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DO PATIENTS VALUE THE SERVICE PROVIDED BY PHYSICIANS WHO  
OVERBILL? A WILLINGNESS-TO-PAY STUDY USING FRENCH SURVEY DATA

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**ESSEC RESEARCH CENTER**

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# Do patients value the service provided by physicians who overbill? A willingness-to-pay study using French survey data

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## Abstract

Outpatient specialist physicians in France can work either in the regulated sector, where they charge the regulated fee, or in the unregulated sector, where they set their own fees above the regulated fee. This context provides a unique opportunity to estimate the extent to which patients value services provided under balance-billing. In January 2021, we carried out a contingent valuation method survey on a sample of 1,051 individuals who were representative of France's adult population. Results highlighted that willingness-to-pay (WTP) for a specialist consultation in the unregulated sector was higher than for a consultation in the regulated sector, with a significant WTP difference of €4.30 (almost 15% of the regulated fee). This difference was significant across all respondent subgroups (i.e., gender, age, education level, marital status, income, health status, insurance coverage, and area of residence). Moreover, this preference was associated with the perception that specialists in the unregulated sector provide better quality medical care, better quality non-medical services, and that making an appointment with them is easier. Finally, we estimated the patient net welfare gain generated by specialist consultations in the unregulated sector in France at approximately €165 million per year. This is the first study to provide an estimation of patients' benefits associated with balance billing. This study is relevant not only in the French context, but also for other countries where the cost of baseline treatment is fully reimbursed by basic insurance, and patients pay out-of-pocket for non-basic care (balance-billing).

**Keywords:** Balance billing, Subjective value of care, Dual healthcare market, Contingent valuation method

**JEL:** I11, C34

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## 1. Introduction

In countries with dual healthcare systems, the cost of baseline treatment is fully reimbursed by basic insurance, while patients must make out-of-pocket payments for the incremental costs associated with non-basic care; examples of the latter include treatments not covered in the basic insurance package, better-quality services, the opportunity to choose a specific physician, and the possibility to access more innovative treatments (Barros and Martinez-Giralt, 2002; Brekke and Sørsgard, 2007; Barros and Siciliani, 2011; Olivella, 2003). Balance billing, overbilling, and bulk-billing are interchangeable terms used to describe situations in which physicians are legally allowed to charge patients an extra payment on top of the regulated fee (Glazer and McGuire, 1993; Kiffman and Scheuer, 2011; Savage and Jones, 2004; Jelovac, 2015; Besancenot et al., 2023).

Many studies in healthcare industrial organization have analyzed balance billing as a form of price discrimination. Early theoretical models depicted physicians as monopolists offering homogenous services, able to price discriminate based on patients' willingness to pay (WTP) out-of-pocket fees (Mitchell and Cromwell, 1982; Zuckerman and Holahan, 1991; Savage and Jones, 2004). In these models, balance billing primarily increased physicians' incomes at the patients' expense. Feldman and Sloan (1988) suggested that capping extra fees could lead to a decline in the quality of the service provided. Later models addressed the price-quality choice in a monopolistic competition framework (e.g., Glazer and McGuire, 1993; Kiffman and Scheuer, 2011; Jelovac, 2015; Gravelle et al., 2016; Besancenot et al. (2023)). Lamiraud and Vranceanu (2024) developed a directed search model of the French dual market, revealing that higher fees in the unregulated sector were associated to a higher likelihood of finding a specialist.

All these models seeking to explain how physicians who charge extra fees decide on these fees assume, either explicitly or implicitly, that a broad measure of patients' utility -- net of out-of-pocket payments and any other costs (such as congestion or poor quality of amenities) from consulting a physician in the unregulated sector under balance billing -- should exceed the utility of consulting a physician in the regulated sector for free (with fees typically covered by insurance)<sup>1</sup>.

While intuitive reasoning supports this assumption, no empirical study to date has verified it. Calcoen and Van de Ven (2019) pointed out that the value added for patients of consultations in the unregulated sector in Belgium and France is largely undocumented. This is confirmed by Dormont and Péron (2016), who noted that some patients in France prefer to consult specialists who balance bill, but did not provide an explicit measure of this utility gain.

The present paper seeks to fill this gap in the empirical literature by investigating whether patients assign a higher utility to consulting a specialist in the unregulated sector compared to consulting one in the regulated sector, using an original set of French data. France provides a unique setting to study this question as specialist physicians providing outpatient care can work exclusively in the regulated sector, charging regulated fees determined by the national Health Insurance, or in the unregulated sector where they can set their own fees under some loose guidelines from national health authorities. Furthermore, patients in France can freely choose to consult specialists in either sector.

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<sup>1</sup> The preference for the unregulated sector is generally linked to better non-medical conditions: shorter search for a suitable specialist, shorter waiting times, longer visits, and better services.

In order to assess patients' benefits, we carried out a contingent valuation method (CVM) survey in a representative sample of the French adult population. Respondents were exposed to a hypothetical scenario where participants had to pay the consultation fee for a specialist in full out of pocket (i.e., no reimbursement for consultations in either sector). In this context, they were asked to express their WTP for a specialist consultation for both sectors. Data analysis highlighted how personal characteristics, such as age and income, explained the heterogeneity between the two sectors in terms of potential patient WTP. The subjective determinants of the WTP gap between both sectors was also investigated. The results from our study provide an approximate estimate of the total welfare gain associated with consultations of specialist physicians in the unregulated sector.

The paper is organized as follows. Section 2 outlines the institutional framework of the dual market for specialist physician services in France. Section 3 presents our WTP study and the empirical methods used. Section 4 presents and discusses the results, while section 5 shares our conclusions.

## 2. Overbilling in the French healthcare system

Outpatient specialist physicians in France are paid on a fee-for-service basis and can choose to work either in the regulated market (called sector 1) or the unregulated market (called sector 2); this choice is exclusive and permanent. Sector 1 practitioners must charge a fixed regulated fee per consultation (€31.50 in 2024), while sector 2 practitioners can charge extra fees above the regulated fee. Between 2012 and 2022, the share of specialists in sector 2 rose from 42% to 53% (DREES, 2023).

Patients can freely choose to consult sector 1 or sector 2 specialists. Those referred by their registered GP for a specialist consultation<sup>2</sup> are fully reimbursed if they see a sector 1 specialist except for a two-euro copayment<sup>3</sup>. Generally, referred patients who choose to consult a sector 2 specialist must make higher out-of-pocket payments.

More specifically, France's National Health Insurance (NHI) system provides public, compulsory, universal health insurance. In addition to this basic coverage, 95% of the French population have complementary insurance (Bartlet, 2019). Three types of complementary contracts exist: corporate contracts provided by firms for their employees on a compulsory basis (i.e., employees cannot opt out), individual contracts negotiated and paid on an individual basis, mostly by self-employed people, and CSS<sup>4</sup> which is means-tested complementary health insurance provided by the state granting low-income people virtually free access to health care. Hereafter, we shall refer to CSS as state-provided complementary health insurance or SPCI.

In general, co-payments/co-insurance under the NHI system can be reimbursed by complementary health insurance. However, a small number of specific co-payments, including the two-euro co-payment (see above), cannot be covered by complementary health insurance

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<sup>2</sup> A soft form of gatekeeping was introduced in 2004. The NHI invites all adults to register with a GP. Except for certain medical specialties where GP referral is not necessary (i.e., gynecology, ophthalmology, stomatology, and psychiatry for those aged 16 to 25), patients must first consult their GP before visiting a specialist. Failure to declare a GP and/or to respect this referral pathway results in lower NHI reimbursements (from 70% to 30%). The individual GP decides whether or not to refer the patient to a specialist; however, he/she cannot impose on the patient which specialist (and therefore the sector type, 1 or 2) to visit.

<sup>3</sup> The co-payment for a physician visit was one euro at the time of our study in 2021.

<sup>4</sup> *Complémentaire Santé Solidaire*. Depending on their resources, eligible people can either benefit from the CSS completely free of charge or by paying a small premium. In late 2020, 7.2 million people (i.e., 10.5% of the French population) were beneficiaries of CSS (DREES, 2021).

contracts, and therefore represent out-of-pocket payments for patients. One exception is SPCI enrollees who are exempt from the two-euro co-payment. Overbilling amounts cannot be reimbursed by complementary insurance for amounts exceeding twice the regulated sector 1 fee. Moreover, coverage of balance billing amounts differs according to the type of complementary insurance. Specifically, corporate contracts provide greater coverage, while half of the individual contracts taken out do not cover balance billing at all (Bartlet, 2019). Physicians cannot overbill SPCI beneficiaries (Dormont and Gayet, 2021).

For the specific case of a specialist consultation, basic insurance reimburses 70% of the regulated price minus the two-euro co-payment. Complementary insurance covers the cost-sharing amount (i.e., the remaining 30% of the regulated price but not the two-euro co-payment). Complementary insurance may also cover a share, but not all, of potential higher fees charged by physicians in sector 2. Finally, SPCI beneficiaries can access sector 1 and sector 2 specialist services free of charge. Based on Choné (2019), the average out-of-pocket payment for a consultation with a sector 2 specialist in 2014 was between 0 and 18 euros for all patients.

### 3. Data and Methods

#### 3.1 The CVM study

CVM is a survey-based direct method involving hypothetical scenarios; in the healthcare context, it is used to determine monetary valuations of new or existing health technologies, drugs, regulations, social health insurance etc. (Klose, 1999; Steigenberger, 2022; Kaonga et al., 2022). As people living in France are accustomed to choosing between Sector 1 and Sector 2 specialists (Besancenot et al., 2023; Lamiraud and Vranceanu, 2024) – the use of CVM to elicit patient preferences for specialist visits in each sector is a natural choice. To do so, we engaged the market research institute OpinionWay to administer a computer-assisted questionnaire on a representative sample of the French adult population on 4 January 2021. Segmentation criteria were age, gender, socio-professional category, type of residency and region. A target sample size of  $n = 1000$  was selected to ensure satisfactory sample power. A total of 1051 adults participated.

To ensure that participants had a common level of knowledge about specialist supply, they were reminded before the survey that patients in France can freely choose between consulting a specialist in sector 1 or in sector 2. They were also told that sector 1 specialists charged a fixed regulated fee per consultation of 30 euros<sup>5</sup> while those working in sector 2 could choose to set their fee above this regulated price. It was made clear that patients who consult sector 1 physicians have very low copayments (only 1 euro at the time of the study) after reimbursement by basic and complementary insurance, while persons consulting sector 2 physicians in general have to pay larger out-of-pocket payments.

After providing this introductory information, respondents were asked *to imagine that financing mechanisms for specialist consultations had been changed and that specialist consultations were no longer reimbursed by basic and complementary insurance*. Hence, patients would have to pay the visit fee in full out of pocket. Given this hypothetical situation, respondents were

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<sup>5</sup> The regulated fee for a specialist consultation in France was 30 euros between 1 July 2017 (see Dixte and Verger, 2022) and 1 November 2023. It was subsequently increased to 31.50 euros.

asked to report their maximum WTP for a specialist consultation in two scenarios: sector 1 and sector 2.

A payment card approach was used to facilitate answers. This method is a valid alternative to asking dichotomous choice questions (Donaldson et al., 1997). The proposed bidding ranges (in euros) were: 0–1, 1–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–100, more than 100. Three thresholds were chosen to reflect the one-euro copayment, and regulated consultation prices: 25 euros for a GP visit, and 30 for a specialist consultation. Other thresholds were chosen to reflect real average fees charged in sector 2 (Choné et al., 2019).

For both sectors, respondents were then asked to what extent they valued i) the quality of medical care, ii) the quality of non-medical services, and iii) the ease in getting an appointment. Quality was coded for each of the three dimensions as a dichotomous variable, taking the value 1 when high, and 0 when low.

In the final section of the questionnaire, information concerning health status and complementary coverage was collected as well as socio-demographic information. The survey recorded the household's net income as a categorical variable with eight categories. We aggregated this information into three monthly income categories: lower than 1500 euros, between 1500 and 3500 euros, and higher than 3500 euros. The threshold for the lowest category was defined based on France's regulated minimum wage. Information about household income was missing for 96 individuals. We checked to ensure that the WTP distribution for these participants was not significantly different from the WTP distribution in the full sample. To avoid losing too many observations, we implemented an ordered probit estimation to predict missing income values<sup>6</sup>.

The survey also measured respondents' individual attitudes towards risk using the self-reported tolerance-to-risk scale introduced by Dohmen et al. (2011).

### 3.2 Econometric methods

The econometric analysis aimed to estimate patients' benefits associated with balance billing for specialist visits.

Let  $Y_{ij}^*$  denote respondent  $i$ 's true valuation for a consultation with a specialist in sector  $j$ , with  $j = (1,2)$ .  $Y_{ij}^*$  is known to lie in an interval, except for the last interval which is right censored.

The theoretical model to be estimated is as follows:

$$Y_{ij}^* = \alpha S_2 + \beta X_{ij} + \varepsilon_{ij}, \quad (1)$$

where  $X_{ij}$  is a vector of individual and household characteristics and  $S_2$  is an indicator variable, taking the value 1 whenever the individual provided an answer relative to sector 2 and the value 0 otherwise. The error term  $\varepsilon_{ij}$  is assumed to be normally distributed with zero mean.

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<sup>6</sup> This was possible using the following explanatory variables: age, gender, education level, employment status, marital status, family size, health status, complementary coverage status, area of residence, and regional fixed effects.

The coefficient  $\alpha$  can be interpreted as the mean difference in WTP per person between sector 2 and sector 1 while controlling for covariates.

An interval data regression model was estimated (Cameron and Trivedi, 2022).<sup>7</sup> As each respondent assessed both sectors 1 and 2, we used the cluster option. Furthermore, all regressions included regional dummies.<sup>8</sup>

To investigate the presence of possible heterogeneous effects among the variables considered, we tested whether covariates had a different impact on WTP for sector 1 and sector 2 specialist consultations by introducing interaction terms  $S_2 \times X_{ij}$ .

After estimating the model in equation (1), we also computed the average WTP and its standard deviation for both sectors.

Finally, we ran several analyses on specific subsamples. The first of these excluded all SCHI respondents in order to exclude potential protest answers (Dziegielewska and Mendelsohn, 2007) as these persons cannot be overbilled by law. The second subsample excluded insurance enrollees without complementary cover. We did this to estimate WTP for sector 2 specialists in a population where all enrollees have complementary coverage, reflecting the French government's target<sup>9</sup>. The third subsample excluded both SCHI beneficiaries and participants without complementary coverage.

## 4. Results

### 4.1 Descriptive statistics

A total of 1051 persons representative of the French adult population answered the survey. Respondents' characteristics are displayed in Table 1. Average age was 49 years, 28.9% had a university qualification higher than a Bachelor's degree, 42.7% declared they were suffering from a chronic disease, and 23.5% lived in rural areas.

The percentage of individuals who had complementary insurance coverage was slightly smaller (91.0%) than in official statistics (95% according to Bartlet et al. (2019)); 38.8% of respondents were covered by a corporate contract, 46.9% by an individual contract and 5.29% by SCHI. The percentage of SCHI beneficiaries was also smaller than in official statistics (10.5%). It is possible that some respondents who said they had no complementary cover were in fact SCHI beneficiaries.

The payment card interval choices for sectors 1 and 2 are presented in Figure 1. No respondent ticked the [0-1] amount, which represented an amount lower than the one-euro co-payment that respondents (except for SCHI beneficiaries) had to pay out of pocket<sup>10</sup>. This suggests that respondents understood the setting of the experiment quite well, and did not provide protest zeros.

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<sup>7</sup> For similar estimation strategies in WTP studies, see for example Lamiraud et al. (2009), Lamiraud et al. (2016) and Costa-Font et al. (2023).

<sup>8</sup> France is divided into thirteen regions which are administrative divisions of government at the sub-national level.

<sup>9</sup> currently, only 95% of enrollees have complementary cover (see above)

<sup>10</sup> Note that most respondents were probably used to paying amounts larger than 1 euro at the time of the study because of overbilling and because of the likelihood that some consulted specialists without GP referral (see section 2).



The percentage of respondents willing to pay more than 30 euros for a specialist consultation was significantly larger for the sector 2 scenario than for the sector 1 scenario overall (42.6% versus 32.8%,  $p < 0.001$ ) and for all subgroups stratified by gender, age, education level, marital status, income, health status, insurance coverage and area of residence (Table 1).

#### 4.2 Econometric analysis – WTP estimates

Table 2 displays the results of Equation 1. Column 1 represents the benchmark regression. In model 2, missing income values were replaced with predicted income values (see section 3). In model 3, we added a variable related to the respondent's marital status, and in model 4 a variable reporting the number of children living in the household was added. Model 5 controls for risk aversion. Models 6-9 reflect specific cases of the model presented in model 1 obtained by omitting some health status variables, education level, types of complementary coverage, and area of residence. Models 10 to 12 were run on specific subsamples. Models 10 and 11 excluded, respectively, respondents without complementary coverage and SCHI beneficiaries. Model 12 excluded both these categories.

In Table 2, looking at the coefficients of the covariates included in  $X_{ij}$ , most of the WTP results are in line with previous studies. Older patients (i.e., >50 years) were significantly more likely to express greater WTP for a specialist visit than their younger counterparts, which is consistent with a greater demand for health care services in this age group.

Respondents with a higher income as well as those with a higher education level were willing to pay significantly more for a specialist consultation. This is consistent with an income effect for a normal good and with previous studies, which highlighted that people with a higher socioeconomic status value care from specialist physicians (Doorslaer et al., 2004).

Those suffering from a chronic disease indicated higher WTP, but this was only significant at the 10% level. The other covariates related to health status (self-assessed health and hospitalization during the previous year) were not significantly associated with WTP for specialist consultations. This may reflect two opposing effects which result in health variables not being significant. On the one hand, respondents with poorer health status may have a higher demand for specialist healthcare services. On the other hand, good health may be correlated with higher socioeconomic status, which is associated with a higher WTP for specialist care.

Respondents covered by corporate complementary contracts were willing to pay significantly more for a specialist consultation than respondents with no complementary coverage. No significant difference in WTP was observed between respondents without complementary coverage and those with an individual contract. This reflects the larger cover by group contracts overall in France.

There were no significant differences in WTP for specialist consultations between male and female respondents. Moreover, marital status, number of children living in the household, and individual risk aversion were not significantly associated with WTP for specialist consultations.

The coefficient on the sector 2 dummy variable ( $\alpha$ ) was positive and significant for all specifications in Table 2, after controlling for covariates. As we can see, the coefficient is fully stable across all specifications and equals €4.30 (columns 1-9). This value can be interpreted as the mean difference in WTP (expressed in euros) per person between a specialist consultation

in sector 2 and a specialist consultation in sector 1, and represents 14.30% of the regulated specialist fee of 30 euros. In models 10-12, the coefficient on the sector 2 variable was slightly larger, respectively, 4.59, 4.48 and 4.80; this is consistent with the fact that those models excluded potential protest answers and were run on wealthier subsamples of the study population. We conclude that the WTP for a consultation with a specialist physician in sector 2 is significantly larger than for a specialist in sector 1.

Table 3 shows the results of the analyses considering interaction terms between Sector 2 and other covariates. Interaction terms were tested one by one and then altogether and by groups of several interaction terms. We only report the specifications for which interaction terms were significant.

The results show some heterogeneity across people with different characteristics concerning their valuation of a consultation with a sector 2 physician. However, only two groups of respondents could be distinguished: young respondents (i.e., 18-30 years old) and high-income respondents. Specifically, although young respondents (people aged 18 – 30), like all age groups, valued sector 2 consultations significantly more than sector 1 consultations, they valued them less than other respondents, reflected in the coefficient on the sector 2 variable equal to 4.82 in model 13, and the coefficient on the interaction term Sector 2  $\times$  Age18 – 30 equal to -3.22. Moreover, Table 3 also shows that the high-income group valued sector 2 specialist consultations more than other income categories. In model 14, the coefficient on the Sector 2 variable is significant and equal to 2.867 and the coefficient on the interaction term Sector 2  $\times$  High Income is significant and equal to 4.946. These results hold when both interaction terms are included in Model 15. The coefficient on the Sector 2 variable is significant and equal to 3.34 while the coefficients on the interaction variables Sector 2  $\times$  Age18 – 30 and Sector 2  $\times$  High Income are, respectively, -2.48 and 4.69.

The fact that younger people valued sector 2 consultations less than other age groups may be explained by the fact that since their demand for specialist consultations was lower, they placed less value on the quality features generally associated with sector 2 physicians (see below). Results for the high-income group suggests that the income elasticity of sector 2 consultations was larger than that for sector 1 consultations. Furthermore, the fact that the coefficient of the sector 2 variable remained positive and significant after controlling for the interaction Sector 2  $\times$  High Income in models 14 and 15, suggests that the highest income group did not fully drive the results displayed in Table 2.

As an upshot of all these, the econometric results show that sector 2 was the preferred option in total value terms, and that all subgroups of respondents valued sector 2 specialist consultations more than sector 1 consultations.

If we multiply the mean gain per person (i.e., 4.30 euros) by the number of consultations with sector 2 specialist physicians (1.05\*68 million people)<sup>11</sup>, we obtain a rough estimate of the total surplus gain associated with sector 2 consultations of approximately 307 million euros. This estimation is quite robust because our sample is representative of the French population.

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<sup>11</sup> In France, the average number of annual in-person doctor consultations per person was 5.5 in 2021 (Source: OECD 2023). The average number of GP consultations per person was 3.4 in 2021 (Source: DREES 2023). Hence, the estimated average number of specialist consultations per person was 2.1. Given the comparable distribution of specialists in sectors 1 and 2, we can suppose half of these consultations take place with sector 2 specialist physicians; accordingly, we infer that the average number of consultations per person with a sector 2 specialist is 1.05. Given that there are 68 million inhabitants in France, the estimated total number of consultations with sector 2 physicians is 1.05\*68 000 000.

Based on our benchmark specification in column 1 of Table 2, the estimated average WTP for a sector 1 and a sector 2 consultation was, respectively, 28.66 ( $\pm 10.39$ ) euros and 32.96 euros ( $\pm 10.39$ ). The average WTP was 30.81 euros, which is slightly larger than the 30 euro regulated fee for a specialist consultation at the time of the survey.

### 4.3 Econometric analysis – perceived quality and WTP

To understand the preference for consultations of sector 2 specialists, we investigated the value associated with three attributes of perceived quality: quality of medical care, quality of non-medical services, and ease in obtaining an appointment<sup>12</sup>.

More specifically, we ran econometric estimations, using WTP as the dependent variable and the sector 2 dummy variable, quality attributes measures, and interaction terms between sector 2 and quality attributes as covariates.

The results, displayed in Table 4, suggest that quality attributes push WTP to higher levels in the sector 2 scenario but not in the sector 1 scenario. More specifically, the coefficients on the interaction variables are significant and positive, while the general coefficient on quality attribute is not significant.

The results in column 4 suggest that the greater value attributed to sector 2 specialist physician consultations is significantly related to the *perception of better medical care* (+10.35 euros), the *perception that it is easier to get an appointment* (+5.84 euros) and, to a lesser extent, the *perception of better non-medical services* (+2.79 euros).

### 4.4 A rough estimate of net benefits

It is generally accepted that extra fees charged by over-billing physicians help them increase their revenue without additional costs to social insurance. For the first time, our results provide evidence that the unregulated balance-billing sector also offers positive value to patients.

So far, our analysis has focused on total value. To obtain a broader perspective of patient welfare, we need to compute the difference between total added value and additional patient-born costs generated by sector 2 over sector 1. In 2022, the average household out-of-pocket payment for specialist care consultations in France not covered by basic and complementary insurance represented 10.3% of the total specialist care expenditure (DREES, 2023), or approximately 142 million euros. Hence the additional value associated with sector 2 specialist physicians (307 million euros) is larger than the additional costs (142 million euros), which represents an annual net gain of 165 million euros.

## 5. Conclusion

In many countries, national health systems include a regulated sector offering basic health care services for a regulated fee, and an unregulated sector, where physicians can charge an extra

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<sup>12</sup> Quality was coded for each of the three dimensions as a dichotomous variable taking the value 1 when high, and 0 otherwise (see above).

fee on top of the regulated one. Many theoretical studies have analyzed the welfare implications of this dual organization, taking in particular into account price and quality differentiation, signaling effects, congestion effects, and profits for the medical profession. However, it is not clear whether patients value consultations in the unregulated sector more than consultations in the regulated sector, or are simply compelled to accept balance billing because they cannot access regulated (i.e., lower fee) services.

France, with its two-sector organization of the outpatient specialist care market, provides a perfect setting to test this “higher value assumption” associated with the overbilling sector. To do so, we developed a CVM study, where participants in a representative survey of the French adult population were asked to report their WTP for consultation in the two sectors, under the hypothesis that there was no reimbursement for either sector, and that they had to pay the consultation fee in full out of pocket.

The results show a significant positive difference of €4.30 per person in favor of the unregulated sector, representing almost 15% of the regulated fee. This positive difference was significant across all subgroups defined by gender, age, education level, marital status, income, health status, insurance coverage, and area of residence. Having said that, the youngest respondents (aged 18–30) valued consultations with Sector 2 specialists less than older respondents, while high-income individuals value Sector 2 specialist consultations more than other income groups. Other results show that the preference for a consultation in the unregulated sector was positively related to the perception of better quality of medical care, greater ease in getting an appointment, and, to a lesser extent, better quality of non-medical services. Finally, we estimated the overall patient welfare gain associated with Sector 2 consultations at approximately €165 million per year.

One might argue that the net gain in patient welfare from consulting specialists in Sector 2 is relatively small and therefore does not, in itself, justify the additional complexity of maintaining the two-sector organization in France. However, it is very probable that our estimate of the net gain is closer to the lower end of the possible range. In particular, retaining sector 2 means providing patients with more choices, something that the CVM analysis we performed here could not capture as respondents could only choose either one sector or the other.

Maintaining Sector 2 is also important because thanks to the larger medical profits involved, it attracts more skilled individuals to the medical profession. If these larger profits came at the expense of patient utility, this would cast serious doubts about the usefulness of maintaining sector 2. Our findings suggest that keeping sector 2 is relevant as positive utility gains are observed.

Because the CVM method compares predetermined scenarios based on a snap-shot view of the market, our conclusions should be interpreted with caution. More specifically, from our estimated gain alone, we cannot infer how patient welfare would evolve if, for instance, only one sector and one pricing scheme existed, as in that case, we would observe substantial resource reallocations and changes in the terms of supply and demand of medical services (Besancenot et al. 2023; Lamiraud and Vranceanu, 2024).

To our knowledge, this is the first study to provide evidence that the unregulated physician sector in France offers positive net value to patients. In this respect, it is relevant not only in the French context, but also for other countries where the cost of baseline treatment is fully reimbursed by basic insurance, and patients pay out-of-pocket for non-basic care. Future studies in these other countries could implement similar contingent valuation analyses or infer benefits from actual consumption behaviors.

## References

- Barlet, M., Gaini, M., Gonzalez, L., and Legal, R. (2019). La complémentaire santé - acteurs, bénéficiaires, garanties. Technical report, Panoramas de la DREES.
- Barros, P.P., and Martinez-Giralt, X. (2002). Public and private provision of health care. *Journal of Economics & Management Strategy* 11 (1): 109–133.
- Barros, P. P., and L. Siciliani, 2011. Public and private sector interface, In: *Handbook of Health Economics*. Vol. 2. Elsevier: 927-1001.
- Besancenot, D., Lamiraud, K., Vranceanu, R. (2023). A Model for Dual Healthcare Market with Congestion Differentiation. *Journal of Economics & Management Strategy* 32:400–423.
- Brekke, K.R., and Sjørgard, L. (2007). Public versus private health care in a national health service, *Health Economics* 16(6): 579–601.
- Calcoen, P., & Van de Ven, W. P. M. M. (2019). Supplementary physicians' fees: A sustainable system? *Health Economics, Policy and Law* 14(1): 40–60.
- Cameron, A. C., and P. K. Trivedi (2022). *Microeconometrics Using Stata*. 2nd ed. College Station, TX: Stata Press.
- Choné, P., Coudin, E. and Pla, A. (2019). Does the provision of physician services respond to competition? Working Paper No. 2019-20, Center for Research in Economics and Statistics.
- Costa-Font J., Rudisill C., Harrison S., Salmasi L. (2023). The social value of a SARS-CoV-2 vaccine: Willingness to pay estimates from four western countries. *Health Economics* 32 (8):1818–1835.
- Dixte, C., Vergier, N. (2022). DREES Études et Résultats n° 1223, mars 2022, Revenu des médecins libéraux : une hausse de 1,9 % par an en euros constants entre 2014 et 2017.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., Wagner, G. (2011). Individual risk attitudes: measurement, determinants, and behavioral consequences. *J. Eur. Econ. Assoc.* 9 (3): 522–550.
- Donladson, C., Thomas, R., Torgerson, D.G. (1997). Validity of open-ended and payment scale approaches to eliciting willingness to pay. *Applied Economics* 29: 79–84.
- Doorslaer, E. v., Koolman, X., and Jones, A. M. (2004). Explaining income-related inequalities in doctor utilisation in Europe. *Health Economics*, 13(7), 629–647.
- Dormont, B., Péron, M. (2016). Does Health Insurance Encourage the Rise in Medical Prices? A Test on Balance Billing in France. *Health Economics* 25(9): 1073–1089.
- Dormont, B., Gayet, C. (2021). The Ban on Extra-Fees for Beneficiaries of the CMU-C Health Cover: What Consequences for Physicians and Dentists in Private Practice? *Economics and Statistics*, 524-525: 31–47.
- DREES (2023). *Les Dépenses de Santé en 2022*, collection Panoramas de la DREES, Paris, 2023.
- DREES (2021). *Minima sociaux et prestations sociales. Fiche 35 : La complémentaire santé solidaire.*

- Dziegielewska, D. A., Mendelsohn, R. (2007). Does “No” mean “No”? A protest methodology. *Environmental and Resource Economics*, 38(1), 71-87.
- Glazer J., McGuire T.G. (1993). Should physicians be permitted to balance bill patients? *Journal of Health Economics*, 12, (3): 239–258.
- Gravelle H., Scott A., Sivey P., and Yong J. (2016). Competition, prices and quality in the market for physician consultations. *Journal of Industrial Economics* 64 (1): 135–169.
- Jelovac, I. (2015). Physicians' balance billing, supplemental insurance and access to health care. *International Journal of Health Economics and Management* 15 (2): 269–280.
- Kaonga, O, Masiye, F., Kirigia, J.M. (2022). How viable is social health insurance for financing health in Zambia? Results from a national willingness to pay survey. *Social Science & Medicine* 305: 115063.
- Kifmann, M., Scheuer, F. (2011). Balance billing: the patients' perspective. *Health Economics Review* 1 (1): 1–14.
- Klose, T. (1999). The contingent valuation method in health care. *Health Policy* 47(2): 97–123.
- Lamiraud, K., Oxoby, R., Donaldson, C. (2016). Incremental willingness to pay: a theoretical and empirical exposition. *Theory and Decision* 80:101-123.
- Lamiraud, K., Vranceanu, R. (2024) A two-sector model of healthcare provision with directed search. Available at SSRN: <https://ssrn.com/abstract=4839489> or <http://dx.doi.org/10.2139/ssrn.4839489>
- Lamiraud, K., Von Bremen, K., Donaldson, C. (2009). The impact of information on patient preferences in different delivery patterns: prescription versus OTC. *Health Policy* 93 (2-3): 102–110.
- Mitchell, J. B., Cromwell, J. (1982). Physician behavior under the Medicare assignment option. *Journal of Health Economics* 1, 245–264.
- Olivella, P., (2003). Shifting public-health-sector waiting lists to the private sector. *European Journal of Political Economy* 19(1): 103–132.
- OECD (2023). Health at a glance.
- Savage, E., Jones G. (2004). An analysis of the General Practice Access Scheme on GP incomes, bulk-billing and consumer copayments. *Australian Economic Review* 37(1): 31–40.
- Steigenberger, C., Flatscher-Thoeni, M., Siebert, U., Leiter, A. M. (2022). Determinants of willingness to pay for health services: a systematic review of contingent valuation studies. *The European Journal of Health Economics* 23(9), 1455–1482.
- Zuckerman, S., Holahan, J. (1991). The role of balance billing in medicare physician payment reform. In *Regulating Doctors' Fees: Competition, Benefits and Controls under Medicare*. Edited by: HE Frech, III. AEI Press, Washington, DC: 143–169.

Figure 1: Distribution of the maximal WTP for a consultation with a specialist physician according to sector type (regulated versus unregulated)

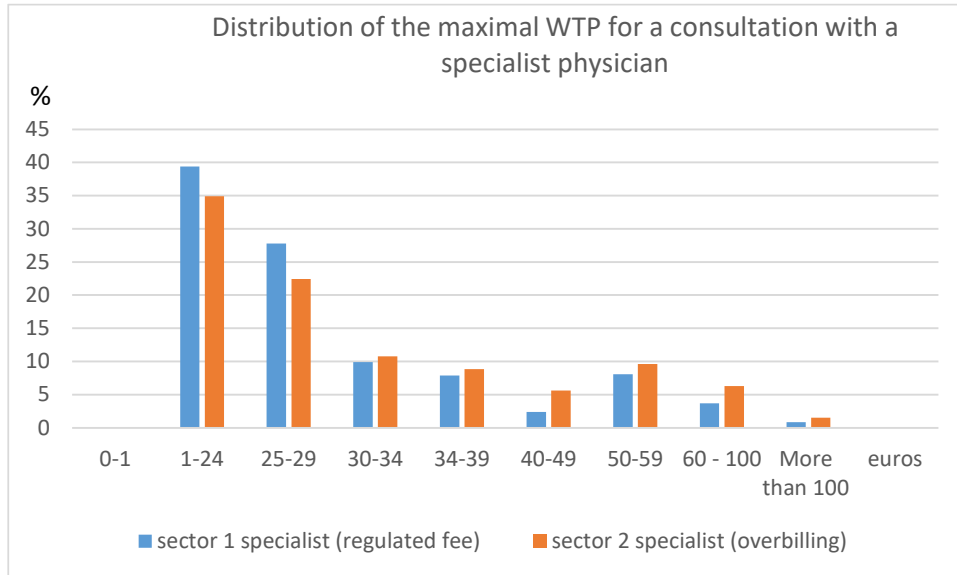


Table 1: Descriptive statistics

|  | All sample (n = 1051)<br>%, mean (std)* | Percentage of enrolles with WTP ≥ 30                |   | p**   |
|--|---|---|---|-------|
|  |   | for sector 1 (regulated)<br>specialist consultation | for sector 2 (overbilling)<br>specialist consultation |       |
| All sample   |   | 32.83   | 42.63   | 0.000 |
| Female   | 52.20                                   | 32.60   | 41.76   | 0.000 |
| <i>Age (years)</i>   | 48.91 (17.22)                           |   |   |       |
| 18 - 30  | 18.01                                   | 33.15   | 39.67   | 0.000 |
| 31 - 50  | 34.64                                   | 30.65   | 40.05   | 0.000 |
| 51 - 65  | 24.62                                   | 26.64   | 39.00   | 0.000 |
| 66 and over  | 22.72                                   | 42.80   | 52.97   | 0.000 |
| <i>Highest Education level</i>                                       |   |   |   |       |
| Secondary school or short professional track                         | 25.99                                   | 22.83   | 29.92   | 0.000 |
| High-school diploma (called the Baccalaureat in France )             | 24.36                                   | 32.14   | 38.10   | 0.000 |
| Short university study cycle (2 years) or long professional training | 20.72                                   | 33.18   | 47.93   | 0.000 |
| University qualification higher than Bachelor's degree               | 28.93                                   | 40.85   | 52.44   | 0.000 |
| <i>Marital status</i>  |   |   |   |       |
| Married or living with a partner                                     | 63.18                                   | 34.64   | 46.23   | 0.000 |
| Number of people living in household                                 | 2.52 (1.25)                             |   |   |       |
| <i>Monthly household net Income</i>                                  |   |   |   |       |
| lower than 1500 euros (low income)                                   | 19.07                                   | 22.75   | 26.98   | 0.000 |
| between 1500 and 3500 euros (middle income)                          | 47.01                                   | 28.69   | 39.14   | 0.000 |
| higher than 3500 euros (high income)                                 | 25.13                                   | 46.04   | 59.35   | 0.000 |
| Missing  | 8.79                                    | 33.42   | 42.71   | 0.000 |
| <i>Health status</i>   |   |   |   |       |
| Excellent self-assessed health                                       | 10.82                                   | 35.54   | 39.67   | 0.000 |
| Good self-assessed health  | 57.40                                   | 33.55   | 43.59   | 0.000 |
| Average self-assessed health   | 27.36                                   | 31.87   | 42.12   | 0.000 |
| Poor/ Very poor self-assessed health                                 | 4.43                                    | 22.45   | 40.82   | 0.000 |
| Suffering from chronic disease                                       | 42.68                                   | 36.67   | 47.84   | 0.000 |
| Hospitalized during the previous year                                | 14.74                                   | 33.77   | 47.68   | 0.000 |
| <i>Health Insurance coverage</i>                                     |   |   |   |       |
| Has complementary cover  | 91.01                                   | 33.79   | 43.79   | 0.000 |
| through a group contract   | 38.78                                   | 33.66   | 45.79   | 0.000 |
| through an individual contract                                       | 46.94                                   | 35.96   | 45.05   | 0.000 |
| through state-provided complementary health insurance (SPCI)         | 5.29                                    | 13.73   | 15.69   | 0.000 |
| Willingness to take risks (1-10) (1: risk averse, 10: risk lover)    | 5.08 (2.24)                             |   |   |       |
| <i>Area of residence</i>   |   |   |   |       |
| Rural area   | 23.48                                   | 32.64   | 40.41   | 0.000 |
| Small city (2000-20 000 inhabitants )                                | 16.98                                   | 31.46   | 38.76   | 0.000 |
| Medium city (20 000 - 100 000)                                       | 12.69                                   | 32.87   | 39.16   | 0.000 |
| Large city (excluding Paris) (> inhabitants)                         | 30.35                                   | 29.60   | 40.52   | 0.000 |
| Paris area   | 16.50                                   | 40.21   | 55.03   | 0.000 |

\*% for category variables, mean (std) for continuous ones (weighted statistics)

\*\* chi2 test comparing the percentage of enrollees with WTP ≥ 30 between sector 1 and sector 2



Table 2: Econometric results

|  | model 1              | model 2              | model 3              | model 4             | model 5              | model 6              | model 7              | model 8             | model 9              | model 10             | model 11             | model 12             |
|--|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| Sector 2   | 4.306***<br>(6.181)  | 4.303***<br>(6.419)  | 4.304***<br>(6.178)  | 4.306***<br>(6.181) | 4.307***<br>(6.183)  | 4.306***<br>(6.181)  | 4.305***<br>(6.183)  | 4.305***<br>(6.181) | 4.304***<br>(6.180)  | 4.591***<br>(6.019)  | 4.480***<br>(6.156)  | 4.801***<br>(5.994)  |
| Female   | -1.467<br>(-0.768)   | -1.275<br>(-0.696)   | -1.231<br>(-0.697)   | -1.101<br>(-0.632)  | -0.972<br>(-0.600)   | -1.424<br>(-0.755)   | -1.659<br>(-0.827)   | -1.400<br>(-0.725)  | -1.403<br>(-0.760)   | -2.171<br>(-1.045)   | -1.931<br>(-0.943)   | -2.762<br>(-1.222)   |
| Age: 18 - 30 <sup>a</sup> years                                      | -5.085**<br>(-2.021) | -4.182*<br>(-1.853)  | -5.864**<br>(-2.364) | -2.512<br>(-0.755)  | -6.571**<br>(-2.417) | -5.318**<br>(-2.168) | -3.940<br>(-1.536)   | -4.177<br>(-1.481)  | -4.545*<br>(-1.829)  | -6.210**<br>(-2.347) | -5.065*<br>(-1.955)  | -6.320**<br>(-2.302) |
| Age: 31 - 50 <sup>a</sup> years                                      | -5.884**<br>(-2.334) | -5.473**<br>(-2.396) | -5.806**<br>(-2.309) | -3.341<br>(-1.087)  | -6.753**<br>(-2.490) | -5.893**<br>(-2.347) | -5.021**<br>(-1.993) | -4.243<br>(-1.568)  | -5.548**<br>(-2.227) | -5.819**<br>(-2.197) | -6.029**<br>(-2.317) | -5.999**<br>(-2.187) |
| Age: 51 - 65 <sup>a</sup> years                                      | -1.917<br>(-0.399)   | -2.147<br>(-0.485)   | -1.914<br>(-0.400)   | -0.933<br>(-0.175)  | -2.114<br>(-0.456)   | -1.973<br>(-0.415)   | -2.757<br>(-0.611)   | -0.517<br>(-0.0933) | -1.651<br>(-0.344)   | -1.331<br>(-0.251)   | -1.797<br>(-0.366)   | -1.143<br>(-0.210)   |
| High-school diploma (called the Baccalaureat in France) <sup>b</sup> | 2.674<br>(1.631)     | 2.445<br>(1.604)     | 2.917*<br>(1.743)    | 3.009*<br>(1.816)   | 2.880*<br>(1.737)    | 2.844*<br>(1.768)    | 2.657<br>(1.596)     | 2.551<br>(1.589)    | 3.121*<br>(1.717)    | 3.316*<br>(1.882)    | 4.021**<br>(1.991)   | 4.021**<br>(1.991)   |
| Short university study cycle (2 years) or long professional training | 4.837**<br>(2.149)   | 4.604**<br>(2.193)   | 4.614**<br>(2.053)   | 4.782**<br>(2.111)  | 5.149**<br>(2.232)   | 5.016**<br>(2.227)   | 5.160**<br>(2.293)   | 4.687**<br>(2.071)  | 5.070**<br>(2.082)   | 5.248**<br>(2.231)   | 5.673**<br>(2.182)   | 5.673**<br>(2.182)   |
| University qualification higher than Bachelor's degree <sup>b</sup>  | 9.869***<br>(2.860)  | 9.217***<br>(2.849)  | 9.476***<br>(2.996)  | 9.466***<br>(2.937) | 10.11***<br>(2.773)  | 9.955***<br>(2.847)  | 10.10***<br>(2.913)  | 10.14***<br>(2.743) | 10.955***<br>(2.799) | 10.366***<br>(2.799) | 11.66***<br>(2.793)  | 11.66***<br>(2.736)  |
| Middle income <sup>c</sup>   | 0.342<br>(0.170)     |                      | 2.076<br>(0.901)     | 1.570<br>(0.742)    | 0.525<br>(0.264)     | 0.254<br>(0.125)     | 1.896<br>(0.988)     | 1.804<br>(0.969)    | 0.303<br>(0.155)     | 1.044<br>(0.446)     | 0.372<br>(0.177)     | 1.143<br>(0.461)     |
| High income <sup>c</sup>   | 12.00***<br>(3.227)  |                      | 15.10**<br>(2.520)   | 14.39***<br>(2.882) | 12.00***<br>(3.236)  | 11.92***<br>(3.232)  | 15.43***<br>(3.432)  | 13.69***<br>(3.651) | 12.01***<br>(3.292)  | 12.64***<br>(2.984)  | 11.89***<br>(3.216)  | 12.53***<br>(2.954)  |
| Suffering from chronic disease                                       | 6.546*<br>(1.746)    | 6.507*<br>(1.857)    | 6.818*<br>(1.726)    | 6.640*<br>(1.751)   | 6.559*<br>(1.750)    | 5.628*<br>(1.785)    | 6.061*<br>(1.687)    | 6.703*<br>(1.769)   | 6.525*<br>(1.772)    | 6.170<br>(1.560)     | 7.025*<br>(1.795)    | 6.703<br>(1.614)     |
| Hospitalized during the previous year                                | -2.990<br>(-0.955)   | -2.664<br>(-0.920)   | -2.582<br>(-0.881)   | -2.989<br>(-0.956)  | -3.145<br>(-0.971)   |                      | -3.018<br>(-0.981)   | -3.057<br>(-0.954)  | -3.068<br>(-0.960)   | -2.919<br>(-0.876)   | -3.231<br>(-0.978)   | -3.206<br>(-0.907)   |
| Poor/ Very poor self-assessed health                                 | -3.541<br>(-0.857)   | -3.810<br>(-0.938)   | -4.337<br>(-0.954)   | -3.505<br>(-0.852)  | -3.464<br>(-0.856)   |                      | -3.740<br>(-0.913)   | -4.523<br>(-1.121)  | -3.443<br>(-0.823)   | -4.568<br>(-0.854)   | -3.174<br>(-0.701)   | -4.383<br>(-0.723)   |
| Complementary cover through an individual contract <sup>d</sup>      | 1.730<br>(0.742)     | 0.434<br>(0.185)     | 1.526<br>(0.614)     | 1.625<br>(0.675)    | 1.675<br>(0.706)     | 1.986<br>(0.883)     | 1.779<br>(0.772)     |                     | 1.502<br>(0.585)     | 1.091<br>(0.293)     | 1.549<br>(0.648)     |                      |
| Complementary cover through a group contract <sup>d</sup>            | 6.139***<br>(2.851)  | 4.501**<br>(2.234)   | 5.913***<br>(2.784)  | 5.959***<br>(2.789) | 5.778***<br>(2.861)  | 6.504***<br>(2.922)  | 6.444***<br>(3.004)  |                     | 5.699***<br>(2.973)  | 5.357**<br>(2.099)   | 6.078***<br>(2.827)  | 4.399<br>(1.432)     |
| Complementary cover through SPCI <sup>d</sup>                        | -0.320<br>(-0.133)   | -1.331<br>(-0.595)   | -0.313<br>(-0.125)   | 0.748<br>(0.270)    | -0.379<br>(-0.158)   | -0.327<br>(-0.135)   | -0.813<br>(-0.343)   |                     | -0.440<br>(-0.189)   |                      |                      |                      |
| Small city <sup>e</sup>  | 1.301<br>(0.476)     | 1.095<br>(0.444)     | 1.181<br>(0.427)     | 1.323<br>(0.481)    | 0.858<br>(0.314)     | 1.158<br>(0.422)     | 1.337<br>(0.488)     | 1.207<br>(0.443)    |                      | 0.827<br>(0.279)     | 1.429<br>(0.503)     | 0.799<br>(0.258)     |
| Medium city <sup>e</sup>   | 0.946<br>(0.410)     | 0.565<br>(0.265)     | 0.657<br>(0.270)     | 0.657<br>(0.276)    | 0.491<br>(0.202)     | 0.905<br>(0.388)     | 1.023<br>(0.441)     | 1.310<br>(0.575)    |                      | 0.520<br>(0.216)     | 0.838<br>(0.350)     | 0.274<br>(0.109)     |
| Large city <sup>e</sup>  | 3.351<br>(0.886)     | 3.140<br>(0.918)     | 2.448<br>(0.767)     | 2.547<br>(0.756)    | 3.394<br>(0.893)     | 3.377<br>(0.887)     | 4.040<br>(0.993)     | 3.069<br>(0.813)    |                      | 3.707<br>(0.878)     | 3.658<br>(0.944)     | 4.003<br>(0.927)     |
| Paris area <sup>e</sup>  | 9.352*<br>(1.655)    | 6.081<br>(1.178)     | 8.678<br>(1.546)     | 9.597*<br>(1.736)   | 9.175*<br>(1.671)    | 9.163<br>(1.622)     | 10.30*<br>(1.905)    | 8.441<br>(1.445)    |                      | 8.684<br>(1.416)     | 9.660*<br>(1.683)    | 8.996<br>(1.442)     |
| Middle income (missing values are replaced with predicted values)    |                      |                      | 0.0865<br>(0.0452)   |                     |                      |                      |                      |                     |                      |                      |                      |                      |
| High income (missing values are replaced with predicted values)      |                      |                      | 12.03***<br>(3.280)  |                     |                      |                      |                      |                     |                      |                      |                      |                      |
| Married or living with a partner                                     |                      |                      | -5.230<br>(-1.095)   |                     |                      |                      |                      |                     |                      |                      |                      |                      |
| Number of people living in household                                 |                      |                      |                      | -1.999<br>(-1.467)  |                      |                      |                      |                     |                      |                      |                      |                      |
| Willingness to take risks (1-10) (1: risk averse, 10: risk lover)    |                      |                      |                      |                     | 1.064<br>(0.981)     |                      |                      |                     |                      |                      |                      |                      |
| Constant   | 24.92***<br>(3.608)  | 25.52***<br>(4.276)  | 27.13***<br>(3.146)  | 27.60***<br>(3.272) | 19.63***<br>(4.327)  | 24.43***<br>(3.649)  | 27.85***<br>(3.777)  | 26.13***<br>(4.391) | 26.75***<br>(3.309)  | 25.30***<br>(3.096)  | 24.35***<br>(3.514)  | 25.49***<br>(4.416)  |

Observations 1,910 2,102 1,910 1,910 1,910 1,910 1,910 1,910 1,910 1,910 1,732 1,822 1,644

All regressions include regional dummies

Model 1 represents the benchmark regression

In model 2, missing income values were replaced with predicted values

In model 3, we added a variable related to the respondent's marital status

In model 4, we added a variable reporting the number of children living in the household

In model 5, we added risk aversion as a covariate

In model 6, we kept only one health status variable, specifically whether the respondent suffered from a chronic disease

Columns 7 to 9 are particular cases of model 1 obtained by omitting education level, information on complementary cover, and area of residence

In model 10 we dropped enrollees without complementary cover

In model 11, we dropped SPCI enrollees

In model 12, we dropped both enrollees without complementary cover and SPCI enrollees

Robust z-statistics in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>a</sup>reference: 66 years old and over

<sup>b</sup>reference: Secondary school or short professional training

<sup>c</sup>reference: low income

<sup>d</sup>reference: had no complementary health insurance (except in models 10 and 12 where the reference groups are respectively people with SPCI cover and people with individual contract cover)

<sup>e</sup>reference: rural areas

Table 3: Models with interaction variables

|   | model 13              | model 14             | model 15             |
|---|-----------------------|----------------------|----------------------|
| Sector 2  | 4.820***<br>(5.926)   | 2.868***<br>(6.005)  | 3.337***<br>(6.030)  |
| Female  | -1.466<br>(-0.768)    | -1.463<br>(-0.766)   | -1.463<br>(-0.766)   |
| Age: 18 - 30 <sup>a</sup> years                                       | -3.472<br>(-1.393)    | -5.089**<br>(-2.022) | -3.848<br>(-1.526)   |
| Age: 31 - 50 <sup>a</sup> years                                       | -5.884**<br>(-2.334)  | -5.885**<br>(-2.334) | -5.886**<br>(-2.335) |
| Age: 51 - 65 <sup>a</sup> years                                       | -1.917<br>(-0.399)    | -1.917<br>(-0.399)   | -1.917<br>(-0.399)   |
| High-school diploma (called the Baccalaureat in France ) <sup>b</sup> | 2.674<br>(1.631)      | 2.673<br>(1.630)     | 2.673<br>(1.630)     |
| Short university study cycle (2 years) or long professional training  | 4.838**<br>(2.150)    | 4.837**<br>(2.149)   | 4.838**<br>(2.149)   |
| University qualification higher than Bachelor's degree <sup>b</sup>   | 9.869***<br>(2.860)   | 9.871***<br>(2.861)  | 9.871***<br>(2.861)  |
| Middle income <sup>c</sup>  | 0.343<br>(0.171)      | 0.341<br>(0.170)     | 0.341<br>(0.170)     |
| High income <sup>c</sup>  | 12.00***<br>(3.228)   | 9.532***<br>(2.703)  | 9.661***<br>(2.740)  |
| Suffering from chronic disease  | 6.548*<br>(1.747)     | 6.549*<br>(1.747)    | 6.550*<br>(1.748)    |
| Hospitalized during the previous year                                 | -2.991<br>(-0.956)    | -2.990<br>(-0.955)   | -2.990<br>(-0.955)   |
| Poor/ Very poor self-assessed health                                  | -3.540<br>(-0.857)    | -3.542<br>(-0.857)   | -3.541<br>(-0.857)   |
| Complementary cover through an individual contract <sup>d</sup>       | 1.729<br>(0.742)      | 1.726<br>(0.741)     | 1.725<br>(0.741)     |
| Complementary cover through a group contract <sup>d</sup>             | 6.138***<br>(2.850)   | 6.137***<br>(2.850)  | 6.136***<br>(2.849)  |
| Complementary cover through SPCI <sup>d</sup>                         | -0.322<br>(-0.134)    | -0.323<br>(-0.134)   | -0.324<br>(-0.135)   |
| Small city <sup>e</sup>   | 1.301<br>(0.476)      | 1.301<br>(0.476)     | 1.301<br>(0.476)     |
| Medium city <sup>e</sup>  | 0.946<br>(0.410)      | 0.947<br>(0.410)     | 0.947<br>(0.410)     |
| Large city <sup>e</sup>   | 3.352<br>(0.886)      | 3.351<br>(0.886)     | 3.352<br>(0.886)     |
| Paris area <sup>e</sup>   | 9.353*<br>(1.655)     | 9.357*<br>(1.656)    | 9.358*<br>(1.656)    |
| Sector 2 × Age18 - 30 years   | -3.224***<br>(-2.832) |                      | -2.480**<br>(-2.413) |
| Sector 2 × High Income  |                       | 4.948**<br>(2.364)   | 4.693**<br>(2.273)   |
| Constant  | 28.97***<br>(4.197)   | 29.94***<br>(4.337)  | 29.71***<br>(4.308)  |
| Observations  | 1,910                 | 1,910                | 1,910                |

All regressions include regional dummies

Robust z-statistics in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>a</sup>reference: 66 years and over

<sup>b</sup>reference: Secondary school or short professional training

<sup>c</sup>reference: low income

<sup>d</sup>reference: had no complementary health insurance

<sup>e</sup>reference: rural areas

Table 4: Econometric analysis – perceived quality and WTP

|  | model 1             | model 2             | model 3             | model 4             |
|--|---------------------|---------------------|---------------------|---------------------|
| Sector 2                                   | 2.704***<br>(4.466) | 2.569***<br>(3.290) | 1.732*<br>(1.922)   | 0.382<br>(0.323)    |
| Quality of medical care                    | -2.814<br>(-1.017)  |                     |                     | -2.523<br>(-1.085)  |
| Sector 2 × Medical Quality                 | 12.58**<br>(2.263)  |                     |                     | 10.35**<br>(1.989)  |
| Quality of non-medical services            |                     | -2.836<br>(-1.300)  |                     | 0.0836<br>(0.0386)  |
| Sector 2 × Quality of non-medical services |                     | 8.176**<br>(2.215)  |                     | 2.790**<br>(2.005)  |
| Ease of getting an appointment             |                     |                     | -1.961<br>(-0.997)  | -0.826<br>(-0.448)  |
| Sector 2 × Ease of getting an appointment  |                     |                     | 7.974***<br>(2.706) | 5.839**<br>(2.166)  |
| Constant                                   | 29.40***<br>(20.42) | 29.10***<br>(20.57) | 29.23***<br>(17.84) | 29.58***<br>(17.33) |
| Observations                               | 1,910               | 1,910               | 1,910               | 1,910               |

Robust z-statistics in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



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