Workplace diversity & employee well-being: a WERS2004 based analysis

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Outline of presentation

- Introduction
- Related theory & literature
- Data
- Empirical methodology
- Preliminary findings
- Conclusion
- Future output

Introduction

- Diversity – differences between social groups in a given (workplace) contexts

  ➔ heterogeneity of employees within a workgroup of interest
- Differences could generally be demographic, occupational, geographic origin, life style, etc
- Key is differences & whether there's a case for inclusion
- Hence interest on groups that have traditionally faced discrimination at work
- There's been considerable change in diversity in recent years

Intro (cont'd)

- Diversity is attributed to:
  - Demographic change
  - Tight labour market conditions
  - Regulatory measures
- Why do employers opt for diverse workforce?
  - At one pole: to reap business benefits that diversity may offer
  - At the opposite pole: to reduce labour costs (driven by supply shortage)
- Diversity policy taking centre stage in recruitment

Intro (cont'd)

- The increasing diversity & interventions despite evidence of widespread discrimination on
  - Gender – Peccei and Lee (2005), Jones *et al.* (2003), Wright & Ermisch (1991)
  - Race/ethnicity – Frijters *et al.* (2006), Shields and Price (2002), Pudney and Shields (2000)
  - Disability – Jones *et al.* (2003)
- If so, then (cost driven) diversity may have adverse impact on employee wellbeing
- There could be a role for policy to address this

Related theory & literature

- Workplace diversity has been addressed through psychology, sociology & management, among others
- Focus here is on economics theories
- The relevant explanations relate to theories of discrimination (Becker 1957; Arrow 1972, 1973; Phelps 1972)

  ➔ discrimination when people behave as if they refuse to change their stereotypes about others

Related theory & lit. (cont'd)

- Two groups of workers, *M* and *F*
- Suppose *M* have a 'test for discrimination' against *F*
- *i*) assume extent of integration does not matter

$$wb_M = (1 - di)wb_F$$

where $d > 0$ & $i = 1$ if workforce is integrated

- *ii*) assume degree of integration matters, so that

$$wb_M = f(e_F / e_T)$$

where $f' < 0$ & e_F & e_T are the *F* & *M*+*F* workers

Data

- The data used is WERS 2004
- The most comprehensive of the WERS series of surveys
- Nationally representative survey of British workplaces
- Use is made of data from the management and employee surveys
- EQ: 22,451 (61% response rate)
- MQ: 2,295 workplaces (64% response)

Data (cont'd)

- 8 facets of JS & 6 measures job related anxiety in wers2004
- Also 'overall' JS & anxiety indicators generated
- Each of the five scale JS & anxiety measures collapsed into a dummy (1 if 'very satisfied' or 'satisfied' & 1 if 'all of the time' or 'never')
- Diversity indices obtained based on info on workforce composition (see next section on indices)
- A range of exogenous variables (employee & establishment) has been used as controls

Data (cont'd)

- Estimation sample, 18029 employees in 1456 estabs.

Table 1: Outcome variables of interest, WERS2004 (*N*=18029)

	Mean	Lineari'd Std Err
Measures of satisfaction with aspects of job		
1. Satisfaction with sense of achievement	0.7051	0.0042
2. Satisfaction with scope for own initiative	0.7194	0.0041
3. Satisfaction with amount of influence	0.5814	0.0045
4. Satisfaction with training you receive	0.5008	0.0046
5. Satisfaction with the amount of pay	0.3551	0.0044
6. Satisfaction with job security	0.6332	0.0044
7. Satisfaction with the work itself	0.7214	0.0041
8. Satisfaction with involvement in decision	0.4095	0.0046
9. Satisfaction with all of the above (gen from 1-8, α=0.7822)	0.6786	0.0042
Measures of how job makes one feel, past few weeks		
10. Do not feel tense at work, past few weeks	0.1262	0.0031
11. Feel calm at work, past few weeks	0.0354	0.0018
12. Feel relaxed at work, past few weeks	0.0298	0.0017
13. Do not feel worried at work, past few weeks	0.2169	0.0039
14. Do not feel uneasy at work, past few weeks	0.3025	0.0043
15. Feel content at work, past few weeks	0.0522	0.0022
16. Feel composed, past few weeks (gen from 10-15, α=0.6943)	0.1039	0.0029
17. Overall wellbeing (gen from 1-8 & 10-15, α=0.7586)	0.3777	0.0045

Data (cont'd)

Table 2: Corr. matrix of JS vars, weighted (*N=18029*)

	Overall JS	JS-ach	JS-init	JS-inf	JS-tra	JS-pay	JS-jsec	JS-work	JS-dec
Overall JS	1.0000								
JS-ach	0.6510	1.0000							
JS-init	0.6539	0.5164	1.0000						
JS-inf	0.6580	0.4643	0.5859	1.0000					
JS-tra	0.4421	0.2632	0.2459	0.2851	1.0000				
JS-pay	0.3512	0.1988	0.1869	0.2255	0.2468	1.0000			
JS-jsec	0.4602	0.2594	0.2381	0.2843	0.2756	0.2604	1.0000		
JS-work	0.6308	0.5574	0.4272	0.4072	0.2788	0.2248	0.3122	1.0000	
JS-dec	0.4741	0.3233	0.3512	0.4302	0.2654	0.2574	0.2500	0.2862	1.0000

Data (cont'd)

Table 3: Corr. matrix of job related anxiety, weighted (*N18029*)

	Overall	Not-tense	Calm	Relaxed	Not-worry	Not-unea	Content
Overall	1.0000						
Not-tense	0.7613	1.0000					
Calm	0.4619	0.3185	1.0000				
Relaxed	0.4603	0.3028	0.7090	1.0000			
Not-worry	0.5586	0.4791	0.2123	0.2171	1.0000		
Not-unea	0.4603	0.4030	0.1745	0.1719	0.5127	1.0000	
Content	0.4263	0.2514	0.3853	0.4126	0.1844	0.1994	1.0000

Data (cont'd)

Table 4: Corr. matrix of overall well-being, JS plus job related anxiety, weighted

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Well-being	1.000													
2. JS-ach	0.435	1.000												
3. JS-init	0.426	0.516	1.000											
4. JS-inf	0.523	0.464	0.586	1.000										
5. JS-tra	0.477	0.263	0.246	0.285	1.000									
6. JS-pay	0.449	0.199	0.187	0.226	0.247	1.000								
7. JS-jsec	0.451	0.259	0.238	0.284	0.276	0.260	1.000							
8. JS-work	0.441	0.557	0.427	0.407	0.279	0.225	0.312	1.000						
9. JS-dec	0.511	0.323	0.351	0.430	0.265	0.257	0.250	0.286	1.000					
10. Not-tens	0.275	0.036	0.028	0.045	0.077	0.071	0.089	0.084	0.030	1.000				
11. Calm	0.205	0.064	0.064	0.079	0.088	0.068	0.077	0.073	0.066	0.319	1.000			
12. Relaxed	0.196	0.069	0.068	0.083	0.083	0.075	0.073	0.073	0.073	0.303	0.709	1.000		
13. Not-wory	0.286	0.010	0.011	0.039	0.072	0.057	0.109	0.060	0.012	0.479	0.212	0.217	1.000	
14. Not-unea	0.372	0.097	0.088	0.111	0.113	0.100	0.165	0.145	0.079	0.403	0.175	0.172	0.513	1.000
15. Content	0.258	0.118	0.104	0.122	0.113	0.119	0.104	0.117	0.123	0.251	0.385	0.413	0.184	0.199

Data (cont'd)

- Diversity indices constructed from establishment level workforce composition as $D^g = 1 - \sum S_k^2$
- Where D^g is gender diversity index & $k = 2$

Table 5: Measures of Workplace Diversity (*N=18029*)

Percentages, mean values across workplaces		
	Mean	Linearised Std. Err.
% Female	48.8393	0.2764
% Ethnic	6.7469	0.1387
% Disabled	1.1639	0.0378
% Over50	21.7913	0.1488
Diversity indices, mean values across workplaces		
Gender diversity	0.3233	0.0014
Ethnic diversity	0.0867	0.0012
Disability diversity	0.0195	0.0004
Age diversity	0.2926	0.0014

Data (cont'd)

Table 6: Average Measures of Workplace *Gender Diversity*, subgroups (*N=18029*)

	Percentages		Diversity indices	
	Mean	Linearised Std. Err.	Mean	Linearised Std. Err.
Weekly pay				
<=110	68.395	0.719	0.299	0.005
111-180	65.137	0.813	0.314	0.005
181-260	51.249	0.652	0.330	0.003
261-360	41.493	0.573	0.325	0.003
>=361	40.397	0.401	0.330	0.002
Establishment size				
5 to 9	55.750	1.320	0.283	0.007
10 to24	56.213	0.712	0.283	0.004
25to49	50.659	0.647	0.293	0.003
50to99	49.513	0.630	0.325	0.003
100to199	45.566	0.526	0.368	0.003
200to499	39.228	0.597	0.344	0.003
500to999	42.541	0.697	0.387	0.004
1000to1999	44.885	1.149	0.357	0.006
2000+	49.326	1.410	0.338	0.005

Data (cont'd)

Table 6: (continued)

	Percentages		Diversity indices	
	Mean	Linearised Std. Err.	Mean	Linearised Std. Err.
Occupations				
Managers and senior officials	45.079	0.761	0.352	0.004
Professional occupations	55.307	0.732	0.344	0.004
Associate professional and technical	50.835	0.615	0.361	0.003
Administrative and secretarial o	55.024	0.583	0.356	0.003
Skilled trades	21.756	0.695	0.250	0.005
Personal service occupations	76.767	0.747	0.254	0.005
Sales and customer service occupation	65.611	0.912	0.329	0.006
Process, plant and machine opera	23.445	0.670	0.272	0.005
Elementary occupations	43.950	0.812	0.309	0.004
Industry				
Manufacturing	23.382	0.400	0.292	0.003
Construction	15.855	0.514	0.234	0.006
W&R Trade	51.372	0.792	0.334	0.004
Hotel, Rest &Transport	39.149	0.840	0.326	0.005
Finance & business service	48.768	0.607	0.371	0.003
Public & community. Services, utilities	52.215	0.582	0.381	0.004
Education	74.638	0.355	0.325	0.004
Health	78.641	0.480	0.265	0.003

Data (cont'd)

Table: (continued)

	Percentages		Diversity indices	
	Mean	Linearised Std. Err.	Mean	Linearised Std. Err.
Ownership				
Public	63.838	0.450	0.319	0.002
Private	44.362	0.321	0.325	0.002
UK	46.950	0.394	0.322	0.002
UK & Foreign	38.978	0.739	0.333	0.004
Foreign	34.377	0.685	0.336	0.004
Public & NA	63.930	0.452	0.316	0.002
Region				
North East	47.157	1.456	0.282	0.008
North West	47.734	0.646	0.343	0.004
Yorkshire & the Humber	45.800	1.010	0.302	0.005
East Midlands	44.478	1.039	0.323	0.006
West Midlands	49.452	1.017	0.321	0.005
East of England	48.340	0.970	0.310	0.005
London	48.806	0.716	0.365	0.004
South East	52.935	0.794	0.320	0.004
South West	48.916	0.907	0.318	0.005
Scotland	49.109	0.830	0.319	0.004
Wales	53.889	1.305	0.295	0.007

Empirical methodology

- The well-being effect of diversity is modelled as

$$wb_{ij} = \eta_{0j} + \beta_1 D_j^g + \beta_2 x_{ij} + \beta_3 x_j + \varepsilon_{ij}$$

- The intercept η_{0j} has a workplace random component where

$$\eta_{0j} = \gamma_{00} + \xi_{0j}$$

- So that our model can be given by

$$wb_{ij} = \gamma_{00} + \beta_1 D_j^k + \beta_2 x_{ij} + \beta_3 x_j + \xi_{0j} + \varepsilon_{ij}$$

Preliminary findings

Table 7: estimation results from RE Logit (unweighted), job satisfaction

	Satisfaction, sense of achievement		Satisfaction, scope for own initiative		Satisfaction, influence on the job		Satisfaction, training on the job		Satisfaction, amount of pay	
	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat
Gender diversity	-0.458	-2.80	0.001	0.01	-0.031	-0.21	-0.489	-2.91	0.211	1.23
ρ	0.049		0.032		0.0342		0.0876		0.08235	
LR test of rho=0	93.400		43.31		64.19		346.880		264.29	
Log-likelihood	-10203.51		-10144.57		-11673.23		-11901.14		-10947.82	
No. of observations	18029									

Preliminary findings (cont'd)

Table 7 (cont'd): estimation results from RE Logit (unweighted) , job satisfaction

	Satisfaction, Job security		Satisfaction, the work itself		Satisfaction, involvement in decision		*Overall (1-8) Satisfaction*	
	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat
Gender diversity	-0.195	-0.94	-0.378	-2.36	-0.285	-1.73	-0.306	-1.83
ρ	0.161525		0.04182		0.073484		0.064054	
LR test of rho=0	844.08		68.78		217.7		160.87	
Log-likelihood	-10947.07		-10132.73		-11173.26		-10582.67	
No. of observations	18029							

Preliminary findings (cont'd)

Table 8: estimation results from RE Logit (unweighted), job related anxiety

	Do not feel tense		Feel calm		Feel relaxed		Do not feel worried		Do not feel uneasy	
	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat
Gender diversity	-0.666	-3.28	-0.892	-2.63	-1.086	-2.90	-0.494	-2.98	-0.546	-3.69
ρ	0.0416355		0.026385		0.047786		0.0293151		0.0264052	
LR test of rho=0	20.67		1.12		2.65		23.91		29.56	
Log-likelihood	-5913.62		-2235.01		-1936.66		-8299.02		-10262.56	
No. of observations	18029									

Preliminary findings (cont'd)

Table 8 (cont'd): estimation results from RE Logit (unweighted), job rlted anxiety+

	Feel Content		Feel Composed (all)		Overall well-being (satisfaction & job related anxiety)	
	Coeff.	Z-stat	Coeff.	Z-stat	Coeff.	Z-stat
Gender diversity	-0.677	-2.38	-0.731	-3.22	-0.275	-1.69
ρ	0.0352611		0.060383		0.069966	
LR test of rho=0	3.59		29.56		208.61	
Log-likelihood	-3169.23		-5028.65		-11120.83	
No. of observations	18029					

Conclusion

- We attempted to measure the well-being effect of gender diversity
- Estimated some seventeen equations on aspects of JS, anxiety & (overall) well-being
- Up to five versions of each of the 17 equations
- Early findings seem to suggest a well-being penalty associated with gender diversity!
- If confirmed, this calls for policy intervention
- Scope for equality training at the workplace and beyond

Forthcoming output/work

- Refined gender diversity related output (eg hpws)
- Ethnic/race, disability & age diversity output
- Investigate whether different results if using the ordinal indicators of JS & anxiety
- Use of weights, if possible extrapolation to pop'n
- Exploiting the nest structure, also introducing higher levels (region for eg)
- Alternative modelling
- Addressing issues of endogeneity

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