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Phillipe Choné; Élise Coudin & Anna Pla

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Are physician fees responsive to competition? §

Philippe CHONÉ¶ Élise COUDIN‖ Anne PLA**

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Abstract

We assess the extent to which specialist doctors respond to local competition when setting prices (including extra-billings) in a fee-for-service system. We use an exhaustive panel data set to estimate physician reaction functions, exploiting exogenous changes in medical density and labor supply to identify the effects of local market structure and competitors' prices. We find that fees are strategic complements and decrease with physician density. Our results are consistent with a static competition model where patient choice is based on distance, price and observable physician characteristics and doctors have standard consumption-leisure preferences. Finally, we examine how the presence of physicians subject to full price regulation affects strategic interactions.

Keywords: fee-for-service, local competition, price competition, physicians' labor supply, extra billings.
JEL: I11, J22, L11.

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¶CREST

‖CREST, Laboratoire de microéconometrie, CREST, Timbre J390, 15 Bd G. Péri, 92245 Malakoff Cedex, France. E-mail: elise.coudin@ensae.fr

**DREES

1 Introduction

The major part of the French ambulatory care is paid on a fee-for-service basis. Since 1980, Public Health insurance has proposed two types of contractual arrangements to self-employed physicians: sector 1 and sector 2. In exchange for the reimbursement of some social contributions, self-employed physicians of sector 1 agree to provide medical services at fixed regulated prices prices. In contrast, sector 2 physicians can charge extra-billings for the same service, in so far as they show "tact and moderation" ("tact et mesure"). For sector 2 specialists, extra-billings represent in average 35% of the regulated billings they receive.[1] Even though extra-billings do not fall in the Social Security accounts, they question the organization of the French Health system. They may decrease the physician's activity, if physicians react to income effects. To what extent they are to be regulated was the main objective of very recent negotiations between physicians, government, and Health insurance actors.[2]

This paper studies how sector 2 physicians set prices, including extra-billings, and activity levels, in response to local competition. The objective is to describe the physicians market structure to deduce regulation policy recommendations. We develop a static model in which sector 2 physicians are utility maximizers and compete locally in prices. Patients choose their physician depending on location, physician's price and characteristics, and on those of her competitors. Physicians maximize their utility with respect to consumption and leisure as in a classical labor supply model. Hence, they may react to income effects, as in Rizzo and Blumenthal (1994) or Thornton and Eakin (1997).[3] Then, we propose a version of the model specific to the French setup, in which free-billing and regulated-fees physicians coexist and can provide the same services. We study how the presence of full price regulation affects strategic interactions of free-billing physicians. Our model entails that the share of regulated-price physicians nearby decreases the degree of competition: free-billing physicians react less to changes in price of their free-billing competitors. Further, the more physicians value leisure the steeper their price reaction.

Then, we test empirically the findings of our model. We derive from the model a reduced-form equation for the best response in price a physician will give to changes in prices of her competitors. We also derive reduced-form equations for the equilibrium price and for the output of a given physician. More precisely, the price reaction function relates physician's price to those of her competitors, local medical density, physician's and her competitors' reputation or quality, physician's preferences -related to other sources of income of her household, and demand characteristics. We model the physician's quality by a individual effect fixed in time that cancels out by time-first differentiating. As prices are jointly determined, we use competitors' household composition and competitors' non-practice income as instruments for their prices. Similarly, local medical density changes may be related to local changes in physicians quality, due to entrance or exit of physicians in the area. Assuming that it provides exogenous variations of the medical density, we

[1] The amounts of sector 2 physicians' extra billings have more than doubled in the last 20 years, going from 900 million of euros in 1990 to 2,5 billion in 2010 (Bellamy and Samson, 2011).

[2] Those negotiations led to the ''Avenant" nb 8 to the 2011 medical convention, signed in November 2012, which aimed to reduce excessive pricing behaviors, and will go on with the new medical convention planned for the end of 2014.

[3] See also Clerc, L'Haridon, Paraponaris, Protopopescu, and Ventelou (2012) for France.

use the local share of just retired physicians with respect to the number of physicians at the beginning of the period, or the share of physicians older than 60, as instruments for the medical density. The econometric strategy for the equilibrium price and output equations is similar. We estimate these reduced-form equations in time-first difference for sector 2 gynecologists, pediatricians, ophthalmologists and psychiatrists, using a panel of administrative data, which combines physicians' household tax returns (DGFiP) and individual information on their fees and activity levels coming from the "Caisse Nationale d'Assurance Maladie" ("système national d'information inter-régimes de l'assurance maladie, SNIIR-AM). The exhaustive nature of our data enables us to study price reaction functions.

Some of our empirical results are in line with price competition mechanisms. First, for gynecologists, pediatricians and ophthalmologists, we find that prices are strategic complements. Sector 2 physicians' fees increase with their local colleagues' fees, and they seem to react more in places where there are less competition of regulated-fees physicians. Contrary to what is observed in cross-section analysis, physicians' fees decrease with physician density once individual fixed effects are included in the regressions to capture location choices. Further, we find evidence in favor of income effects for gynecologists and pediatricians. The latter increase their fees - to limit their activity level - if non-practice income increases. However, we do not find this result for psychiatrists nor ophthalmologists.

Several papers study physicians' reactions to competition using the medical density, *i.e.*, the number of physicians per capita, as competition indicator. Kann, Biørn, and Lurås (2010) show that a local higher number of physicians per capita leads to more prescriptions. Nassiri and Rochaix (2006) consider physicians activity composition changes induced by more competition. If local competition increases, physicians may provide more technical procedures, more lucrative, to maintain their income level. For France, Delattre and Dormont (2000, 2003) test and accept the presence of induced-supply demand mechanisms by sector 1 GPs, and reject it for sector 2 GPs if the number of GPs per capita increases. More generally, Andreassen, Di Tommaso, and Strøm (2013) study physicians reactions to financial incentives. They use a structural multinomial model, in which physicians choose the different components of their activity: public or private practice, full- or part-time work. Andreassen, Di Tommaso, and Strøm (2013) estimate the model on Norwegian data and find that an overall increase in wage or a more progressive rate tax modestly lead physicians to work more full-time and in private practice. Even though their conclusions indicate reactions to financial incentives and competition mechanisms, those papers do not directly address the physicians' market structure issue.

Two approaches have been developed in the empirical literature to study the ambulatory care market structure, see Gaynor and Town (2012). The first approach is indirect and compares the observed physicians' locations, via the local density of physicians, to predictions of a spatial model with perfect competition; see Newhouse, Williams, Bennett, and Schwartz (1982), Brown (1993), Dionne, Langlois, and Lemire (1987), amongst others. The second approach consists of estimating physicians' cost and production functions, and then, assessing the physician's market power by comparing marginal cost and marginal revenue. With this approach, Gunning and Sickles (2013) reject perfect competition and do not reject a Cournot oligopoly. Wong (1996) tests whether higher prices in places where the number of physicians per capita is high, is actually explained by the fact that a high number of physicians per capita increases the quality information search cost for patients. He rejects this "informational confusion" hypothesis in favor of a classic monopolistic competition.

A recent paper by Gravelle, Scott, Sivey, and Yong (2013) develops an approach close to ours. The authors construct a Vickrey-Salop model, in which physicians compete locally in price and quality of care. Patients differ in taste parameters with respect to price and quality of care. Physicians observe patients preferences and can price discriminate patients. The authors test empirically the model predictions in terms of price level, share of patients who are not charged out-of-pocket fees, and average consultation length as a measure of care quality. They use a cross-sectional survey on Australian GPs. In the empirical analysis, they estimate equilibrium price and quality equations. They use the distance between GPs as a competition indicator and large area fixed effects to control for GPs location choices. They find that GPs with more distant competitors charge higher prices, to a larger share of patients, and have slightly shorter consultations, which can be interpreted as a loss of quality. In contrast, in the model we develop, physicians are utility rather than profit maximizers, do not choose effort or quality level, and charge the same price to all patients. Our empirical strategy to control for endogeneity induced by location choices and joint determination of prices relies on exploiting the time dimension, the share of retired physicians, and physicians' labor supply preferences.

This paper is organized as follows. A general model of price competition is presented in section 2. Section 3 details a more specific one adapted to the French context. The empirical strategy is presented in section 4. Section 5 describes the data and the variables used in the empirical part. Section 6 contains the results and section 7 concludes.

2 Physician behavior in a competitive environment

We consider I physicians competing in prices to attract patients. We denote by p_i the price chosen by physician i and p_{-i} the (average) price set by her competitors, $i = 1, \ldots, I$.

Demand, costs and profit The demand addressed to physician i, $D^i(p_i, p_{-i})$, depends negatively on p_i and positively on p_{-i}. We denote by ε_i the direct price elasticity: $\varepsilon_i = -p_i D^i_i / D^i \geq 0$, where D^i_i denotes the derivative of demand with respect to the price p_i.[4]

Assumption 1. *The price elasticity of demand ε_i decreases with p_{-i}.*

To produce output Y, physician i incurs fixed and variable input expenses $E^i(Y)$. Those expenses constitute the monetary part of the physician cost function; they may have a fixed part (rent, staff, etc.), $F = E^i(0)$, and variable component (e.g. medical consumables). The marginal cost $c^i(Y) = \mathrm{d}E^i/\mathrm{d}Y \geq 0$ is assumed to be nondecreasing in output.

We abstract away from explicit or implicit rationing practices, such as dumping patients or increasing waiting time, and assume that the physicians serve the demand, so $Y_i = D^i(p_i, p_{-i})$. We focus attention on the price as being the relevant strategic variable at

[4]Hereafter, the subscript^i indicates partial differentiation of a function with respect to p_i.

the disposal of the agents. Physician practice net revenue or profit, is the difference $\Pi^i = p_i D^i - E^i(D^i)$. Noticing that $E^i_i = c_i D^i_i$, we write the marginal profit Π^i_i as

$$\Pi^i_i(p_i, p_{-i}) = (p_i - c_i)D^i_i + D^i = [p_i(1 - 1/\varepsilon_i) - c_i]\, D^i_i. \tag{1}$$

In the case when physicians maximize profit, the assumption is equivalent to physician reaction functions being upward-sloping (see Tirole (1999), pp.207-208). We show below that strategic complementarity continues to hold when physicians value leisure.

Labor supply The labor supply behavior of a physician is determined by her budget constraint and her preferences over consumption and output.

The gross income of physician i's household is $N^0_i + \Pi^i(p_i, p_{-i})$, where N^0_i denotes physician i's non-practice income (including spouse's revenue). The budget constraint is given by

$$C_i = R(N^0_i + \Pi^i(p_i, p_{-i})) \tag{2}$$

where R denotes the physician after-tax income. The retention function R links the after-income as a function of the pre-tax income. In the income range of physicians, we assume progressive taxation, i.e., R is concave.

Assumption 2. *Physician i's preferences over consumption and leisure are given by a concave utility function $U^i(C, Y)$ satisfying $U^i_C \geq 0$, $U^i_Y \leq 0$, and $U^i_{CY} \leq 0$.*

The partial derivative $U^i_Y \leq 0$ expresses the marginal loss in utility incurred by physician i to produce an extra unit of output. We assume that the term becomes more negative as consumption rises, and hence that richer individuals tend to work less (income effect on output).

Physician i chooses p_i to maximize utility $U^i(C_i, Y_i)$, where C_i is given by the budget constraint (2) and Y_i is the demand D^i. Substituting into the utility function yields physician i's objective $U^i[R(N^0_i + \Pi^i(p_i, p_{-i}))\,,\, D^i(p_i, p_{-i})]$, which is to be maximized over p_i. Differentiating with respect to p_i, we get

$$U^i_C R'_i \Pi^i_i + U^i_Y D^i_i = 0, \tag{3}$$

where $R'_i = R(N^0_i + \Pi^i)$ equals one minus the marginal tax faced by the physician. Equation (3) shows that the physician chooses her price in the region where her profit is decreasing, $\Pi^i_i < 0$, i.e., the price is *above* the level she would choose if she maximized profit, and the quantity is *below* what would be observed for a profit maximizer, see Figure 1. Using (1), the first-order condition can be rewritten as

$$p_i = \frac{1}{1 - 1/\varepsilon_i}\left[c_i - \frac{U^i_Y}{U^i_C}\frac{1}{R'_i}\right], \tag{4}$$

for $i = 1, \dots, I$. The above equation implicitly yields physician i's best response to her competitors' price p_{-i}.[5] It is similar to the usual formula that relates price to marginal cost under price competition. Here the cost has two components: the monetary cost c_i

[5] The unknown price p_i enter the right-hand side of (4) through ε_i and the disutility cost of work.

and the disutility cost of work $-U_L^i/R_i'U_C^i$. Non-practice income N_i^0 affects positively that cost, implying that the higher N_i^0, the higher the price p_i (income effect on price). In equilibrium, prices $p_1, \ldots, p_i$ are solution to the I equations (4).

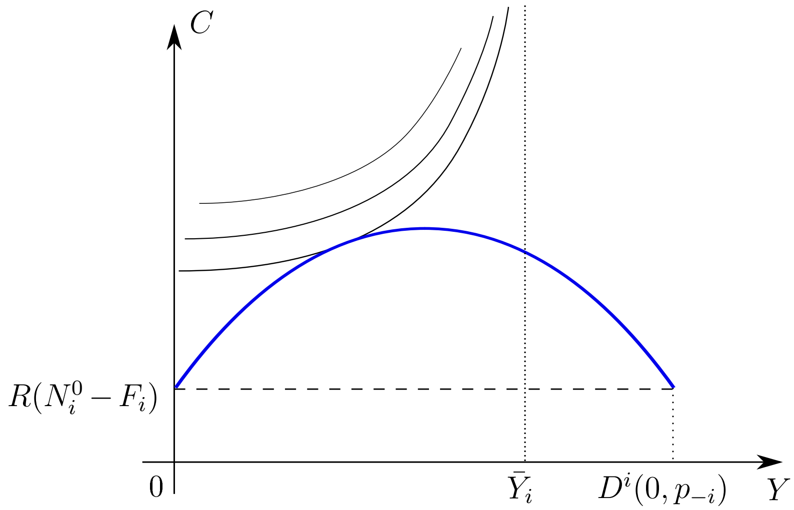

Figure 1: Physician indifference curves (thin lines) and budget constraint (thick line)

Lemma 1. *Under Assumptions 1 and 2, physician reaction functions are upward-sloping, i.e. prices are strategic complements.*

Proof. The output $Y_i = D^i(p_i, p_{-i})$ increases from zero and $D^i(0, p_{-i})$ as the price p_i decreases from large values to zero. Dividing (3) by $-D_i^i U_C^i R_i' p_i > 0$, we write the derivative of the physician objective with respect to the price as

$$-\frac{p_i - c_i + U_Y^i/(U_C^i R_i')}{p_i} + \frac{1}{\varepsilon_i} = 0.$$

By the second-order condition of the problem, the left-hand side of the above equation is locally decreasing in p_i. Competitors' prices p_{-i} enters the above expression through the marginal cost, $c_i(D_i)$, the marginal rate of substitution,U_Y^i/U_C^i, the retention rate R_i', and the price elasticity of demand, ε_i. All four channels make the term increasing in p_{-i} because i) c_i increase with D_i and hence with p_{-i}; ii) by Assumption 2, U_Y^i/U_C^i decreases with $C = R_0 + \Pi^i$ and with D^i, and hence with p_{-i}; iii) R_i' decreases with Π^i and hence with p_{-i}; iv) the inverse elasticity increases with p_{-i} by Assumption 1. The result follows by the implicit function theorem. □

Example We consider the Vickrey-Salop circular city model with equally spaced physicians.Let Δ denote the distance between two adjacent doctors and h be the patient density along the circle. If L denotes the length of the circle, the number of patients is Lh and the number of physician is L/Δ. The physician density, defined as the physician per patient ratio, is $1/(h\Delta)$.

Let u_{im} be the patients utility located at m when consulting physician i. Let assume that $u_{im} = v_i - \alpha d(m, i) - p_i$, where v_i denotes the intrinsic quality of physician i, $d(i, m)$ the distance or travel time between physician i and the patient area m, and α expresses the tradeoff between price and distance, $\alpha \geq 0$. The marginal patient served by physician i rather than her direct right competitor is located at a distance x_r from i such that $v_i - \alpha x_r - p_i = v_r - \alpha(\Delta - x_r) - p_r$, so $x_r = \Delta/2 + (v_i - p_i - v_r + p_r)/2\alpha$. Multiplying by the patient density h, and adding the number of patients served on the left side yields the total demand addressed to the physician

$$D^i(p_i, p_l, p_r) = h.(x_l + x_r) = h. \left[\Delta + \frac{v_i - p_i}{\alpha} - \frac{v_l - p_l + v_r - p_r}{2\alpha}\right], \quad (5)$$

where the indexes l and r refer to i's left and right neighbors. From (5), we derive the price elasticity of demand

$$\varepsilon_i = -\frac{p_i D_i^i}{D^i} = \frac{2p_i}{2\alpha\Delta + 2(v_i - p_i) - (v_l - p_l) - (v_r - p_r)}, \quad (6)$$

which decreases with p_l and p_r in accordance with Assumption 1 and with the distance between adjacent physicians, Δ. On the other hand, the price elasticity does not depend on patient density h.

If the marginal cost c_i and the marginal tax rate $1 - R_i'$ are constant over the relevant quantity range, consumption is a quadratic function of price and hence of output (because output is linear in price). Figure 1 represents the budget constraint under the further assumption that the marginal cost c_i is zero; thus, when the variable profit $p_i D_i$ is zero, the physician net revenue is $R(N_i^0 - F_i)$, where N_i^0 is the outside income and F_i is the fixed cost.

Assume now that physician utility is Cobb-Douglas, $U^i(C, Y) = C^{\gamma_i}(\bar{Y}_i - Y)^{\lambda_i}$, with $\gamma_i + \lambda_i = 1$ and $\bar{Y}_i > 0$ is the physician maximal output (capacity). Using (4) and (6), we find that physician i's reaction function is implicitly given by

$$p_i = \frac{c_i + \alpha\Delta + v_i}{2} + \frac{p_l - v_l}{4} + \frac{p_r - v_r}{4} + \frac{\lambda_i}{2\gamma_i} \frac{R(N_i^0 + \Pi^i)}{\bar{Y}_i - D^i} \frac{1}{R'(N_i^0 + \Pi^i)}. \quad (7)$$

For $\lambda_i = 0$, the above formula yields the standard reaction function of profit-maximizing firms in the Salop model. For $\lambda_i > 0$, the price p_i enters the right-hand side of (7). The right-hand decreases with p_i because as seen above the profit decreases with p_i in the relevant region (and D^i decreases with p_i, too).

The price depends positively on the quality of care or reputation of the physician and negatively on those of her competitors. A lower distance between adjacent physicians makes demand more elastic and hence tends to be associated with lower prices. The patient density h affects the price only through the last term, and the effect is positive because Π^i and D^i increase with h, and hence $R(N_i^0 + \Pi^i)$ and $R'(N_i^0 + \Pi^i)$ respectively increases and decreases with h.

3 Interaction with fee regulation

3.1 French regulation of physicians payments

In France, specialists, such as GPs, who provide ambulatory care are usually self-employed and paid on a fee-for-service basis. Two types of contractual arrangements between physicians and Public Health insurance exist, sector 1 and sector 2. Each medical procedure has a fixed reference price.Sector 1 physicians cannot charge extra-billings above this reference price whereas sector 2 physicians can. Patients choose freely their physicians. Whatever physician's contract, Public Health insurance reimburses to patients about 70% of the reference prices, and the remaining 30% are covered by a supplementary insurance the patient contracted.[6] Extra-billings are not reimbursed by Public Health insurance. They may be in some extent by some supplementary insurance contracts.

To compensate for not overbilling, Public Health insurance subsidizes part of sector 1 physicians social contributions and pension savings, whereas it does not for sector 2 physicians.[7]

Sector 2 physicians can charge extra-billings and freely choose their prices in so far as they show "tact and moderation" (tact et mesure), which suggests that they adapt their prices to patients' revenues. Especially, they are not allowed to extra-charge low-income patients - who benefit from the "couverture maladie universelle complémentaire". A physician chooses her sector once for all when beginning her practice. Since 1990, the access to sector 2 is restricted to physicians who demonstrated an additional qualifying hospital practice (such as ex- Head of Clinic).

Table 1 reports physicians' fees composition per specialty and per sector in 2008. The average levels of sector 2 physicians' fees greatly differ between specialties, but extra-billings represent always a large component of sector 2 physicians total fees, around 40%. They are of course negligible for sector 1 physicians. Sector 1 physicians have lower fees than sector 2s for a higher output. The annual fees at reference prices provide indeed an indicator of physician's output (see after) and they are higher for sector 1 physicians than for sector 2s. This raw comparison between sector 1 and sector 2 physician fees and output suggests that sector 2 physicians may reduce their labor supply in response to income effects.

– insert Table 1 here –

In 2008, between 25% (psychiatrists) to 51% (gynecologists) of physicians of the considered specialties are sector 2 but these shares will greatly increase in the future. Around 80% of the new gynecologists and ophthalmologists who began their practice between 2005 and 2008 are sector 2, resp. 63% of psychiatrists and 39% of pediatricians. With this generalization of the free-billing sector, learning about the market structure of sector 2 physicians is necessary.

[6] In 2012, only 4% of the population did not have any supplementary insurance contract (see Garnero and Le Palud (2013)).

[7] 9.70% of net fees for their Health insurance contributions, 5% of net fees for their familial contributions and 2760 euros annually for pension savings.

3.2 Best response in a partially regulated framework

We now adapt the Vickrey-Salop model presented in Section 2 to account for the coexistence of free-billing and regulated-fees physicians. In particular, we aim to study the impact of price regulation on price response functions, namely how price reactions of free-billing physicians depend on the presence of regulated-fees physicians nearby.

To this aim, we differentiate neighbors depending on whether they practice regulated or unregulated prices. Let $\theta_i^u \in (0; .5; 1)$ be the proportion of free-billing physicians neighboring i, and p_{-i}^u the average price they charge, the remaining $1-\theta_i^u$ charge the regulated price $\bar{p}$. We can rewrite the demand function as

$$D^i(p_i, p_{-i}^u, \theta_i^u) = h. \left[\Delta + \frac{v_i - p_i}{\alpha} - \frac{\theta_i^u(v_{-i}^u - p_{-i}^u) + (1-\theta_i^u)(\bar{v}_{-i} - \bar{p})}{\alpha}\right], \tag{8}$$

where v_{-i}^u and $\bar{v}_{-i}$ stand for free-billing and regulated-price neighbors' average qualities. D^i decreases with p_i, increases with p_{-i}^u and the more free-billing neighbors, the more reactive this increase. Using equation (8), the price elasticity can be written

$$\varepsilon_i = \frac{p_i}{\alpha\Delta + (v_i - p_i) - \theta_i^u(v_{-i}^u - p_{-i}^u) + (1-\theta_i^u)(\bar{v}_{-i} - \bar{p})}, \tag{9}$$

which decreases with p_{-i}^u and this decrease is stronger if θ_i^u is small.

If now, we rewrite physician i's reaction function depending on the share of unregulated neighbors and the average price they charge, we have:

$$p_i = \frac{c_i + \alpha\Delta + v_i}{2} + \frac{\theta_i^u(p_{-i}^u - v_{-i}^u) + (1-\theta_i^u)(\bar{p} - \bar{v}_{-i})}{2} + \frac{\lambda_i}{2\gamma_i}\,\frac{R(N_i^0 + \Pi^i)}{\bar{Y}_i - D^i}\,\frac{1}{R'(N_i^0 + \Pi^i)}. \tag{10}$$

Lemma 2. *The slope of the reaction function increases with the physician preference for leisure. In particular, it is greater than or equal to $\theta^u/2$, with equality if and only if the physician is profit-maximizing.*

Proof. Applying the implicit function theorem to the equation

$$F(p_i, p^u) = \text{Cst} - p_i + \frac{\theta^u}{2}p^u + a\frac{C}{L} = 0,$$

with $a = \delta\lambda/2\gamma$, we find the slope of the reaction function

$$\frac{\partial p_i}{\partial p^u} = \frac{\theta^u/2 + a\,\partial(C/L)/\partial p^u}{1 - a\,\partial(C/L)/\partial p_i}$$

The slope can be rewritten as

$$\frac{\partial p_i}{\partial p^u} = \frac{\theta^u}{2} + \left[\frac{\theta^u}{2}\frac{\partial(C/L)}{\partial p_i} + \frac{\partial(C/L)}{\partial p^u}\right]\frac{a}{1 - a\,\partial(C/L)/\partial p_i}$$

The last factor at the right-hand side of the above equation increases with a because C/L increases with p_i. The lemma assertion is therefore equivalent to the bracketed term being positive, which can be rewritten as

$$L\left[\frac{\theta^u}{2}\frac{\partial C}{\partial p_i}+\frac{\partial C}{\partial p^u}\right]\geq C\left[\frac{\theta^u}{2}\frac{\partial L}{\partial p_i}+\frac{\partial L}{\partial p^u}\right] \tag{11}$$

The latter inequality follows from the observation that

$$\frac{\theta^u}{2}\frac{\partial D}{\partial p_i}+\frac{\partial D}{\partial p^u}\geq 0,$$

which shows the left-hand (right-hand) side of (11) is positive (negative). □

Impact of price regulation on reaction functions If $\lambda_i = 0$, the slope of this function with respect to p^u_{-i} is $\theta^u_i/2$. The reaction function is steeper when the share of regulated doctors among neighbors is lower: in the standard Vickrey-Salop model, if both neighbors practice unregulated prices, the slope is .5, if only one does, .25, and none, 0. When $\lambda_i > 0$, the slope is higher than $\theta^u/2$, and steeper when there are fewer regulated-fees neighbors, and physicians react more to unregulated neighbor prices than when maximizing profit. The slope depends also on levels of leisure and consumption, demand, density of population, and leisure preferences. It notably increases in λ_i, the preference parameter for leisure. Physicians with higher preferences for leisure react more to neighboring price increases.

3.3 Model predictions

We recall here the predictions entailed by the model that we check in the empirical part.

First, **prices are strategic complements**. The higher the prices of competitors, the higher the price of physician i should be. The model stresses two additional features. The share of regulated-price physicians nearby decreases the degree of competition and controls in some sense price reactions. The slope of the price response depends on the share of regulated neighbors: **the less regulated neighbors there are, the steeper the price response should be**. Further, this slope depends also on leisure preference: physicians with higher preferences for leisure react more to neighboring price increases. **The more physicians value leisure, the steeper their reactions to neighbors' prices should be**.

Further, if physician i values leisure and so, reacts to income effects, **an increase her income, especially in her non-practice income (such as spouse's income), makes her price increase**.

Moreover, **the addressed demand to physician i decreases in her price and increase in the price of her competitor**. If physician i is profit-maximizing, or values not so much leisure, and is not capacity-constrained, physician i serves the demand addressed to her. Hence, the output she provides should present the same evolutions. The increase in competitors' price should be steeper if there are few regulated-price neighbors.

Finally, the number of physicians per area unit, $1/\Delta$, is the main measure of competition. **The higher the number of physicians per area unit, the lower physician's i price should be.** The effect of that indicator on the output of physician i depends on how far physician i values leisure and is close to her capacity constraint. If **the number of physicians nearby decreases, the demand addressed to physician i increases and physician i increases her output**. However, if she values a lot leisure, an increase in the demand addressed to her may entail a decrease in her output if she increases her prices a lot. Further, if she provides the maximum output she can, an increase in the demand addressed to her makes her increase her prices without potentially changing the output.

Note also that the population/patients density, through h, makes the addressed demand increase, which may in return have an increasing effect on price. However, this indirect effect of the population density is likely to be of second order with respect to the direct effect on price of the competition indicator.

4 Empirical strategy

We derive reduced-form equations and test model predictions in our empirical application. To do this, we rely on the econometric specification and the empirical strategy presented below.

4.1 Econometric specification

Let us denote $G_t(i)$, physician's i free-billing competitors at date t, and $z(i)$ the location of physician i. Following the previous section, physician i sets her price at date t in function of several factors: (i), the average price set by her free-billing competitors, $p_{G_t(i)}$; (ii), her quality v_{it}, whose effect is modeled as $\alpha_i^q + Q(Exp_{it})$, a constant term α_i^q and $Q(Exp_{it})$ that varies with time and is observed such as her experience; (iii), the quality of care provided by her (free-billing and regulated) neighbors $v_{G_t(i)}$, whose effect is modeled in a similar way $\alpha_{G_t(i)}^q + Q^c(Exp_{G_t(i)})$;[8] (iv), her preferences, non professional revenue, λ_i, $\gamma_i, N_i^0, \bar{Y}_i$, whose effects are modeled as $\alpha_i^\Phi + \Phi(X_{it})$, a fixed term in time, and a variable term that depends on X_{it}, the household characteristics: spouse income, children, etc.; (v), the distance between adjacent physicians, Δ, which we model by the local medical density , *i.e.*, the ratio of the number of physicians per head of population in the area, $d_{z(i)t}$. Note that medical density captures both the direct effect of competition and the indirect effect passing through the demand of an increase in the patient population. As robustness, we shall control for the size of the population per area unit; (vi) the structure of the demand addressed to her because of her location $z(i)$, i.e., the population average wealth in the area, the population density, and age structure in the area, whose effects are $f(Y_{z(i)t})$; (vii), a common time trend s_t.

Reduced-form price response equation. The reduced form of the price response function

[8] We will only consider experience of free-billing competitors

is then

$$
\begin{aligned}
p_{it} &= \alpha_i^q + Q(Exp_{it}) + \alpha_i^{\Phi} + \Phi(X_{it}) + f(Y_{z(i)t}) + s_t \\
&\quad + ad_{z(i)t} + bp_{G_t(i)} + Q^c(Exp_{G_t(i)t}) + \alpha^q_{G_t(i)} + u_{it} \qquad (12)
\end{aligned}
$$

where prices are in log. Further, to study the slope of the price response, we shall interact competitor prices with the share of regulated physicians among neighbors.

Equilibrium prices. Replacing the competitors' price by competitors' preference and demand characteristics we obtain a reduced-form equation for the equilibrium price:

$$
\begin{aligned}
p_{it} &= \alpha_i^q + Q(Exp_{it}) + \alpha_i^{\Phi} + \Phi(X_{it}) + f(Y_{z(i)t}) + s_t + ad_{z(i)t} \\
&\quad + Q^c(Exp_{G_t(i)t}) + \alpha^q_{G_t(i)} + \alpha^{\Phi}_{G_t(i)} + \Phi(X_{G_t(i)t}) + f(Y_{z(G_t(i))t}) + u_{it}, \qquad (13)
\end{aligned}
$$

Reduced-form output equation. Finally, we use the following reduced-form for the output equation

$$
\begin{aligned}
y_{it} &= \alpha_i^d + \rho^d \alpha^d_{G_t(i)} + H(Y_{z(i)t}) + Q^i_d(Exp_{it}) - ap_{it} + bp_{G_t(i)t} + Q^c_d(Exp_{G_t(i)}) \\
&\quad + \gamma d_{it} + u^d_{it}, \qquad (14)
\end{aligned}
$$

in which, y_{it} are in log, and, if physician i serves the demand, parameter a represents the price elasticity ε_i, an parameter b, the positive cross-elasticity. Physician i quality of care is captured by her experience and the fix term α_i^d, whereas $Exp_{G_t(i)}$ and $\alpha^d_{G_t(i)}$ capture the competitors quality. To check if the cross-elasticity of the demand depends on the presence of regulated physicians nearby, we shall interact competitors' price with the local share of regulated physicians.

4.2 Empirical strategy

Our empirical strategy relies on two steps: taking time-first differences, and instrumenting prices and medical density by exogenous changes.

The first step of our empirical strategy consists of taking time-first differences of equations 12, 13 and 14 to eliminate individual fixed effects. The time-first difference version of equation 12, between t_0 and t_1, is

$$
\begin{aligned}
\Delta p_{it} &= \Delta Q(Exp_{it}) + \Delta\Phi(X_{it}) + \Delta f(Y_{z(i)t}) + \Delta s_t + a\Delta d_{z(i)t} + b(p_{G_{t_1}(i)} - p_{G_{t_0}(i)}) \\
&\quad + (Q^c(Exp_{G_{t_1}(i)}) - Q^c(Exp_{G_{t_0}(i)})) + (\alpha^q_{G_{t_1}(i)} - \alpha^q_{G_{t_0}(i)}) + \Delta u_{it}. \qquad (15)
\end{aligned}
$$

If physician i does not face the same competitors at the different dates, $G_{t_1}(i) \neq G_{t_0}(i)$, the unobserved term $\alpha^q_{G_{t_1}(i)} - \alpha^q_{G_{t_0}(i)} \neq 0$ and enters the error term of the equation $\epsilon_{it} = \Delta u_{it} + \alpha^q_{G_{t_1}(i)} - \alpha^q_{G_{t_0}(i)}$. Due to location choices of new physicians, the quality of competitors, $\alpha^q_{G_t(i)}$, is likely to be correlated with the medical density and the prices set by the competitors. Moreover, prices are determined jointly. So the medical density and the competitors prices are endogenous in equation (15).

Similarly, equation 13 on the equilibrium prices gives in first difference

$$\begin{aligned}
\Delta p_{it} &= \Delta Q(Exp_{it}) + \Delta\Phi(X_{it}) + \Delta f(Y_{z(i)t}) + \Delta s_t + a\Delta d_{z(i)t} \\
&+ (Q^c(Exp_{G_{t_1}(i)}) - Q^c(Exp_{G_{t_0}(i)}) + (\alpha^q_{G_{t_1}(i)} - \alpha^q_{G_{t_0}(i)}) + (\alpha^\Phi_{G_{t_1}(i)} - \alpha^\Phi_{G_{t_0}(i)}) \\
&+ (\Phi(X_{G_{t_1}(i)}) - \Phi(X_{G_{t_0}(i)})) + (f(Y_{z(G_{t_1}(i))}) - f(Y_{z(G_{t_0}(i))}) + \Delta u_{it} \qquad (16)
\end{aligned}$$

The unobserved competitors' preference and quality terms $(\alpha^q_{G_{t_1}(i)} - \alpha^q_{G_{t_0}(i)}) + (\alpha^\Phi_{G_{t_1}(i)} - \alpha^\Phi_{G_{t_0}(i)})$ do not cancel out and are correlated with the medical density, which is then endogenous.

Finally, for the output equation,

$$\begin{aligned}
\Delta y_{it} &= \rho^d(\alpha^d_{G_{t_1(i)}} - \alpha^d_{G_{t_0(i)}}) + \Delta H(Y_{z(i)t}) + \Delta Q^i_d(Exp_{it}) - a\Delta p_{it} + b(p_{G_{t_1}(i)} - p_{G_{t_0}(i)}) \\
&+ (Q^c_d(Exp_{G_{t_1}(i)}) - Q^c_d(Exp_{G_{t_0}(i)})) + \gamma\Delta d_{it} + \Delta u^d_{it} \qquad (17)
\end{aligned}$$

Again, prices are chosen by physicians and hence are endogenous, so is the medical density.

The second step of our empirical strategy consists of instrumenting prices and medical density by some exogenous changes. If the quality of care or the reputation of physicians do not depend on their household and non-practice income characteristics, $E(\alpha^q_{it}|X_{it}) = 0$, and if physicians react to income effects, changes in household characteristics and non-practice income, ΔX_{ti} provide instruments for changes in price Δp_{ti}. A similar reasoning applies for competitors, if $E(\Delta u_t|\Delta X_{G_t(i)}) = 0$, *i.e.*, if explained changes in price (resp. in demand) and especially those related to unobserved changes in demand are not correlated with changes in neighbors' characteristics. Then, changes in competitor household characteristics and non-practice income $\Delta X_{G_t(i)}$ provide instruments for changes in neighbor prices $p_{G_{t_1}(i)} - p_{G_{t_0}(i)}$. In particular, this excludes the case when new physician choices to locate nearby are explained by unobserved changes in demand. Note that the condition $E(\Delta u_t|\Delta X_{ti} = 0)$ is less demanding than the latter.

Moreover, changes in the medical density may be related to changes in the local quality of physicians due to the choice of location of new physicians. However, we assume that if this is true for new physicians, in contrast, retirements of old physicians are not related to those changes in quality. If this is true, the local share of retired physicians between t_0 and t_1 or more generally the local share of physicians older than 55 or 60 for instance at t_0, provide instruments explaining changes in medical density.

5 Data and variables

5.1 Data

We use the "Appariement Revenus et Activité des médecins, INSEE-DREES-CNAMts-DGFiP", which are exhaustive data on individual administrative information on self-employed physicians' activity and fees in 2005, 2008, and 2011, provided by Public Health insurance Scheme (SNIIR-AM, CNAMts), matched with individual information on physicians earnings and household characteristics coming from household income tax returns for the same three years. For each physician we have information on the number of medical procedures provided per year, annual fees, extra-billings, sex, age, year of practice beginning, specialty, sector, and location (zipcode). From the tax returns, we also have information on physicians' household earnings and household characteristics: non-practice income, per type of income, type of household, number of children, etc..

We focus on the most frequent direct access specialties, gynecologists, pediatricians, ophthalmologists, and psychiatrists. Patients do not need to be addressed by their regular GP when visiting one physician of those specialties to be reimbursed by Public Health insurance.

The sample we use for the regressions is composed of self-employed sector 2 physicians of those specialties. Full-time salaries and full-time hospital employees are excluded even though they also have a side self-employed activity. Physicians older than 65 are also excluded. We also exclude the very few physicians who do not have a contract with the Public Health insurance. Those physicians choose freely their prices but their patients are reimbursed on a very low arbitrary basis only. At the end, we observe 2217 gynecologists, 694 pediatricians, 2058 ophthalmologists, and 1356 psychiatrists at least twice between 2005 and 2011.

5.2 Composite output indicator and composite price

Physicians provide different types of medical procedures: office visits, home visits, technical procedures, which do not contain the same intensity of care. So, roughly summing all medical procedures will not reflect well the output level of a given physician, as it will neglect differences in intensity of care. We construct a composite output indicator. We follow the same approach as Delattre and Dormont (2003). The output of physician i in year t, dq_{it} is given by the sum of the number of medical procedures of type j , n_{jit}, weighted by the reference price for this type of medical procedure $\bar{p}_{jt}$, and divided by the reference price of a simple office visit, $\bar{p}_{0t}$. So,

$$q_{it} = \frac{\sum_j \bar{p}_{jt} n_{jit}}{\bar{p}_{0t}}, \tag{18}$$

where j denotes the type of medical procedures.

Similarly, we construct a composite indicator for the price set by a physician, which will be our main variable of interest. The composite price set by physician i is corrected for structural effects related to differences in care intensity between different types of medical procedures:

$$p_{it} = \bar{p}_{0t} \frac{\sum_j p_{jit} n_{jit}}{\sum_j \bar{p}_{jt} n_{jit}} = \bar{p}_{0t} \left(1 + \frac{\sum_j \delta_{jit} n_{jit}}{\sum_j \bar{p}_{jt} n_{jit}} \right) \tag{19}$$

where δ_{jit} are the extra-billings charged in average by physician i at year t for a medical procedure of type j. We do not observe p_{jit} nor n_{jit} for each type of medical procedure, but we do observe the numerators, and the denominators of equations (18) and (19), and then can compute both composite indicators.

Descriptive statistics about composite prices and their evolutions are reported in Table

2. The reference price for an office visit to a gynecologist, a pediatrician or an ophthalmologist is 23 euros, 37 euros for a psychiatrist. However, due to additional technical procedures provided and surcharges perceived when visiting specific patients (children), the composite price of a sector 1 specialist is around 28€, 37€for a psychiatrist. Sector 2 specialists charge on average 60 to 75% more than sector 1s. In real terms, sector 1 prices decreased between 2005 and 2008 by 6%, and by 4% between 2008 and 2011, whereas sector 2 prices increased by 1 to 5% for gynecologists, pediatricians and psychiatrists between 2005 and 2008 and by 3 to 4% between 2008 and 2011. They remained stable for ophthalmologists.

– insert Table 2 here –

5.3 Physicians' characteristics

As physician characteristics, we consider her experience which is related to her quality/reputation. It is defined as the difference between the current year and the year of practice beginning.

As physician's household characteristics, potentially related to physician's preferences for leisure, we use the size of the household (with a fiscal meaning), a dummy indicating whether there is at least one child under three in the household, and a dummy indicating single-headed household (again with a fiscal meaning).

As non-practice income variable, we consider three variables. First, the non-professional income of the household, which includes real estate income, agricultural income, capital income, and pensions, supports and rents perceived by a member of the household; second, the non physician income, which covers previous sources plus labor income of other members of household (except the physician); and last, child and ex-spouse support, that is, the financial support the household may give for a child or an ex-spouse after a separation. This decreases the available household income. Those three variables are reported to the number of persons in the household.

5.4 Local and neighbors' variables

We exploit physicians zipcodes and the exhaustive nature of our data to compute local and neighbors' variables.

Firstly, the local medical density is computed at the zipcode level following the two-step floating catchment area method used to construct the "Accessibilité Potentielle Localisée" (Barlet, Coldfy, and Collin (2012), Radke and Mu (2000), Luo and Qi (2009)). The number of physicians at a particular location is related to the potential demand addressed to them in their entire influential zone, not only their zipcode. Hence, the medical density at zipcode z is obtained as the number of physicians located at z, m_z, or in neighbor zipcodes j, m_j, divided by the population at j, pop_j, and in neighbor zipcodes i, pop_i:

$$d_z = \sum_j w(t_{zj}) \frac{m_j}{\sum_i pop_i w(t_{ij})} \tag{20}$$

where $w(t_{zj}) = e^{-\alpha t_{zj}}$ are weights decreasing exponentially with travel time and calibrated such that zipcodes at 10 minutes count for .5, and equalling 0 after 45 minutes of travel.

Secondly, we use the same weights to compute local indicators for population wealth (population median income per zipcode weighted by the size of the population in the zipcode) and age structure.

Thirdly, we consider as physician i's neighbors, all sector 2 physicians of the same specialty located around i. Their prices and characteristics are then summarized by similar local averages. In particular, the neighbors' price variable is the average price of free-billing physicians around i using the same weighting function (reverse of the time travel) between i and each neighbor j, $w(t_{ij})$. To test the robustness of our results to this weighting function, we also consider the simple average of prices of all sector 2 physicians of the same specialty located at less than 45 minutes from physician i. We use the same methodology to compute local averages for neighbors' experience, household characteristics, and non-practice income variables.

5.5 Price cross-sectional correlations

Table 3 reports cross-sectional OLS regressions of the equilibrium price equation 12, in which sector 2 physician log composite price is related to physician characteristics, characteristics of competitors, demand characteristics - local population age structure, and local median income, and competition indicators, *i.e.* regulated-prices, S1, (resp. free-billing, S2) medical densityWe also include fixed effects for geographic areas: either regions or departments, which are subdivisions of regions.

– insert Table 3 here –

Sector 2 physicians set higher prices in richer areas. In contrast *a priori* with competition mechanisms, the higher sector 2 medical density, the higher local prices are, and the higher sector 1 medical density, the lower prices. These naive regressions do not account for physician location choices and consequent geographical unobserved variations in their quality/reputation. Hence, estimates are biased. There may be a positive correlation between the medical density of sector 2 physicians and the unobserved quality/reputation of physicians who chose to locate in such areas. Sector 2 physicians may have additional education with respect to sector 1 physicians, as since 1990 the sector 2 option has been only opened to physicians who have a qualifying university teaching and hospital practice (ex-clinic supervisors). So, they may have a better reputation or may provide care of higher quality. If so, the coefficient in front of the S2 medical density is biased upward, and the one in front of the S1 medical density is biased downward due to geographical unobserved variations in quality/reputation. The senses of these biases are confirmed when we change the geographical level of fixed effects: with department rather than region fixed effects, the S1 medical density coefficient is higher and the S2 medical density coefficient lower. However, the S2 medical density coefficient remains un-significantly positive, and not negative, for the four specialties. Geographical fixed effects are not sufficient enough to control for biases induced by location choices and variations in quality, at least at this level. In the next section, we go further and especially exploit the time dimension of our data to control for these unobserved quality effects.

6 Results

In this section, we present the estimation results of the three-reduced form equations derived from the competition price model, with the empirical strategy exposed in section 3.

6.1 Price reaction function

We first focus on the best response equation 15, which relates changes in price in response to changes in prices of local competitors. Tables 4 to 7 report both OLS and IV regressions in time-first difference, for each specialty. In the IV specifications, the competitors' price variable and the medical density are instrumented by the share of retired physicians in the three years (interacted with their sector), the share of physicians older than 60 three years before, and competitors' household characteristics, in total 11 instruments. The two first-stage F are reported, together with over-identification tests. Other covariates included also in first difference are physician's experience squared, physician's household size, a single-headed household dummy, a dummy indicating the presence of a child under 3, and the three non-practice income variables. To describe the demand, we use local average median income, and the population age structure. To describe competitors reputation, we include local average of their experiences and its square. Results when competitors' price use the reverse of travel time weighting function are reported in columns 1 and 2, and those without weighting in columns 3 and 4.

– insert Tables 4 5 6 7 here –

For gynecologists, pediatricians, and ophthalmologists, we find that prices are strategic complements in total consistence with price competition mechanisms. Physicians increase their price between .3% to .7% in response to a 1% increase in competitors price. The magnitude of the coefficient depends on the specialty and on how the competitors average are computed, but it is always positive except for IV results on psychiatrists. Note however, that IV results may suffer from instruments weakness.

Further, we wonder whether the response in price differs between areas where there are many sector 1 physicians and areas where they are less numerous. More sector 1 physicians may prevent sector 2 physicians to fully respond to price variations of other sector 2 physicians. So, we interact the competitors price with a dummy variable that indicates whether the physician is located in an area with more sector 1 physicians than average or not, see table 8. As expected, price response to sector 2 price change estimates are always stronger when there is locally less competition from sector 1 physicians, but the difference is not always significant. This result is found for all specialities.

– insert here Table 8 –

6.2 Equilibrium price

We then present the estimation results of the equilibrium price equation 16, see Tables 9 to 12 for each specialty. Competitors household characteristics are now included in the regression instead of competitors price along with physician household characteristics and non practice income. In the IV specifications, medical density is instrumented by the same variables as before.

– insert Tables 9 10 11 12 here –

Medical density. The model predicts that the equilibrium price should decrease with medical density. We confirm this prediction. For all specialities, the positive correlation between medical density and prices found in cross-section disappears totally in first difference, *i.e.* when location choices are really accounted for. And, once we instrument, we find significant negative effects of medical densities on prices consistent with a competition mechanism.

Income effects. The model predicts that physicians should reduce their activity and raise their prices in response to a non-practice income increase. Empirical results are consistent with such income effects for gynecologists and pediatricians. Gynecologists raise their prices in response to an increase in the non-practice income of the household, and decrease them if they have more financial support to give to out-of-household child or ex-spouse. Pediatricians raise their prices when non-professional income of the household (i.e. including potentially a spouse professional income) increases. However, coefficients are not significant for ophthalmologists nor psychiatrists.

Other coefficients have expected signs, at least for the IV estimates. In particular, the presence of a child under in the household make physicians raise their prices in response to a decrease in their activity level. Results are very stable whether we weight local averages by travel time between physicians or not.

Population wealth. We do not find a positive effect of local population wealth on prices, which is not consistent with the model.

All these results (medical density, income effects, etc..) are also found with price reaction functions.

6.3 Output

Finally, we check the model predictions concerning output and the underlying demand for care addressed to the physician. We estimate equation 17, which relates physician activity level to her own price, competitors prices, experience, and demand characteristics. We use her own and her competitors' household and income variables to instrument prices, and again the shares of retired physicians, and of physicians older than 60, to instrument medical density. OLS and IV regression results are reported in Table 13. Competitors' prices are interacted with a dummy variable indicating whether physicians are located in places with a higher density of sector 1 physicians than average or not. Demand reaction to sector 2 competitors price variations should indeed be stronger in areas where sector 1 are less numerous. We also report first-stage F statistics for excluded instruments joint nullity. They are low, so one should be cautious when interpreting the IV results.

– insert here Table 13 –

As predicted by the model, the demand addressed to a physician is elastic and strongly decreases with her price. This result is found for the four specialities. Further, medical density has a negative effect on output/demand, but estimates are not always significant. Lastly, the model predicts that the demand addressed to a physician should increase if her competitors prices increase. The negative coefficients found in OLS disappear in IV specifications, but they are not significant.

7 Concluding comments

Some of our empirical results are in line with the static competition model we developed, where patient choice is based on distance, price and observable physician characteristics and doctors have standard consumption-leisure preferences. First, for gynecologists, pediatricians and ophthalmologists, we find that prices are strategic complements. Sector 2 physicians' fees increase with their local colleagues' fees, and they seem to react more in places where there are less competition of regulated-fees physicians. Contrary to what is observed in cross-section analysis, physicians' fees decrease with physician density once individual fixed effects are included in the regressions to capture location choices. Further, we find evidence in favor of income effects for gynecologists and pediatricians. The latter increase their fees - to limit their activity level - if non-practice income increases. However, we do not find this result for psychiatrists nor ophthalmologists. Results about physicians output suggest also that the addressed demand is elastic, but we do not find evidence that it is more elastic when there are less sector 1 physicians in the area. This empirical analysis relies greatly on the quality of the instruments used, both in terms of power and validity. Validity can be questionable if changes in local neighbors' characteristics are related to the arrival of new physicians and so, to unobserved changes in demand. Hence, further work is needed to check if the results remain when the instruments used account only for changes in neighbors' characteristics relative to neighbors already there, and not to new physicians. More generally, our empirical analysis shows how important it is to account for endogenous location choices of physicians to correctly describe the market structure.

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8 Tables and graphics

Table 1: Physicians fees in 2008

	Gynecologists	Pediatricians	Ophthalmologists	Psychiatrists
% sector 2	51	31	49	25
For sector 2 only				
Annual Fees in thousands	231	169	313	136
at reference prices	135	97	198	79
extra-billings (EB)	95	61	115	57
% of EB in Fees	41	36	37	42
For sector 1 only				
Annual Fees in thousands	152	127	206	114
at reference prices	147	113	202	111
extra-billings (EB)	4	2	4	3
% of EB in Fees	3	2	2	2

Source: CNAMts. Self-employed physicians below 65 in 2008, who began their practice before 2005.

Table 2: Physicians composite price (in €2008)

		Free-billing			Regulated prices		
		Price 2008	ΔLog Price 2008-2005	ΔLog Price 2011-2008	Price 2008	ΔLog Price 2008-2005	ΔLog Price 2011-2008
Gynecologists	mean	50.855	0.025	0.040	28.900	-0.073	-0.038
	median	47.554	0.016	0.032	28.087	-0.063	-0.037
	sd	15.134	0.101	0.083	2.494	0.050	0.038
Pediatricians	mean	47.163	0.055	0.027	28.500	-0.062	-0.037
	median	44.318	0.052	0.022	28.032	-0.060	-0.037
	sd	12.641	0.083	0.063	1.860	0.030	0.031
Ophthalmologists	mean	46.557	-0.006	0.005	28.559	-0.069	-0.041
	median	43.675	-0.000	0.006	28.080	-0.060	-0.037
	sd	13.166	0.102	0.090	1.882	0.052	0.048
Psychiatrists	mean	65.645	0.031	0.059	38.332	-0.055	-0.035
	median	61.734	0.024	0.052	37.067	-0.059	-0.037
	sd	43.645	0.114	0.098	3.760	0.042	0.045

Source: CNAMts. Self-employed physicians below 65, observed in 2005, 2008 and 2011.

Table 3: Price cross-sectional correlations: OLS on 2008 data

Log Composite Price	Gynecologists		Pediatricians		Ophthalmologists		Psychiatrists	
Local log median income	0.589***	0.594***	0.377***	0.659**	0.613***	0.464***	0.745***	0.838***
	(0.063)	(0.146)	(0.086)	(0.209)	(0.056)	(0.114)	(0.115)	(0.215)
Local medical density S1	-0.044*	-0.029	-0.033	-0.078	-0.048***	-0.031*	-0.071	-0.168*
	(0.021)	(0.038)	(0.031)	(0.054)	(0.014)	(0.015)	(0.048)	(0.077)
Local medical density S2	0.124*	0.053	0.159***	0.074	0.072	0.020	0.061	0.034
	(0.052)	(0.043)	(0.046)	(0.049)	(0.037)	(0.018)	(0.034)	(0.034)
Fixed effects (1)	Region	Depart.	Region	Depart.	Region	Depart.	Region	Depart.
Other controls	experience, experience^2, sex, household non-practice income, household size, financial support for out-of-household child or ex-spouse, child under 3, Local averages of same characteristics for competitors, with travel time weights							
Adj. R2	0.471	0.517	0.393	0.445	0.462	0.511	0.293	0.321
Nb obs	2159.000	2159.000	683.000	683.000	1897.000	1897.000	1367.000	1367.000

Standard errors in parentheses, clustered at the "bassin de vie" level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
(1) Include fixed effects at the Region or Department level.
Source: CNAMts. Free-billing self-employed physicians below 65, observed in 2008.

Table 4: Price response equation: gynecologists

D. Log Composite price	OLS	IV	OLS	IV
D.Log Competitors price	0.488***	0.720***	0.455***	0.621***
	(0.105)	(0.120)	(0.069)	(0.103)
D.Local medical density	-0.029	-0.176**	-0.024	-0.203***
	(0.022)	(0.082)	(0.024)	(0.075)
D.Non physician Log income	0.001*	0.001**	0.001	0.001**
	(0.001)	(0.000)	(0.001)	(0.000)
D.Non professional Log income	0.000	0.000	0.001	0.000
	(0.000)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	-0.001	-0.001	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)
D.$\leq$3 yo child (y/n)	0.000	-0.001	0.001	0.000
	(0.006)	(0.008)	(0.006)	(0.008)
D.Log Nb persons in Household	-0.001	-0.001	-0.001	-0.000
	(0.006)	(0.007)	(0.006)	(0.007)
D.Single	0.007	0.008	0.006	0.007
	(0.009)	(0.008)	(0.010)	(0.009)
D.Local log median income	-0.142***	-0.076**	-0.142***	-0.078***
	(0.029)	(0.029)	(0.031)	(0.029)
Constant	0.007	-0.017	0.009	-0.011
	(0.006)	(0.010)	(0.007)	(0.010)
Competitors definition	Sector 2 physicians <45’ weighted by time travel		Sector 2 physicians <45’ non-weighted	
Other controls	Physician exp.^{2}, Competitors exp and ^{2}, Local age structure			
Instruments (for IV columns only)	Competitors price and medical density instrumented by % retired physicians by sector, % > 60 yo physicians in 2005 and 2008 Competitors’ Log non prof income, Log non practice income Child/ex-spouse support, Child under 3, Household size % women, % single-headed household			
Adj. R^2	0.105	-	0.087	-
Nb obs	3706.000	3706.000	3706.000	3706.000
Joint test for endogeneity (pval)		0.000		0.000
1st st. F excluded for medical density		13.331		12.226
1st st. F excluded for compet. price		15.298		24.593
Nb inst.		10.000		10.000
Hansen J test for overid (pval)		0.398		0.043
Stock Wright S (joint 0) (pval)		0.000		0.000
Anderson-Rubin (joint 0) (pval)		0.000		0.000

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regression. Data: 2005, 2008 and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 5: Price response equation: pediatricians

D. Log Composite price	OLS	IV	OLS	IV
D. Log Competitors price	0.386***	0.361***	0.325***	0.311***
	(0.103)	(0.101)	(0.080)	(0.111)
D.Local medical density	0.005	-0.136**	0.007	-0.138**
	(0.019)	(0.057)	(0.018)	(0.056)
D.Non physician Log income	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
D.Non professional Log income	0.001	0.001	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	0.000	0.001	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
D.$\leq$3 yo child (y/n)	0.026	0.022*	0.024	0.021*
	(0.021)	(0.012)	(0.022)	(0.012)
D.Log Nb persons in Household	-0.000	0.000	0.000	0.001
	(0.008)	(0.010)	(0.008)	(0.010)
D.Single	-0.007	-0.004	-0.006	-0.002
	(0.009)	(0.012)	(0.010)	(0.012)
D.Local log median income	-0.022	-0.007	-0.008	0.006
	(0.023)	(0.028)	(0.032)	(0.028)
Constant	0.005	-0.002	0.010	0.002
	(0.009)	(0.014)	(0.008)	(0.015)
Competitors definition	Sector 2 physicians $<$45’ weighted by time travel		Sector 2 physicians $<$45’ non-weighted	
Other controls	Physician exp.^{2}, Competitors exp and ^{2}, Local age structure			
Instruments (for IV columns only)	Competitors price and medical density instrumented by % retired physicians by sector, % $>$ 60 yo physicians in 2005 and 2008 Competitors’ Log non prof income, Log non practice income Child/ex-spouse support, Child under 3, Household size % women, % single-headed household			
Adj. R^2	0.093	-	0.066	-
Nb obs	1190.000	1190.000	1190.000	1190.000
Joint test for endogeneity (pval)		0.030		0.017
1st st. F excluded for medical density		9.872		8.833
1st st. F excluded for compet. price		4.388		2.969
Nb inst.		10.000		10.000
Hansen J test for overid (pval)		0.515		0.366
Stock Wright S (joint 0) (pval)		0.000		0.002
Anderson-Rubin (joint 0) (pval)		0.002		0.038

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regression. Data: 2005, 2008 and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 6: Price response equation: ophthalmologists

D. Log Composite price	OLS	IV	OLS	IV
D. Log Competitors price	0.382***	0.313***	0.343***	0.392***
	(0.059)	(0.109)	(0.061)	(0.114)
D.Local medical density	-0.066***	-0.165***	-0.063***	-0.193***
	(0.020)	(0.061)	(0.021)	(0.070)
D.Non physician Log income	-0.001	-0.001	-0.001*	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)
D.Non professional Log income	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	0.000	0.000	0.000	0.001
	(0.000)	(0.001)	(0.001)	(0.001)
D.$\leq$3 yo child (y/n)	-0.008	-0.008	-0.007	-0.008
	(0.009)	(0.007)	(0.009)	(0.007)
D.Log Nb persons in Household	-0.010*	-0.010	-0.009	-0.008
	(0.006)	(0.007)	(0.006)	(0.007)
D.Single	-0.012**	-0.012	-0.012**	-0.011
	(0.006)	(0.009)	(0.006)	(0.009)
D.Local log median income	-0.129***	-0.118***	-0.136***	-0.107***
	(0.029)	(0.035)	(0.027)	(0.036)
Constant	-0.023***	-0.022**	-0.022***	-0.027***
	(0.005)	(0.009)	(0.005)	(0.009)
Competitors definition	Sector 2 physicians <45' weighted by time travel		Sector 2 physicians <45' non-weighted	
Other controls	Physician exp.^{2}, Competitors exp and ^{2}, Local age structure			
Instruments (for IV columns only)	Competitors price and medical density instrumented by % retired physicians by sector, % $>$ 60 yo physicians in 2005 and 2008 Competitors' Log non prof income, Log non practice income Child/ex-spouse support, Child under 3, Household size % women, % single-headed household			
Adj. R^2	0.060	-	0.050	-
Nb obs	3470.000	3470.000	3470.000	3470.000
Joint test for endogeneity (pval)		0.295		0.221
1st st. F excluded for medical density		13.087		13.573
1st st. F excluded for compet. price		7.758		10.307
Nb inst.		10.000		10.000
Hansen J test for overid (pval)		0.609		0.406
Stock Wright S (joint 0) (pval)		0.053		0.009
Anderson-Rubin (joint 0) (pval)		0.029		0.004

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regression. Data: 2005, 2008 and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 7: Price response equation: psychiatrists

D. Log Composite price	OLS	IV	OLS	IV
D. Log Competitors price	0.262***	-0.102	0.201***	-0.086
	(0.056)	(0.159)	(0.049)	(0.146)
D.Local medical density	0.055	-0.399**	0.055	-0.322**
	(0.037)	(0.167)	(0.037)	(0.152)
D.Non physician Log income	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)
D.Non professional Log income	0.000	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	0.000	0.000	0.000	0.000
	(0.000)	(0.001)	(0.000)	(0.001)
D.$\leq$3 yo child (y/n)	0.013***	0.009	0.013***	0.010
	(0.004)	(0.009)	(0.004)	(0.009)
D.Log Nb persons in Household	0.004	0.003	0.004	0.003
	(0.006)	(0.010)	(0.006)	(0.010)
D.Single	-0.002	-0.003	-0.002	-0.003
	(0.011)	(0.010)	(0.010)	(0.010)
D.Local log median income	-0.237***	-0.277***	-0.245***	-0.273***
	(0.021)	(0.041)	(0.024)	(0.037)
Constant	0.037***	0.064***	0.041***	0.062***
	(0.007)	(0.018)	(0.008)	(0.017)
Competitors definition	Sector 2 physicians $<$45' weighted by time travel		Sector 2 physicians $<$45' non-weighted	
Other controls	Physician exp.^{2}, Competitors exp and ^{2}, Local age structure			
Instruments (for IV columns only)	Competitors price and medical density instrumented by % retired physicians by sector, % $>$ 60 yo physicians in 2005 and 2008 Competitors' Log non prof income, Log non practice income Child/ex-spouse support, Child under 3, Household size % women, % single-headed household			
Adj. R^2	0.061	-	0.056	-
Nb obs	2255.000	2255.000	2255.000	2255.000
Joint test for endogeneity (pval)		0.001		0.003
1st st. F excluded for medical density		4.340		5.247
1st st. F excluded for compet. price		7.313		8.025
Nb inst.		10.000		10.000
Hansen J test for overid (pval)		0.208		0.096
Stock Wright S (joint 0) (pval)		0.013		0.007
Anderson-Rubin (joint 0) (pval)		0.007		0.002

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regression. Data: 2005, 2008 and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 8: Price responses with sector 1 competition

	Weighted compet charac		Unweighted compet charac		Weighted compet charac		Unweighted compet charac	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	Gynecologists				Ophthalmologists			
D. Log Compet price$\times d_S1 \geq$ av.	0.481***	0.640***	0.441***	0.436***	0.389***	0.287***	0.347***	0.284**
	(0.104)	(0.190)	(0.070)	(0.160)	(0.052)	(0.108)	(0.056)	(0.123)
D. Log Compet price$\times d_S1 \leq$ av.	0.525***	0.672***	0.481***	0.599***	0.438***	0.329*	0.391***	0.484***
	(0.111)	(0.113)	(0.073)	(0.090)	(0.059)	(0.188)	(0.060)	(0.188)
Adj. R^2	0.112	0.102	0.090	0.073	0.067	0.057	0.053	0.029
Nb obs	3413.000	3413.000	3413.000	3413.000	3169.000	3169.000	3169.000	3169.000
1st-stage F med density		13.796		13.526		11.607		11.666
1st-stage F price$\times d_{S1} \geq$ av.		3.588		4.629		2.591		2.232
1st-stage F price$\times d_{S1} \leq$ av.		7.309		7.683		4.429		6.298
Nb inst		10.000		10.000		10.000		10.000
Hansen J test for overid (pval)		0.110		0.004		0.364		0.176
	Pediatricians				Psychiatrists			
D. Log Compet price$\times d_S1 \geq$ av.	0.268***	0.257**	0.202***	0.210*	0.269***	0.108	0.216***	0.077
	(0.076)	(0.123)	(0.064)	(0.115)	(0.058)	(0.149)	(0.054)	(0.143)
D. Log Compet price$\times d_S1 \leq$ av.	0.455***	0.451***	0.394***	0.487***	0.296***	0.253	0.238***	0.246
	(0.094)	(0.136)	(0.069)	(0.176)	(0.053)	(0.215)	(0.046)	(0.199)
Adj. R^2	0.116	0.096	0.085	0.062	0.054	0.030	0.049	0.033
Nb obs	1121.000	1121.000	1121.000	1121.000	2022.000	2022.000	2022.000	2022.000
1st-stage F med density		8.218		7.364		3.538		4.903
1st-stage F price$\times d_{S1} \geq$ av.		1.946		1.646		5.341		6.712
1st-stage F price$\times d_{S1} \leq$ av.		3.427		2.778		4.156		4.694
Nb inst		10.000		10.000		10.000		10.000
Hansen J test for overid (pval)		0.353		0.381		0.258		0.051
Other controls	Physician exp.^{2}, Competitors exp and ^{2}, Local age structure, Local median income							
Instruments	% retired physicians by sector, % > 60 yo physicians at previous period competitors' log non prof income, non practice income,% single Child/ex-spouse support, Child under 3, Household size, % women							

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regressions. Data: 2005, 2008, and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 9: Equilibrium price equation: gynecologists

D. Log Composite price	OLS	IV	OLS	IV
D.Local medical density	-0.040	-0.760***	-0.038	-0.711***
	(0.026)	(0.128)	(0.026)	(0.125)
D.Local log median income	-0.194***	0.132	-0.196***	0.007
	(0.031)	(0.089)	(0.031)	(0.052)
D.Non physician Log income	0.001	0.001**	0.001	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)
D.Non professional Log income	0.001	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	-0.001	-0.001	-0.001	-0.001*
	(0.000)	(0.001)	(0.000)	(0.001)
D.$\leq$3 yo child (y/n)	0.002	-0.001	0.002	-0.000
	(0.005)	(0.009)	(0.005)	(0.008)
D.Log Nb persons in Household	-0.004	-0.005	-0.005	-0.005
Constant	0.043***	0.014	0.043***	0.013
	(0.013)	(0.012)	(0.014)	(0.013)
Competitors definition	Sector 2 physicians <45' weighted by time travel		Sector 2 physicians <45' non-weighted	
Other controls	exp^2, local population age structure all same characteristics for competitors+ experience and % women			
Instruments for density (for IV only)	% retired physicians by sector, % > 60 yo physicians in previous period			
Adj. R^2	0.050	-	0.051	-
Nb obs	3706.000	3706.000	3706.000	3706.000
Joint endogeneity test (pval)		0.000		0.000
1st st. F excluded inst. for density		26.725		22.790
Nb excluded inst.		3.000		3.000
Hansen J test for overidentification (pval)		0.033		0.014
Robust inference (joint test for 0)				
Stock Wright S (pval)		0.000		0.000
Anderson-Rubin (pval)		0.000		0.000

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regressions. Data: 2005, 2008, and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 10: Equilibrium price equation: pediatricians

D. Log Composite price	OLS	IV	OLS	IV
D.Local medical density	0.014	-0.120*	0.017	-0.107*
	(0.022)	(0.064)	(0.020)	(0.064)
D.Local log median income	0.034	0.054	0.033	0.047
	(0.048)	(0.034)	(0.054)	(0.032)
D.Non physician Log income	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
D.Non professional Log income	0.001*	0.001*	0.001	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.$\leq$3 yo child (y/n)	0.026	0.023**	0.026	0.024**
	(0.021)	(0.011)	(0.020)	(0.011)
D.Log Nb persons in Household	0.001	-0.000	0.002	0.001
	(0.006)	(0.009)	(0.006)	(0.009)
Constant	0.046***	0.037***	0.046***	0.038***
	(0.012)	(0.011)	(0.011)	(0.010)
Competitors definition	Sector 2 physicians <45' weighted by time travel		Sector 2 physicians <45' non-weighted	
Other controls	$\exp^2$, local population age structure; all same characteristics for competitors+ experience and % women			
Instruments for density (for IV only)	% retired physicians by sector, > 60 yo physicians in previous period			
Adj. R^2	0.032	-	0.023	-
Nb obs	1190.000	1190.000	1190.000	1190.000
Joint endogeneity test (pval)		0.003		0.004
1st st. F excluded inst. for density		18.784		16.731
Nb excluded inst.		3.000		3.000
Hansen J test for overidentification (pval)		0.042		0.021
Robust inference (joint test for 0)				
Stock Wright S (pval)		0.005		0.003
Anderson-Rubin (pval)		0.022		0.015

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regressions. Data: 2005, 2008, and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 11: Equilibrium price equation: ophthalmologists

D. Log Composite price	OLS	IV	OLS	IV
D.Local medical density	-0.083***	-0.164***	-0.083***	-0.188***
	(0.023)	(0.063)	(0.023)	(0.068)
D.Local log median income	-0.178***	-0.159***	-0.168***	-0.149***
	(0.031)	(0.040)	(0.031)	(0.038)
D.Non physician Log income	-0.001*	-0.001	-0.001*	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)
D.Non professional Log income	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
D.$\leq$3 yo child (y/n)	-0.010	-0.010	-0.010	-0.011
	(0.009)	(0.007)	(0.009)	(0.007)
D.Log Nb persons in Household	-0.005	-0.005	-0.005	-0.004
	(0.004)	(0.006)	(0.004)	(0.006)
Constant	-0.002	-0.004	-0.004	-0.007
	(0.009)	(0.006)	(0.009)	(0.006)
Competitors definition	Sector 2 physicians <45' weighted by time travel		Sector 2 physicians <45' non-weighted	
Other controls	exp^2, local population age structure all same characteristics for competitors+ experience and % women			
Instruments for density (for IV only)	% retired physicians by sector, > 60 yo physicians in previous period			
Adj. R^2	0.027	-	0.028	-
Nb obs	3470.000	3470.000	3470.000	3470.000
Joint endogeneity test (pval)		0.277		0.158
1st st. F excluded inst. for density		31.959		32.644
Nb excluded inst.		3.000		3.000
Hansen J test for overidentification (pval)		0.241		0.213
Robust inference (joint test for 0)				
Stock Wright S (pval)		0.036		0.023
Anderson-Rubin (pval)		0.025		0.012

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regressions. Data: 2005, 2008, and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 12: Equilibrium price equation: psychiatrists

D. Log Composite price	OLS	IV	OLS	IV
D.Local medical density	0.054	-0.303*	0.049	-0.364**
	(0.035)	(0.181)	(0.037)	(0.182)
D.Local log median income	-0.301***	-0.196***	-0.272***	-0.181***
	(0.030)	(0.068)	(0.029)	(0.057)
D.Non physician Log income	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)
D.Non professional Log income	0.001	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.Child/ex-spouse support	0.000	0.001	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
D.$\leq$3 yo child (y/n)	0.012***	0.009	0.013***	0.009
	(0.004)	(0.008)	(0.005)	(0.008)
D.Log Nb persons in Household	0.006*	0.004	0.006*	0.004
	(0.003)	(0.008)	(0.004)	(0.008)
Constant	0.065***	0.059***	0.064***	0.058***
	(0.010)	(0.009)	(0.010)	(0.009)
Competitors definition	Sector 2 physicians <45' weighted by time travel		Sector 2 physicians <45' non-weighted	
Other controls	$\exp^2$, local population age structure all same characteristics for competitors+ experience and % women			
Instruments for density (for IV only)	% retired physicians by sector, % > 60 yo physicians in previous period			
Adj. R^2	0.051	-	0.052	-
Nb obs	2255.000	2255.000	2255.000	2255.000
Joint endogeneity test (pval)		0.032		0.007
1st st. F excluded inst. for density		11.635		10.341
Nb excluded inst.		3.000		3.000
Hansen J test for overidentification (pval)		0.288		0.343
Robust inference (joint test for 0)				
Stock Wright S (pval)		0.016		0.006
Anderson-Rubin (pval)		0.016		0.005

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regressions. Data: 2005, 2008, and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$

Table 13: Output equation

	Weighted compet charac OLS	Weighted compet charac IV	Unweighted compet charac OLS	Unweighted compet charac IV	Weighted compet charac OLS	Weighted compet charac IV	Unweighted compet charac OLS	Unweighted compet charac IV
	Gynecologists				Ophthalmologists			
D.Log Composite price	-0.346	-2.027*	-0.355	-1.944*	-1.165***	-0.987	-1.165***	-0.913
	(0.417)	(0.899)	(0.416)	(0.803)	(0.035)	(0.726)	(0.035)	(0.618)
D.Log Compet. price× S1 dens $<$ av	-0.197	1.233	-0.167	1.360	0.018	0.002	0.025	0.092
	(0.147)	(0.938)	(0.124)	(0.871)	(0.094)	(0.421)	(0.111)	(0.417)
D.Log Compet. price× S1 dens $\geq$ av	-0.254	1.232	-0.220	1.572	-0.082	0.183	-0.068	-0.053
	(0.143)	(1.042)	(0.121)	(1.019)	(0.091)	(0.531)	(0.099)	(0.581)
D.Local medical density	0.006	-0.969	-0.007	-1.024	-0.065	-0.301	-0.063	-0.424*
	(0.104)	(0.781)	(0.105)	(0.760)	(0.059)	(0.172)	(0.058)	(0.188)
Adj. R^2	0.014	-0.084	0.014	-0.085	0.241	0.227	0.241	0.217
Nb obs	3413.000	3413.000	3413.000	3413.000	3169.000	3169.000	3169.000	3169.000
1st-st F price		5.399		5.303		3.447		3.510
1st-st F density		9.558		9.300		8.620		8.221
1st-st F Compet price× S1$<$ av.		7.001		5.123		7.063		7.743
1st-stage F Compet price× S1$\geq$ av.		3.066		4.198		2.075		1.661
Nb inst.		15.000		15.000		15.000		15.000
Hansen J test for overid (pval)		0.729		0.703		0.829		0.974
	Pediatricians				Psychiatrists			
D.Log Composite price	-1.166***	-4.398**	-1.153***	-4.010**	-0.753***	-1.382*	-0.749***	-1.512*
	(0.210)	(1.354)	(0.210)	(1.391)	(0.156)	(0.690)	(0.154)	(0.677)
D.Log Compet. price× S1 dens $<$ av	0.028	1.561	-0.028	1.350	-0.169	0.342	-0.356*	-0.065
	(0.165)	(1.184)	(0.206)	(1.436)	(0.213)	(0.714)	(0.175)	(0.859)
D.Log Compet. price× S1 dens $\geq$ av	-0.178	-0.009	-0.247	-0.134	-0.153	0.393	-0.199	0.338
	(0.182)	(0.612)	(0.217)	(0.553)	(0.159)	(0.516)	(0.107)	(0.524)
D.Local medical density	-0.335***	-0.516*	-0.341***	-0.481*	-0.002	0.541	0.003	0.029
	(0.092)	(0.247)	(0.092)	(0.231)	(0.117)	(0.551)	(0.118)	(0.553)
Adj. R^2	0.107	-0.330	0.108	-0.245	0.053	0.019	0.054	0.012
Nb obs	1121.000	1121.000	1121.000	1121.000	2022.000	2022.000	2022.000	2022.000
1st-st F price		3.729		3.366		1.812		2.249
1st-st F density		5.532		5.074		2.679		3.499
1st-st F price× S1$<$ av.		3.559		2.846		6.177		6.269
1st-st F price× S1$\geq$ av.		1.266		1.249		2.759		4.388
Nb inst.		15.000		15.000		15.000		15.000
Hansen J test for overid (pval)		0.876		0.553		0.420		0.247
Other controls	Physician exp.^{2}, Competitors exp and ^{2}, Local age structure, Local median income							
Instruments	% retired physicians by sector, % $>$ 60 yo physicians in 2005 by sector own and competitors' log non prof income, non practice income, Child/ex-spouse support, Child under 3, Household size, % women, % single							

Standard errors in parentheses: clustered "by Bassin de vie" for OLS, White for IV regressions. Data: 2005, 2008, and 2011.
*:$p < 0.10$, **:$p < 0.05$, ***:$p < 0.01$