (Layard, 2013) and longevity (Diener and Chan, 2011).

satisfied workers were in their jobs among 12 domains of organisational characteristics. They concluded that their finding was in line with US based evidence from Gallup, where 50% of adults who left their jobs indicated they did so to get away from their managers.

Artz *et al.* (2017) examined the link between the quality of leaders, as measured by their technical competence, and the wellbeing of workers in the UK and the US in terms of job satisfaction. They found that the technical competence of bosses being the most important predictors of workers' job satisfaction.⁵ They concluded that their findings were consistent with the broad idea that technically competent bosses influence the quality of workers' lives positively. More recently, Artz *et al.* (2020) used cross-national data on 27,000 randomly selected workers across 35 European countries to generate a boss quality measure, which captures the strengths and weaknesses of bosses along seven different domains.⁶ They report that some 13% of bosses in Europe to be bad bosses, and the existence of a correlation between employees' satisfaction and the quality of their boss. Fox *et al.* (2021) conducted a systematic review of 83 studies with organisational- and group-level interventions involving experimental or quasi-experimental designs. They found that strategies focused on changing working conditions having significant potential in improve wellbeing. They concluded that regardless of type, *increased worker control*, *opportunities for workers' voice*, and *worker participation* being critical interventions that can promote worker wellbeing more reliably.

The preceding sections underscore the continuing calls for further research on leadership and its role in the operations of organisations and on worker wellbeing (see, for example, Hermalin 1998, 2013; Martinez *et al.*, 2015; Artz *et al.*, 2017; Artz *et al.*, 2020). The existing literature is based on either a single organisation and/or industry (Lazear *et al.*, 2015;

⁵ Technical competence in terms of whether they worked their way up the ranks in the company and if they could step in competently to do an employee's job, if necessary,

⁶ The domains covered included bosses' qualities in terms of: 'providing useful feedback', 'respecting you as a person', 'giving praise and recognition when you do a good job', 'being helpful in getting the job done', 'encouraging and supporting your development', 'succeeding in getting people to work together', and 'helping and supporting workers', which were all assessed on a 5-point scale from 'strongly disagree' to 'strongly agree'.

Boyce *et al.*, 2015; Jacobs *et al.*, 2013); or is centred on only workers (Artz *et al.*, 2020; Bryson and MacKerron, 2016; Kahneman *et al.*, 2004) or organisations (Bloom and Van Reenen, 2007; Bloom *et al.*, 2012; Goodall, 2011); or it is cross-sectional/-national in nature (for example, Krekel *et al.*, 2019; Artz *et al.*, 2020), thus wanting analytically. Perhaps due to the narrower scope, the evidence to date is not clear-cut. For example, Artz *et al.* (2017; 2020) report leaders' technical competence being "the single strongest predictor of worker's job satisfaction" (2017: p. 419) while others stressed "increased control and greater employee voice" (Fox *et al.*, 2021: p. 20) being critical drivers of worker wellbeing.

This paper aims to contribute to the literature by examining the link between the quality of leadership and outcomes measured at the level of organisations and workers. It has several strengths. *First*, it relies on nationally representative linked data, which offer a large variety of organisations and workers. *Second*, it employs alternative empirical approaches involving both panel data analysis, which allows controlling for unmeasured organisational characteristics, as well as pooled analysis to address some of the shortcomings identified in the literature. *Third*, it examines both organisational performance and wellbeing as outcomes, the latter including worker job anxiety unlike much of the literature. *Finally*, it undertakes analysis both at the organisation- and worker-level. Leadership can make substantial difference in the way organisations operate as well as on the wellbeing of workers within. The paper is thus likely to inform organisational and workplace policy.

3. Data

3.1 Overview – the Workplace Employment Relations Surveys (WERS)

We use data from the 2004 and 2011 British Workplace Employment Relations Surveys (WERS2004 and 2011). The surveys, which provide linked employer-employee data representative of all establishments with five or more employees, offer the most authoritative

source of information on employment relations in Britain.⁷ The employer surveys used management questionnaires, which were completed via face-to-face interviews with managers in charge of organisations' day-to-day tasks of employment relations. The employee surveys used self-completion questionnaires, which were completed by up to 25 employees in sampled organisations. The 2004 & 2011 surveys monitored, respectively, 2295 & 2680 organisations and 22,451 & 21,981 employees in them (Kersley *et al.*, 2006; van Wanrooy *et al.*, 2013).⁸ Of these organisations, 989 completed the management questionnaire in both the 2004 and the 2011 surveys, thus constituting a panel. However, only 600 of the panel organisations completed the worker surveys, which are the source of the key independent variable on leadership quality. Therefore, the panel analysis relies on an initial sample of these 600 organisations, which yielded 405 and 548 panel organisations for the performance and wellbeing analysis, respectively, with non-missing outcome and independent variables.⁹ As well as the panel analysis, we also pool organisations and workers from the 2004 and 2011 surveys to conduct pooled OLS and 2SLS analysis. The pooled analysis on performance has yielded a pooled sample of 3,008 organisations (1,395 and 1,613 organisations from 2004 and 2011, respectively). The wellbeing analysis retained a final sample of 36,634 workers in 3,471 organisations, which are comprised of 18,512 and 18,122 workers from 1,655 and 1816 organisations from 2004 and 2011, respectively.¹⁰

3.2 Organisational Performance Outcomes

⁷ The only exception to this is establishments engaged in primary activities such as mining and quarrying; agriculture, hunting and forestry; fishing; private households with employed domestic staff; and extraterritorial bodies.

⁸ The respective response rates were 46.6% (2004) & 46.3% (2011) for the employer surveys and 54.3% (2004) & 54.3% (2011) for the employee surveys (Kersley *et al.*, 2006; van Wanrooy *et al.*, 2013).

⁹ Relatively fewer organisations returned the WERS performance questionnaires, which explains the difference in the sizes of performance and wellbeing panel samples retained. On the other hand, WERS does not yield panel data on workers as the same workers were not monitored twice.

¹⁰ This is comprised of 18,512 and 18,122 workers retained from WERS2004 and 2011 who were, respectively, in 1,655 and 1816 organisations.

The organisational performance outcomes come from managers' responses to the question: "Compared with other establishments in the same industry how would you assess your workplace's...: (i) 'financial performance', (ii) 'labour productivity' and (iii) 'quality of product or service'?" In each case, managers would respond on a five-point Likert scale from "a lot better than average" to "a lot below average". PCA identified only one item with eigenvalue greater than one in both 2004 and 2011 (1.7694 and 1.7646), with corresponding KMO statistics of 0.64 and 0.63, respectively. Given this, a single summative organisational performance outcome ('overall performance') has been generated, which runs from 5 to 15 (higher values signifying better performance) to study organisational performance.

3.3 Wellbeing Outcomes

The wellbeing outcomes used are *job satisfaction* and *job-related anxiety*, which were generated from workers' responses to eight questions monitoring their satisfaction on facets of their job and three questions scrutinising job-related affects.

The job satisfaction questions were: "how satisfied are you with the following nine aspects of your job": 'sense of achievement from work'; 'scope for using own initiative'; 'amount of influence over job'; 'training received'; 'amount of pay received'; 'job security'; 'the opportunity to develop your skills in your job'; 'the work itself' and 'involvement in decision making'. Responses on these questions were provided on a five-point scale from "very satisfied" to "very dissatisfied".¹¹ Principal component analysis (PCA) identified a single factor from the 8 domains of job satisfaction with Eigenvalues bigger than one in both 2004 (4.0206) and 2011 (4.1334) and corresponding Kaiser-Meyer-Olkin (KMO) overall sample adequacy measures of 0.8775 and 0.8788 respectively. Given this, a single summative measure of overall

¹¹ In 2011 an additional facet ('the opportunity to develop your skills in your job') was monitored, which was not part of the 2004 survey. To ensure consistency between the 2004 and 2011 waves, this facet has been excluded.

job satisfaction (JS) was generated for each responding employee after first re-scaling the five-point scale responses into -2 (very dissatisfied) to 2 (very satisfied) as: $JS_{ij} = \sum_{k=1}^8 JS_{ijk}$, where i represents an employee, j an organisation and k a domain satisfaction. The resulting scale obtained runs from -16 to 16 for both surveys (higher values signifying better outcome), which has been used for the worker-level analysis. For the organisational analysis, an organisational average JS (\bar{JS}_j) is generated by averaging over the number of respondents in an organisation

$$(N_j) \text{ as: } \bar{JS}_j = \frac{\sum_{i=1}^N JS_{ij}}{N_j}.^{12}$$

The job-related affect questions were: “*Thinking of the past few weeks, how much of the time has your job made you feel each of the following?*”: ‘tense’, ‘worried’, and ‘uneasy’. The responses to the three negative affects, which were monitored in both the 2004 and 2011 surveys, provided on a five-point scale of: ‘all of the time’, ‘most of the time’, ‘some of the time’, ‘occasionally’ and ‘never’. PCA identified a single factor from the 3 job-related negative affects with eigenvalue bigger than one (2.2910, 2004 & 2.2868, 2011), with a KMO statistics of 0.7284 (2004) and 0.7361 (2011). We therefore re-coded each of the three affects into a rating from 4 (all of the time) to 0 (never) and generated a single summative measure of job-related anxiety (JA_{ij}) running from 0 to 12 (higher values signifying more anxiety), which we use for the worker-level analysis. For the organisational analysis, a similar aggregation has been used as above to obtain an aggregate measure of job anxiety (\bar{JA}_j).

3.4 Leadership - key independent variable

The key independent variable of interest to this study is leadership. It is derived from workers’ responses to the question: “*Now thinking about the managers at this workplace, to what extent do you agree or disagree with the following?*” (a) *can be relied upon to keep to*

¹² See Bryson *et al.* (2017), Haile (2022) for a similar aggregation.

their promises, (b) are sincere in attempting to understand employees' views, (c) deal with employees honestly, (d) understand about employees having to meet responsibilities outside work, (e) encourage people to develop their skills, and (f) treat employees fairly. The responses were given on a 5-point scale from 'strongly agree' to 'strongly disagree'. In addition, workers were asked: "In general, how would you describe relations between managers and employees here?", which was also monitored on a 5-point scale from 'very good' to 'very poor'. PCA on responses to the seven questions identified one factor with eigenvalue bigger than one (5.1042, 2004 and 5.1895, 2011) and a KMO statistics of 0.9427 each for both waves. Given this, a summative measure of leadership has been generated as: $Leadership_{ij} = \sum_{k=1}^7 Leadership_{ijk}$ after the individual responses were first re-scaled from -2 to 2 (strongly disagree to strongly agree and, for the second question, from very poor to very good). The resulting scale, which runs from -14 to +14 (higher values signifying better quality leadership), is used directly in the worker-level analysis. For organisational-level analysis, this scale is aggregated as: $\overline{Leadership}_j = \frac{\sum_{i=1}^N Leadership_{ij}}{N_j}$, where N_j represents the sum of responding workers within an organisation. This aggregate measure is thought to reflect workers' collective perception of the quality of leadership in their organisation, thus likely to be a better indicator of leadership quality.

3.5 Other Independent Variables

The analysis conducted controls for rich sets of worker and organisational characteristics. The former includes demographic and human capital characteristics, while the latter includes a battery of organisational characteristics including size, ownership type, age, whether a single or multi-plant establishment, industry, union representation, and geographic location. Summary statistics on the full range of outcomes and regressors in each analysis sample including the key independent variable are available as separate Appendix Tables.

4. Empirical framework

The main empirical approach we use is panel data analysis on organisations that were repeat surveyed in 2004 and 2011. As highlighted in the preceding section, however, the subsample of panel organisations is a small proportion of the organisations surveyed by WERS. To make a more complete use of the data, therefore, we also pool organisations and workers from 2004 and 2011 and conduct alternative organisation- and worker-level analysis. This involves OLS and tentative instrumental variables (2SLS) regressions as specified below, which may yield more precise estimates due to larger sample sizes.

4.1 Panel Data Analysis

The panel data analysis involves fixed effects regression and has the following form:

$$y_{jt} = \theta_j + k_t + \beta * \overline{Leadership}_{jt} + \boldsymbol{\gamma} * \boldsymbol{ORG}_{jt} + u_{jt} \quad (1)$$

where, y represents any one of the three organisational outcomes (i.e., *Performance*, \overline{JS}_j , and \overline{JA}_j) described in the preceding section, θ represents organisational dummies including organisational fixed effects, k represents year dummies, $\overline{Leadership}$ represents the organisation-level leadership quality measure, \boldsymbol{ORG} represents the vector of time varying organisational characteristics including organisational size, u represents the idiosyncratic error term, j indexes organisations and t indexes year ($t = 2004 \& 2011$). Fixed effects regression

can be regarded as the sternest test in our analysis, and it goes some way in addressing potential endogeneity problems, which Martinez *et al.* (2015) noted as vital in organisational studies.¹³

4.2 Pooled Analysis

As stated earlier, the pooled analysis involves organisation- and worker-level OLS and 2SLS regressions.

4.2.1 Organisation-level analysis

The organisation-level OLS regression model has the following general form:

$$y_j = \alpha + k_t + \beta * \overline{Leadership}_j + \gamma * \mathbf{ORG}_j + \varepsilon_j \quad (2)$$

where, once gain y represents any one of the three organisational outcomes as in equation (1); k represents year dummies; $\overline{Leadership}$ represents the leadership quality measure thought to signify workers' collectively perception of leadership quality; \mathbf{ORG} represents the vector of organisational characteristics including size, industry, union representation and geographic location; ε is the idiosyncratic error term, and j indexes organisations. In the organisation-level analysis OLS may be susceptible to endogeneity problem arising from omitted and potentially unobservable organisational variables. To deal with this we also use 2SLS regressions, which has the following general form:

¹³ Nonetheless, its success in tackling the endogeneity problem hinges on the omitted variables being time invariant.

$$y_j = \alpha + k_t + \beta * \overline{Leadership}_j + \gamma * \mathbf{ORG}_j + \delta * \mathbf{Z}_j + \varepsilon_j \quad (3)$$

where all terms in equation (3) are the same as in equation (2), and \mathbf{Z} represents the vector of instrumental variables thought to be strongly correlated with the leadership quality measure, uncorrelated with the error term and not directly related to each of the outcomes of interest.¹⁴ In our observational data even the 2SLS may not address the endogeneity problem fully, but it may serve this purpose up to a point.

4.2.2 Worker-level analysis

The worker-level analysis is centred on the two wellbeing (WB) outcomes – JS and JA – and involves OLS and 2SLS once again. The pooled OLS regression model we estimate has the following form:

$$WB_{ij} = \alpha + k_t + \beta * Leadership_{ij} + \gamma * EE_{ij} + \delta * \mathbf{ORG}_j + \varepsilon_{ij} \quad (4)$$

¹⁴ Three IVs have been used, which are: *organisational age*, *sole establishment*, and *aggregate level of organisational job satisfaction*. The age of an organisation is likely to be strongly correlated with the leadership quality it may have (the longer an organisation has been in existence, the more likely that it has an entrenched leadership style and quality), but organisational age may not necessarily be directly correlated with managers' perceptions of organisational performance. Similarly, whether an establishment is a sole or a multi-plant establishment is likely to be correlated with the quality of organisational leadership, given that different organisational structures are likely to shape different leadership qualities (for example, the leadership in a sole establishment may have the liberty to address organisational matters, including worker grievances, head-on locally whereas this may not be possible within a multi-plant establishment). On the other hand, whether an establishment is a sole or a multi-plant should not necessarily directly influence the performance of an organisation. Aggregate job satisfaction is highly likely to be correlated with workers' assessment of the quality of their leadership. On the other hand, it is highly unlikely to be directly related to managers' perceptions of organisational performance. This is because responding managers would be unlikely to know the expressed wellbeing ratings of workers in their organisation and even more unlikely to know the aggregated ratings. Three IVs have also been used in the 2SLS regressions on the two wellbeing outcomes, which are *organisational age*, *sole establishment*, and *aggregate organisational performance*. The justifications for the use of the first two IVs in the wellbeing equations is as given above. The third IV of (aggregate) employer's assessment of organisational performance is highly likely to be correlated with the type of leadership regime the employer maintains. On the other hand, the employer's assessment of performance is unlikely to be directly correlated with workers' subjective wellbeing since workers would be unlikely to know their managers' perceptions of performance.

where WB represents each of the worker-level wellbeing outcomes (JS or JA), $Leadership$ represents individual worker's perception of leadership, EE represents the vector of worker characteristics, ORG represents the vector of organisational characteristics; ε is the idiosyncratic error term, and i and j index workers and organisations. As well as potentially omitted and unobserved variables, the worker-level analysis may exhibit another source of endogeneity problem in the form of reverse causality, where higher levels of workers' wellbeing contribute to positive perceptions of leadership or vice versa. To address this, first we exploit the linked nature of the data to estimate OLS with organisational fixed effects, which is specified as:

$$WB_{ij} = \alpha + k_t + \beta * Leadership_{ij} + \gamma * EE_{ij} + \delta * D_j + e_{ij} \quad (5)$$

where, each term in equation (5) is as in equation (4) above, but we have here organisational dummies (D), which account for both observable and unobservable organisational characteristics (i.e., $D_j \equiv ORG_j + \mu_j$). Equation (5) allows us to deal with potentially unobservable organisation-level omitted variables (such as unobservably 'happy' or 'gloomy' organisations) and may serve as a halfway house solution to potential endogeneity problem.¹⁵ Secondly, we also implement worker-level 2SLS regression, which has the following general form:

¹⁵ Half-way house since potential endogeneity problems related to unobserved worker characteristics may remain.

$$WB_{ij} = \alpha + k_t + \beta * Leadership_{ij} + \gamma * EE_{ij} + \delta * ORG_j + \rho * Z_j + \varepsilon_{ij} \quad (6)$$

where, each term in equation (6) is as in equation (4) above and Z represents the vector of instrumental variables thought to satisfy the properties of instrumental variables we highlighted earlier.¹⁶

All the estimations we undertake use survey weights provided by the WERS team. The weights allow accounting for differences in organisation and worker selection probabilities and observable non-response biases (see Van Wanrooy *et al.*, 2013: 212-213; Bryson *et al.*, 2017: 1023).¹⁷

5. Results and discussion

The estimation results based on each of the specifications outlined in the preceding section (equations 1 – 6) are reported in Tables 1 to 3.¹⁸ Table 1 reports results from fixed effects regressions on the panel of organisations surveyed in 2004 and 2011. As pointed earlier, these results can be regarded as the most conservative of all our estimates. Accordingly, good quality leadership – or workers’ perceptions of it – is found to be significantly and positively related to managers’ upbeat assessment of organisational performance vis-à-vis other organisations in the same industry. Moreover, it is also found to enhance the wellbeing of

¹⁶ Five instrumental variables have been used for each of the wellbeing equations, which include: *organisational age*, *sole establishment*, and *managers’ assessment of organisational performance* in terms of *financial performance*, *labour productivity* and *the quality of goods or services*. The justification for each of the first three IVs is like the one provided earlier (see footnote 12). Employers’ assessments of their organisations’ performance with respect to finance, labour productivity or product quality are justified since such assessments are highly likely to be correlated with the quality of leadership organisations have in place. On the other hand, such managers’ assessments of performance are unlikely to influence employees’ subjective wellbeing since employees would be unlikely to know their managers’ perceptions of performance.

¹⁷ These include, respectively, panel organisational weights as well as cross-sectional establishment- and worker-level weights.

¹⁸ Tables 2 and 3 report only a portion of the results focusing on the key independent variable, model fit and diagnostic statistics. Corresponding full regression outputs are provided in Appendix Tables A2 and A3.

workers in terms job satisfaction and job anxiety, which are found to be significantly positively and negatively related to the quality of leadership respectively. In terms of the magnitude of these links, a one standard deviation increase in the quality of leadership leads to an increase in organisational performance by 0.27 standard deviations. On wellbeing, a one standard deviation increase in leadership quality is found to lead to an increase in aggregate job satisfaction by 0.73 standard deviations. On the other hand, a similar one standard deviation increase in leadership quality is found to lead to a decline in aggregate job anxiety by 0.13 standard deviations.

[Table 1 about here]

Table 2 reports results from the organisation-level OLS and 2SLS regressions on the pooled samples of organisations from 2004 and 2011, which correspond to equations 2 – 3. As noted earlier, the 2SLS regressions used three instrumental variables in each of the performance and wellbeing regressions. Diagnostic test statistics suggest that the performance and job anxiety equations fail to reject the null hypothesis of regressor exogeneity, as can be seen from the Durbin-Wu-Hausman (DWH) test statistics, which validates the corresponding OLS estimates. On the other hand, the job satisfaction equation rejects the null hypothesis of regressor exogeneity, thus suggesting the 2SLS estimates being the most appropriate in this case. The remaining two 2SLS diagnostic test statistics on weak identification (F-statistics) and the overidentifying restrictions (Sargan test) are both favourable.¹⁹

¹⁹ The null hypothesis of weak identification is rejected while we fail to reject the null of instrument exogeneity confirming the exogeneity of our instrumental variables.

The main results suggest that good quality leadership is significantly positively related to managers' upbeat assessment of performance. It is also found to be significantly positively associated with workers' wellbeing overall, where aggregate job satisfaction is positively linked while aggregate job anxiety is negatively associated with good quality leadership. In terms of magnitude, the estimates indicate that a one standard deviation increase in the quality of leadership leads to an increase in managers' assessment of organisational performance by 0.17 standard deviations. On wellbeing, a similar one standard deviation increase in the quality of leadership is associated with an increase in workers' aggregate job satisfaction by 1.16 standard deviations while it is associated with a reduction in job anxiety by 0.37 standard deviations. Overall, therefore, we find evidence linking good quality leadership and organisational performance and aggregate worker wellbeing.

[Table 2 about here]

Table 3 reports three sets of results from the worker-level wellbeing analysis, which correspond to equations 4 – 6, on job satisfaction and job anxiety. For each wellbeing outcome, the first column of results relates to OLS estimates controlling for the full gamut of worker and organisational characteristics including geographic location. The second column relates to OLS estimates using organisational fixed effects as described in Section 4.2.2. The final column relates to results from the 2SLS regressions and associated diagnostic test statistics.

The results in the first two columns are strikingly similar, which seems to suggest that the observable (and unobservable) organisational characteristics we controlled for do not have much influence on the leadership-wellbeing link. The results indicate that good quality

leadership, or workers' perceptions of it, is significantly and positively related with job satisfaction while it is significantly negatively related with job anxiety. In terms of magnitude, a one standard deviation increase in the quality of leadership is associated with an increase in job satisfaction by 0.69 standard deviations. On the other hand, a similar one standard deviation increase in leadership quality is found to be associated with a fall in job anxiety by 0.32 standard deviations.

The bottom parts of columns 3 in Table 3 report diagnostic test results from the pooled 2SLS regressions on job satisfaction and job anxiety. The job satisfaction diagnostic test statistics rejects the null hypothesis of regressor exogeneity (as can be seen from the DWH statistics). This means that OLS would yield biased and inconsistent estimates for the job satisfaction equations, which makes the 2SLS results in Table 3 the preferred results for the job satisfaction outcome.²⁰ On the other hand, DWH statistics from the job anxiety equation suggest that we fail to reject the null hypothesis of regressor exogeneity. Thus, the pooled OLS results we explained above should serve as the preferred estimates since the test statistics do not reveal endogeneity problems. The job satisfaction estimates from the pooled 2SLS regression are consistent with those obtained from the two pooled OLS regressions in terms of statistical significance. However, as was the result from the organisational 2SLS regression, they are significantly larger in magnitude where a one standard deviation increase in leadership quality is linked to an increase in worker job satisfaction by 1.09 standard deviations. Thus, the 2SLS estimates of the job satisfaction equations appear to suggest even larger positive link between leadership quality and employee job satisfaction. Overall, workers' perception of good quality leadership is found to have a strong association with their wellbeing.

²⁰ The reported F-statistics also rejects the null hypothesis of weak identification, thus suggesting that the IVs used are good enough to address the endogeneity problem identified, while the reported Sargan test statistics, which checks for the overidentifying restrictions, fail to reject the null hypothesis, which suggests that the instruments are exogenous as a group.

[Table 3 about here]

6. Summary and conclusion

We conducted organisation- and worker-level analysis to determine the extent to which the quality of leadership influences organisational performance and worker wellbeing, which we measured in terms of worker job satisfaction and job anxiety. To that end, we used linked data from the 2004 and 2011 waves of the nationally representative British Workplace Employment Relations Survey (WERS) and conducted alternative empirical analysis, which included panel data (fixed effects) analysis on a sub-sample of organisations surveyed in both waves and pooled analysis. The latter comprised of instrumental variable techniques and (pooled) OLS with and without organisational fixed effects, which we conducted on larger samples of organisations and workers monitored in either one of the two waves.

As argued in the paper, leadership plays an important role in the operation of organisations and the wellbeing of workers within. However, not much is known about the quality of leadership in organisations generally, and even less is known about how the quality of leadership influences outcomes such as performance and worker wellbeing. Several recent studies have underscored the importance of further research in this area (see, for example, Hermalin, 1998; 2013; Martinez *et al.*, 2015; Gibbons and Roberts, 2015; Casser and Meier, 2018; Artz *et al.*, 2020), which this paper attempted to address. We asserted that further research is vital particularly in Britain, where the working population is reported to have poorer mental and physical health. There has also been a slump in labour productivity in the country. These challenges are thought not to be entirely unrelated as recent research highlighted (see,

for example, Isham *et al.*, 2020; Oswald *et al.*, 2015). If, as Artz *et al.* (2020) showed, there is a significant amount of poor leadership around, then it is inevitable that we experience sub-optimal performance and poorer worker health outcomes consequently. Shedding some light into the links between leadership quality and outcomes including organisational performance and worker wellbeing may therefore be imperative from the perspective of informing public policy.

The results we reported indicate that good quality leadership leads to an upbeat assessment of organisational performance, which both the panel analysis on the sub-sample of organisations and pooled analysis on samples of organisations from 2004 and 2011 revealed. Good quality leadership is also found to enhance workers' overall wellbeing significantly. This is shown to be the case in terms of workers' job satisfaction, which is influenced positively, and job anxiety, which is linked negatively. The results found on worker wellbeing are consistent across the organisation- and worker-level analysis. In terms of the magnitude of these links, the most conservative of our estimates (fixed effects) reveal that a one standard deviation increase in leadership quality leads to increases in perceptions of organisational performance and worker job satisfaction by 0.27 and 0.73 standard deviations, respectively. On the other hand, a similar one standard deviation increase in leadership quality is found to lead to a fall in worker job anxiety by 0.13 standard deviations. These results suggest that improving the quality of leadership is a worthwhile policy objective for organisations to pursue. This may be achieved via better recruitment, appraisal/review, and training of leaders. As detailed in Section 3.4, the leadership quality measure we used encompasses seven dimensions. These reflect what may be termed as 'soft leadership skills' and include impartiality, trustworthiness, and empathy of leaders. Leadership training may therefore need to consider such 'soft leadership skills' to enhance organisational performance and worker wellbeing. Perhaps unsurprisingly, the importance of leaders' technical competence is what

has been highlighted in much of the limited literature to date. Our results stress the value of ‘soft leadership skills’ additionally. This is our contribution to the literature, which we hope will be informative to organisational policy making centred on leadership.

This study is rigorous in many respects including its use of alternative outcomes at the organisation- and worker-levels, its use of nationally representative data, its measuring leadership quality both at aggregate/organisation- and individual/worker-levels, its implementation of alternative empirical approaches including fixed effects regressions that Martinez *et al.* (2015) suggested, its controlling richly on organisational and worker characteristics, and its extensive review of the literature, among others. However, it is also worth stressing here that this is a study based on observational data and, as such, it is unlikely to pin down true causality precisely. Future research in this area may usefully contribute towards this goal of establishing true causality. Still, the robustness of the results we obtained from the alternative empirical analysis conducted does appear to lend some credibility to the results we reported. There are also some other caveats worth highlighting here. First, the organisational performance outcomes used are based on managers’ perceptions of organisational performance, which may be far from actual performance as pointed by Black and Lynch (1996). Moreover, such perceptions may not necessarily be shared throughout organisations as highlighted in Alberga *et al.* (1997). Secondly, both the leadership quality measure and the wellbeing outcomes come from workers’ responses, as detailed in Section 3. This might raise concerns of potential common-methods bias in the worker-level wellbeing analysis (see, for example, Spector, 2006). The aggregations we implemented as part of the organisation-level analysis may lessen such potential problems, however, which the robustness of our results seems to confirm. Finally, the WERS data are somewhat outdated now, the most recent wave being a decade old, while there was also a seven-year gap between the two surveys.

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Table 1: Leadership and Organisational Performance & Wellbeing Outcomes, Fixed effects Estimates (Panel Organisations, WERS2004 & 2011)

	Performance	Satisfaction ($\bar{J}S$)	Anxiety ($\bar{J}A$)
	Coeff.	Coeff.	Coeff.
<i>Leadership</i>	0.130*** (0.048)	0.717*** (0.069)	-0.179*** (0.039)
Private establishment	-1.385 (1.165)	2.247* (1.236)	-0.252 (0.927)
UK owned	1.145 (0.875)	-0.494 (0.905)	-0.175 (0.837)
Sole establishment	-0.440 (0.337)	-0.959** (0.460)	0.036 (0.214)
Log (organisation age)	0.068 (0.242)	-0.400 (0.302)	-0.071 (0.122)
Recognised union	0.904** (0.352)	0.407 (0.567)	-0.184 (0.277)
Organisation size (no. of employees)	0.027 (0.288)	-0.378 (0.308)	0.187 (0.128)
<i>Industry (base: manufacturing):</i>			
Construction	-0.235 (1.148)	-1.628 (2.139)	0.202 (0.984)
Wholesale & retail Trade	-1.012** (0.433)	-0.145 (0.744)	0.306 (0.605)
Hotel, Restaurant & Related	0.656 (0.680)	-2.880 (2.573)	1.153 (1.069)
Finance & Business Service	1.244* (0.683)	-0.940 (1.668)	-0.159 (0.943)
Utilities & public admin	-0.867 (0.657)	0.267 (1.945)	0.325 (1.093)
Education	-2.971*** (0.740)	-0.764 (1.789)	1.712 (1.168)
Health	-0.975 (0.650)	-0.988 (1.728)	1.564 (1.172)
Year=2011	-0.164 (0.195)	-0.005 (0.259)	-0.557*** (0.136)
Constant	5.155*** (1.396)	8.314*** (1.826)	7.203*** (1.040)
<i>Model fit</i>			
R-squared (within)	0.170	0.560	0.288
F (14, 404 or 547)	28.752	11.173	3.742
Prob > F	0.000	0.000	0.000
No. of organisations	405	548	548
No. of observations (N × 2)	810	1096	1096

* p<0.10, ** p<0.05, *** p<0.01

The key independent variable ‘*Leadership*’ here (also that in Table 2 below) is obtained by aggregating workers’ responses on their perceptions of the quality of organisational leadership, which was monitored along seven dimensions (see Section 3.4), after first cardinalizing and summing across the responses of each worker.

The completion rate of the questionnaires on performance was relatively lower, which explains the lower sample size for the performance equation/column.

All three fixed effects results are weighted by the WERS panel establishment weights to account for the probability of organisations’ selection to the WERS study.

Full descriptive statistics on the outcome and control variables in Table 1 are provided as separate Appendix Table.

Table 2: Leadership and Organisational Performance & Wellbeing Outcomes, Organisation-level analysis (Pooled Organisations, WERS 2004 and 2011)

	Performance		Satisfaction (\bar{S})		Anxiety (\bar{A})	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
<i>Leadership</i>	0.068*** (0.013)	0.118*** (0.036)	0.601*** (0.021)	0.934*** (0.098)	-0.137*** (0.015)	-0.119** (0.055)
Organisational characteristics	yes	yes	yes	yes	yes	yes
Year=2011	0.108 (0.103)	0.120 (0.106)	0.493*** (0.156)	0.590*** (0.188)	-0.713*** (0.098)	- 0.755*** (0.108)
Constant	5.774*** (0.449)	4.476*** (0.769)	8.420*** (0.782)	2.035 (1.959)	6.525*** (0.425)	6.060*** (1.096)
<i>Model fit</i>						
R-squared	0.066	0.050	0.576	0.444	0.249	0.241
Wald chi2 (31/30)		65.210		727.514		227.310
Prob > chi2		0.000		0.000		0.000
No. of organisations	3008	3008	3473	3008	3473	3008
<i>2SLS Diagnostics</i>						
Durbin-Wu-Hausman Test, F(1, 2976) / [P]		2.147 / [0.143]		14.648 / [0.000]		0.117 / [0.732]
Weak IV test, F (3, 2975) / [Prob > F]		41.450 / [0.000]		22.670 / [0.000]		22.670 / [0.000]
Sargan Test, Chi2(2) / [P]		12.192 / [0.002]		0.657 / [0.000]		9.590 / [0.008]

* p<0.10, ** p<0.05, *** p<0.01

Three IVs have been used in the performance and wellbeing equations. These are: *workplace age*, *sole establishment*, and *aggregate job satisfaction* for the former and *workplace age*, *sole establishment*, and *overall performance* for the two Wellbeing equations.

The DWH test statistics for the performance and anxiety equations means that we fail to reject Ho (variables exogeneity), hence the corresponding OLS equations are the preferred equations.

All results are weighted by WERS establishment weights to account for the probability of selection of organisations to the study sample.

Full descriptive statistics on the outcome and control variables in Table 2 are provided in a separate Appendix Table.

Table 3: Leadership and Worker Wellbeing, Worker-level Analysis (Pooled Worker Samples, WERS2004 and 2011)

	Job Satisfaction			Job Anxiety		
	(1)	(2)	(3)	(1)	(2)	(3)
Leadership	0.612*** (0.005)	0.609*** (0.006)	0.970*** (0.056)	-0.135*** (0.003)	-0.137*** (0.003)	-0.163*** (0.031)
Worker characteristics	yes	yes	yes	yes	yes	yes
Organisational characteristics	yes	yes	yes	yes	yes	yes
Year=2011	0.310*** (0.057)		0.202*** (0.072)	-0.677*** (0.035)		-0.656*** (0.039)
Constant	7.941*** (0.305)	4.271*** (0.235)	1.245 (1.095)	6.487*** (0.197)	7.042*** (0.146)	6.995*** (0.598)
<i>Model fit</i>						
No. of workers	36634	36634	31471	36634	36634	31471
R-squared	0.497	0.579	0.352	0.155	0.281	0.154
Wald chi2 (43)			2485.038			1564.080
Prob > chi2			0.000			0.000
<i>2SLS Diagnostics</i>						
Durbin-Wu-Hausman Test, F (1, 31426) / [P]			50.839 / [0.000]			0.701 / [0.402]
Weak IV test, F (5, 31423) / [Prob > F]			35.983 / [0.000]			35.983 / [0.000]
Sargan Test, Chi2(4) / [P]			4.439 / [0.3498]			4.971 / [0.000]

* p<0.10, ** p<0.05, *** p<0.01

The key independent variable ‘Leadership’ in Table 3 is obtained by cardinalizing and summing across the responses of each worker on their perception of leadership quality, which was monitored along seven dimensions (see Section 3.4).

The results in columns (1) are from pooled OLS, controlling for the full gamut of worker and organisational covariates including geographic region. Columns (2) replace the organisational and region covariates by organisational fixed effect (dummies). Columns (3) report estimates using 2SLS with five IVs in each case, which include organisation age, sole establishment, financial performance, labour productivity, and the quality of good or services, and diagnostic statistics.

DWH test statistics on the job anxiety equation fails to reject Ho (variable exogeneity), hence the preferred specification is the corresponding OLS equation.

All estimations have used the WERS employee sample weights to account for the probability that employees were included in the WERS.

Full descriptive statistics on the outcome and control variables in Table 3 are provided in a separate Appendix Table.