The role of top managers in the public sector: Evidence from the English NHS

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Motivation

- From 1980s popular reform model for delivery of public services was from traditional centralised bureaucracies to more specialised and autonomous organisations
- Greater coordination by market mechanisms and contractual relationships rather than hierarchies of bureaucratic authority
- Emphasis on senior managers, giving them greater autonomy, holding them accountable through manager specific compensation, performance related pay, tighter monitoring and dismissal for failure
- Does this model work for large complex public sector delivery organizations?

What we do

- Examine impact of senior managers on performance in context that epitomises shift from traditional bureaucracies to more accountable and autonomous entities
- Evaluate whether differences in organisational performance can be attributed to members of the senior management team
- Focus on key measures of hospital production and top director pay over 14 years
- Exploit considerable movement of top directors across different hospitals to isolate differences in individual performance from persistent differences in hospital characteristics and other time varying factors
- Examine whether top director pay variation is associated with individual contributions to hospital performance

What we find

- Minimal Performance Impact: Senior managers, including CEOs, only account for a small portion of the variance in hospital performance, with most performance differences attributed to hospital-specific factors, rather than individual management
- Non-Portable Managerial Impact: Managerial effects generally not consistent or transferable when directors move across hospitals
- Little Pay-Performance Link: Significant pay variation but not correlated with hospital performance

Outline

- NHS Managerial Reforms
- Data
- Methods
- Results and possible reasons
- Pay for Performance?
- Conclusions

Managerial reform in the NHS

- NHS Hospitals: large organisations, av. 4,500 employees, 75,000 patients per year, multimillion pound turnover
- From late 1980s traditional administrative approach replaced with a highly decentralised model that minicked private sector governance models
  - Corporate governance:
  - Market mechanisms:
  - Top director responsibilty:
  - Director selection:
  - Director remuneration:

Data

- Data on all NHS short term hospitals 2000-14, matched to admin data on performance, staffing, characteristics and data on director pay
- Board composition
  - Core exec positions: CEO, Medical director, Nursing director, Finance Director, HR Director, Other directors
  - Av board size = 6 between 2000-14.
  - Between 50-80% hospitals have a change in at least one director p.a. (12-25% hospitals have a change in CEO, turnover rates similar for other directors)
- Hospital production measures
  - Focus on subset of key politically salient performance measures for NHS hospitals
  - Surplus, waiting time, day cases, length of stay, infection (MRSA) rate; staff satisfaction

Methods

TWFE (AKM 1999) to isolate importance of directors in performance and pay

$$production_{i(j,t)jt} = \boldsymbol{X}'_{jt}\boldsymbol{\beta} + \lambda_t + \alpha_i + \psi_j + \varepsilon_{i(j,t)jt}$$

$production_{i(j,t)jt}$ = production of hospital j in financial year t
$i(j,t)$ = maps hospital j to director i in financial year t, $production_{jt}$ assigned to all directors in hospital j at time t.
$\boldsymbol{X}_{jt}$ = FT status, year of merger, years since merger, beds, technology index, patients aged 0-14, patients aged 60-74, patients aged 75+, male patients
λ_t = financial year effects
α_i = director effects
ψ_j = hospital effects

Methods

Director Pay

$$pay_{ijt} = \boldsymbol{X}'_{jt}\boldsymbol{\beta} + \gamma\ tenure_{ijt} + \boldsymbol{Z}'_{ijt}\boldsymbol{\delta} + \lambda_t + \alpha_i + \psi_j + \varepsilon_{ijt}$$

pay = pay of director i at hospital j in financial year t
$tenure_{ijt}$ = tenure of director i at hospital j in financial year t
$\boldsymbol{Z}_{ijt}$ = board level position of director i at hospital j in t

- Same identification assumptions as for production

Methods:Identification

Connected sets

- Within a set of hospitals connected by director mobility, can identify both director and hospital perm effects
- One large connected set + Kline et al (2020) to deal with limited mobility bias: 7700 obs from 1500 directors, 174 hospitals

▸ Klein

Identification tests

Sorting on match components

- Gain in production/pay from moving from a low to a high performing hospital should be symmetric
- Compare fit of models with and without hospital-by-director effects

Sorting on unit root component

- Directors who are on a positive/neg trend before move do not move to hospitals with higher/lower output

▸ idtests

Methods

Portability

Step 1: Estimate hospital-by-director effects

$$production_{i(j,t)jt} = \boldsymbol{X}'_{jt}\boldsymbol{\beta} + \lambda_t + \eta_{ij} + \varepsilon_{i(j,t)jt}$$

$$pay_{ijt} = \boldsymbol{X}'_{jt}\boldsymbol{\beta} + \gamma\ tenure_{ijt} + \boldsymbol{Z}'_{ijt}\boldsymbol{\delta} + \lambda_t + \eta_{ij} + \varepsilon_{ijt}$$

η_{ij} = hospital-by-director effects

Step 2: Test association between hospital-by-director effects for movers

$$\eta_{in} = \rho_1 + \rho_2\eta_{in-1} + \varepsilon_{in}$$

η_{in}=director i's n-th spell

Results: TWFE Variance decomposition

Production

		Proportion of variance in outcome variable explained by:			
	Obs.	Covariates	Hospital effects	Director effects	Residuals
Surplus					
All directors	7,736	2.71%	25.0%	7.92%	64.3%
		Correlation of hospital and director effects: -0.41			
Only CEOs	1,621	2.26%	26.8%	5.70%	65.2%
Waiting times					
All directors	7,569	54.6%	29.5%	6.0%	9.9%
		Correlation of hospital and director effects: -0.12			
Only CEOs	1,591	53.0%	30.3%	5.4%	11.2%
Day cases					
All directors	7,689	16.6%	74.0%	1.39%	7.96%
		Correlation of hospital and director effects: -0.09			
Only CEOs	1,612	*20.7%*	*73.9%*	*-2.15%*	*7.54%*

Results: TWFE Variance decomposition

Production

	Obs.	Proportion of variance in outcome variable explained by: Covariates	Hospital effects	Director effects	Residuals
Length of stay					
All directors	7,666	42.3%	42.1%	4.03%	11.6%
Correlation of hospital and director effects: -0.18					
Only CEOs	1,599	44.1%	39.6%	4.91%	11.4%
MRSA rate					
All directors	6,868	53.9%	22.2%	8.73%	15.1%
Correlation of hospital and director effects: -0.28					
Only CEOs	1,384	51.8%	23.4%	8.90%	15.9%
Job satisfaction					
All directors	6,353	43.8%	31.2%	5.97%	19.0%
Correlation of hospital and director effects (not bias corrected): -0.26					
Only CEOs	1,241	44.9%	29.0%	5.54%	20.5%

Results: TWFE Variance decomposition:Pay

	Obs.	Proportion of variance in outcome variable explained by: Covariates	Hospital effects	Director effects	Residuals
Directors' pay					
All directors	7,710	40.7%	14.0%	37.8%	7.5%
		Correlation of hospital and director effects: 0.13			
Only CEOs	1,606	27.3%	20.7%	35.3%	16.7%

Results: Summary and possible reasons

Results

- Director effects explain little of the variance in performance
- Little evidence of portability in performance
- Director effects important in pay and portable

Is it short tenure?

- Examine association between total time in post and hospital-by-director effect
- Maybe: those that are in post longer have higher output

Endogenous sorting of managers to hospitals?

- Identify hospitals which are difficult to manage (prestigious)
- Estimate probability of moving to such a hospital as a function of the director's hospital-by-director fixed effect at their previous hospital
- No evidence that good managers are subsequently hired by bad hospitals

Pay for Performance?

- Reforms gave local boards pay settings responsibilities for directors to enable them to attract talent and align behaviour to hospital needs
- Director's limited impact on production but persistent pay differentiation across directors raises questions about effectiveness
- Are pay and performance linked?
- Examine this three ways
  - Correlation between director's fixed effects in pay and performance
  - Correlation between director's within spell pay and performance
  - Evolution of pay - and peformance - before and after a director's move

Pay for Performance? Summary

- No differences in pay before a move, upon moving pay jumps by around £4000
- Increases larger for prestigious hospitals and smaller during periods with less competition for managerial talent (excess supply of hospital directors in periods of hospital closures)
- No correlation with changes in production

Conclusions

What we find

- Little evidence of top director influence on hospital performance wrt key targets and staff satisfaction
- Not due to endogenous sorting
- Suggestive evidence that in post for too short a time to have an effect
- Differences in pay are generally uncorrelated with performance

Conclusions

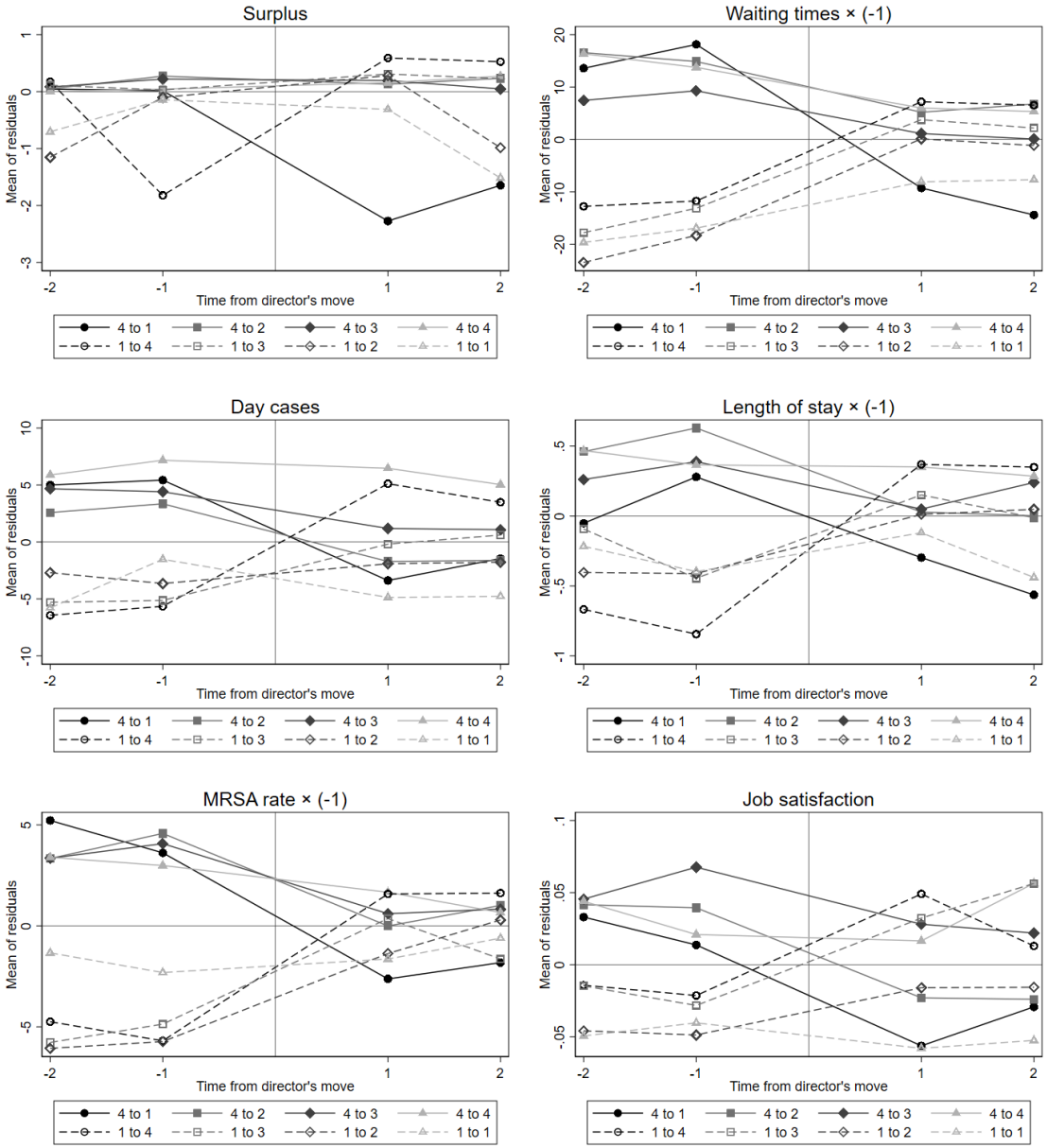
Potential explanations

- Lack of managerial talent - consistent with short tenures and pay premia connected to moves
- Supply of managers was adequate but reforms could not overcome political pressures from central government
- Short term managers not able to manage complex organizations in which medical professionals have long tenure
- Maybe instead focus on training cadres of middle managers in management (Bloom et al 2015)
- Regardless of underlying drivers raise concerns about government mimicking arrangements of private sector for large, complex organisations

"Most of the senior [managerial] people seem genuine, intelligent people, who initially create the impression that they will solve obvious, long-running problems. A year or so later, it always becomes apparent that nothing will change. . . . I suspect that the central NHS organisation gives them very little room for manoeuvre or so much work to serve the machinery of bureaucracy, that they never actually make the decisions that I would expect them to be capable of." (Clinical Director)
[Powell and Davies, 2016]

Thank you

Identification tests: Sorting on match and Unit Root



Identification tests: Tests for match effects

	Surplus	Waiting times	Day cases	Length of stay	MRSA rate	Job satis-faction	Direc-tors'-pay
Hospital and director effects							
Adjusted R^2	0.172	0.871	0.893	0.851	0.805	0.751	0.903
Hospital-by-director effects							
Adjusted R^2	0.177	0.887	0.903	0.856	0.810	0.756	0.924
Observations	7,736	7,569	7,689	7,666	6,868	6,353	7,710

back

Kline et al. (2020)

back

- Leave-one-out estimator to obtain unbiased estimates of covariance between hospital and director effects
- Step 1:
  Leave-one-out estimate of i-th error variance: $\hat{\sigma}_i^2 = pay_{ijt}(pay_{ijt} - \boldsymbol{X}'_{jt}\hat{\boldsymbol{\beta}}_{-ij} - \hat{\gamma}_{-ij} tenure_{ijt} - \boldsymbol{Z}'_{ijt}\hat{\boldsymbol{\delta}}_{-ij} - \hat{\lambda}_{t(-ij)} - \hat{\alpha}_{i(-ij)} + \hat{\psi}_{j(-ij)})$
  where $\hat{\beta}_{-ij}$, $\hat{\gamma}_{-ij}$, $\hat{\boldsymbol{\delta}}_{-ij}$, $\hat{\lambda}_{t(-ij)}$, $\hat{\alpha}_{i(-ij)}$ and $\hat{\psi}_{j(-ij)}$ are OLS estimates of parameters in TWFE equation if director-hospital combination ij left out
- Step 2:
  Leave-one-out estimate $\hat{\sigma}_i^2$ "plugged in" to covariance matrix to obtain heteroskedasticity-unbiased estimate of sampling variability of $\hat{\alpha}_i$ and $\hat{\psi}_j \Rightarrow$ use these to bias-correct estimate of covariance between hospital and director effects