Impact of Mergers on Repositioning of Services: Evidence from the French Hospital Industry

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January 18, 2017

Very Preliminary

Abstract

This paper aims to provide insight on the impact of mergers on positioning of hospital services by exploiting a rich and unique database on the French hospital industry for the years 2010-2014. Our preliminary findings show that following a merger private hospitals distance themselves from each other by re-positioning their health services offered. This is in line with a non-cannibalization strategy by the merging parties. We observe that merging hospitals' combined market share increases. To our knowledge, no economic studies have attempted to evaluate the economics effects of mergers and acquisitions in the hospital industry on service re-positioning. We contribute to the existing literature on the use of positioning of products/services health services as a competitive tool. We also believe that such studies can help competition authorities improve their assessment of potential effects of mergers by accounting for another dimension of competition.

JEL Codes: C23, I11, L40.

Keywords: Product differentiation, mergers, acquisitions, hospitals.

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Introduction

Most intuitions on the potential effects of horizontal mergers in differentiated product industries come from price-only competition models, where mergers between close competitors may give rise to unilateral effects (see Werden & Froeb (2008)). Unilateral merger effects occur from internalization of the competition between the merging firms. The incentives to raise prices are directly linked with the likelihood product-substitution between the products produced by the merging firms. A merger between firms with similar products might trigger potential anti-competitive effects in the market.

Competition, however, may take place in other dimensions than price. Empirical evidence suggests that airlines tend to cluster the departure times of their flights relative to the times chosen by competitors, consistent with strategic differentiation to soften price competition (Borenstein & Netz (1999)). In the motion picture industry, evidence suggest that movie distributors tends to differentiate the release dates of its movies relative to the dates chosen by competitors. Making the dates between its own movies and that of their competitors closer (Corts (2001)). Also, empirical evidence suggests that when a movie theater chain opens a new theater, it takes patrons from competitors rather than from its own existing theaters. This suggests that a chain positions new theaters, either geographically or by choosing which movies to screen, closer to theaters owned by competitors than its own venues (Davis (2006)).

Non-price competition seems to be an important factor shaping firms interactions. Non-price competition can take either of several forms: entry, exit or product re-positioning (i.e., quality, location, etc...). Revenue cannibalization, business stealing and market expansion may result from either type of not-price competition. It is well know that because of free entry an industry can incur into an excessive entry if firms ignore the business stealing effect on rivals' revenues when making entry decisions to the detriment of net social welfare (Davis (2006)). Nevertheless, the effects of non-price competition are often overlooked by competition authorities. Product re-positioning, aside from prices, may be used as a competitive tool and ignoring this dimension of competition may lead to a biased evaluation of effects of merger.

Existing theoretical literature provides some insight on the competitive role played by re-positioning in a merger situation. Gandhi et al. (2008) introduces a theoretical model where firms compete both in price and location. They show that products combined by a merger are re-positioned away from each other in the aim of reducing cannibalization. Non-merging rivals re-position their products between merged products. The comparison of their results to those obtained in a price-only competition model show that when merging products are close to each other pre-merger, the merger would be considered as less anti-competitive in the price-location

model than in the price-only model. Anticompetitive effects of mergers are shown to be mitigated by the re-positioning of merging products.

Empirical literature studying the question of the impact of mergers on product positioning remains scarce. Berry and Waldfogel (2001) study the relationship between per-firm variety and market concentration in U.S. radio broadcasting, focusing on the impacts of recent regulatory changes. They find that greater concentration of ownership in a market raises variety per firm, where variety is measured by the number of different programming formats on air. Whereas, Gotz and Gulger (2006) present examples for a spatially differentiated economy, which show that reduced product variety is a likely outcome of mergers if barriers to entry are high. Draganska et al. (2009) develop an integrated empirical framework to investigate how firms make product-choice decisions in differentiated products industries. Fan (2012) develops a structural model of newspaper markets to analyze the effects of ownership consolidation, taking into account not only firms' price adjustments but also the adjustments in newspaper characteristics. Mazzeo, Seim, Varela (2014) provide a model that endogenizes both product choice and pricing. They conduct equilibrium market simulations for mergers and find that allowing for changes in product offering the merging parties offered relatively similar products prior to the merger.

Similarly, Sweeting (2010) shows, on the example of the US music radio industry, that mergers between close competitors lead to important changes in product positioning. In particular, re-positioning is used as a competitive tool. Mergers are shown to result in a higher degree of differentiation between the merging stations with the goal of limiting cannibalization. Furthermore, merging radio stations decide to position themselves closer to competitors to attract new listeners. Re-positioning is used to gain market shares at the expense of competitors. Argentesi et al. (2016) study the impact of retail mergers on prices and product variety. They show that choice of product assortment and product positioning play a key competitive role in the retailing sector. While they find no effect of mergers on prices, their results suggest that the merging parties reduced the depth of their assortment. They explain this finding by merging firms wanting to re-position their product offerings in order to avoid cannibalization. This reduced variety effect is partially (but not fully) outweighed by increased variety provided by competitors. None of the existing studies focus on the hospital industry.

To our knowledge, the question of product re-positioning as a competitive tool in the context of the hospital industry has not been challenged in the existing literature. Existing and scarce studies assessing the impact of mergers in the health care industry provide ambiguous results of the impact of mergers on quality (see for instance Ho & Hamilton (2000)).

These studies ignore however the use of re-positioning of health services as a competitive tool. Meanwhile, health practitioners often underline that mergers between hospitals lead to re-

positioning of their services (so called "organizational re-engineering"). The relevant empirical question we want to address concerns the impact of mergers on quality when re-positioning of services is possible.

In the context of the French hospital industry, strategic effects of mergers may reveal themselves in the form of quality and not price effects. Since 2008, all hospitals (both private and public) are reimbursed at a fixed price, based on their diagnosis related group regardless of the amount of care provided to patients. As prices for treating patients are fixed, hospital may have incentives to reduce quality with the aim of maximizing profits. Mergers may then result in the degradation of quality of services offered.

Our paper intends to contribute to the existing empirical literature by performing an empirical study of the impact of mergers occurring in the French hospital industry of medicine, surgery, obstetrics (hereafter, MSO) on the re-positioning of services offered by private hospitals. Addressing this question in the context of the hospital industry is of particular public relevance, as the quality of services offered to patients is at stake. Furthermore, our aim is to contribute to the studies performing ex-post merger evaluation with the goal of helping competition authorities to improve their assessment of potential effects of mergers and thus improving future decision making.

This paper provides insight on the impact of mergers on positioning of hospital services by exploiting a rich and unique database on the French hospital industry for the years 2010–2014. We examine the effects of a change in ownership on positioning of health care services and market shares. Our results show that following a merger, private hospitals distance themselves from each other by re-positioning their health services offered. Merging firms avoid market cannibalization by re-positioning their products. Re-positioning is followed by an increase in combined market shares.

The paper proceeds as follows. Section 1 provides an overview of the French hospital industry. Section 2 introduces the unique and original dataset constructed for the purpose of the study. Section 3 presents the empirical model. Finally, section 4 concludes and highlights potential alleys for further extensions and improvements.

1 French hospital industry

The hospital sector in France is large and it is publicly funded. In 2009, the hospital sector alone was assigned the equivalent to 12% percent of GDP (DGOS, 2009). A sizable share went to the private sector as the French hospital health care system is provided by private and public actors, each with a significant share of patients. In particular, there are three main hospital ownership statuses in the sector: public, private not-for-profit and private for-profit. There are two main

differences between each hospital ownership statuses: 1) public hospitals need to transfer their profits to the state, whereas not-for-profit need to reinvest the earnings and for-profit hospitals can keep it; 2) public hospital employees are civil servants, whereas private employees are salaried and private practice doctors. Among the 1700 hospitals providing MSO, nearly half are private hospitals.

The French hospital sector is a regulated sector with two different instruments, namely, health care authorizations and DRG-pricing. In this section we present a non-exhaustive summary of each regulation instrument, as well as, how the sector has evolved.

1.1 Health care authorizations

Regulators act from a national point of view with the Directorate of Health Care (fr, *Direction générale de l'offre de soins- DGOS*), and from a regional point of view with the Regional Health Agency (fr. *Agence Regional en Santé - ARS*). These national and regional agencies shape the health supply landscape by providing hospitals with authorizations (or not) to practice a service.

There are nineteen ARS covering France. Each ARS has the obligation to generate a five-year plan (fr. *Schéma Régional d'Organisation des Soins - SROS*) to organize health care supply within its territory. To accomplish their goals, the ARS have the faculty to deliver service authorizations. This tool allows health authorities to reach their health services provision objectives, and constitutes the general framing for competition and cooperation in the hospital sector.

The creation of a new health institution, or a creation, transformation or gathering of health services and installation of new medical device are subject to authorization[1]. An authorisation needs to specify the type of activity that is allowed. For example, an authorization for surgery does not grant a health institution to perform neurosurgery, cancer surgery nor heart surgery.

New or renewal of authorizations can only be granted to the activity that have been prior identified to be in need for an expansion; though exceptions do apply. The "bilan quantifié de l'offre de soin" (BQOS) characterizes the population's needs in terms of health and is constructed retrospectively using hospital discharge data. BQOS states the number of current authorizations and the number of desired authorization. The difference between realized and desired number of authorizations is an indicator of how well the planning objectives are satisfied. New authorization

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[1]The French health code requires that medicine, surgery, gynecology-obstetrics, neonatology, neonatal reanimation, psychiatric, acute care and rehabilitation, long term care, organstransplants and hematopoietic cell transplants, the treatment of severily burned patients, heart surgery, interventional endovascular radiology for cardiology, neurosurgery, neu-roradiologie, medical emergencies, reanimation, treatment of chronic renal insufficiency through haemodialysis, clinical and biological medical assistance for procreation and pre-natal diagnostic, cancer treatment, genetic identification for medical uses. Similarly, heavy medical equipment subject to authorization are scintillation camera with or without positron detectors, tomography, positron emitters, spectroscopy, scanography, hyperbaricchamber, cyclotrons.

permits are only received for those areas where a need is identified.[2] An authorization is given if: 1) it satisfies the populations' health needs identified in the SROS and published in the BQOS; 2) if it complies with the objectives established by the SROS; 3) if it complies with physical and technical requirements.

All authorizations, even public hospital activity authorizations can be transferable. All transfers are subject to the confirmation from the inbound ARS director. Nevertheless, the director can only dis-approve the transfer if the moral person benefiting from the transfer changes substantially the nature of the authorization. Transferring authorizations between hospitals is more likely to happen than the creation of a new authorization. Physical grouping of hospital in one site, physical relocation of a single hospital and a transformation of a service into a different service also requires an authorization from an ARS. Nevertheless, conditions for groupings, relocation and transformation are generally satisfied and agreed upon with the ARS.

An authorization may last up to five years, and the length of time may be modified by the ARS when a change of the initial conditions of the authorization occurs (e.g. closure of service, cooperation between hospitals). In the case of a merger, the authorizations owned by both merging parties are shared. Merging firms can easily close a service. This is because, ass opposed to the creation of a new service, closure of a service does not requires prior authorization to the ARS. In addition, it is important to underline that authorizations are given for the provision of a broadly defined activity covering a large number of services. Re-position can happen both at the extensive margin and intensive margin. Nevertheless, the French hospital setting might suggest that service re-positioning would happen more frequently at the intensive margin rather than the extensive margin.

1.2 Financing system

A hospital in France is a moral personal that is administratively and financially autonomous.[3] Generally a hospital can be funded by their hospital activity; subventions, grants and endowments given by a public person, government or the public health insurance; good and services, rent and intellectual property rights; loans and advances; generosity and gifts. Yet, 90% of hospitals' funding come from the activity they perform. In particular, the activity-based payment (fr. *Tarification à l'activité - T2A*) is currently the only mode of financing medical, surgical and obstetric activities of both public and private hospitals. It was gradually introduced in 2004 and came fully into force in 2008. Prior to 2004, health establishments were financed depending on their legal nature.

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[2] If the authorization is denied, the ARS needs to motivate the decision and, if required by the authorization seeker transmit the reasons of denial to the seeker. An appeal to the courts can be performed.

[3] Law L6141-1 from the Public Health Code

Public hospitals and not-profit private hospitals would receive global budgets, mainly based on historical costs. Financing of private for-profit hospitals was based on an itemised billing system complimented with fee-for service payments (see Or (2014)).

Since 2008, each hospital (both public and private) is reimbursed based on a fixed rate determined prospectively at a national level. All hospital stays are classified in Diagnosis Related Groups (hereafter, DRG), which regroup patients that have experienced similar treatments in the aim of assigning the same amount of resources to the similar patients. Hospitals are hence reimbursed at a fixed price, based on their diagnosis related group regardless of the amount of care provided to patients.

Under the activity-based reimbursement scheme the amount of financing received by the hospital depends on the volume of patients per DRG and the respective fixed fees per DRG. Comparing to a global budged mode of financing, public hospitals have now more incentives to compete for patients. The reform of the payment system induced competition to both the public and private sectors.[4] As prices are fix, hospitals may compete on non-price attributes such as quality or service re-positioning. In the absence of re-positioning of service and cost efficiency, mergers may result in the degradation of quality of services offered.

2   Data

To consistently estimate the effect of mergers on service re-positioning we require information on merging and non-merging entities. In particular, we need: to identify when a merger occurs; to identify services offered by each hospital; and to identify each hospital-service level of activity. We construct a unique and original dataset on services offered by private and public hospitals activity on MSO activities in the French hospital industry covering the period 2010-2014. We also construct a set of differentiation variables.

2.1   Data sources

Data come from several sources. **SAE** (fr. *Statistique Annuelle des Etablissements*) database is a mandatory administrative survey of all public and private healthcare establishments in France. The data are collected by the Regional Department of Health and Social Affairs (fr. *Direction régionale des affaires sanitaires et sociales*), the ministries of social affairs, health and women's rights. **ScanSanté** (an extraction of PMSI, fr. *Programme de médicalisation des systémes d'information*) data is a publicly available dataset providing an exhaustive nationwide database on hospital activity. ScanSanté is based on the DRG-classification of activities, covering all public and private

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[4]For more information on the pro-competition aspect of the reform see Gobillon & Milcent (2016).

hospitals. It provides data on almost all claims paid by the Social Security System to hospitals and is therefore the main source of information on hospital activity and associated expenditure. **FINESS** (fr. *Fichier National des Etablissements Sanitaires et Sociaux*) database is a national directory of health and social establishments maintained by the Regional Department of Health and Social Affairs (fr. *Direction régionale des affaires sanitaires et sociales*) and the Departmental Directorate for Health and Social Affairs (fr. *Direction Départementale des Affaires Sanitaires et Sociales*). **ATIH** (fr. *Agence Technique de l'Information sur l'Hospitalisation*) provides fixed fee reimbursement rates per DRG.

The SAE database provides us with historical information on capacity of public and private hospitals, that is the number of beds that each hospital attributes to medicine, surgery and obstetrics, respectively. We further supplement our dataset with hospital discharge data using ScanSanté. We use information on the total number of acts made within each service, average length of stay, average age of patient, sex ratio, as well as the percentage (%) of death at the DRG level for each hospital from 2010 until 2014. ScanSanté allows us to recover the number of standardized discharge summaries per DRG and zip-code of residence of patients in each hospital. We aggregate each DRG to a group of activities, where each group of activity (e.g. Breast Disorders, Mouth surgery, Bottom deliveries . . .) can be attributed to respectively medicine, surgery and obstetrics. Finally, ATIH (fr. *Agence Technique de l'Information sur l'Hospitalisation*) enables us to calculate market shares expressed in values.

Table 1 provides provides summary statistics on hospital MSO hospital activity in France. There are more public hospitals than for profit and non-profit hospitals combined. We compute market shares on value, number of discharges and number of beds for public and private hospitals for each service, MSO. The public sector has consistently a larger market share in the medicine and obstetric markets for all measures. The private sector dominates the surgery market, except when market shares are measured in value. This is due to a higher average reimbursement rate per activity to public hospitals sector across all services[5].

Table 2 and table 3 report on hospital summary statistics. Public hospitals compared to private (both for-profit and non-profit), on average, treat a greater number of patients (as measured in discharges), offer a wider variety of services (groups of activities) and face higher capacity in medicine and obstetrics. When it comes to surgery, private for-profit hospitals take, on average, the lead.

We compute department market shares on value, number of discharges and number of beds for public and private hospitals for each service, MSO. Hospitals in the public sector are consistently

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[5]Public hospitals are payed in average 1.8 to 2.5 more than the private sector. Finally, public hospitals offer a broader set of activities in medicine and obstetrics than the private sector but not in surgery.

Table 1: Summary statistics on public and private sector market shares

	Public	Private	
		For-profit	Non-profit
Number of hospitals providing MSO	900	600	200
Market shares in value			
in Medicine services	84% [0.0023]	12% [0.0019]	4.2% [0.0013]
in Surgery services	62.8% [0.0039]	32.8% [0.0047]	4.5% [0.0013]
in Obstetric services	77.7% [0.0051]	18.2% [0.0063]	4.1% [0.0014]
Market shares in hospital discharges			
in Medicine services	67.1% [0.0108]	25.9% [0.0150]	7.5% [0.0253]
in Surgery services	38.1% [0.0048]	56.0% [0.0066]	5.8% [0.0018]
in Obstetric services	70.2% [0.0108]	24.3% [0.0113]	5.4% [0.0006]
Market shares in capacity			
in Medicine services	80.8% [0.0023]	12.4% [0.0023]	6.8% [0.0013]
in Surgery services	45.9% [0.0048]	47.5% [0.0059]	6.7% [0.0015]
in Obstetric services	68.4% [0.0048]	26.9% [0.0060]	4.7% [0.0015]

Notes: All reported figures correspond to 2010 from 2014 averages. Standard deviations are in parenthesis. Market shares in value are defined as the share of a given sector (public/private for-profit/private non-profit) in the total reimbursement allocated to MSOs in France. Market shares in hospital discharges are defined as the share of a given sector in total number of discharges in MSOs in France. Market shares in beds are calculated by accounting for the share of a given sector in the total capacity of beds in MSOs in France.

Table 2: Summary statistics of hospital activity

	Public	Private	
		For-profit	Non-profit
N of hospital discharges per hospital			
in Medicine	11048 [32482]	4874 [4424]	6289 [10573]
in Surgery	3658 [9851]	6254 [4451]	3377 [3916]
in Obstetrics	2338 [4017]	935 [1265]	1458 [1683]
N of GA per hospital			
in Medicine	77 [33]	63 [27]	34 [24]
in Surgery	34 [29]	48 [20]	66 [30]
in Obstetrics	5 [1]	4 [2]	4 [2]
N of beds per hospital			
in Medicine	111 [135]	26 [34]	53 [57]
in Surgery	41 [72]	65 [47]	40 [48]
in Obstetrics	11 [27]	10 [19]	8 [17]

Notes: All reported figures correspond to 2010 from 2014 averages. Standard deviations are in parenthesis.

characterized by the greatest average market shares. This difference is particularly pronounced when accounting for the value of the services offered. The landscape, however, may change substantially from one department to another.

Table 3: Summary statistics on hospital market shares

	Public	Private	
		For-profit	Non-profit
Number of hospitals per department	7 [3]	6 [6]	2 [3]
Market shares			
in value	11.7% [0.1779]	3.3% [0.0360]	2.0% [0.0260]
in hospital discharges	9.5% [0.1494]	5.6% [0.0598]	3.1% [0.0423]
in capacity	8.1% [0.1224]	4.2% [0.0436]	2.7% [0.0265]

Notes: All reported figures correspond to 2010 from 2014 averages. Standard deviations are in parenthesis. Market shares in value are defined as the share of a given hospital in the total reimbursement allocated to MSOs in a given department (which takes into account both the number and value of hospital discharges). Market shares in hospital discharges are defined as a hospital's share in the total number of discharges in MSOs in a given department. Market shares in capacity are defined as a hospital's share in the total capacity of beds in MSOs in a given department.

Every French based health establishment is identified by a geographical and legal FINESS number. Each FINESS number is paired with data on the hospital's name, geographic location, legal status, field of activity, date of opening and closure (if any). Information provided in FINESS database allows us to identify mergers and acquisition occurring in the industry. A merger is identified when two or more hospitals previously registered under different legal FINESS identifiers, obtain a new common legal identifier. An acquisition occurs when one hospital acquires the legal pre-existing FINESS identifier of another hospital. We find that the French hospital industry has seen a wave of mergers and acquisitions. Table 4 reports mergers for the years 2010–2014. Approximately 81 mergers and acquisitions took place. Almost 60% of them concerned mergers between private hospitals.

Table 4: Number of mergers and acquisitions during the period 2010-2014

Total	Public-public [%]	Private-Private [%]	Public-Private [%]
81	30 [37%]	45 [56%]	6[7%]

2.2 Measures of differentiation between hospital pairs

We focus on a private for-profit hospitals providing MSO services in departments with at least two for-profit hospitals. There are 501 distinct hospital pairs, and 27 changes in ownership, resulting from a merger or acquisition, in our period of interest.

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We measure hospital differentiation as the differences in medical activities offered by a pair of hospitals. We focus on hospitals located in the same local market defined by the department. Department boundaries correspond exactly to the market that each French Hospitals belong to. We introduce three different measures of differentiation between hospitals.

The first differentiation measure is a unique group of activity, **D1**. It computes the proportion of GA provided by a hospital X that is not provided by hospital Y. The measure takes values from 0 to 1. As compared to hospitals with the same owner, hospitals with different owners are slightly less differentiated.

Our second measure of differentiation is a more complex angle measure, **D2**. Under this measure each hospital is located in a product space, where each group of activity offered is located in a separate dimension. A vector lists whether a given groups of activity is provided to the total number of groups of activities served in a given hospital. The distance (differentiation of services offered) between two hospitals is measured by the angle (in radians) between two vectors (divided by $\pi/2$, so that it lies between 0 and 1).

Our last measure of differentiation, **D3**, follows the construction of our second measure but accounts for each hospital's capacity measured by the number of beds in respectively medicine, surgery and obstetrics. We construct this measure by locating each hospital in a vector space as described above and multiplying each product space of the vector by the proportion of beds attributed to either medicine, surgery and obstetrics depending on the group of activity. As expected, the **D3** measure is closer to 1 than **D2**. Nevertheless, there is very little difference between same owner and different owners in the raw data.

Table 5: Hospital pairwise differentiation measures

Measure	Hospitals with same owner	Hospitals with different owner	P-value of difference
D1	0.39 [0.26]	0.34 [0.27]	0.05***
D2	0.56 [0.15]	0.57 [0.19]	-0.01
D3	0.62 [0.20]	0.61 [0.23]	0.01

Notes: Standard deviations are in parenthesis. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Observations consist of pairs of hospitals in the same department.

2.3 Measures of combined market shares

We measure combined market shares in value of MSO services provided by a hospital-pair with respect to the total value of services provided in a given department. The value of services is understood as the sum of the product of hospital discharges and their respective fixed fee reimbursement rates. As shown in table 6, pairs of private for-profit hospitals with common owners tend to have significantly higher combined market shares than those having different owners.

Table 6: Hospital pair combined market shares

Measure	Hospitals with same owner	Hospitals with different owner	P-value of difference
Market shares	6.1% [0.052]	3.8% [0.037]	2.3%***

Notes: Standard deviations are in parenthesis. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Observations consist of pairs of hospitals in the same department.

3 Empirical model

This section presents the main empirical results, examining the effects of ownership on positioning and market shares.

3.1 Common ownership and differentiation

The first set of regressions studies whether commonly owned private hospitals differentiate their services more than those independently owned private hospitals. We compare all pairwise combinations between hospitals in a given local market (department). We use a linear fixed effects specification, as defined below

$$d_{ijy}^{PAIR} = X_{ijy}\beta_1 + T_y\beta_2 + N_y\beta_3 + FE_{ij} + \epsilon_{ijy}, \tag{1}$$

where each observation is a pair of two hospitals and d_{ijy} is a measures of differentiation between hospital i and j in the year y, X_{ijy} is a dummy variable taking the value 1 when hospital i and j have the same owner in a given year y, T_y are year fixed effects, N_y are dummy variables for the total number of hospitals in each market, FE_{ij} are hospital-pair fixed effects and ϵ_{ijy} is the error term. Our parameter of interest is β_1. Standard errors are clustered on the department level.[6]

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[6]This allows for heteroskedasticity, time-series correlation within a paris and cross-sectional correlation across pairs in the same department.

Given that we are controlling for hospital-pair fixed effects, the common owner variable is identified by changes in common ownership. There are twenty seven (27) changes in common ownership that identify our parameter. Table 7 reports the results of the estimation of eqauation(1) for the three measures of differentiation considered. The coefficients (positive and statistically significant at a 1% level) suggest that following a merger hospitals reposition their services away from each other. The results obtained from taking the first measure of differentiation (*M1*) are most intuitive in their interpretation. They suggest that a common owner increases the percentage of MSO groups of activities not provided by the other hospital by approximately 0.08 percentage points. This is in line with a non-cannibalization strategy of merging hospitals.

Table 7: Estimation results – common ownership

	M1	**M2**	**M3**
Hospital pair with same owner	0.084***	0.043***	0.044***
	(0.027)	(0.007)	(0.014)
Control variables			
Year dummies	*Yes*	*Yes*	*Yes*
Number of Hospital fixed effects	*Yes*	*Yes*	*Yes*
Hospital paris fixed effects	*Yes*	*Yes*	*Yes*
Number of observations	15283	15283	15283
Adjusted R^2	0.10	0.18	0.21

Notes: Standard deviations are in parenthesis. Standard error are clustered on the department. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Regressions include pairs of hospitals in the same department.

3.2 Market shares

Market shares are used to examine whether the observed changes in re-positioning are associated with a gain in market shares. The following equation is estimated

$$MS_{ijy}^{PAIR} = X_{ijy}\beta_1 + T_y\beta_2 + N_y\beta_3 + FE_{ij} + \epsilon_{ijy}, \qquad (2)$$

which is the same as equation (1) with the difference that now the dependent variable is the *log* of market shares.

Results presented in Table 8 suggest that common ownership increases the combined market shares of a hospital-pair by approximately 9%, a result significant at the 1% level. This may

suggest that re-positioning results in a gain in common market shares.

Table 8: Estimation results – market shares

	Market shares
Hospital pair with same owner	0.086***
	(0.028)
Control variables	
Year dummies	*Yes*
Number of Hospital fixed effects	*Yes*
Hospital paris fixed effects	*Yes*
Number of observations	15283
Adjusted R^2	0.63

Notes: Standard deviations are in parenthesis. Standard error are clustered on the department. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Regressions include pairs of hospitals in the same department.

4 Conclusion and necessary extensions

We have provided preliminary insight on re-positioning occurring in the French health care industry. Following a merger, private hospitals distance themselves from each other by re-positioning their offer of health services. This is in line with the merging parties wanting to avoid market cannibalization. The re-positioning is accompanied by increased combined market shares. These results suggest that re-positioning of health services may be indeed used by private hospitals as a competitive tool.

While these results are in line with existing theoretical literature and the claims of health practitioners on "organizational re-engineering" observed in the industry, further extensions need to be introduced to provided a conclusive interpretation of the results. The immediate extension of our study would consists in identifying how following a merger hospitals position their services with respect to competitors (both private and public). One could imagine two alternative strategies. On the one hand, they may decide to position themselves further from competitors in order to attract new patients. Alternatively, a common owner may decide to position its hospitals closer to its competitors in order to take over its patients.

Further, while it is not unreasonable to assume that competition takes place within a department, our data allows us to consider alternative by exploiting information on the postal codes of patients "consuming" particular groups of activities. This needs to be explored.

Finally, in our paper we have not addressed potential endogeneity of mergers. Evidence need to provided to support the claim that no trend prior to the merger affecting both re-positioning and the merger decision itself exists.

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