

Hospital reform in the NHS: Evaluating the impact of Foundation Trusts*

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Abstract

Aims: Foundation Trusts (FTs) were introduced in 2004/5 and gave NHS hospital trusts the opportunity to become independent not-for-profit public benefit corporations. Whilst remaining in the public sector, they were granted greater financial flexibility than non-FTs and a range of other freedoms (including freedoms on recruitment and rewarding staff). We analyse the effect of FTs policy by testing whether FT status has produced any differences in hospital performance relative to non-FTs.

Data and methods: We use a range of hospital performance data including financial measures (reference costs index and retained surplus) and staff satisfaction indicators from 2002/3 to 2007/8. Comparisons of hospital performance between FTs and non-FTs are potentially confounded by selection bias as trusts can volunteer for FT status (subject to performance requirements). In addition, other policies may have affected all hospitals over time, making it difficult to isolate the impact of FT status. We therefore use a range of methods aimed at estimating the impact of FT policy more robustly.

Results: Initial results suggest FTs perform better than non-FTs in terms of better financial outcomes (lower reference costs index and higher retained surplus). Staff satisfaction indicators do not differ significantly between FTs and non-FTs with the exception of the variable “intention to leave” which suggests that staff in FTs are less likely than those in non-FTs to be thinking of leaving or looking for another job. We discuss the implications of the results for the assessment of FT policy.

1. Introduction

In 2003, the UK Parliament passed the Health and Social Care Act to create a new type of organisation transforming English NHS Trusts into Foundation Trusts (FTs) (Health and Social Care Act, 2003). Whilst remaining in the public sector, these new organisations were given greater financial flexibility than non-FTs and a range of other freedoms, including freedoms on recruitment and rewarding staff.

Applying for FT status is voluntary, but access is dependent on the performance of Trusts: only the best performing Trusts are allowed to apply for Foundation status.

* Work in progress. Consult authors before citation or quotation.

The first phase of policy implementation occurred in 2004/05 when 25 acute and specialist Trusts became fully operative as FTs. The number of FTs increased after 2004/05 rising to 72 acute and specialist Trusts in 2007/08 and currently there are 129 FTs (at March 2010). There are signals that the new government in England will support the continuation of the FT policy (Conservative Party Manifesto 2010).

With increased planning flexibility, extended freedoms and ability to retain surpluses, FTs are expected to channel investment to local needs while improving national targets. Previous analysis (Marini et al. 2007) investigated whether the policy intervention produced any difference in the financial management of FTs compared with non-FTs. The results suggested that there had not been any significant change following the introduction of FTs. The analysis, however, covered only one year of post policy implementation, with only 10 Trusts being FTs for the entire financial year 2004/05. Thus, these results may reflect the relatively early stage of the FT process. The aim of this study is to extend earlier work in two ways: updating the assessment of the impact of the policy, which has been extended to more Trusts over a longer time period; and examining additional key performance variables related to staff satisfaction and views of their working environment in order to test whether the policy made any significant impact in terms of internal structure and organisational behaviour.

Sections 2 and 3 present the methods and the data. Section 4 describes the results. Section 5 concludes with some observations and issues for discussion.

2. Methods

We use a difference in difference (DID) methodology to test whether there are any differences in the variables of interest between FTs and non-FTs as response to the policy:

$$y_{it} = \beta_0 + \beta_1 F_i + \sum_{t=1}^6 \beta_{2t} D_t + \beta_3 X_{it} + \sum_{t=1}^6 \delta_t F_i D_t + \varepsilon_{it}$$

where y_{it} is the key policy indicator, F_i is a dummy variable for Foundation status where $F_i = 1$ if the Trust is a FT and 0 otherwise, D_t is a year dummy with the baseline year set to 2004/05 and X_{it} is a vector of covariates. The coefficient β_1 is the effect of being a FT, rather than a non-FT, in year 2004/05. The DID coefficients δ_t give the difference between FTs and non-FTs in year t , compared with the difference between FTs and non-FTs in year 2004/05. Therefore, the difference between FTs and non-FTs in year t is given by $\beta_1 + \delta_t$.

The effect of Foundation status on FTs is tested by comparing the difference between FTs and non-FTs when the policy intervention was in effect (i.e. in 2004/05, 2005/06, 2006/07 and 2007/08) with the difference between FTs and non-FTs in the year before the introduction of FTs (i.e. in 2003/04). Since 2004/05 is our baseline year, $\beta_1 - (\beta_1 + \delta_2) = -\delta_2$ is the difference between FTs and non-FTs in 2004/05 against 2003/4, while $(\beta_1 + \delta_t) - (\beta_1 + \delta_2) = \delta_t - \delta_2$ is the difference between FTs and non-FTs in t against 2003/04, where $t = 2005/06, 2006/07$ and $2007/08$.

An important shortcoming of the DID method is that it relies on the crucial assumption that assignment of Trusts to the treatment and control groups (the FTs and non-FTs, respectively) is not random. However, in the context of the reform under study, this assumption is violated as Trusts can volunteer for FT status (subject to performance requirements). Thus, the estimates provided by the DID method may be biased by the existence of confounding factors. The propensity score matching method gives a useful way to control for the existence of these confounding factors based on the idea that the bias is reduced when the comparison of outcomes is performed using treated and control Trusts that are as similar as possible (Becker and Ichino, 2002). In our study, we use this method to match FTs with non-FTs following the same approach proposed by Marini et al. (2008). We therefore use two comparator groups to estimate the effect of the policy intervention: all non-FTs (105 Trusts) and a matched control group of non-FTs generated by the propensity score matching (94 Trusts). We estimate a variety of panel data models, including pooled ordinary least squares (OLS), random-effects and fixed-effects specifications. Results from all these three estimation techniques are provided in section 4.

3. Data

Our data cover all acute Trusts in England for a period of 6 years between 2002/03 and 2007/08. The database includes 2 years of data prior to the introduction of FTs (2002/03 and 2003/04) and 4 years of data post policy intervention (2004/05, 2005/06, 2006/07 and 2007/08).

Dependent variables

We use the retained surplus (deficit) measured as proportion of total expenditure and the Reference Cost Index (RCI) as indicator of financial performance of Trusts. Both retained surplus (deficit) and total expenditure were obtained from the Chartered Institute of Public Finance and Accountancy (CIPFA) for non-FTs and for FTs for the fraction of the year in which FTs were non-FTs. For the remaining months of the financial year, data for FTs were drawn from the annual Income and Expenditure Accounts provided by the Finance Department of each FT.

Data on RCI for all FTs and non-FTs were compiled from the Department of Health. All inpatient elective and non-elective schedules used for the reference costs dataset are based on data truncation, excluding bed days that fall outside of nationally set lengths of stay (trimpoints). The costs of any days beyond these trimpoints are excluded to provide a like-to-like comparison of activity and costs. The RCI was also adjusted by the market forces factor (MFF) in order to take account of some areas of the country with higher costs for staff, land or buildings.

In order to investigate whether the FT policy had any impact in terms of internal factors, we also explore a range of performance indicators derived from the NHS National Staff Survey undertaken by the Care Quality Commission. These staff indicators include the following: percentage of staff working extra hours; support from immediate managers; percentage witnessing potentially harmful errors in last month, near misses or incidents; job satisfaction; intention to leave. Percentage of staff working extra hours indicates the percentage of staff saying in an average week that they work longer than the hours for which they are contracted. Support from immediate managers assesses the extent to which staff feel their manager or

supervisor provides them with support, guidance and feedback on their work and takes into account their opinions before making decisions that affect their work. Percentage witnessing potentially harmful errors, near misses or incidents in last month is the percentage of staff who, in the previous month, had witnessed at least one error or near miss that could have potentially hurt patients or staff. Staff satisfaction measures satisfaction in terms of recognition for good work; support from immediate managers and colleagues; freedom to choose methods of working; amount of responsibility; opportunities to use skills; and the extent to which the trust is seen to value the work of staff. Finally, intention to leave is a measure of the extent to which staff are considering leaving their organisation, and looking for a new job either within or outside of the NHS. This variable asks staff to indicate in a scale ranging from 1 (=strongly disagree) to 5 (strongly agree) to what extent they agree with the following questions: “I often think about leaving this trust”; “I will probably look for a new job at a new organisation in the next 12 months”; “as soon as I can find another job, I will leave this trust”. All these variables are available from year 2003/04.

Explanatory variables

We use a number of explanatory Trust variables to make our analysis more robust by allowing for the influence of potential confounding factors. The data were collected from several sources, including the Hospital Episode Statistics (HES), the Hospital Activity Statistics (HAS), the Department of Health (DoH) and Healthcare Commission. Table 1 provides some descriptive statistics of these variables. They include measures on activity (ep_spell and tot_imaging_tests_occupbeds), efficiency on use of resources (alos, daycase_spell, ipd_spell and occuppc), capital inputs (avbeds), case-mix (emerg_spell), key targets (inwtgtstpc and outwt13wkpc), performance indicators (medianwait and staff_survey_attitude),¹ data quality (info_gov), type of Trust (specialist) and degree of competition in the geographical market (competition). We also use a set of dummies for the 10 Strategic Health Authorities (SHAs) to which each hospital belongs, in order to take into account for

¹ This indicator was provided by the Healthcare Commission and it is derived from the National Staff Survey for year 2003/04. It is involved taking the average of the staff intention to leave and staff job satisfaction scores.

further regional differences in the country. The 10 SHAs are treated as fixed for the whole period, although they only came into existence in 2006.

4. Results

Table 2 shows the results for the probit model that we use to match FTs with non-FTs. The sample consisted of 172 trusts in the final propensity score and the model produced a Pseudo R-squared of 0.26.² Once FTs and non-FTs are matched, the unmatched comparison units out of the common support are discarded and are not directly used in estimating the treatment impact (Dehejia and Wahba, 2002). Significant matching variables were sought over the database of trusts variables. The final set of regressors selected produced the highest number of Trusts in the control group under the common support assumption. The results from the probit show that the probability of becoming a FT in the pre-treatment year is associated with higher number of available beds, higher proportion of day-case admissions and shorter length of stay. FTs also perform better in terms of both measures of waiting times criteria, staff attitudes, and compliance with targets on information governance and data confidentiality.

Using both all non-FTs and matched non-FTs as our comparator groups, we explore a variety of estimation techniques, including pooled OLS, random-effects and fixed-effects specifications. OLS works fine if there are no omitted variables in the model. However, if there is some residual unobservable efficiency or quality across Trusts, OLS produces biased estimates. In contrast, the fixed-effects specification captures all unobserved inefficiency and quality through individual fixed effects. This model works well if there is sufficient variation in the regressors over time. However, if the covariates do not vary to a great extent across periods, the fixed effects provide inefficient estimates, i.e. suggest an insignificant effect even if there is one. In this study, covariates only show little variation over a short period of time and the random-effects provide a more efficient alternative compared to the fixed-effects. However, the estimates produced by the random-effects are also unbiased as long as

² There were five blocks of trusts in the final propensity score model, although these were pooled together to produce a control group of 94 trusts under common support, compared with 68 in the treatment group with the balancing property satisfied.

there is no correlation between unobservable efficiency or quality and the covariates. The results from the three estimation techniques are all reported in Tables 3-5. They provide a useful comparison with one another regarding the stability of coefficient estimates. Robust standard errors and clustering on trusts were employed as well.

Retained surplus (deficit)

Table 3 reports the results for the difference in difference regression models in which we test whether the treatment group (FTs) relative to the two control groups (all non-FTs and matched non-FTs) were any different in terms of financial surplus (deficit) between year t and the baseline year 2004/05.

The FT coefficients indicate the overall difference in the performance measure between FTs and the control groups in 2004/05, while the year coefficients show the average changes for all types of Trusts between year t and the baseline year 2004/05. As Table 3 shows, the FT coefficients are always positive and significant across specifications. The year coefficients indicate that retained surplus (deficit) declines between 2002/03 and 2005/06, whereas it increases in the last two years of analysis. The DID estimates for the change between FTs and the control Trusts in the two years before the policy intervention relative to 2004/05 are all negative and significant across specifications. Moreover, the coefficients for the difference in the first year after the policy intervention relative to 2004/05 are always positive and significant. We find no significant changes between the remaining periods and 2004/05. These results are consistent with the raw plot in Figure 1 and show evidence that in 2004/05 and 2005/06 FTs have experienced higher surplus on average, compared with both groups of non-FTs.

Figure 4 (a) plots the difference in the retained surplus (deficit) between FTs and all non-FTs over time using the random-effects estimates.³ As this figure shows, FTs always have higher surpluses compared with non-FTs, with the difference being significant since the pre-intervention year (2003/04).

³ Estimates from OLS show very similar trends and they are not presented in the paper.

We formally test the effect of Foundation status on FTs by comparison of the difference between FTs and non-FTs when the policy intervention was in effect (i.e. in 2004/05, 2005/06, 2006/07 and 2007/08) with the difference in the year before the introduction of FTs (2003/04). These results are reported in Table 6. Relative to 2003/04, the change between FTs and the control Trusts is always positive in the years after the policy intervention. The difference is also significantly different from zero in 2004/05 and 2005/06, suggesting that that the FT policy could have sustained the higher performance of FTs leading to a significant higher surplus relative to non-FTs.

Reference Cost Index (RCI)

Table 4 reports the regression results for the RCI. As this table shows, the FT coefficients are always negative and significant across all specifications. Moreover, the DID estimates for 2002/03 and 2003/04 are negative and significant over all estimation models, whereas the DID coefficients for the years after 2004/05 are not statistically significant. These results indicate that in the policy intervention year FTs have decreased their RCI relative to both all non-FTs and matched non-FTs. The difference was significantly higher in the two years before 2004/05, whereas it does not change significantly in the last years of analysis. This pattern is also reflected in Figure 2, which indicates that FTs always have lower RCI, compared with all non-FTs. The gap increases between 2003/04 and 2004/05, while falls back to the initial level after the first year of policy intervention.

Figure 4 (b) plots the difference in RCI between FTs and all non-FTs over time using the results provided by the random-effects specification. FTs report lower RCI relative to non-FTs over the entire period of study, with the difference being statistically significant since the pre-intervention year.

Testing for the effect of the policy, we find that the change between FTs and all non-FTs in every year from 2004/05 to 2006/07 is negative relative to year 2003/04. As Table 6 shows, the difference is also significantly different from zero in 2004/05 and 2005/06, suggesting that the FT policy might have had some effects in terms of financial performance leading the FTs to decrease the RCI relative to non-FTs.

Staff Related Variables

Our results suggest that the FT policy did not have any significant impact in terms of all the staff related performance indicators with the exception of intention to leave. Therefore, we discuss in detail below the results for this indicator only.

Staff turnover (intention to leave)

Table 5 shows the results from the DID models for staff turnover (intention to leave). As this table shows, the FT coefficients are always negative and significant across all specifications. Moreover, the DID estimates for 2006/07 and 2007/08 are negative and significant over all estimation techniques. These results indicate that in the first year of the policy FTs experience a decrease in the staff intention to leave relative to both all non-FTs and matched non-FTs. This difference also increases significantly in the last two years of analysis. This finding is also consistent with the trends displayed in Figure 3, which shows that our indicator of staff intention to leave is always lower for FTs relative to both groups of non-FTs, with the gap being higher in the last years of analysis.

Figure 4 (c) plots the difference in staff turnover over time using the random-effects coefficients. As this figure shows, FTs experience lower staff turnover compared with non-FTs. The gap is significantly different from zero in all years of study and decreases over time.

Comparison of the difference between FTs and all non-FTs in each year from 2004/05 to 2007/08 with the difference between FTs and all non-FTs in the pre-policy year allows us to test for whether the policy had any effects in terms of quality. As shown in Table 6, our results suggest that the FT policy might have had some effects in this regard, as the indicator of staff intention to leave decreases over time in the FTs relative to all non-FTs.

5. Conclusions

The FT reform was part of the general strategy to shift away from a centrally managed system and devolve freedom and responsibility to lower levels of decision-making.

Therefore, the evaluation of this policy is of crucial importance not only for UK policy makers, but also for all systems that might consider similar transitions in the future.

Using a panel of data over the period 2002/03 to 2007/08, this study has tested whether the FT policy produced any difference in the financial management of FTs relative to non-FTs. Our results provide evidence that the policy might have sustained the already higher financial performance of FTs as measured by higher surpluses and lower reference costs, although this effect is found to be significant only in the first years of policy implementation (2004/05 and 2005/06). In addition, we have explored the impact of the policy on a set of performance indicators related to staff variables. We find the policy had no significant effects in terms of almost all the variables used in our analysis. The only exception is the indicator of staff intention to leave. Relative to non-FTs, our results suggest that FTs are performing better in terms of having fewer staff intending to leave, following the introduction of the FT policy.

We have focused in this analysis on the variables which may be directly affected by key elements of the FT policy: greater financial freedom and greater freedom over staffing policy. Ideally we would want to test whether better financial performance comes at the cost of lower quality patient care. Some of the variables that related to staff satisfaction can be interpreted as indicators of quality of care, such as percentage reporting or witnessing errors or near misses, support and guidance available from senior staff. These variables were not found to be significant in our analysis and therefore we may be able to infer there is no evidence for a *detrimental* impact on quality of care, at least in terms of these measures. The positive and significant impact we found on the intention to leave indicator suggests that to the degree that such intentions may in part reflect quality of the environment and the care provided, then FT policy has a positive effect. FTs may be able to attract and retain more satisfied and positive staff that provide higher quality care (Dixon 2002). However, the effect may also be associated with relative salaries although evidence suggests there has been limited use by FTs of their freedom to set salary levels differently from the national levels (Healthcare Commission 2005; Taylor 2007).

Our analysis is preliminary and we can suggest a number of points for discussion: Are our measures of performance satisfactory or could they be improved or extended? The level of surplus amongst FTs, whilst originally viewed as a sign of successful financial management, has been subject to debate as the accumulated surpluses have built up and have not been re-invested widely for patient benefit. Some of the staff related variables can be interpreted as quality indicators in terms of what they suggest about the work environment and culture but are not direct measures of quality of patient care. The intention to leave indicator is complex as it may be influenced by a wide range of factors and we do not have all the data required to explore these. Are there improvements to be made to our methodology? We have tried to make it as robust as possible and the consistency of results across specifications is reassuring, but we are open to suggestions. What further work could we undertake? We are currently exploring other measures and we have some early results on staff mix (medical and administrative staff) and salary expenditure on groups of staff that we do not have space to discuss here, but can discuss further at the conference.

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Table 1. Descriptive statistics and variable definitions, pooled data, years 2002/03-2007/08

Variable	Definition	Source	N	Mean	Std dev	Min	Max
surplus	Retained surplus (deficit) for the financial year as proportion of total expenditure	CIPFA and Annual Accounts	1033	-4.58E-06	0.0000314	-0.0002168	0.0001119
rci	Reference Cost Index excluding excess bed days adjusted by the Market Forces Factor (MFF)	DoH	1035	100.4867	10.79685	74.67433	165
job_satisfaction	Job satisfaction of staff	CQC	859	3.422759	0.0883965	3.11	3.7
staff_turnover	Staff intention to leave	CQC	859	2.682317	0.1360656	2.25	3.17
FT	Dummy = 1 if the trust is a FT, 0 otherwise	Derived-time invariant	1035	0.3942029	0.4889151	0	1
FT-matched	Dummy = 1 if the trust is a FT, 0 otherwise in the matched control group	Derived-time invariant	960	0.425	0.4946007	0	1
2002/03	Dummy = 1 if year = 2002/03, 0 otherwise	Derived-time invariant	1035	0.1700483	0.3758569	0	1
2003/04	Dummy = 1 if year = 2003/04, 0 otherwise	Derived-time invariant	1035	0.1671498	0.3732899	0	1
2005/06	Dummy = 1 if year = 2005/06, 0 otherwise	Derived-time invariant	1035	0.1671498	0.3732899	0	1
2006/07	Dummy = 1 if year = 2006/07, 0 otherwise	Derived-time invariant	1035	0.1652174	0.3715562	0	1
2007/08	Dummy = 1 if year = 2007/08, 0 otherwise	Derived-time invariant	1035	0.163285	0.3698042	0	1
occuppc	Percent occupied beds	HAS	1034	84.24086	6.432766	57.3205	100
tot_imaging_tests_occupbeds	Total imaging and radiodiagnostic tests per occupied bed	Derived from HAS	1010	300.2448	77.86886	9.542674	1075.831
medianwait	Median waiting time (days)	HES	1020	53.8835	22.28169	6	295
ep_spell	Total inpatient episodes per total inpatient spells	Derived from HES	1023	1.126532	0.0685652	1	1.375961
alos	Average length of stay	HES	1023	5.342326	1.739502	0.7	23.1
daycase_spell	Number of day cases per total inpatient spells	Derived from HES	1023	0.3603272	0.1108981	0	0.8589125
emerg_spell	Number of emergency admissions per total inpatient spells	Derived from HES	1023	0.3480341	0.0992103	0.0022692	0.6176331
specialist	Dummy = 1 if the trust is a specialist trust, 0 otherwise	Derived-time invariant	1035	0.0695652	0.2545358	0	1

competition	Number of hospitals within a 20 km radius	Derived-time invariant	1035	5.246377	7.758079	0	28
SHA1	Dummy = 1 if Strategic Health Authority = North East	Derived-time invariant	1035	0.0463768	0.2104015	0	1
SHA2	Dummy = 1 if Strategic Health Authority = North West	Derived-time invariant	1035	0.1690821	0.3750056	0	1
SHA3	Dummy = 1 if Strategic Health Authority = Yorkshire and The Humber	Derived-time invariant	1035	0.0869565	0.2819076	0	1
SHA4	Dummy = 1 if Strategic Health Authority = East Midlands	Derived-time invariant	1035	0.0502415	0.2185486	0	1
SHA5	Dummy = 1 if Strategic Health Authority = West Midlands	Derived-time invariant	1035	0.115942	0.3203102	0	1
SHA6	Dummy = 1 if Strategic Health Authority = East of England	Derived-time invariant	1035	0.1043478	0.305859	0	1
SHA7	Dummy = 1 if Strategic Health Authority = London	Derived-time invariant					
SHA8	Dummy = 1 if Strategic Health Authority = South East Coast	Derived-time invariant	1035	0.105314	0.307106	0	1
SHA9	Dummy = 1 if Strategic Health Authority = South Central	Derived-time invariant	1035	0.0289855	0.1678469	0	1
SHA10	Dummy = 1 if Strategic Health Authority = South West	Derived-time invariant	1035	0.1043478	0.305859	0	1
info_gov‡	Information governance and data confidentiality	DoH	346	1.635807	0.1209628	1.073531	1.915012
staff_survey_attitude‡	Performance indicator of staff attitude	Healthcare Commission	346	3.412694	0.0849726	3.152583	3.634162
ipd_spell‡	Inpatient days per total inpatient spells	Derived from HES	1023	3.492581	0.8795411	0.0933508	8.312541
avbeds‡	Number of available beds	HAS	1000	730.8792	410.7932	13.53973	2669.77
inwtgtstpc‡	Percentage of inpatients waiting longer than standard for elective admission	DoH	859	0.0433155	0.2582193	0	4.987775
outwt13wkpc‡	Total number o patients waiting over 13 weeks for outpatient appointment	DoH	522	80.79978	9.349913	52.66187	100

‡ Used in probit model, 2003/04 data only.

Figure 1. Retained surplus (deficit) for the financial year as proportion of total expenditure

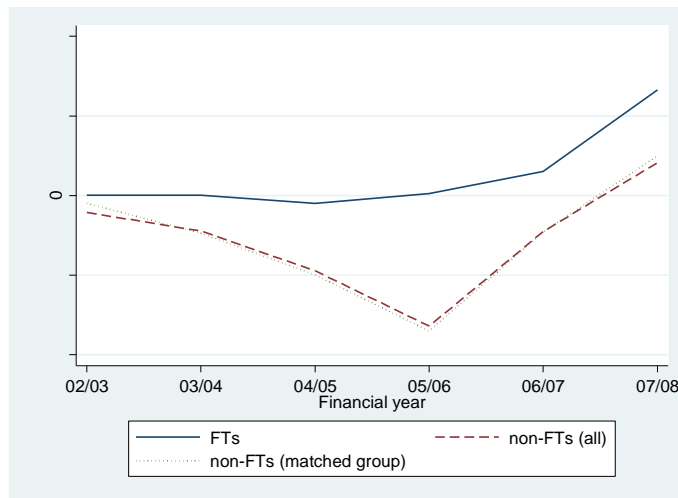


Figure 2. Reference Cost index adjusted by the Market Forces Factor for the financial year

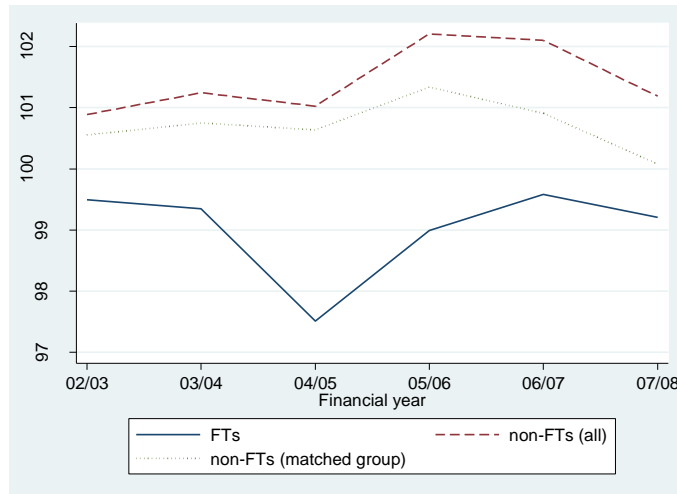


Figure 3. Intention to leave of staff for the financial year

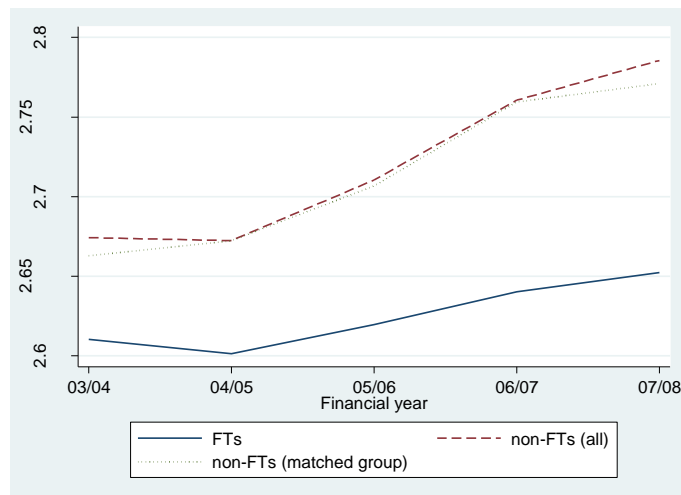


Table 2. Probit model for the selection of the appropriate comparator group

Avbeds	0.000105 (-0.38)
daycase_spell	0.209 (-0.13)
ipd_spell	-0.231 (-1.46)
Inwtgtstpc	-1.806 (-1.00)
outwt13wkpc	0.0594*** (-4.11)
info_gov	2.185** (-2.08)
staff_survey_attitude	4.055*** (-2.72)
Constant	-21.68*** (-4.05)
N	172
R-squared	0.2595

Robust *t* statistics in parentheses. * Significant at 10%; ** Significant at 5%; *** Significant at 1%.

Table 3. Regression results for difference in difference model for overall effect of FT status on retained surplus (deficit)

	All acute Trusts			Matched group		
	Pooled OLS	RE	FE	Pooled OLS	RE	FE
FT	0.0000159*** (-4.03)	0.0000158*** (-4)		0.0000164*** (-3.91)	0.0000161*** (-3.83)	
2002/03	0.0000155*** (-3.08)	0.0000155*** (-3.08)	0.0000146** (-2.18)	0.0000177*** (-3.39)	0.0000172*** (-3.27)	0.0000116* (-1.72)
2003/04	0.0000100*** (-2.94)	0.00000985*** (-2.91)	0.00000995*** (-2.67)	0.0000108*** (-2.9)	0.0000107*** (-2.89)	0.0000113*** (-2.8)
2005/06	-0.0000139*** (-3.56)	-0.0000139*** (-3.55)	-0.0000136*** (-3.09)	-0.0000145*** (-3.46)	-0.0000145*** (-3.47)	-0.0000150*** (-3.09)
2006/07	0.00000892* (-1.93)	0.00000887* (-1.92)	0.00000908* (-1.67)	0.00000922* (-1.81)	0.00000898* (-1.77)	0.00000811 (-1.29)
2007/08	0.0000273*** (-6.05)	0.0000275*** (-6.06)	0.0000284*** (-4.9)	0.0000281*** (-5.74)	0.0000282*** (-5.67)	0.0000283*** (-3.78)
FT X 2002/03	-0.0000111** (-2.13)	-0.0000110** (-2.10)	-0.0000119** (-2.03)	-0.0000145*** (-2.72)	-0.0000141*** (-2.65)	-0.0000140** (-2.45)
FT X 2003/04	-0.00000740* (-1.90)	-0.00000721* (-1.86)	-0.00000690* (-1.67)	-0.00000812* (-1.94)	-0.00000793* (-1.91)	-0.00000780* (-1.76)
FT X 2005/06	0.0000161*** (-3.66)	0.0000162*** (-3.68)	0.0000166*** (-3.41)	0.0000164*** (-3.52)	0.0000166*** (-3.56)	0.0000174*** (-3.38)
FT X 2006/07	-0.0000019 (-0.28)	-0.00000172 (-0.26)	-0.00000106 (-0.14)	-0.00000255 (-0.36)	-0.0000022 (-0.31)	-0.00000128 (-0.17)
FT X 2007/08	-5.22E-08 (-0.01)	-9.40E-08 (-0.02)	-6.21E-08 (-0.01)	-0.00000145 (-0.24)	-0.00000148 (-0.25)	-0.00000156 (-0.23)
Constant	0.0000478 (-1.61)	0.0000534* (-1.74)	0.0000994 (-1.43)	0.0000436 (-1.47)	0.000051 (-1.64)	0.0000621 (-0.87)
N	993	993	993	924	924	924
R-squared	0.2343	0.234	0.1039	0.2469	0.2464	0.1006

Robust t statistics in parentheses. * Significant at 10%; ** Significant at 5%; *** Significant at 1%. Covariates used in the models include: occupp, tot_imaging_tests_occup_beds, medianwait, ep_spell, alos, daycase_spell, emerg_spell, rci and SHA1-SHA10 dummies.

Table 4. Regression results for difference in difference model for overall effect of FT status on RCI

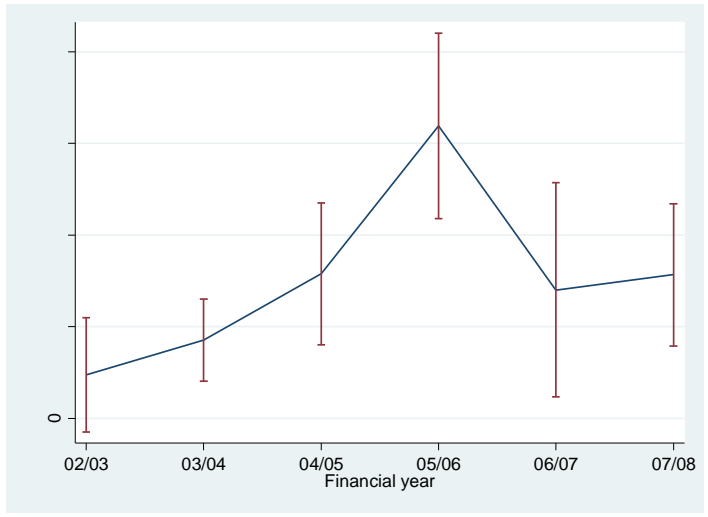
	All acute Trusts			Matched group		
	Pooled OLS	RE	FE	Pooled OLS	RE	FE
FT	-4.855*** (-3.18)	-5.023*** (-3.54)		-4.699*** (-3.06)	-4.953*** (-3.53)	
2002/03	-0.101 (-0.05)	1.212 (-0.83)	1.543 (-0.78)	-1.577 (-0.82)	0.655 (-0.4)	2.029 (-0.85)
2003/04	-0.757 (-1.17)	-0.6 (-0.97)	-0.0677 (-0.09)	-0.619 (-0.93)	-0.671 (-1.04)	-0.544 (-0.70)
2005/06	1.934*** (-2.81)	1.787*** (-2.63)	1.434* (-1.82)	1.401* (-1.97)	1.330* (-1.91)	1.29 (-1.55)
2006/07	2.439** (-2.33)	2.205** (-2.18)	1.687 (-1.4)	1.627 (-1.46)	1.523 (-1.44)	1.562 (-1.17)
2007/08	1.768 (-1.4)	1.473 (-1.34)	0.966 (-0.75)	1.148 (-0.87)	1.057 (-0.9)	1.092 (-0.67)
FT X 2002/03	3.358** (-2.27)	2.846* (-1.93)	2.204 (-1.32)	3.425** (-2.22)	2.914* (-1.92)	2.614 (-1.54)
FT X 2003/04	2.468** (-2.06)	2.224* (-1.85)	1.904 (-1.44)	2.256* (-1.88)	2.217* (-1.81)	2.109 (-1.56)
FT X 2005/06	0.0997 (-0.09)	0.184 (-0.17)	0.345 (-0.29)	0.648 (-0.6)	0.724 (-0.66)	0.744 (-0.61)
FT X 2006/07	0.361 (-0.21)	0.477 (-0.29)	0.739 (-0.41)	1.335 (-0.77)	1.356 (-0.8)	1.354 (-0.74)
FT X 2007/08	1.445 (-0.9)	1.215 (-0.77)	1.327 (-0.76)	2.272 (-1.39)	1.885 (-1.17)	1.808 (-1.02)
Constant	154.9*** (-10.28)	152.5*** (-14.17)	136.1*** (-9.06)	150.4*** (-10.18)	142.9*** (-13.94)	133.2*** (-8.6)
N	995	995	995	925	925	925
R-squared	0.329	0.3167	0.1532	0.2725	0.2571	0.1324

Robust t statistics in parentheses. * Significant at 10%; ** Significant at 5%; *** Significant at 1%. Covariates used in the models include: occuppc, tot_imaging_tests_occup_beds, medianwait, ep_spell, alos, daycase_spell, emerg_spell and SHA1-SHA10 dummies.

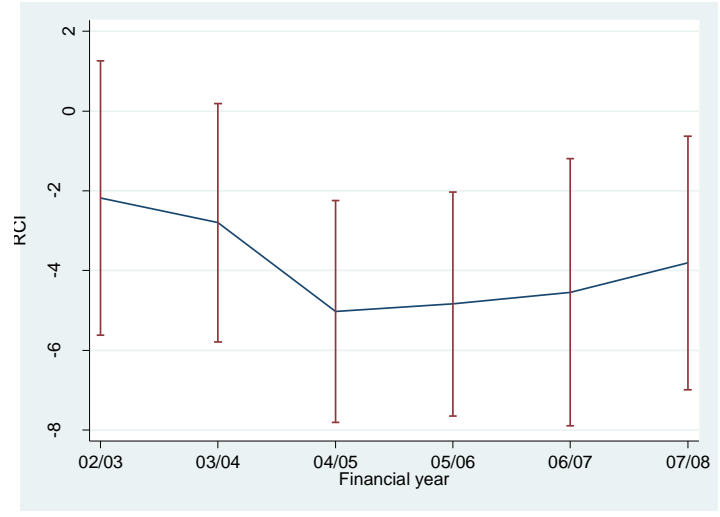
Table 5. Regression results for difference in difference model for overall effect of FT status on staff intention to leave

	All acute Trusts			Matched group		
	Pooled OLS	RE	FE	Pooled OLS	RE	FE
FT	-0.0576*** (-3.31)	-0.0580*** (-3.31)		-0.0579*** (-3.15)	-0.0593*** (-3.21)	
2002/03						
2003/04	0.00197 (-0.16)	-0.000163 (-0.01)	-0.00587 (-0.42)	-0.0104 (-0.85)	-0.0127 (-1.04)	-0.0187 (-1.25)
2005/06	0.0393*** (-3.51)	0.0389*** (-3.48)	0.0393*** (-2.96)	0.0364*** (-3.08)	0.0360*** (-3.03)	0.0367*** (-2.64)
2006/07	0.0984*** (-6.61)	0.0921*** (-6.35)	0.0913*** (-5.14)	0.0987*** (-5.97)	0.0919*** (-5.69)	0.0920*** (-4.63)
2007/08	0.118*** (-6.52)	0.116*** (-7.04)	0.117*** (-5.72)	0.108*** (-5.44)	0.107*** (-5.83)	0.111*** (-4.65)
FT X 2002/03						
FT X 2003/04	0.00815 (-0.45)	0.00753 (-0.42)	0.0101 (-0.51)	0.0203 (-1.13)	0.0191 (-1.07)	0.0209 (-1.04)
FT X 2005/06	-0.017 (-0.99)	-0.0184 (-1.08)	-0.0196 (-1.03)	-0.0143 (-0.82)	-0.0153 (-0.88)	-0.0159 (-0.83)
FT X 2006/07	-0.0559*** (-2.78)	-0.0509** (-2.55)	-0.0515** (-2.29)	-0.0561*** (-2.64)	-0.0499** (-2.38)	-0.0488** (-2.08)
FT X 2007/08	-0.0578*** (-2.85)	-0.0610*** (-3.06)	-0.0646*** (-2.86)	-0.0480** (-2.28)	-0.0506** (-2.45)	-0.0530** (-2.26)
Constant	2.823*** (-18.22)	2.737*** (-17.95)	2.572*** (-8.83)	2.852*** (-17.82)	2.768*** (-16.64)	2.615*** (-7.83)
N	829	829	829	775	775	775
R-squared	0.3234	0.3136	0.1038	0.3165	0.3048	0.0931

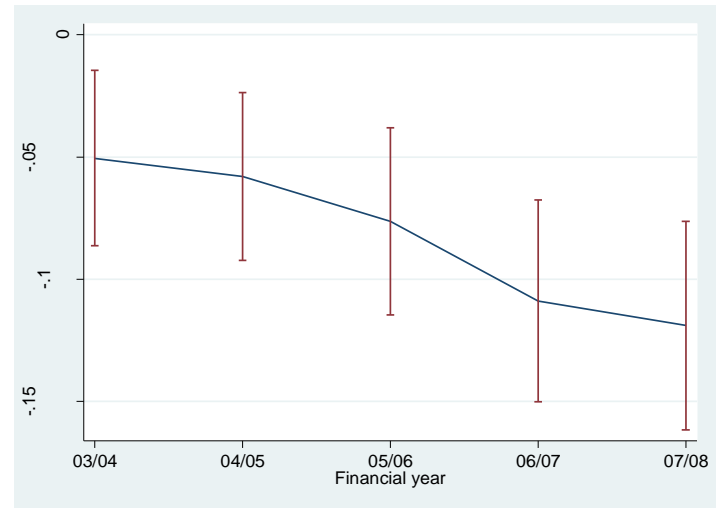
Robust t statistics in parentheses. *Significant at 10%; **Significant at 5%; ***Significant at 1%. Covariates used in the models include: occuppc, tot_imaging_tests_occup_beds, medianwait, ep_spell, alos, daycase_spell, emerg_spell, competition, specialist and SHA1-SHA10.



(a)



(b)



(c)

Figure 4. Estimated differences between FTs and all non-FTs: (a) retained surplus (deficit), (b) RCI and (c) intention to leave

Table 6. The effect of FT policy: difference between FTs and all non-FTs

	Retained surplus (deficit)	RCI	Staff intention to leave
Difference between 2004/05 and 2003/04	7.21e-06* -1.86	-2.224* (-1.85)	-0.007 (-0.42)
Difference between 2005/06 and 2003/04	2e-05*** -4.33	-2.040* (-1.73)	-0.026 (-1.32)
Difference between 2006/07 and 2003/04	5.50E-06 -0.94	-1.747 (-1.21)	-.058*** (-2.60)
Difference between 2007/08 and 2003/04	7.12E-06 (-1.6)	-1.009 (-0.68)	-.068*** (-3.24)

Robust t statistics in parentheses. * Significant at 10%; ** Significant at 5%; *** Significant at 1%.