

TOP EXECUTIVES TURNOVER, POLITICS AND THE PERFORMANCE OF HEALTHCARE  
PROVIDERS: EVIDENCE FROM THE ITALIAN NHS

ENRICO BALLARDINI AND DANIELE FABBRI

**TOP EXECUTIVES TURNOVER, POLITICS AND THE  
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EVIDENCE FROM THE ITALIAN NHS**

**ENRICO BALLARDINI**

Dipartimento di Scienze Economiche  
Università di Bologna, ITALY

**DANIELE FABBRI**

Dipartimento di Scienze Economiche  
Università di Bologna, ITALY

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PRELIMINARY

Comments welcome

Ballardini, Enrico and Fabbri, Daniele, "Top Executives Turnover, Politics and the Performance of Healthcare Providers: Evidence from the Italian NHS".

**ABSTRACT:**

The removal of bad top executives by politically accountable regional principals is a key to claim that federalism in healthcare provision leads to improved performance. We examine the issue in the Italian NHS where regions are responsible for funding public healthcare providers (local healthcare authorities-LHAs, and hospital trusts-HTs) operating on their territory, and appoint top executives of these providers. We explore the key determinants to the removal of top executives to see to what extent, if any, this removal is driven by performance related arguments. Our data consists of a panel of six years for the whole population of the Italian local healthcare authorities and hospital trusts. We collect data on top executives' identity for this whole population and also gather firms' budget data, several proxies for performance (partial productivity indicators, average length of stay, per-capita drug expenditure, patients' inflows and exit ratios), and the outcomes of regional elections. We estimate linear probability models for managerial turnover accounting for potentially correlated firms' constant effects. In our findings the change in political control is a leading determinant of managerial turnover for both LHAs and HTs. Executives' past performance holds quite some relevance as a determinant of managerial turnover in LHAs. Such relevance is strengthened as regional political principals are contestable.

**KEYWORDS:** Top executives turnover, Italian NHS, performance, political cycles, linear probability model

**JEL:** H11, I18, J63, P16

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## 1 INTRODUCTION

In the recent years the Italian NHS has undergone a reform process aimed at increasing the reliance upon managerial discretion and regional autonomy. Expenditures on healthcare amount to about 80% of the regional budgets, thus making the issue of regional healthcare governance particularly important. Even if still in a context of public financing, the Local Healthcare Authorities (LHAs) have been re-constituted as autonomous firms, while several important hospitals have obtained administrative autonomy as Hospital Trusts (HTs). Top executives of these public firms are appointed by the regional governments by way of a private contract of limited duration, with renewals and bonuses typically linked to the achievement of predefined goals.

Similarities can be noticed with the New Public Management (NPM) movement in the English NHS, where a high level of central control over the performance of Hospital Trusts' executives is combined with local discretion over managers' performance-related pay. Ballantine, Forker and Greenwood (2008) found evidence of a relationship between low performance and turnover, but not of a relationship between performance and remuneration, thus casting some doubts on the rationale behind local discretion granted in performance-related pay. Bloom, Propper, Seiler and Van Reenen (2010) spotted the role played by incentives on manager arising through the working of the quasi-market competition in the English NHS. They found that in English Hospital Trusts managerial quality, which proves to be correlated with clinical and financial outcomes, is increased by the degree of competitive pressure in the local market. However, the quasi-market paradigm, with a complete separation between purchasers and providers, has been barely adopted in Italian regions. Only one region, namely Lombardy, strictly adhered to such a model, thus possibly combining regional monitoring on LHAs performances with incentives on HTs operating through the quasi-market competition arising in the market. All the remaining regions adopted different versions of a regional planning model where LHAs and HTs are kept accountable to the regional ruling majority and a limited role is played by quasi-market competition.

An indirect measure of how effective is the regional governance structure in orienting the provision of healthcare is the degree of performance-related turnover in LHAs and HTs top executives nominees. Indeed, in order to carry out his or her

functions in a highly technical field, the politician must rely on expert officers. These unelected public servants possess the skills necessary to perform their tasks, but asymmetric information and possible differences in the objectives lead to potential agency problems. A large literature suggests that performance related dismissal of bad executives is quite widespread in profit-oriented firms (see for example Coughlan and Schmidt (1985), Kaplan (1994), Denis and Denis (1995), Kang and Shivdasani (1995), and Huson, Malatesta and Parrino (2004)). Evidence referring to public or highly regulated firms is less abundant. There is some testimony of the dismissal of not-for-profit hospital managers to be driven by poor financial performance but not by altruistic aims (Brickley and van Horn (2002)), especially when under strong competitive pressure (Arnould, Bertrand and Hallock (2005)), although this effect has a different magnitude with respect to the case of private hospitals; see for instance Ballou and Weisbrod (2003) and Eldenburg, Hermalin, Weisbach and Wosinska (2004).

The aim of this paper is to contribute to this literature and to study the determinants of managerial turnover in the Italian National Healthcare Service (NHS). We account for the role played by regional political cycle, managers' tenure and firms' performance to address a general question: is managerial turnover to some extent related to performance and therefore conveys some incentive on managers to improve on it?

In the institutional framework we consider here, the politician appears as the key figure: we expect the choice of managers to be largely based on a spoil system and the sanctioning tools available to him to be quite powerful. We would therefore interpret our findings in a "congressional dominance" view of the politician-bureaucrat relationship (see Weingast and Moran (1983), McCubbins, Noll and Weingast (1987)), more than in the Niskanen (1971) perspective of administrative delegation being equivalent to abdication of powers. Therefore, limited sanctioning of underperforming managers should reveal deliberate under monitoring of top executives.

In our findings executives' past performance holds quite some relevance as a determinant of managerial turnover for LHAs but not for HTs. The change in political control is found to be the leading determinant of managerial turnover for both LHAs and HTs. Moreover, we find support to regional political contestability strengthening the relationship between performance and turnover in LHAs.

The rest of this paper is organized as follows. In Section 2 we provide a description of the institutional background and develop our conceptual model on top executives' turnover in the Italian NHS. In Section 3 we review the relevant literature on the executives' turnover in the private and in public sector. Section 4 presents the data and descriptive statistics and Section 5 discusses our empirical strategy. Results are presented in Section 6. Section 7 concludes.

## **2 BACKGROUND**

### **2.1 BASIC FEATURES OF THE ITALIAN NHS**

The Italian National Health Service, established in 1978 as a universalistic system, provides comprehensive insurance and uniform healthcare to the entire population. It is mainly financed through general taxation. According to the Constitution the central government, namely the Ministry of Health, sets the basic standards, while organization and regulation of services' provision and delivery pertains to the regions. Regions have a great autonomy in organizing the healthcare system within the general limits imposed by the national laws. Some regions rely upon a single authority, while in most of the cases they rely upon a multiplicity of independent, autonomous Local Health Authorities, operating approximately at the provincial level. A typical LHA assists a population of about 300.000 enrollees.

Every year the central government allocates funds to each region according to a "negotiated" capitation payment, partly adjusted for population age structure. These funds are then reallocated according to a mix of political patronage, historical precedent and cost-plus reimbursement among the approximately 200 LHAs operating in their territory. Within its budget, each LHA is responsible for financing the healthcare consumption of the "enrolled" population, enrollment being based on individuals' place of residence. Patients are entitled to free access to most necessary care, like hospital treatments, with limited co-payments imposed for drugs, out-patient treatment, some diagnostic and laboratory tests, and medical appliances, depending on a citizen's income, age and health condition.

While the financing is mainly public, the provision can be both public and private. General practitioners' care is provided by private professionals holding a contract with LHAs and being reimbursed according to capitation per assisted patient.

Specialist outpatient care is mainly provided by LHAs' salaried physicians. Concerning hospital care, private hospitals, both for profit and not-for-profit should be accredited and authorized in order to supply services within the NHS, then being reimbursed according to a prospective payment system based on the US Diagnosis Related Groups (DRG) tariffs. Small general public hospitals are usually governed directly by the LHAs and don't have an autonomous budget. The vast majority of big general hospitals are independent Hospital Trusts (HTs), highly specialized institutions, aimed at providing cares to patients with complex case-mixes, possibly inflowing from the whole national territory.

The autonomy granted to the HTs is restricted to hospitals of particular importance and qualified technical endowments, while the majority of territorial small hospitals providing primary cares remain under the direct control of the LHAs. This, in addition to the regional autonomy and the strict regulatory set up, prevented the establishment of the quasi-markets typical of the English system. While the LHAs are funded on the basis of the resident enrolled population, the HTs collect funds by selling their hospital care services to the LHAs. Since fiscal year 1995, hospitals are financed according to a mix of pay-per-case and prospective activity budget based on the pricing of each clinical episode, with clinical episodes being classified according to DRGs (see Fabbri and Robone (2010)). Hospital admissions taking place within each LHA (either directed to LHAs hospitals, a local Hospital Trust or a private licensed hospital) are regulated according to the prospective block budget attributed to each local provider. Hospital admissions that take place from outside the enrolling LHA are regulated on a pay-per-case basis using centrally set tariffs as a reference.<sup>1</sup>

The problem of the over-expenditure by the regions is one of the main concerns that motivated the last reform. Before the 1992/1993 reforms, the Italian NHS adopted a policy of under-financing, with periodic interventions to bail-out the deficit accumulated by the regions. Regions are currently responsible for covering any

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<sup>1</sup> This is the case for regional cross-border caseloads. In case the flows involve LHAs belonging to the same region it is common practice to settle financial imbalances according to regional fee schedules. Regions set their tariffs by referring to national tariff rates, which represent a ceiling and allow flexibility downward (so far they have been reduced by up to 30% of the national tariff).

expenditure overruns of LHAs and HTs under their control. This should be done by reducing expenses, reallocating funds from other functions, or raising regional taxation.

## **2.2 APPOINTING, MONITORING AND REMOVING TOP EXECUTIVES IN THE ITALIAN NHS, THE INSTITUTIONS AND AN INTERPRETATIVE MODEL**

According to the national law (Legislative Decree 502/1992), LHAs and HTs are to be governed by a triad of top managers: the general manager, the administrative/financial director, and the clinical director. We focus our analysis on the general managers (“*direttori generali*”, DG hereafter) only. Each regional government has a great discretionary power in the appointment of LHAs’ and HTs’ DGs. A rule currently abolished prescribed that the nominee should be chosen by regional governments out of a national list of eligible candidate maintained by a commission at the Ministry of Health. The list should have included applicants in possess of requisites like: being younger than 65, holding a university degree, owing appropriate competencies, and having previously held a position with clinical or administrative responsibility in a medical institution. After the abolishment of the national list of eligible candidates, the regional government can freely choose and appoint the general manager of a LHA/HT, provided that he holds some basic competencies in the management of public healthcare institution.<sup>2</sup> This makes regional discretion in DGs’ appointment to be almost unlimited and the appointment process in the Italian NHS possibly inspired by a pure spoil system.

The appointed new managers sign a private law contract that has a limited duration of three years, with the possibility of extending it for two more years. Renewal and monetary bonuses are determined on the basis of the achievement of particular goals. These are determined on a case-by-case basis, depending on the necessity of restructuring the LHA or the HT and on the needs of the local residents. In addition to these tasks, the evaluation criteria have also to be previously defined. Examples of these objectives are: the reduction of the hospitalizations, the reduction of the ambulatory

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<sup>2</sup> Executives can even lack such prerequisites at the appointment date provided they promise to fulfill them in due time.



cares, the reduction of the costs for particular functions, the adoption of the regional healthcare plan, the appropriateness of the drug prescriptions, the use of "generic drugs", the reduction of the passive mobility, and the improvement of the territorial assistance. DGs operating in particularly important or disadvantaged institutions can receive additional remuneration bonuses to acknowledge the hardness of the operating environments. Usually, managers with an outstanding past performance - or good political connections - can expect to obtain a subsequent appointment in a more important firm.

Managers undergo a first performance review process 18 months after the appointment. Then, at the end of the time in office, he can obtain a renewal for one or two additional years. Additional evaluations of the manager's activity are done in case of violations of the law or of the principles of the administration. An incapability of the manager to follow the local health plan can also be a cause for an anticipated examination.<sup>3</sup> Thus, differently from the British NHS, even though the renewals and bonuses are linked to clear tasks, these are determined by the regional governments for the individual units, and not defined by the Ministry in a centralized system.

Given this institutional background we can sketch a conceptual model to guide our interpretation of the empirical analyses we are going to develop in the rest of the paper. In our view the politician (principal) has the power to control and sanction the manager (agent). According to the institutional framework we described, we assume that the control is relatively easy.<sup>4</sup> Thus, if an underachieving manager is not sanctioned, we should conclude that the politician's preferences include objectives other than the performance. Since the politician is accountable to the voters, a reason for that is he being devoted to increase his personal consensus in the constituency. A possibility, for instance, is that he tries to improve, or at least to maintain, local employment in the public sector. Thus a trade-off between conflicting objectives, like financial performance and provision efficiency versus over-employment, can lead to a suboptimal

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<sup>3</sup> The removal of the manager is decided after the conference of the local mayors has also expressed an evaluation. This is not a compelling requirements in case of particularly urgent cases.

<sup>4</sup> Thus, we build an interpretative model in line with the "congressional dominance" theory of Weingast and Moran (1983) and McCubbins, Noll and Weingast (1987).

outcome. In our interpretative model, both the electoral cycle and the executives' performance can determine a dismissal of the manager. Assuming that the region aims at maximizing the social welfare, we should find a significant and positive relationship between a bad performance indicator, like cost overruns, and the likelihood of managerial turnover. On the other hand, if the turnover is merely political, this effect should not be significant and we should observe a relevant effect of the political cycle only, thus implying that objectives other than efficient healthcare provision lay in the core of political principals' action.

### **3 RELEVANT LITERATURE**

#### **3.1 CEO TURNOVER AND FIRM PERFORMANCE**

A consistent body of literature analyzes the relationship between managerial performance and turnover in the private sector. There is clear evidence that the forced dismissal of the top executives is affected by their performance. Coughlan and Schmidt (1985) and Warner, Watts and Wruck (1988) are among the first works on the topic. This negative relationship between performance and dismissal is supported by several following studies (see among the others, Kaplan (1994), Denis and Denis (1995), Kang and Shivdasani (1995), and Huson, Malatesta and Parrino (2004)).

As noted by Brickley (2003), measures of performance based on accounting data, as well as the price of the shares in the stock markets, have a significant impact on the probability of dismissal, although several factors can affect this relationship. Factors that can enhance or reduce the relationship between turnover and performance can be: the kind of firm, the competitiveness of the market, the composition of the board of directors, its ties with the CEO (Lausten (2002)), family ownership (Bloom and Van Reenen (2007)), stock holdings by the management, and the ability of the director to entrench himself (Hermalin and Weisbach (2003)). Also the issue of the personal connections of the CEO has been address, among others by Battistin, Graziano and Parigi (2009) who found a significant positive effect for the directors but not for the firms.

A performance driven turnover should improve the future performance, in order to actually serve the needs of those - shareholders or board of directors - who promoted the change. Evidence on private firms is quite abundant on this issue as well (see for

instance Weisbach (1995), Huson, Malatesta and Parrino (2004), Kang and Shivdasani (1995), and Chang and Wong (2009)).<sup>5</sup> To the best of our knowledge there is no evidence on post turnover performance in public firms.

These results hold in different cultural and institutional frameworks. As noted by Kaplan (1993), the US corporate governance is more characterized by the role of market-oriented shareholders, while the Japanese and German systems are more based on a system of relationships with banks and large shareholders. According to Kaplan (1994), although equity ownership by the managers and cash bonuses are smaller in Japan than in the US, the magnitude of the effect of the performance on the turnover is very similar. This may be due to the role of the banks, which have a strong relationship with the firms of the industrial groups and exercise a more active control in case of a high risk of default. The importance of the ties with the banks is corroborated by Kang and Shivdasani (1995), who also individuate significant changes in the firm performance after a forced dismissal.

Another variable potentially related to the performance is the total wage of the executives, whose monetary bonuses can be related to the earnings, the stock-market value, or the achievement of particular goals. According to Barro and Barro (1990), the CEO compensation is significantly related to the performance, although this effect diminishes with the managers' tenure. The different complexity of companies operating in the same industry can be reflected in differentiated salaries for the top manager of each firm, thus making appropriate a modeling that accounts for this potential heterogeneity in CEO incentives.

### **3.2 PREVIOUS LITERATURE ON EXECUTIVES' TURNOVER IN THE PUBLIC SECTOR**

While a consistent body of literature analyzes the relationship between executives' turnover and performance in the private sector, the contributions are scarcer with respect to the public one. Studying the performance in not-for-profit enterprises or

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<sup>5</sup> An important caveat is that the price of the shares may reflect the shareholders' prior on the new management, instead of the actual performance. Huson, Malatesta and Parrino (2004) individuate significantly higher stock returns following the announcement of a change in the top

in the public administration poses several additional concerns. It must be taken into account that (1) multiplicity of tasks different from profit maximization, (2) political constraints, and (3) inputs values' far divergent from market value, may all contribute to make the definition of a unique measure of performance a hard task. The multi-dimensionality that characterizes the public administration (see Tirole (1994)) is possibly the key difference with the private sector, where the shareholders' utility can be easily represented by firms' profitability.

The literature on the turnover of public nominee executives is quite limited. Li and Zhou (2005) find a significant effect of the economic performance of administered provinces on the turnover of public officials in China, with the average GDP growth being valued more, by party politician's principals, than the previous year GDP growth rate. Chen, Li and Zhou (2005) note as an important factor the performance relative to the predecessor. Boyne, James, John, and Petrovsky (2007) study the public managers' turnover in English councils in relation with the political cycle. To control for the quality of the services they can rely on the Comprehensive Performance Assessment and on the Index of Multiple Deprivation, having thus predefined aggregated measures of the performance. In their findings, while politics significantly affects the top executives turnover, the performance has an effect on the whole senior management team.

In addition to actual public officers, we can find important examples of state-owned enterprises in China, where several privatized firms are still mainly owned by the government. Liao, Chen, Jing and Sun (2009) emphasize the double role of these enterprises, which must achieve a financial balance but still have the burdens of improving employment and social stability. This is also studied by Chang and Wong (2009) who find that, in case of a removal due to financial losses, the post-turnover performance increase, this effect being absent in pre-turnover profit-making firms. Kato and Long (2006) find a significant, albeit small, effect of the performance on the turnover. This effect is strengthened by the presence of independent members in the board of directors, and decreases with the increasing of the government's ownership.

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management, which confirms that the announcement *per se* has an effect on the forecasting of future earnings.

These results suggest that, differently from proper private firms, the partially state-owned enterprises have a multiplicity of roles: financial stability is a necessary goal, but once this condition is met, social considerations, such as maintaining an over employment, are more important than profits.

A small number of papers explores the relationship between performance and top executives' turnover in the healthcare sector. Among these we can find results which are fundamental contributions to our topic.

A first issue is the different behavior observed among the different kinds of institutions, and how they react to a competitive pressure. Brickley and van Horn (2002) found that not-for-profit hospital CEOs do not have explicit incentives to pursue altruistic activities, but the threat of dismissal seems weaker than in the case of for-profit hospitals managers. Arnould, Bertrand and Hallock (2005) analyze how the competitive pressure induced by Health Maintenance Organization (HMO) affects the managers' turnover and salary. In their findings, not-for-profit hospitals begin to behave like for-profit organizations when they are under a particular competitive pressure. While the effect of performance on the managers' wage is in general weak, this relationship is enhanced by the competition induced by the HMO penetration.

Eldenburg, Hermalin, Weisbach and Wosinska (2004) study the different types of governance within California Hospitals. They consider religious, non-profit, profit, government, district and teaching hospitals. In their results, poor performance, high uncompensated care and excessive administrative costs have a significant impact on the turnover of the top executives, but each kind of hospital gives a different weight to these factors. Ballou and Weisbrod (2003) focus on the difference in hospital CEO wages and incentive structures across different types of ownership. In their findings the bonus structure of the managers differs greatly across the type of institutions, and this can be caused by heterogeneous goals or constraints. The various incentive schemes can determine different behaviors among the managers. However, as an alternative explanation, the authors suggest that public hospitals, by paying the lowest salaries, possibly attract the individuals with the lowest unobservable ability.

In a different context, and within highly regulated institutions, the relationship between pay and performance can be weaker. Studying the English NHS, Ballantine, Forker and Greenwood (2008) find evidence of a relationship between turnover and low

performance, but not between remuneration and performance. The authors hence underline how this governance mechanism, if implemented without taking into account the organizational form, is ineffective and costly. Thus, an NPM approach cannot be based on the blind adoption of private sector management criteria without considering the peculiarities of the public sector in which they will be adopted.

The selection of managers with different levels of ability is discussed in Eldenburg and Krishnan (2003). In the US, the CEOs of organizations supported by taxes are usually appointed by boards of directors whose members are publicly elected. The pressure, by the electors, to contain costs can determine a lower salary for the CEOs, with respect to non-subsidized institutions. Thus, the authors conclude that that this form of governance has a detrimental effect on the performance of the public hospitals.

These studies evidence how the role of the managerial incentives (monetary bonuses but especially the threat of a forced dismissal) can potentially affect the executives' behavior. This is also true for non-market institutions and even when politics play a non-negligible role. But the governance structure cannot be ignored, since the peculiarities of the public sector affect the relationship between the performance and the explicit incentives provided to the managers. For example, a control mechanism cannot be enough to assure a good performance, if the firms operate in a non-competitive environment, and in this case consistent monetary bonuses can be a social cost with no real benefit. Since the cross-country comparability is problematic due to the different cultural and institutional backgrounds, the effectiveness of these policies can hardly be generalized, and need to be studied for each individual country.

## **4 DATA**

### **4.1 MEASURING TOP EXECUTIVE TURNOVER**

We collected data on the identity, i.e. exact name and surname, of top executive managing LHAs and HTs, from different sources. The main source is “Annuario Sanità Italia”, edited by Publiaci, a commercial publication reporting mailing information including the identity of executive managers of all private and public healthcare providers operating in the Italian market. Names collected from this source have been extensively cross-checked with other three main sources: 1) the regional decrees of

appointment and removal of “direttori generali”, whenever available; 2) local press reports; 3) miscellaneous sources available from the web. The available sources allowed us to recover the identities of top executives for the, almost complete, universe of LHAs and HTs for years from 1999 to 2008. Over that period the universe that we consider comprises 2853 firm-year observations. We are able to collect top executives' identities, as the identities of the managing executive observed in charge at the beginning of each year, for 2825 of them. Using first names we were also able to identify executives' gender.

Our analysis is based on the turnover of top executives in Italian LHAs and HTs over a 10 year period, from 1999 to 2008. We identify a change in top executive in each year by comparing the names in adjacent years: a manager is considered dismissed in a given year if he is not observed to be in office at that firm the next year. We define thus a dichotomous variable  $y_{it}$  (TURNOVER) assuming at year  $t$  for firm  $i$  the value 0 if the manager is observed as maintaining his position at firm  $i$  in year  $t+1$ ; the value 1 if the manager ends his appointment by the end of that year. Therefore we restrain our analysis to the 9 years period from 1999 to 2007.

Our measure of managerial turnover should be interpreted with some cautions. We have no information on the reasons behind an observed TURNOVER. Therefore we cannot distinguish between voluntary leaving and forced dismissal. However it is worth noticing that this is a common limitation to most of the contribution in the empirical analyses of CEO turnover. Even collecting the declared reasons for the turnover, the officially reported cause can often reflect a “face-saving” strategy (see Gregory-Smith, Thompson and Wright, 2009). Moreover, the forced removal or the confirmation of the executive may be articulated in several sub-cases: (1) the manager can be confirmed in office, (2) he can be assigned to a similar position in a different LHA or Hospital Trust within the same region, i.e. being transferred, (3) he can be removed (or simply not confirmed) without being offered a similar office in another regional LHAs or HTs, and (4) he can be dismissed but obtain another CEO position in a different region. In the rest of the paper we pool together the cases of removal and transfer within the region. Most of the CEOs are either confirmed or fired, very few are transferred within the same region and only a minimal part of them finds a similar employment outside the region

when dismissed, having thus only a minor loss of information with this merging of cases.

A few other limitations in our definition of TURNOVER should be considered. First, we do not know in which month of the year the managers are chosen or formally appointed. In most cases this happens in the first two months of the year, but there are many exceptions. We have yearly data on the explicative variables too, and these limitations are comprised in the fact that we have a discrete time setting with annual data. Second, with the data on executives' identities we can easily compute tenure in office, as the number of years he held the position up to the current year, for those executives that are not left censored. However we cannot measure the tenure for those appointed before the year 2000. We address this limitation by running an additional search on the left censored top executives in order to recover the year of their first appointment. We were quite successful in that despite not completely. For that reason we lost some observation in the early years (the dataset boils down to 2265 observations). So in the final sample there could be some selection in the very first years, i.e. we could miss some executives that presumably have longer tenure than those observed and included in the sample. According to the descriptive statistics reported in **Table 1** this does not seem to represent a big concern.

**Insert Table 1 Here**

**Insert Table 2 Here**

Our sample comprises HTs and LHAs from all the three macroregions of Italy. Due to institutional changes, such as mergers and constitution of new units, the actual number of firms varies over time. **Table 1** reports the number of units per year and the annual mean tenures and turnover ratios. The overall turnover average is 23%. A value of 20% would be in line with a dismissal once every 5 years, which would correspond on average to the dismissal at the end of the 3+2 period for every manager. **Table 3** shows that, despite the peak observed at the 5 years of tenure, this is not in general the case.

**Insert Table 3 Here**



The average turnover shows a pick in 2005, which was an electoral year for most regions, although we do not observe a similar phenomenon in the year 2000. The observed mean value of the turnover in 2005 was of 41%. In correspondence with this pick of the average turnover in 2005, we observe the highest average tenure of 3.66 years. Overall, there is no evidence of a clear increasing or decreasing trend during the time-span covered.

**Table 2** reports some evidence on the stability of sample composition. Southern regions are slightly underrepresented in the early years due to the dropping of left censored executives. On average the Northern firms are 49% of the total, the firms from central Italy 23%, and the Southern ones 28%. From 1999 to 2005, the HTs are 31% or 32% of the sample depending on the year, increasing to 36% in 2006 and 37% in 2007. The proportion of female top managers is quite low, showing a positive trend over the period. Then we observe a value of 4% in 2002 and 2003, followed by a stable growth of one percentage point every year up to 8% in 2007. The overall average is of 5% female executives.

## 4.2 POLITICAL VARIABLES

We collected data on all regional elections starting from year 1990 to present from the Ministry of Internal Affairs (“Ministero dell’Interno”). Regional governments are elected every five years according to a proportional representation election system corrected by a majority bonus granted to winning coalitions. Provided a regional legislature comes to a natural end, elections take place every 5 years. However unexpected end of the legislature might lead to anticipated elections, thus affecting the following stream of electoral years. Typical electoral years during the period considered in our case study are 1995, 2000 and 2005. Exceptions are for Molise (where elections were held in 2001 after an unexpected end of the legislature and in 2006 then after), Sicily (in 1996, 2001, 2006 and 2008), Sardinia (1999 and 2004), Bolzano and Trento provinces, Friuli-Venezia Giulia, and Valle d’Aosta (all in years 1998, 2003 and 2008). With the outcome of each regional election in years from 1990 to present we were able to establish if each regional election brought also a change in political majority, such as from a left to a right wing government or vice versa.

**Figure 1** provides basic evidence of the impact of the political cycle on our dependent variable of interest. Turnover peaks in the electoral year in particular for those regions experiencing a change in majority. This pattern suggests that a change in majority triggers an immediate and large change in top executive appointments. A comparable increase in the frequency of top executive turnover follows one year after a change in majority. Finally it could be noticed that whenever the ruling majority is confirmed no change in turnover is noticed before two years after the elections.

### **Insert Figure 1 Here**

Therefore we built two main dummies: a dummy assuming a value of 1 for the year being an electoral year that brought to a change in majority, 0 otherwise; another dummy assuming a value of 1 for the year being an electoral year that did not bring to a change in majority, 0 otherwise.

### **4.3 PERFORMANCE INDICATORS**

A major aim of our analysis is to evaluate, on top of the operation of the spoil mechanism, the relationship, if any, between managerial turnover and firm performance. In order to define a relevant and viable set of indicators we collected and made operational several administrative dataset. They comprise: 1-budget data (available from the Ministry of Health for the years 2001 to 2007) of each LHAs and HTs in Italy; 2-data on patients' hospital admissions (provided by the Ministry of Health for the years 2001 to 2006) observed in each LHAs and HTs according to the place of residence of the patients, DRG and type of admission (ordinary or day-hospital); 3-output and input indicators on LHAs and HTs (available from the Ministry of Health for the years 1999 to 2007) comprising total number of hospital admission and hospital days, total number of employees and beds; 4- services provided by LHAs (available from the Ministry of Health for the years 1999 to 2007) comprising the legal population enrolled in the LHA and expenditure on drugs.

As a relevant measure of financial performance we rely on the net financial loss before regional funding as reported in the balance sheet. This represents the overall burden imposed by the operation of a given LHAs/HTs on the regional budget. To get

rid of the different firms' dimensions we define LOSS as the net loss divided by the firms' total costs, the total costs including production costs and net financial income (therefore net of accounting adjustments and extraordinary income and charges). LOSS is available from years 2001 to 2007.

OCCUPANCY is defined as the total number of days of hospital care provided to inpatients, divided by available bed-days in a year. This indicator captures hospitals' beds utilization. A particularly low value can be a symptom of an excessive number of beds. However an excessive OCCUPANCY might reflect the inability to reduce excessive hospitalization. Reducing inpatients admission is a typical objective indicated in executives' contracts. Without denying necessary cares, this can be achieved by avoiding unnecessary hospitalizations, relying on outpatient admissions, and investing in prevention policies.

The DISCHARGE indicator is given by the total number of inpatients admissions divided per hospital employees. It represents a partial productivity measure. Below average values for this indicator could reflect the failure of top executives to downsize on unproductive hospital workforce. Given the multiplicity of objective pursued by a public NHS, including the maintenance of employment levels, we cannot exclude this indicator to be irrelevant or even negatively correlated to TURNOVER. See Liao, Chen, Jing and Sun (2009), for an analysis of the impact of such policy burden on the relation between performance and turnover in Chinese state owned firms.

One more indicator relative to the volume of production is the average length of stay (ALOS), in hospital inpatients care. Given the technological advancements it is increasingly possible to reduce hospital LOS. This is done both for the well-being of the patients and for reducing the hospitals costs. Above average ALOS is thus an important indicator for bad hospital governance and performance.

Data on patients' hospital admissions observed in each LHAs and HTs according to the place of residence of the patients, DRG and type of admission (ordinary or day-hospital) allowed us to measure INFLOW and EXIT rates. INFLOW is measured as the number of inpatients coming from outside the region to receive cares in the LHA or HT considered. This indicator is computed for both the kind of firms, but is particularly relevant for the HTs, since they are intended to attract an inter-regional flow of patients. This is due to the peculiar role of the HT, which are constituted in order to provide

highly specialized cares to patients with complex case-mixes. The role of the LHAs, on the other hand, is more related to the territorial provision of primary cares. INFLOW, as well as the EXIT, is weighted for inpatients DRG mix to account for the complexity of the attracted caseload. Patients moving outside the LHA in which are enrolled, to receive a hospital treatment in a different region, are accounted through the EXIT indicator. By its nature, the EXIT indicator is relevant only for the LHAs. LHAs must finance the cares of their enrollees. Provided that patients in Italy are free to choose their treating hospital, patients outflow is somehow unpreventable apart from making the exit option unattractive. An outflow of patients represents a drain of resources from the regional budget, and while it may be an optimal solution to outsource particular services, it represents a negative symptom LHA and for the regional healthcare service as a whole. This index is not computable for the HTs, since they are only providers and not purchasers of medical services and provided that they are intended to serve a national demand of highly specialized cares.

The availability of hospital discharge data by DRG and type of admission is also useful in computing an index of INAPPROPRIATENESS of hospitalization. This is based on a list of 43 DRG which should, according to a Ministry guideline, be treated in a day-hospital regime. INAPPROPRIATENESS is measured as the share of hospital production emerging out of the 43 DRG list that have been admitted as ordinary. A high INAPPROPRIATENESS corresponds in most cases to a waste of resources.

DRGW is a measure of hospital case-mix severity given by the average DRG-weights of the hospitals' caseload. Given the prospective payment system, it corresponds also to a higher financial income, at least when these patients are moving from a different LHA. In general, the sign of the relationship between DRGW and the turnover is not obvious. It can also depend on the hospital characteristics: for example, for a small rural hospital it may be problematic to receive an inflow of patients with complex case-mixes for which it is not well prepared, determining inefficiencies and a raise in the costs.

DRUG is measured as LHAs' per-enrollee total expenditure on drugs. The reduction of these expenditures can be considered a typical LHA manager's objective. This goal can be achieved by avoiding unnecessary prescriptions, enforce the use of

generic drugs (non-branded medicines), and in general incentivizing the appropriateness of the prescriptions. This indicator is available only for LHAs in the years 1999 to 2007.

#### **Insert Table 4 Here**

Each of the aforementioned indicators is standardized by dividing it for the mean value of the comparison group, the comparison group comprising all the firms of the same type (HT or LHA), operating in the same region and observed in the same year. Therefore each indicator will capture individual firm's departure from a regional norm. Moreover we consider the probability of being dismissed during year  $t$  to be possibly dependent upon managerial performance observed by the regional principals at year  $t-1$ . Therefore each standardized indicator will enter our regression models as lagged one year.

#### **Insert Table 5 Here**

## **5 EMPIRICAL MODEL**

We study the empirical relationship between top executives' turnover, regional political cycle and firms' performance. Our dependent variable is defined as a dummy indicator assuming a value of 1 if the incumbent top executive, the one in charge at the beginning of the current year, is not observed to maintain his position at the turn of the year; 0 if he is otherwise confirmed. The models we are to use are thus binary outcome models.

We will rely on simple linear probability models allowing for firm specific effects. This is a major improvement in this literature that largely relies upon standard logit models without accounting for firm specific effects. A notable exception is Arnould, Bertrand and Hallock (2005). Our models will have the following general structure:

$$y_{it} = \alpha + \beta' X_{it} + \nu_i + \varepsilon_{it} \quad (1)$$

where  $X_{it}$  include all the relevant regressors,  $\nu_i$  is a firm specific effect and  $\varepsilon_{it}$  is the iid normal error component.

Our empirical analysis proceeds in two steps. First we look for a parsimonious baseline specification for a model of top executives turnover as driven by the political cycle. We start from a general model and then proceed to a slightly reduction of it. In the second step we enrich the baseline specification to allow for the role played by performance indicators on top executives turnover. Our attention is mainly devoted to the effect played by financial performance. The first step is taken on an unbalanced panel comprising 264 units (LHAs and HTs) over the period 1999-2007. Since not all performance indicators are available on this full period and some observations are missing the second step analyses are performed on different subsamples as detailed below.

In all our models we control for a quadratic time trend, the manager's gender and tenure. The inclusion of managers' tenure is essential in order to control for the natural end of the contracts. As we said in the institutional review, this might occur 3 or 5 years after appointment. Including this variable also allows to account for possible entrenchment effects accruing to the most senior managers.

Given the above overall discussion the final structure of our empirical models will be the following:

$$y_{it} = \alpha + \beta_1 * tenure_{it} + \beta_2 * t + \beta_3 * t^2 + \beta_4 * FEMALE_{it} + \bar{\beta} * POLITICS_{it} + \bar{\beta} * PERFORMANCE_{it-1} + v_i + \varepsilon_{it} \quad (2)$$

## 6 RESULTS

### 6.1 TURNOVER OVER THE POLITICAL CYCLE

**Table 6** reports our specification analysis for a model of the effect of regional political cycle on top executives turnover. We report there the estimated linear probability models allowing for LHAs/HTs constant effects potentially correlated with other regressors. We allow for the effect on turnover of the regional elections in the current, and the previous two years. Our preliminary descriptive evidence clearly supports this choice. Each dummy indicator for current and past regional election is combined with an indicator for a change in political majority. Model in columns 1-2 and 3-4 report specifications with alternative ways of controlling for tenure: in columns 1-2

we adopt a second order polynomial in tenure, while in columns 3-4 we opted for a complete set of tenure dummies.

#### **Insert Table 6 Here**

Models reported in columns 1 and 3 contain an extended set of political indicators (elections with and without change from the current years to the second lag). On the basis of this general specification we test for a reduction of the specification that restrict the effect of a change in majority to be equal across the current and the previous years elections and the effect of election 2 year before have a homogeneous effect irrespective of the change in majority it brought. For both specifications (the one with the polynomial in tenure and the one with tenure dummies) this combined restriction is never rejected ( $F(3, 18) = 0.30$ , Probability  $> F = 0.8248$ , for the polynomial specification and  $F(3, 18) = 0.20$ , probability  $> F = 0.8979$ , for the tenure dummies specification).

#### **Insert Figure 2 Here**

Tenure appears as a relevant determinant of the probability of turnover. We notice that the probability of turnover increases in tenure according to a basically linear function. Comparing the partial effect of tenure on turnover probability (see **Figure 2**) we notice that the tenure dummies profile is basically linear up to a tenure of 5 years. Then after turnover probability stays constant for tenure 5 to 7 and then increases again at values of 8 and 9. Despite these interesting differences model 2 and 4 are remarkably close concerning the remaining estimated coefficients. This is in particular true for coefficients related to the effect of the political cycle. Passing through a change in majority in the current or in the past year increases the baseline probability of turnover by 16 percentage points. A quite large effect, about 10 to 11 percentage points, is also attributable to an earlier election occurred two years before, irrespective of the possible change in majority it brought.

Given the results of this preliminary analysis, we base our further analysis on specification 2. In the following section we enrich this specification with the available performance indicator. We start by looking at the effect of financial LOSS.

## 6.2 TURNOVER AND PERFORMANCE OVER THE POLITICAL CYCLE

As we mentioned in section 4.3, performance indicators are available only for a subset of observations. In particular the important indicator on LOSS is available for years 2001-2007. Moreover we consider the probability of being dismissed during year  $t$  to be dependent upon managerial performance observed at year  $t-1$ . Therefore we can run regressions containing LOSS on the subsample of observations from year 2002 to 2007.

### Insert Table 7 Here

**Table 7** contains, at column 1 (Base model 1), the same specification as in column 2 of **Table 6**, estimated, as a reference, on the subset of observations for which LOSS is available. By restricting the sample we notice that the general features are quite similar to those emerging out of the estimation from the extended sample. However the sizes of the effects of TENURE and CHANGE, in current or previous year elections, are both larger in the restricted sample. A CHANGE in majority increases the baseline turnover probability by about 20 percentage points. In order to generalize this specification further we allow also for different effects of CHANGE in current and past elections across firm's type, i.e. LHAs and HTs. This additional specification is reported in column -2 as Base model 2. The coefficients on CHANGE interacted by LHA and HT show that HTs are slightly more responsive (26 pp) than LHAs (18 pp) to the operation of a spoiling system. Notice however that these coefficients are not statistically different.

Columns 3 and 4 contain the estimates for the enriched specifications including non-standardized LOSS as performance indicator, while columns 5 and 6 include those with standardized LOSS. Specifications in columns 3 and 5 allow for a homogenous effect of the performance indicator across firms type, while those reported in columns 4 and 6 allow also for a differential effect of the relevant performance indicator across LHAs and HTs. According to our estimates we find evidence of a consistent pattern of effects of LOSS (either standardized or not) on TURNOVER once we allow for a differentiated effect according to firm's type. The dismissal of HTs' top executives seems to be uncorrelated to both definitions of LOSS while it is clearly positively correlated once we consider the LHAs' top executives. A deterioration of financial



LOSS of one standard deviation increases by approximately 5 percentage point the baseline probability of turnover for a LHA's top executive. Putting these values in perspective we notice that the effect of a CHANGE in majority is fourfold that of one standard deviation deterioration in LOSS. However the chances of facing a CHANGE in majority in the current and previous year are quite small on average. Elections take place once every five years and the probability of a change in majority, conditionally on the occurrence of election in the current or past year, is below 50%. Therefore, the chances of facing a CHANGE in the current and past elections are a small 15% for LHAs, and 11% for HTs in our sample. According to this empirical specification we therefore obtain that a CHANGE is a relatively rare event leading to large consequences on TURNOVER.

However, incumbent politicians face chances of a political sanction, i.e. losing regional elections, which are much higher in certain regions than in others. At least half of the Italian regions are political fiefs of a center-right or center-left coalition with predictable uncontested electoral outcomes. Therefore it may be relevant to acknowledge the different impact of politics on turnover across regions where the ruling majority is not contestable by the opposition and those where this might actually occur. We rely on a simple criterion for classifying a region as contestable. We consider a region as CONTESTABLE if at least one majority CHANGE occurred in the last three elections. Otherwise the region is considered as NOT CONTESTABLE.

**Table 8** shows the results of the model accounting for political contestability. The first and second regressions are similar to our main model, but are run on the subsamples of contestable and not contestable regions. The third regression is run on the complete sample but incorporates the interactions between the financial loss and contestability (also interacted for the type of firm). Our evidence clearly suggests that LHAs' managerial turnover is more responsive to financial loss in contestable regions. Looking at the full sample interacted model estimates, one standard deviation deterioration in LHA's LOSS leads to 10.5 percentage points increase in turnover baseline probability in contestable regions, while it brings just to a 3.5 pp increase in not contestable regions. Therefore, both politics and performance have a significant role, but in particular the risk of losing the next election make the politicians more responsive to a bad performance of the managers. This leads us to conclude that the effect of the

politics enhances the relationship between performance and turnover. The two effects are not mutually exclusive, but are complementary in determining the turnover. In particular, the interaction between the two plays an important role.

### **Insert Table 8 Here**

We replicate the same kind of analysis by exploring the relationship between turnover and the other PERFORMANCE indicators we described above. **Table 9** reports our evidence. We adopt the same specification of columns 4 and 6 and substitute for LOSS the following indicators in turn: OCCUPANCY, DISCHARGE, ALOS, INFLOW, INAPP, DRGW, EXIT and DRUG. All these models, excluded the last two, are estimated on the sample comprising both the LHAs and the HTs. The last two models, given the nature of the performance proxy used, apply to the LHAs only. The number of firms included in the estimation sample is 254 in all but the last two models, where it is 174 with EXIT and 183 with DRUG. Observations vary according to data availability on the specific performance indicator considered.

### **Insert Table 9 Here**

According to these models the basic features pertaining to the relationship between turnover and political cycles are largely confirmed. Concerning the additional role played by the performance indicators, our evidence suggests that, if any, the effect is confined to LHAs top executives' turnover. The indicators having a statistically significant effect on LHAs turnover are OCCUPANCY, ALOS, INFLOW, DRGW and DRUG. The only indicators affecting HTs turnover proves to be INFLOW. The signs of the correlations are mainly those expected, i.e. positive for indicators of bad performance (ALOS, and DRUG) and negative for indicators of good performance (INFLOW). Exceptions are represented by OCCUPANCY, DRGW and INFLOW which are positively correlated with LHAs turnover ratio. Notice however that the size of the effect of bed OCCUPANCY is quite small (one standard deviation increase in occupancy leads to 1.2 pp increase in baseline turnover probability). Moreover a high occupancy might reflect the inability to undercut excessive hospital admissions. The

large positive effect of INFLOW and DRGW (one standard deviation increase respectively leading to a 10.5 pp and 7 pp increase in LHAs turnover) reveals that these two indicators capture dimensions of managerial performance that are not appreciated by a regional principal. The production of medical services, when aimed at non-residential patients with complex case-mixes, is typical of the HT. When this activity is pursued by a LHA, it is done in competition with the local HT (whose comparative advantage may be not exploited). Thus, from the point of view of the regional principal who must satisfy the local population demand, this can lead to a drain of LHA's resources. On the other hand, raising INFLOW appears as an important objective assigned to HTs manager: a one standard deviation increase in INFLOW reduces by 8 pp the probability of dismissal. Finally, reducing ALOS and per capita DRUG expenditure are both appreciated performance by a LHAs manager: a one standard deviation improvement on them lead to a 7.5 pp and 2.8 pp reduction in turnover probability.

## **7 CONCLUSIONS**

In this paper we have provided an analysis of the managerial turnover in the Italian NHS and of its relationship with managerial performance and regional politics. We acknowledged the existing difference between local health authorities (LHA) and hospital trusts (HT). The LHAs, acting as insurers, responds to a different incentive scheme than the HTs. LHAs are funded by the regional government and are subject to a direct scrutiny by regional principals. On the other hand, HTs' incentive mechanism operates more through the volume-pay contracts hold with the LHAs, than through direct monitoring from regional principals. In this respect incentives on HT would be enhanced by a real competition among the HTs (and between the HTs and the other providers), which is rarely the case in Italy. Of the two conditions, i.e. formalized goals and competition, needed by quasi-markets in order to fully develop efficiently, only the first one is met.

This difference in the incentives structure imposed upon LHAs and HTs is clearly reflected in our findings. The turnover in the LHAs is responsive to most of the considered performance indicators, financial loss in particular, while for the HTs the impact of performance indicators proved to be very limited. The political cycle is quite

relevant. A change in majority in the current and previous years' elections leads to a sharp increase in the turnover probability, which is larger for HTs. Moreover, regional political contestability enhances the effect of performance on the turnover in LHAs, suggesting that the risk of a political sanction through the vote provides incentive for the regional politician to adopt a stricter control over the LHAs' managers.

Our evidence supports the idea that regional principals are actively monitoring LHAs managers' performance, while are disregarding the one offered by HTs' managers. Such a monitoring is more pervasive and productive the more contestable regional principals are. Although the matter is further complicated by the double role of the Italian LHAs, which are purchasers and providers at the same time, the funding mechanism of these institutions (directly financed on the basis of the population) can render them more accountable than the HTs. Indeed, since the HTs obtains their funding through the selling of medical services, unless an actual deficit is reported, the incentive for the politician to enforce an active control is minimal. Our evidence on the missing HTs performance-turnover relationship might suggest that this lack of formal monitoring is not replaced by incentives operating through quasi-market competition in hospital care market.

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**TABLES & FIGURES TO BE INSERTED IN THE MAIN TEXT**

**TABLE 1: ANNUAL TOP EXECUTIVES' TURNOVER RATE IN OUR SAMPLE.**

YEAR	N°OF UNITS	TENURE	TURNOVER
1999	183	2.82	16%
2000	211	3.05	19%
2001	236	3.14	24%
2002	274	2.99	27%
2003	280	2.92	20%
2004	285	3.04	13%
2005	285	3.66	41%
2006	262	3.16	20%
2007	249	3.28	24%
Total	2265	3.13	23%

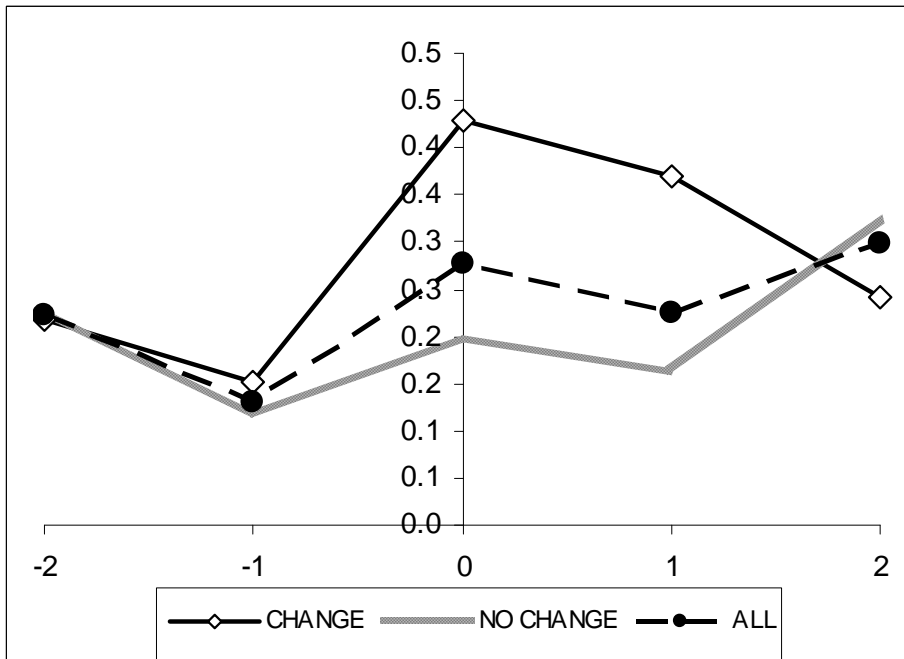
**TABLE 2: SAMPLE COMPOSITION ACCORDING TO REGION, HTS AND GENDER.**

YEAR	NORTH	CENTRE	SOUTH	HTS	FEMALE
1999	56%	27%	17%	32%	3%
2000	56%	25%	19%	32%	2%
2001	53%	25%	23%	31%	3%
2002	46%	23%	31%	31%	4%
2003	47%	22%	31%	32%	4%
2004	47%	22%	31%	32%	5%
2005	47%	22%	31%	32%	6%
2006	45%	24%	31%	36%	7%
2007	46%	24%	30%	37%	8%
Total	49%	23%	28%	33%	5%

**TABLE 3: TURNOVER RATIO BY YEARS OF TENURE.**

TENURE	N°at RISK	TURNOVER	TURNOVER PROBABILITY
1 year	589	104	17.7%
2	508	90	17.7%
3	364	80	22.0%
4	286	77	26.9%
5	217	82	37.8%
6	122	36	29.5%
7	78	16	20.5%
8	54	16	29.6%
9	26	10	38.5%
>9	21	12	57.1%
Total	2265	523	23.1%

**FIGURE 1: TURNOVER RATIO IN YEARS BEFORE AND AFTER REGIONAL ELECTIONS. FULL SAMPLE: 1999-2007.**



**TABLE 4: PERFORMANCE INDICATORS**

<b>NAME</b>	<b>Description</b>	<b>Availability</b>
LOSS_NS	Loss before regional funding, divided for the total costs. The total costs considered are inclusive of production costs and financial income and charges, excluding accounting adjustments and extraordinary income and charges.	2001-2007
LOSS	Defined as LOSS, standardized	2001-2007
OCCUPANCY	Total # of inpatients days divided by number of bed-days	1999-2007
DISCHARGE	N° of inpatients divided by total N° of p ersonnel	1999-2007
ALOS	Average length of stay for hospital admissions	1999-2007
INFLOW	Share of patients coming from outside the region (adjusted for case mix complexity)	2001-2006
INAPP	Ratio of inpatients that should have been treated on an outpatient basis (on the total of the treated inpatients)	2001-2006
DRGW	Average DRG weight of the patients	2001-2006
EXIT	Share of patients moving outside the region (adjusted for case mix complexity)	2001-2006
DRUG	Per capita expenditure on drugs (on the basis of the LHA population)	1999-2007

Note: Each variable is standardized by dividing it for the mean value of the comparison group. The comparison group comprises all the firms of the same type (HT or LHA), in the same region and in the same year. In the regressions we control for the 1-year lagged value of each indicator.

**TABLE 5: DESCRIPTIVE STATISTICS FOR THE INCLUDED REGRESSORS**

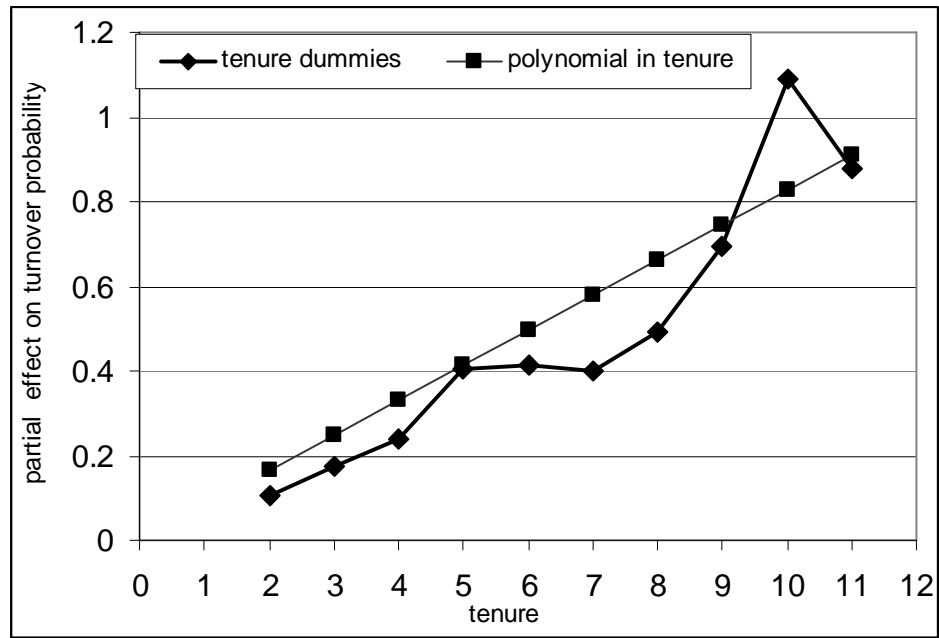
Variable	LHA					HT				
	Obs	Mean	Std.D	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Turnover	1429	0.233	0.423	0	1	634	0.233	0.423	0	1
Tenure	1429	3.094	2.011	1	13	634	3.353	2.280	1	11
Female top-executive	1429	0.059	0.237	0	1	634	0.028	0.166	0	1
Year 0 ELECTION without CHANGE	1429	0.136	0.343	0	1	634	0.158	0.365	0	1
Year 0 ELECTION with CHANGE	1429	0.079	0.270	0	1	634	0.057	0.232	0	1
Year -1 ELECTION without CHANGE	1429	0.146	0.353	0	1	634	0.166	0.372	0	1
Year -1 ELECTION with CHANGE	1429	0.071	0.256	0	1	634	0.058	0.235	0	1
Year -2 ELECTION without CHANGE	1429	0.152	0.359	0	1	634	0.169	0.375	0	1
Year -2 ELECTION with CHANGE	1429	0.074	0.262	0	1	634	0.062	0.240	0	1
LOSS_NS	984	0.904	0.068	0.628	0.995	437	0.350	0.325	-0.049	0.979
LOSS	984	1.035	0.153	0.712	2.032	437	0.902	0.420	-0.644	2.609
OCCUPANCY	1194	1.029	0.377	0.219	8.435	526	1.013	0.146	0.064	2.966
DISCHARGE	1190	1.042	0.525	0.091	8.376	516	1.008	0.229	0.419	2.031
ALOS	1191	0.996	0.240	0.563	3.372	518	1.000	0.162	0.487	1.457
INFLOW	930	0.976	0.613	0.163	4.788	434	1.039	0.514	0.201	3.665
INAPP	930	1.002	0.236	0.361	2.882	434	0.992	0.218	0.442	1.587
DRGW	930	0.993	0.069	0.812	1.339	434	1.017	0.148	0.537	1.785
EXIT	941	1.001	0.529	0.250	4.021	n.a.	n.a.	n.a.	n.a.	n.a.
DRUG	1267	1.010	0.148	0.001	2.798	n.a.	n.a.	n.a.	n.a.	n.a.

**TABLE 6: IMPACT OF POLITICAL CYCLE ON EXECUTIVES TURNOVER, YEARS 1999-2007.**

VARIABLES	-1	-2	-3	-4
TENURE	0.080*** [0.019]	0.083*** [0.022]		
TENURE SQUARED	0.000 [0.002]	0.000 [0.002]		
Tenure = 2			0.103*** [0.030]	0.108*** [0.033]
Tenure = 3			0.165*** [0.041]	0.175*** [0.051]
Tenure = 4			0.239*** [0.036]	0.238*** [0.038]
Tenure = 5			0.399*** [0.048]	0.404*** [0.054]
Tenure = 6			0.404*** [0.055]	0.413*** [0.058]
Tenure = 7			0.403*** [0.065]	0.399*** [0.066]
Tenure = 8			0.479*** [0.057]	0.490*** [0.064]
Tenure = 9			0.700*** [0.117]	0.694*** [0.117]
Tenure = 10			1.086*** [0.109]	1.090*** [0.116]
Tenure = 11			0.876*** [0.177]	0.880*** [0.182]
TIME	0.020 [0.033]	0.020 [0.034]	0.030 [0.030]	0.030 [0.030]
TIME SQUARED	-0.002 [0.003]	-0.002 [0.003]	-0.003 [0.003]	-0.003 [0.003]
FEMALE	-0.065 [0.052]	-0.067 [0.051]	-0.063 [0.051]	-0.065 [0.052]
Year 0 ELECTION without CHANGE	0.041 [0.055]		0.047 [0.060]	
Year 0 ELECTION with CHANGE	0.171 [0.110]		0.178 [0.107]	
Year -1 ELECTION without CHANGE	-0.006 [0.034]		0.004 [0.031]	
Year -1 ELECTION with CHANGE	0.139 [0.091]		0.143 [0.089]	
Year -2 ELECTION without CHANGE	0.122 [0.093]		0.114 [0.082]	
Year -2 ELECTION with CHANGE	0.086* [0.047]		0.08 [0.046]	
Year -1,0 ELECTION without CHANGE		0.014 [0.040]		0.022 [0.040]
Year -1,0 ELECTION with CHANGE		0.162*** [0.049]		0.168*** [0.050]
Year -2 ELECTION		0.112 [0.069]		0.104* [0.060]
Constant	-0.105 [0.079]	-0.107 [0.087]	-0.052 [0.065]	-0.055 [0.072]
Observations	2063	2063	2063	2063
Number of units	264	264	264	264
R-squared	0.158	0.157	0.169	0.168

Note: The dependent variable equals 1 if there was a new manager at the end of the year, 0 otherwise. All models are estimated as linear probability models with LHA/HT fixed effects. Standard errors (in parentheses) are corrected for clustering of the error term at the region level.

**FIGURE 2: PARTIAL EFFECT OF TENURE ON THE TURNOVER PROBABILITY: TENURE DUMMIES VS. POLYNOMIAL IN TENURE**



Note: these plots are based on models 2 and 4 of table 6

**TABLE 7: RELATION OF TOP EXECUTIVE TURNOVER WITH PERFORMANCE INDICATORS: LOSS**

	Base	Base	Performance =		Performance =	
	model 1	model 2	LOSS_NS		LOSS	
	-1	-2	-3	-4	-5	-6
TENURE	0.123*** [0.027]	0.124*** [0.027]	0.124*** [0.027]	0.126*** [0.028]	0.123*** [0.027]	0.121*** [0.027]
TENURE SQUARED	-0.001 [0.002]	-0.001 [0.002]	-0.001 [0.002]	-0.002 [0.002]	-0.001 [0.002]	-0.001 [0.002]
TIME	-0.039 [0.182]	-0.032 [0.179]	-0.017 [0.179]	-0.009 [0.176]	-0.026 [0.178]	-0.013 [0.180]
TIME SQUARED	0.002 [0.014]	0.001 [0.014]	0.000 [0.014]	0.000 [0.014]	0.001 [0.014]	-0.001 [0.014]
FEMALE	-0.048 [0.058]	-0.047 [0.057]	-0.045 [0.058]	-0.049 [0.059]	-0.053 [0.057]	-0.053 [0.056]
YEAR -1,0 ELECTION WITHOUT CHANGE	0.007 [0.064]	0.009 [0.061]	0.007 [0.060]	0.005 [0.061]	0.01 [0.059]	0.031 [0.057]
YEAR -1,0 ELECTION WITH CHANGE	0.197*** [0.060]					
YEAR -1,0 ELECTION WITH CHANGE * LHA		0.177** [0.073]	0.175** [0.073]	0.175** [0.071]	0.176** [0.073]	0.186** [0.078]
YEAR -1,0 ELECTION WITH CHANGE * HT		0.258** [0.099]	0.273** [0.100]	0.267** [0.104]	0.257** [0.101]	0.275** [0.106]
2 YEARS PAST ELECTION	0.083 [0.083]					
2 YEARS PAST ELECTION * LHA		0.071 [0.074]	0.073 [0.074]	0.072 [0.074]	0.063 [0.072]	0.052 [0.071]
2 YEARS PAST ELECTION * HT		0.121 [0.134]	0.124 [0.133]	0.126 [0.132]	0.147 [0.152]	0.14 [0.145]
PERFORMANCE			0.221 [0.150]		0.095 [0.069]	
PERFORMANCE * LHA				0.711*** [0.235]		0.321*** [0.104]
PERFORMANCE * HT				0.154 [0.170]		-0.022 [0.071]
Constant	-0.018 [0.576]	-0.042 [0.573]	-0.253 [0.637]	-0.579 [0.585]	-0.152 [0.563]	-0.288 [0.576]
Observations	1421	1421	1421	1421	1421	1421
Number of units	263	263	263	263	263	263
R-squared	0.236	0.237	0.238	0.239	0.239	0.243

Note: the dependent variable equals 1 if there was a new manager at the end of the year, 0 otherwise. All models are estimated as linear probability models with LHA/HT fixed effects. Standard errors (in parentheses) are corrected for clustering of the error term at the region level.



**TABLE 8: TOP EXECUTIVE TURNOVER AND FINANCIAL LOSS: ACCOUNTING FOR REGIONAL CONTESTABILITY**

LABELS	Contestable regions	Not contestable regions	ALL
TENURE	0.187*** [0.040]	0.066** [0.023]	0.121*** [0.025]
TENURE SQUARED	-0.008 [0.004]	0.004 [0.002]	-0.001 [0.002]
TIME	0.077 [0.256]	-0.321 [0.247]	-0.021 [0.185]
TIME SQUARED	-0.006 [0.020]	0.021 [0.019]	0.000 [0.014]
FEMALE	-0.043 [0.079]	-0.06 [0.114]	-0.052 [0.060]
YEAR -1,0 ELECTION WITHOUT CHANGE	0.257*** [0.023]	0.056 [0.051]	0.027 [0.058]
YEAR -1,0 ELECTION WITH CHANGE	0.171** [0.066]		0.216*** [0.066]
2 YEARS PAST ELECTION	0.100 [0.074]	0.009 [0.195]	0.073 [0.080]
LOSS * LHA	0.525** [0.216]	0.331*** [0.083]	
LOSS * HT	0.012 [0.107]	-0.150 [0.124]	
LOSS * LHA * CONTESTABLE			0.687*** [0.178]
LOSS * LHA * NOT CONTESTABLE			0.231* [0.111]
LOSS * HT * CONTESTABLE			-0.022 [0.105]
LOSS * HT * NOT CONTESTABLE			-0.077 [0.124]
Constant	-0.892 [0.894]	0.873 [0.772]	-0.355 [0.604]
Observations	689	732	1421
Number of units	127	136	263
R-squared	0.261	0.276	0.243

Note: the dependent variable equals 1 if there was a new manager at the end of the year, 0 otherwise. Regions are classified as "CONTESTABLE" if at least one change in majority occurred in the last three elections. All models are estimated as linear probability models with LHA/HT fixed effects. Standard errors (in parentheses) are corrected for clustering of the error term at the region level.

**TABLE 9: RELATION OF TOP EXECUTIVE TURNOVER WITH PERFORMANCE INDICATORS: OTHER INDICATORS**

	<b>PERFORMANCE =</b>	OCCUPANCY	DISCHARGE	ALOS	INFLOW	INAPP	DRGW	EXIT	DRUG
TENURE	0.091***	0.092***	0.092***	0.123***	0.121***	0.126***	0.111***	0.080***	
	[0.026]	[0.026]	[0.026]	[0.028]	[0.028]	[0.030]	[0.027]	[0.025]	
TENURE SQUARED	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	0.000	0.002	
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	
TIME	0.064	0.064	0.06	-0.008	-0.007	-0.024	-0.031	0.029	
	[0.043]	[0.042]	[0.041]	[0.191]	[0.195]	[0.193]	[0.190]	[0.040]	
TIME SQUARED	-0.007	-0.007	-0.006	0.000	-0.001	0.002	0.001	-0.004	
	[0.004]	[0.004]	[0.004]	[0.015]	[0.015]	[0.015]	[0.015]	[0.004]	
FEMALE MANAGER	-0.100*	-0.102*	-0.100*	-0.061	-0.053	-0.055	-0.028	-0.063	
	[0.051]	[0.051]	[0.049]	[0.059]	[0.061]	[0.062]	[0.069]	[0.064]	
YEAR -1,0 ELECTION WITHOUT CHANGE	0.042	0.041	0.039	0.012	0.018	0.003	0.002	-0.007	
	[0.050]	[0.052]	[0.052]	[0.059]	[0.060]	[0.056]	[0.061]	[0.056]	
YEAR -1,0 ELECTION WITH CHANGE * LHA	0.163**	0.160**	0.161**	0.160**	0.164**	0.149*	0.173**	0.141**	
	[0.060]	[0.060]	[0.059]	[0.075]	[0.076]	[0.076]	[0.076]	[0.056]	
YEAR -1,0 ELECTION WITH CHANGE * HT	0.253***	0.251***	0.245***	0.262**	0.267**	0.237**			
	[0.073]	[0.073]	[0.069]	[0.102]	[0.098]	[0.087]			
2 YEARS PAST ELECTION * LHA	0.105**	0.104**	0.105**	0.056	0.054	0.058	0.073	0.112**	
	[0.039]	[0.039]	[0.039]	[0.075]	[0.076]	[0.077]	[0.080]	[0.048]	
2 YEARS PAST ELECTION * HT	0.114	0.11	0.112	0.148	0.149	0.152			
	[0.120]	[0.121]	[0.114]	[0.142]	[0.149]	[0.150]			
<b>PERFORMANCE * LHA</b>	0.033*	0.013	0.313**	0.171*	-0.050	1.000**	-0.018	0.189*	
	[0.016]	[0.020]	[0.128]	[0.085]	[0.092]	[0.459]	[0.204]	[0.108]	
<b>PERFORMANCE * HT</b>	0.007	0.002	-0.543	-0.158*	0.357	-0.790			
	[0.109]	[0.089]	[0.486]	[0.084]	[0.212]	[0.584]			
Constant	-0.256	-0.241	-0.278	-0.181	-0.192	-0.516	0.021	-0.305*	
	[0.149]	[0.147]	[0.263]	[0.609]	[0.607]	[0.716]	[0.560]	[0.150]	
Observations	1720	1706	1709	1364	1364	1364	941	1267	
Number of units	254	254	254	254	254	254	174	183	
R-squared	0.168	0.168	0.171	0.232	0.231	0.235	0.227	0.179	

Note: the dependent variable equals 1 if there was a new manager at the end of the year, 0 otherwise. All models are estimated as linear probability models with LHA/HT fixed effects. Standard errors (in parentheses) are corrected for clustering of the error term at the region level.