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Roles

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Marc Perronnin conducted all statistical analyses, drafted the first version of the exhibits, and provided feedback on drafts of the full manuscript.

John Lavis led the writing of the manuscript.

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Abstract

The French government introduced a "free supplementary health insurance plan" in 2000, which covers most of the out-of-pocket payments faced by the poorest 10% of French residents. This plan was designed to help the non-elderly poor to access health care. To assess the impact of the introduction of the plan on its beneficiaries, we use a longitudinal dataset to compare, for the same individual, the evolution of his/her expenditures before and after enrolment in the plan. This longitudinal analysis allows us to remove most of the spuriousness due to individual heterogeneity, and we also use information on past coverage to evaluate the impact of specific benefits associated with the plan. As a result, we can properly assess the impact of the plan on those who enrolled in it. However, we cannot assess the impact of the plan on all of those who were eligible to enrol. Our main result is the plan's lack of an overall effect on utilization. This result is likely attributable to the fact that those who were enrolled automatically in the free plan (the majority of enrollees), already benefited from a relatively generous plan. The significant effect among those who enrolled voluntarily in the free plan was likely driven by those with no previous supplemental coverage.

Keywords: health care financing; equity and inequalities; health care systems; health insurance; natural experiment

JEL Classification: I38

Introduction

The consumption of health care is subject to price and income effects as well as to health care providers' decisions. Awareness of these demand-side price effects has led some decision-makers in countries with universal health insurance to increase user charges as a way to curb expenditure growth: increasing user charges not only redistributes the financial burden of payment for health care (away from the insurer and to the insured), but also reduces the total demand for health care. A reduction of the average per capita health care expenditure has often been described as "beneficial" [1], even though the impact on social welfare truly depends on the price and income elasticities in effect [2] or on the impact on health outcomes of reduced utilization. However, increasing user charges among the poorest individuals is particularly likely to lead to sub-optimal levels of medical consumption [3],[4], especially when they cannot afford the supplementary insurance that covers user charges and is often more available to better- off individuals [5]. Extreme cases of 100% user charges, such as those faced by many Canadians for prescription drugs [6] and by many working-aged Americans for all types of health care in the U.S.[7], have recently prompted recommendations or legislation to reduce these financial barriers to health care.

Designing a scheme aimed at removing financial barriers to accessing health care raises two kinds of issues. First, there is the positive issue associated with measuring the impact that a change in insurance coverage has on health care consumption among the poor [8]. Second, there is the normative issue of whether any impact it might have raises the consumption of the poor to the desired level of health care or to levels detrimental to overall welfare [1] [2]. Studying these issues empirically requires more than cross-sectional data because of the potential for both unobserved heterogeneity and selection effects [1]. It also requires a detailed account of the impact of coverage on different types of health care rather than just on aggregate health care expenditures.

With the goal of estimating the impact of user charges on health care utilization among the poor, we evaluate a quasi-natural experiment that took place in France in 2000. France's universal health insurance system relies heavily on user charges and supplementary health insurance [5]. Patients face user charges when they visit a doctor (general practictioner or specialist), stay in hospital or buy prescription drugs, eyewear glasses and dental prostheses [9]. Overall, the social insurance scheme covers only 75% of total health care expenditures. Supplementary insurance plans cover most user charges (this is their main role, rather than providing additional benefits) and about half of the population living in France is enrolled in a plan through the workplace. These supplementary insurance plans are usually funded through flat-rate premiums that vary with age but rarely according to pre-existing condition (mostly because the social insurance plan comprehensively covers expenditures linked to severe chronic illnesses).

In 2000, the French Government introduced a free supplementary health insurance plan (i.e., Couverture Maladie Universelle Complémentaire, hereafter the free plan, [10] [11]) to help the non-elderly poor to access health care. We present here a comprehensive analysis of the behavioural and financial consequences of this innovation.

Removing financial barriers to access in France

The free plan requires no out-of-pocket payments by beneficiaries at the point of use and participation in the plan is compulsory for all physicians, dentists, and opticians (even though, as stated below, there are concerns that some providers discourage patients covered by the plan to use their services). Individuals with a household income of less than €535 per adult-equivalent per month (€587 in 2005), which corresponds to an income less than 92% of France's "unofficial" poverty line (calculated by the Institut National de la Statistique et des Études Économiques as half the median income), were eligible for the plan in 2000. The equivalence scale weights the first individual in a household as 1, the second 0.5, the third and fourth 0.3, and the fifth and all other individuals 0.4.

The plan does not cover the elderly (i.e., those aged 65 or more) or the disabled because the minimum income they receive from the government is higher than the cut-off. While not permitted by law, many elderly and disabled people would be better off financially if they were to give up part of their income to become eligible for the free plan, an anomaly that has been examined in detail elsewhere [12]. Implemented in 2004, a voucher is distributed to households with income between the plan cut-off and 115% of the cut-off value, with which they can buy commercial supplementary health insurance plan. Almost 4 million people were enrolled when the plan began operation on 1 January 2000. The number of beneficiaries increased to 5.3 million in June 2001, decreased sharply to 4.7 million in September 2001, and then stabilized thereafter. The free plan now covers roughly 7.8% of the population, which is less than the 10% that had been estimated using data from the European Household Panel [13].

Predictions about the behavioural and financial consequences of the free plan were mixed at the time it was introduced. Many claimed that non-financial barriers to accessing health care, such as differences in the "cultural" attitudes of the poor and their physicians, trumped financial barriers [14]. According to this logic, the free plan would have little effect. However, past research on out-of-pocket payments in the French health-care system has found that the payments deterred the poor from visiting physicians and using prescription drugs [15,16,17,18]. On the other hand, supplementary health insurers and the political opposition claimed that the free plan would increase health-care utilization significantly [19]. National Assembly member Bernard Accoyer even estimated that the benefit would cost 45% more than the official forecast [20]. Some within these groups predicted that the effect would be transitory (until pent-up demand was exhausted), whereas others predicted that the effect would be permanent, either because the poor tend to be less healthy or because the poor are more prone to moral hazard. The notion that the poor are more prone to moral hazard has been argued by some individuals [21], however, no convincing evidence has been offered to support the assertion.

Three types of transitions to free supplementary health insurance were possible for the poor. First, those who previously purchased a commercially available supplementary health insurance plan *and* who enrolled in the free plan continued to have almost all out-of-pocket payments paid. However, they moved from facing a variety of forms of out-of-pocket payments at the point of use and being partially (often entirely) reimbursed later from the social sickness fund and the commercial plan in which they were enrolled to facing no out-of-pocket payments at the point of use (and paying no insurance premium). A survey conducted in 1998 (i.e., before the introduction of the free plan) found that only 52% among the individuals in the lowest income bracket (i.e., the poorest 5% of the population) reported that they were covered through a commercial plan, compared to 85% of the entire population [22].

Second, the very poor, who were enrolled in an existing means-tested assistance plan (i.e., Aide Médicale Générale), moved from facing only a few types of out-of-pocket payments at the point of use (e.g., the difference between market prices and the agreed-upon fees of the social sickness funds for some specialists, which is called balance billing, as well as for dental prostheses and prescription eyewear) to facing no out-of-pocket payments of any type at the point of use. The very poor are defined as those who received France's minimum-income benefit valued at €400 per adult-equivalent per month, which corresponds to 70% of France's "unofficial" poverty line, although the exact cut-off is subject to some discretion at the local level. The very poor accounted for about 3% of the population at the time of the introduction of the free plan. Unlike other potentially eligible citizens, those enrolled in the means-tested plan were enrolled automatically in the free plan. After six months in the free plan, their eligibility was re-assessed.

The third type of transition was the most dramatic: those who were not enrolled in either a commercial plan or the means-tested plan *and* who enrolled in the free plan moved from facing all forms of out-of-pocket payments at the point of use and being only partially reimbursed later from the social sickness fund to facing no out-of-pocket payments at the point of use. The types

of out-of-pocket payments included: co-insurance on physicians' fees (30%), laboratory tests (40%), prescription drugs (up to 65% depending on the drug), and medical devices (e.g., 35% for dental prostheses and prescription eyewear); co-payments on nights spent in hospital (e.g., €10.70 for one night in a general medicine ward); and the difference between market prices and the agreed-upon fees of the universal social insurance plan for some specialists as well as for dental prostheses and prescription eyewear [23,24].

One final feature of the French health insurance is worth noting here: Individuals with one of thirty eligible conditions are already exempt from all out-of-pocket payments at the point of use when their care is directly related to the eligible condition. A very small number of these individuals would have been included in our analysis of each of the three types of transitions.

Examining the consequences of removing financial barriers to access

Several studies have examined the behavioural and financial consequences of introducing a free plan. The most rigorously designed and best known research comes from the Rand Health Insurance Experiment [25]. Individuals who were randomly assigned to a free plan were found to have 37% more physician visits than those facing a co-insurance rate of 25%, and 50% more physician visits than those facing a rate of 50%. In our quasi-experiment, before enrolling into the free plan with no co-insurance, citizens with either a commercial plan or the means-tested plan faced co-insurance rates for ambulatory care that were close to zero, citizens who enrolled in the free plan faced co-insurance rates of zero, and citizens with no supplemental coverage faced co-insurance rates between 25% and 50%. Another study, using observational data in Switzerland, but controlling for selection bias, finds that self-selection (of enrollees in various plans) explains most of the difference in physicians' visits across plans with various deductibles [34].

Only one published study has examined the consequences of introducing the means-tested plan that preceded the free plan in France. In this cross-sectional study, individuals who were enrolled in the means-tested plan were found to have the same probability of using any

health care and lower health-care expenditures overall than those covered by commercial plans [26]. To date, published studies that have estimated the impact of supplementary insurance coverage have excluded the beneficiaries of the means-tested plan and concentrated instead on those with commercial plans (see e.g. [15]). A fair amount of "gray" literature exists on the impact of the means-tested plan, most of which comes from local or regional health authorities or the insurers that administer the plan (i.e., primarily the social sickness funds but also commercial plans). However, a systematic effort to review this literature was unsuccessful, in large part because the methodological weaknesses of the evaluations led the authors to be wary of wide distribution [27].

Two studies have examined the consequences of introducing France's free plan. One study, using a cross-sectional design and claims data from the main social sickness funds merged with survey data about the health status of beneficiaries (for a description of the survey data, see [28]), found that those enrolled in the free plan had higher health-care expenditures than those covered by a commercial plan, and that the difference disappeared after controlling for health status [29]. This finding runs counter to the cultural attitudes (non financial barriers to accessing health care, referred to in [14]) and moral hazard (that the poor are more prone to overutilization , [21]) hypotheses but the study did not address whether the impact was transitory or permanent.

The other study used a longitudinal design and claims data to track the health-care expenditures of both those enrolled in the free plan and the rest of the population over three years (1999, 2000 and 2001). Controlling for age and gender, it found that ambulatory health-care expenditures for those enrolled in the free plan increased by 19% between 1999 and 2000 (compared to only 10% for the rest of the population) [30]. In particular, expenditures on prescription drugs increased by 23% for those enrolled in the free plan (compared to 13% for the rest of the population) and expenditures on care provided by general practitioners (hereafter generalist care) increased by 9% (compared to 5%). The differences between groups were

much smaller between 2000 and 2001 however, and factors other than an exhaustion of pent-up demand might explain this finding. The study population was limited to those who used some health care in each of 1999, 2000, and 2001, so the study could not address differences over time in the probability of using any health care. The study also did not exploit the natural experiment created by some beneficiaries being enrolled automatically in the free plan and others enrolling voluntarily, so it could not address the potential for enrollment bias (namely, the fact that those with higher planned utilization have higher incentives to enroll).

Methods

To examine the behavioural and financial consequences of the plan, we examined changes in the probability of using any health care and changes in average quarterly health-care expenditures (total and for each of general practitioners, specialists, and prescription drugs) by beneficiary type (automatically enrolled, not automatically enrolled with prior supplementary insurance coverage, and not automatically enrolled with no prior supplementary insurance coverage), and by region of residence. The latter was designed to take supply effects into account. Van de Voorde et al. [35] show that supply plays a significant role in the consumption of ambulatory care by patients faced with varying degrees of cost-sharing. We included both ambulatory *and* hospital services, and we exploited the natural experiment created by some beneficiaries being enrolled automatically in the free plan and others enrolling voluntarily.

Data sources

The data for all but two variables were extracted from a claims database for a panel of 50,000 enrollees in France's main social sickness funds (Echantillon permanent des assurés sociaux, hereafter EPAS) for the years 1998, 1999, and 2000. Panel members are drawn randomly from the total pool of enrollees and remain in the sample until their death. New panel members are added every year so that the panel continues to reflect the current population. We

extracted the following types of data from the database: health-care expenditure, birth date, area of residence, whether enrolled in the free plan, and (if applicable) date of enrollment in the free plan. We present data on total health-care expenditure (e.g., hospital care, care provided by all health-care professionals, prescription drugs, and prescription eyewear) as well as data on expenditures for each of generalist care (i.e., visits to general practitioners as well as all procedures performed during a visit), specialist care (i.e., visits and procedures), and prescription drugs.

Average quarterly expenditures were calculated for each of three periods:

- period a comprised the first four pre-enrollment quarters;
- period b comprised the last four pre-enrollment quarters; and
- period c comprised the post-enrollment quarter(s), which could range from one to three quarters depending on the date of enrollment in the free plan.

For example, if a person was enrolled on 2 March 2000, we have three post-enrollment quarters: 2 March - 1 June, 2 June - 1 September, and 2 September - 1 December.

We excluded individuals that enrolled after 1 October so that we have at least one post-enrollment quarter for each individual. We calculated the difference in consumption between quarters following enrollment and quarters immediately preceding it, and compare this change with the change in consumption between quarters preceding enrollment and quarters one year before enrollment.

We also excluded individuals with an average quarterly expenditure over €2,500 for at least several consecutive quarters, which translated into 86 individuals or 3% of the sample.

We use expenditures rather than self-reported utilization because physicians in ambulatory care settings and in private hospitals are paid fee-for-service, and there is a national price schedule for drugs (Sandier, Paris, and Polton, 2005). Therefore, expenditure is a much more fine-grained and reliable indicator of utilization than the number of visits or drugs in the past 12 months. The main issue is public hospital (approximately half of overall hospital

expenditures), paid according to global budget: public hospital stays are valued ex post in the dataset we used, based on specialty and length of stay and an average cost per night per specialty over all public hospitals in the country.

The data on physician supply in each region came from an administrative database about France's health-care system (Eco-Santé France) and the data on supplementary health insurance coverage before enrollment in the free plan, which are used only for one type of analysis, were extracted from a general population survey on health and health insurance conducted in 1998 (Santé protection sociale, hereafter ESPS). We did not conduct analyses using data about self-reported health status, before enrollment in the free plan because the measures used in the survey have not been validated and the appropriateness of particular cut-points has not been establishe. These data were merged with the claims database. The survey covered continental France only, and not the overseas territories. Because only about 1 in 5 panel members in the claims database were captured by the survey, the sample (see below: this is not a non-response rate of 80%) for analyses involving supplemental coverage is quite small and therefore the power to detect differences is lower than we would have preferred.

As with any survey, ESPS suffers from a non-random non-response phenomenon. A purely random sub-sample with a rate of .5 is drawn from EPAS to be surveyed. Among selected individuals, 37% cannot be reached due to double accounting (they enrolled in several social insurance schemes) or because they are deceased. Among those who could be reached, another 38% refused to complete the survey. Overall, 40% of the random sub-sample complete the survey and can be used in the present analysis. Previous studies have found that those under 30, the poor and those who don't use health care are among those who are less likely to participate in the survey [31]. Given that we are interested in comparing sub-populations, rather than estimating an overall impact or even the absolute impact for each sub-population, we are not concerned by non-response per se. We assume here that a non-response systematically correlated with enrollment in the free plan is highly unlikely.

Data analysis

We employed a two-step model for our analysis. First, we examined the probability of using any health care (i.e., the probability of having expenditures greater than zero). We used a linear probability model rather than a probit or logit estimation to make the interpretation of the fixed effects easier; furthermore, a logit model with fixed effect, based on the Chamberlain method, would not allow estimating predicted values, wich prevent the calculus of partial effects for utilization or total expenditure. We reasoned that the linear probability model can be used as an approximation even if it is heteroskedastic and yields probabilities out of the [0 - 1] range. We confirmed that the result from our first-step estimate (without fixed effect) was comparable to the result obtained using a linear or logistic estimate and that rates of health care use were neither very high nor very low. Second, we examined health-care expenditures conditional on having used health care, this time using a log-linear model.

We included a fixed effect in the regressions to capture the effect of all fixed variables, both those that are observed (e.g., gender) and those that are not observed (e.g., propensity to use health care). We expected to cope with the enrollment bias through this fixed effect. This is not totally satisfying though: because the enrolment bias entails an endogeneity issue (the fact that someone enrols is endogenous to the explained variable), an ideal way of controlling it would have been to use some instrument predicting voluntary enrolment without being explained by planned health care utilization. However, since we do not accurately observe eligibility to the free plan in the data, there is no proper way to fully control for the endogeneity of voluntary enrolment.

We can infer, however, that the enrollment bias leads to overestimating the impact of the new free plan on health utilization: Because the decision to enrol is likely to be positively correlated to planned utilization of health care, we can expect that, even using the fixed effect, we overestimate the impact of enrollment in the plan on those with no previous coverage. If we

are correct, the impact of benefiting from the free-plan on utilization should fade away in the long run if beneficiaries re-enroll automatically even if not anticipating high spending.

We used a two-part model, which is standard in estimating health care consumption, in order to estimate different sets of coefficients for the control variables in the participation equation (probability of any care) and the conditional expenditure equation (expenditure conditional on any care). The price to pay for this flexibility is the complexity in computing the effect on expected total costs (participation and conditional expenditure) and the standard deviations of the estimated differences, a subject to which we return below.

The regressions included two control variables. The control variables -- season and a dummy variable for each of periods a and c (with period b as the reference period) -- change value from period to period, and the changes can be expected to affect health-care expenditure. We don't control for health status since we assume it is constant over the observation period (individuals over the age of 65 cannot benefit from the free plan, therefore our sample is comprised of young adults and children for whom health status doesn’t change dramatically in a three year span) and therefore controled by the fixed effect.

We conducted analyses using the full sample as well as for defined subpopulations. The sub-populations were constructed according to whether enrollment was automatic (i.e., exogenous) or voluntary (i.e., presumably informed at least in part by expected use of health care), the nature of a person’s supplemental coverage in 1998 (commercial plan, means-tested plan or no supplemental coverage), and by region (regions with a high ratio of physicians per capita, versus low or medium). Only the regressions for sub-populations constructed by the nature of supplemental coverage in 1998 are limited by the small sample size and non-response bias that arise from using the merged survey data. The overall impact of the free plan on the population is a mix of differential impacts on these sub-populations.

We present our results as the partial effects of the change between two time periods on the probability of using any health care and on both conditional and expected total expenditures.

Expected total expenditure is approximately the conditional expenditure times the probability of using any health care. The calculation of the expected total expenditure relies on an estimation of what would have been the conditional expenditure for those individuals who did not use any health care during the period covered. This estimation is not straightforward because the fixed effect of the second-step regression is not known for non-users and is possibly correlated with explanatory variables for those who used health care. Ignoring the fixed effect might bias the estimation of the coefficients in the regressions but integrating it into the smearing estimate may produce an inconsistent estimate of this quantity due to heteroskedasticity. To cope with this problem, we used an auxiliary regression to project the fixed effect on the explanatory variables (season, and a dummy variable for two of the three periods) for those who used health care. By applying the linear expression of the projection to the whole population, we were able to calculate an estimate of the fixed effect for all individuals, including those who did not use any health care. Further details of the calculation are available upon request.

The change between periods a and b is our baseline insofar as it constitutes the "natural" trend for this population. The net effect of being enrolled in the free plan is the difference between the change between periods b and c and the change between periods a and b. This method is a standard before-and-after estimation and has been used previously to evaluate similar quasi-natural experiments [32]. This before-and-after estimation uses the same individuals before the introduction of the free plan as the comparator. An alternative approach would be to compare the evolution of the health care expenditure of the beneficiaries of the plan before and after they entered the plan to the same evolution for the non-eligible population (a difference in difference strategy see e.g. [33]). This approach is certainly superior to the one we use since it controls for any variation in utilization or expenditure over time that is unrelated to enrolment into the plan. We didn’t use it for practical reasons: our main data set (EPAS) doesn’t contain information accurately identifying the non eligible population (we only know who is not enrolled); moreover, within the population not enrolled in the free health plan, we cannot

properly assess zero expenditure: EPAS contains observations with no claims due to overlaps in registration (the same individual belongs to more than one sickness fund, even though s/he can be reimbursed by only one) or death (individuals must remain in the administrative file some time after their death). The subset of Individuals enrolled in the free plan does not suffer from these deficiencies. The only way to control for any change over time spread over the entire population (whether enrolled or not in the free plan) would be to use the restricted survey sample (ESPS), which is much smaller. We did not run analyses at the individual level on ESPS to compare the change in expenditure over time among those enrolled and those not enrolled into the plan but we present some tests on differences in the before-and-after analysis based on average participation rates and expenditures below to show that the differences we observe are not due to an overall increase in expenditure after 2000.

Because the estimator is complex (a two-step model with fixed effect), we used a bootstrap estimation of standard errors and confidence intervals.

Results

The analysis of the full sample reveals that enrolling in the free plan had a significant net effect on the probability of using any health care and on total health-care expenditures among all enrollees, controlling for season and a fixed-individual effect. The same holds true for each of generalist care and prescription drugs. There is a significant increase in the probability of using specialist care after enrollment, but no significant effect on expenditures conditional on seeing a specialist. The fixed-individual effect, which captures all individual characteristics except season and enrollment in the free plan, is significant in all four analyses. This finding suggests that individual characteristics we cannot observe through our administrative data influence the use of health care more than enrollment in the free plan. Expected demand for health care (i.e., expectations about whether health care will be needed and used), which would prompt

voluntary enrollment in the free plan, is the most likely characteristic missing from our analyses. If true, enrollment bias is confounding our estimation of the behavioural and financial consequences of the free plan.

Exhibit 1: Changes in the probability of using any health care and in health-care expenditure, by type of care received

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
All types of care			
Probability of any use	10.2% [7.9%, 12.3%]	13.4% [11.3%, 15.5%]	3.2%
Conditional expenditure	4.7% [0.4%, 9.2%]	7.2% [3.0%, 11.6%]	2.5%
Expected total expenditure	15.3% [9.2%, 21.1%]	21.6% [15.8%, 28.4%]	5.3%
Generalist care			
Probability of any use	13.0% [10.1%, 16.1%]	10.9% [8.2%, 13.9%]	-2.1%
Conditional expenditure	1.3% [-1.2%, 3.8%]	1.2% [-1.1%, 3.6%]	-0.1%
Expected total expenditure	14.4% [10.1%, 19.1%]	12.3% [8.3%, 16.7%]	-2.1%
Specialist care			
Probability of any use	8.8% [2.5%, 14.9%]	23.9% [18.7%, 31.0%]	**15.1%**
Conditional expenditure	-0.2% [-5.6%, 5.5%]	-9.7% [-14.3%, -4.8%]	-9.5%
Expected total expenditure	8.6% [0.2%, 17.3%]	11.9% [3.7%, 21.0%]	3.3%
Prescription drugs			
Probability of any use	11.0% [8.6%, 13.9%]	16.2% [13.5%, 18.7%]	5.2%
Conditional expenditure	2.5% [-1.0%, 6.1%]	9.4% [5.9%, 13.2%]	6.9%
Expected total expenditure	13.8% [8.7%, 19.8%]	27.2% [22.0%, 32.8%]	13.4%

Sources: EPAS 1998-2000

Notes: N = 2,686 individuals or 31,593 quarters for all analyses. Period a corresponds to the first four pre-enrollment quarters, period b to the last four pre-enrollment quarters, and period c to the post-enrollment quarters. The probability of any use is the probability of having any type of health-care expenditure during the period covered. The conditional expenditure is the average quarterly expenditure of those individuals who used any health care during the period covered. The expected total expenditure is the product of the probability of any use and the conditional expenditure. A change of x% between two periods indicates that the difference between the values in the two periods is divided by the value in the first period. The 95% confidence interval is provided in brackets. Enrollment has a statistically significant effect on the probability of any use of specialist care during the period, but not on any of the other types of care and utilization.

Influence of automatic versus voluntary enrollment

Exhibit 2: Changes in the probability of using any health care and in health-care expenditure, by type of care received and by whether enrollment was automatic or voluntary

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
All types of care – Automatic enrollment			
Probability of any use	11.6% [9.4%, 14.4%]	11.8% [9.9%, 13.9%]	0.2%
Conditional expenditure	6.9% [2.3%, 11.8%]	3.9% [-0.4%, 8.4%]	-3.0%
Expected total expenditure	19.3% [13.3%, 26.6%]	16.1% [10.4%, 21.7%]	-3.2%
All types of care – Voluntary enrollment			
Probability of any use	0.5% [-5.0%, 6.8%]	29.8% [21.4%, 39.5%]	**29.3%**
Conditional expenditure	-11.3% [-21.4%, 0.1%]	44.8% [26.4%, 65.7%]	**56.1%**
Expected total expenditure	-10.8% [-23.2%, 1.6%]	88.0% [60.3%, 118.2%]	**98.8%**
Generalist care - Automatic enrollment			
Probability of any use	14.7% [11.5%, 18.1%]	9.1% [6.4%, 11.8%]	-5.6%
Conditional expenditure	2.7% [0.1%, 5.4%]	-0.0% [-2.4%, 2.4%]	-2.7%
Expected total expenditure	17.8% [13.8%, 22.3%]	9.1% [4.9%, 13.1%]	-8.7%
Generalist care - **Voluntary enrollment**			
Probability of any use	-0.2% [-8.4%, 9.1%]	31.1% [17.6%, 43.1%]	**31.3%**
Conditional expenditure	-11.0% [-17.6%, -3.9%]	15.2% [5.8%, 25.5%]	**26.2%**
Expected total expenditure	-11.2% [-21.3%, 0.5%]	51.1% [31.5%, 69.9%]	**62.3%**
Specialist care - **Automatic enrollment**			
Probability of any use	12.1% [6.1%, 18.2%]	19.3% [13.2%, 25.2%]	7.2%
Conditional expenditure	0.2% [-5.6%, 6.2%]	-9.6% [-14.4%, -4.5%]	-9.8%
Expected total expenditure	12.3% [3.7%, 21.9%]	7.8% [-0.1%, 17.0%]	-4.5%

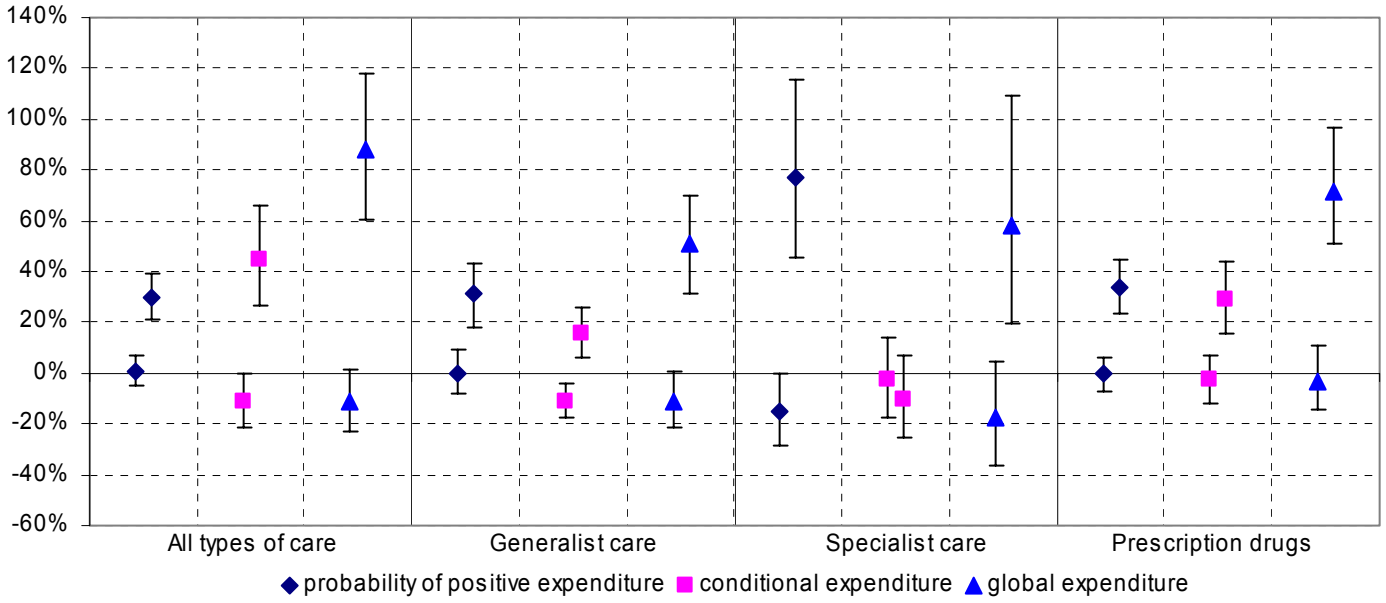
	Change between periods a and b	Change between periods b and c	Net effect of enrollment
Specialist care - **Voluntary enrollment**			
Probability of any use	-15.0% [-28.6%, 0.2%]	76.9% [45.4%, 115.7%]	**91.9%**
Conditional expenditure	-2.9% [-17.4%, 14.3%]	-10.6% [-25.1%, 6.7%]	-13.5%
Expected total expenditure	-17.4% [-36.4%, 4.7%]	58.1% [19.3%, 109.0%]	**75.5%**
Prescription drugs - **Automatic enrollment**			
Probability of any use	12.7% [10.0%, 15.6%]	14.5% [11.5%, 17.1%]	1.8%
Conditional expenditure	3.2% [-0.6%, 7.1%]	7.8% [4.1%, 11.6%]	4.6%
Expected total expenditure	16.3% [10.5%, 21.8%]	23.4% [18.0%, 29.1%]	7.1%
Prescription drugs - **Voluntary enrollment**			
Probability of any use	-0.5% [-7.0%, 5.8%]	33.4% [23.3%, 44.9%]	**33.9%**
Conditional expenditure	-2.8% [-11.9%, 7.3%]	28.7% [15.3%, 43.6%]	**31.5%**
Expected total expenditure	-3.2% [-14.4%, 10.7%]	71.7% [50.9%, 96.9%]	**74.9%**

Sources: EPAS 1998-2000

Notes: N = 2,329 individuals or 27,948 quarters for analyses involving individuals who were automatically enrolled in the free plan. N = 357 individuals or 3,645 quarters for those who enrolled voluntarily in the free plan. Period a corresponds to the first four pre-enrollment quarters, period b to the last four pre-enrollment quarters, and period c to the post-enrollment quarters. The probability of any use is the probability of having any type of health-care expenditure during the period covered. The conditional expenditure is the average quarterly expenditure of those individuals who used any health care during the period covered. The expected total expenditure is the product of the probability of any use and the conditional expenditure. A change of x% between two periods indicates that the difference between the values in the two periods is divided by the value in the first period. The 95% confidence interval is provided in brackets. The net effects of enrollment that are statistically significant are shown in bold.

Enrollment has a significant impact when it is voluntary only: it increases the probability of any use, conditional expenditure (except for specialist care) and expected total expenditure on all types of care and for prescription drugs as well as for physicians' services.

Exhibit 3: Changes in the probability of using any health care and in health-care expenditure for those whose enrollment was voluntary (rather than automatic), by type of care received



Notes: N = 357 individuals or 3,645 quarters. The point estimate and 95% confidence on the left of each pair correpond to the change between the first four pre-enrollment quarters and the last four pre-enrollment quarters. The point estimate and 95% confidence on the right of each pair correspond to the change between the last four pre-enrollment quarters and the post-enrollment quarters. The probability of any use is the probability of having any type of health-care expenditure during the period covered. The conditional expenditure is the average quarterly expenditure of those individuals who used any health care during the period covered. The expected total expenditure is the product of the probability of any use and the conditional expenditure. A change of x% between two periods indicates that the difference between the values in the two periods is divided by the value in the first period.

To explore the possibility of enrollment bias, we examined the net effect of enrollment separately for those who were enrolled automatically (i.e., those who had been enrolled in the means-tested plan previously) and for those who enrolled voluntarily. Enrolling in the free plan had significant net effects on the probability of using any health care and on total health-care expenditure among those who enrolled voluntarily in the free plan, controlling for season and a fixed individual effect, but not among those who were enrolled automatically. The same holds true for generalist care and prescription drugs. Enrolling in the free plan had a significant net effect on the probability of using any specialist care among those who enrolled voluntarily but not on expenditure on specialist care. These findings confirm the presence of enrollment bias and suggest that expected demand for health care prompted voluntary enrollment in the free plan. They also suggest that the lack of a net effect of the free plan is mainly due to individuals who were enrolled automatically, who constitute 87% of the sample.

Influence of previous supplemental insurance coverage

Exhibit 4: Changes in the probability of using any health care and in health-care expenditure, by type of care received and by the nature of supplementary insurance coverage held in 1998

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
All types of care - **Commercial plan**			
Probability of any use	14.8% [3.3%, 29.6%]	16.6% [6.9%, 28.9%]	1.8%
Conditional expenditure	7.9% [-11.1%, 31.0%]	-0.1% [-17.2%, 20.5%]	-8.0%
Expected total expenditure	23.9% [-5.4%, 66.5%]	16.5% [-6.3%, 49.2%]	-7.2%
All types of care - **Means-tested plan**			
Probability of any use	15.1% [8.7%, 22.8%]	-1.5% [-5.8%, 2.8%]	**-16.6%**
Conditional expenditure	8.9% [-2.0%, 21.1%]	-7.4% [-16.3%, 2.5%]	-16.3%
Expected total expenditure	25.4% [9.7%, 43.9%]	-8.8% [-21.1%, 4.5%]	**-34.2%**
All types of care - **No supplemental coverage**			
Probability of any use	38.4% [23.9%, 58.4%]	19.2% [11.1%, 28.4%]	-19.2%
Conditional expenditure	13.4% [-5.8%, 36.5%]	34.1% [14.1%, 57.7%]	20.7%
Expected total expenditure	56.9% [19.8%, 107.8%]	59.9% [29.4%, 90.9%]	3.0%
Generalist care - **Commercial plan**			
Probability of any use	25.2% [6.4%, 48.5%]	18.8% [6.7%, 33.3%]	-6.4%
Conditional expenditure	16.7% [2.5%, 32.9%]	7.4% [-4.8%, 21.2%]	-9.3%
Expected total expenditure	46.1% [19.2%, 78.5%]	27.6% [6.0%, 55.4%]	-18.5%
Generalist care - **Means-tested plan**			
Probability of any use	15.5% [7.6%, 24.4%]	-0.1% [-5.2%, 6.3%]	**-15.6%**
Conditional expenditure	6.2% [-0.7%, 13.6%]	-7.7% [-13.4%, -1.5%]	**-13.9%**
Expected total expenditure	22.6% [10.6%, 35.4%]	-7.7% [-16.1%, 2.3%]	**-30.3%**

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
Generalist care - **No supplemental coverage**			
Probability of any use	50.8% [28.1%, 78.5%]	30.5% [15.4%, 47.0%]	-20.3%
Conditional expenditure	4.3% [-7.9%, 18.2%]	-1.4% [-11.1%, 9.3%]	-5.7%
Expected total expenditure	57.5% [26.5%, 100.0%]	28.7% [8.2%, 52.4%]	-28.8%
Specialist care - **Commercial plan**			
Probability of any use	12.0% [-13.8%, 46.6%]	12.1% [-11.2%, 44.1%]	0.1%
Conditional expenditure	18.1% [-6.6%, 49.4%]	-14.9% [-32.3%, 7.0%]	-33.0%
Expected total expenditure	32.3% [-9.5%, 90.8%]	-4.6% [-29.7%, 75.1%]	-36.9%
Specialist care - **Means-tested plan**			
Probability of any use	33.8% [15.0%, 55.7%]	-5.4% [-16.9%, 8.8%]	**-39.2%**
Conditional expenditure	-1.0% [-14.6%, 14.8%]	-14.3% [-25.6%, -1.4%]	-13.3%
Expected total expenditure	32.4% [3.7%, 67.9%]	-18.9% [-34.3%, -0.5%]	**-51.3%**
Specialist care - **No supplemental coverage**			
Probability of any use	41.8% [8.9%, 93.4%]	51.3% [24.4%, 89.2%]	9.5%
Conditional expenditure	4.8% [-19.7%, 36.6%]	6.3% [-14.5%, 32.3%]	1.5%
Expected total expenditure	48.5% [1.5%, 122.3%]	60.9% [22.8%, 113.6%]	12.4%
Prescription drugs - **Commercial plan**			
Probability of any use	15.8% [2.4%, 32.1%]	13.4% [2.1%, 26.2%]	-2.4%
Conditional expenditure	15.8% [-1.7%, 36.4%]	13.6% [-3.1%, 33.2%]	-2.2%
Expected total expenditure	34.2% [5.9%, 72.5%]	28.9% [7.4%, 53.6%]	-5.3%
Prescription drugs - **Means-tested plan**			
Probability of any use	15.7% [8.0%, 23.4%]	0.0% [-4.6%, 4.8%]	**-15.7%**
Conditional expenditure	2.6% [-6.3%, 12.3%]	0.3% [-8.0%, 9.3%]	-2.3%
Expected total expenditure	18.6% [6.2%, 32.9%]	0.3% [-9.7%, 12.0%]	-18.3%

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
Prescription drugs - No supplemental coverage			
Probability of any use	49.5% [30.3%, 74.7%]	20.9% [10.9%, 31.5%]	-28.6%
Conditional expenditure	-3.3% [-17.8%, 13.9%]	23.9% [7.9%, 42.2%]	27.2%
Expected total expenditure	44.5% [12.6%, 93.3%]	49.8% [27.0%, 78.0%]	5.3%

Sources: EPAS 1998-2000, ESPS 1998
Notes: N = 101 individuals or 1,166 quarters for analyses involving individuals with a commercial plan in 1998. N = 237 individuals or 2,835 quarters for analyses involving individuals with a means-tested plan in 1998. N = 137 individuals or 1,607 quarters for analyses involving individuals with neither a commercial plan nor a means-tested plan in 1998. A higher proportion of those who enrolled voluntarily in the free plan in 2000 would have been eligible to enroll voluntarily in the free plan in 1998 if it existed then because they reported being covered by a commercial plan or not having any supplemental coverage in 1998 ((101+137)/357 = 0.67) than we would have expected given that only about 1 in 5 panel members in the claims database were captured by the survey from which data were drawn about supplemental coverage in 1998. We offer four explanations for this difference: 1) survey respondents may not have been aware that they were covered by the means-tested plan in 1998; 2) survey respondents were drawn from continental France only and these individuals had lower rates of eligibility for the means-tested plan than individuals living in overseas territories; 3) survey respondents were less likely to include the poor, who are eligible for the means-tested plan; 4) a higher proportion of the population were eligible for the free plan than were eligible for the means-tested plan; and 5) the annual rate of entry for individuals who were enrolled automatically in the means-tested plan (i.e., those who became eligible for France's minimum-income benefit) is 25%. Caisse Nationale des Allocations Familiales, Direction des Etudes et de la Recherche, "Légère hausse des beneficiaires du RMI au 30 juin 2002," *L'E-ssentiel* (October 2002), http://www.caf.fr/coupdoeil.htm (accessed 15 December 2003). Period a corresponds to the first four pre-enrollment quarters, period b to the last four pre-enrollment quarters, and period c to the post-enrollment quarters. The probability of any use is the probability of having any type of health-care expenditure during the period covered. The conditional expenditure is the average quarterly expenditure of those individuals who used any health care during the period covered. The expected total expenditure is the product of the probability of any use and the conditional expenditure. A change of x% between two periods indicates that the difference between the values in the two periods is divided by the value in the first period. The 95% confidence interval is provided in brackets.
Individuals covered by the means-tested plan before enrollment into CMU reduced their utilization after enrollment: the probability of any use significantly decreases for General Practitionners', and specialists' services as well as for prescription drugs. This translates into decrease in overall expenditures on physicians' services and overall consumption (physicians and prescription drugs). Enrollment has no significant effect at the usual threshold on individuals with no previous coverage or commercial coverage before enrollment.

To explore further how the net effect of enrollment in the free plan varied by the nature of previous supplemental insurance coverage, we examined the net effect of enrollment separately for those who were enrolled in a commercial plan in 1998, for those who were enrolled in the means-tested plan in 1998, and for those who had no supplemental coverage in 1998. For all these three categories of enrolled individuals, we never observe any significant increase in participation, conditional expenditure, or expected total expenditure after enrollment, and this holds true for all types of care, generalists or specialists' services, or drugs. Among those with no previous supplementary coverage (for whom enrolment means more than incremental change in coverage), we observe a non statistically significant but important decrease in the probability of any use of generalist care (-29% after enrolment compared to before enrolment), a non significant increase in the probability of any use of specialist care (+12%), a decrease in the probability of any use of prescription drugs (-29%), offset by an increase in conditional expenditure on drug (+27%). We only observe some significant decrease in utilization among those previously covered: participation and total expected expenditure on all types of care, generalist care, specialist care decrease after enrolment in the free plan for those previously covered by the means tested plan; the probability of any use of prescription drugs also decreases after enrolment among those previously covered by the means tested plan.

The fact that we don't reach significance levels in this analysis doesn't mean that the quasi-experiment fails to show an impact of changes in coverage on utilization among the poor. The main reason why, despite noticeable differences across groups defined by previous type of coverage significance threshold are not reached is that, as pointed out previously, the data used for these analyses on sub-populations defined by previous coverage were generated by merging claims data (EPAS) with data from a general population survey (ESPS).

A first consequence is that the resulting sample is small and tests lack statistical power. Second, the survey sample includes residents of continental France only and none from overseas territories; residents from overseas territories account for 12% to 13% (according to

year of observation) of total enrolment into the plan. In a sub-analysis we found that individuals living in overseas territories used much less health care in 1998 and 1999 and that their use of health care was much more influenced by the free plan compared to individuals living in continental France. In our exploration of how the net effect of enrollment in the free plan varies by the nature of previous supplemental insurance coverage, the absence of individuals living overseas makes the net effect of the free plan appear smaller than it actually was.

The relative impact of the free plan among sub-populations therefore interests us more than the absolute impact. In terms of relative impact, individuals with a means-tested plan in 1998 tended to reduce their use of health care after enrollment in the free plan relative to others, with the exception of individuals with no supplemental coverage who similarly use less generalist care and individuals with commercial coverage who similarly use less specialist care.

Influence of physician supply

Exhibit 5: Changes in the probability of using any health care and in health-care expenditure, by type of care and by the regional supply of physicians.

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
All types of care - High density			
Probability of any use	6.5% [2.5%, 10.8%]	6.6% [3.5%, 9.5%]	0.1%
Conditional expenditure	6.0% [-2.4%, 15.1%]	6.3% [-1.9%, 15.3%]	0.3%
Expected total expenditure	12.9% [3.5%, 23.4%]	13.3% [3.7%, 25.1%]	0.4%
All types of care - Low or medium density			
Probability of any use	11.1% [8.4%, 14.1%]	5.9% [3.8%, 8.1%]	**-5.2%**
Conditional expenditure	3.3% [-1.9%, 8.7%]	8.6% [3.4%, 14.1%]	5.3%
Expected total expenditure	14.7% [7.9%, 22.3%]	15.1% [8.8%, 21.8%]	0.4%
Generalist care - High density			
Probability of any use	15.3% [9.5%, 21.9%]	7.6% [2.3%, 12.1%]	-7.7%
Conditional expenditure	0.0% [-4.6%, 4.9%]	2.4% [-2.1%, 7.1%]	2.4%
Expected total expenditure	15.4% [7.3%, 24.3%]	10.2% [2.1%, 17.3%]	-5.2%
Generalist care - Low or medium density			
Probability of any use	12.3% [8.6%, 16.5%]	8.5% [5.5%, 11.8%]	-3.8%
Conditional expenditure	2.6% [-0.4%, 5.8%]	0.1% [-2.7%, 3.1%]	-2.5%
Expected total expenditure	15.2% [9.6%, 20.6%]	8.6% [4.1%, 13.7%]	-6.6%
Specialist care - High density			
Probability of any use	9.9% [0.2%, 19.9%]	18.0% [9.0%, 27.8%]	8.1%
Conditional expenditure	4.2% [-5.2%, 14.6%]	-11.1% [-18.7%, -2.8%]	-15.3%
Expected total expenditure	14.6% [-0.6%, 31.9%]	4.9% [-9.7%, 18.1%]	-9.7%

	Change between periods a and b	Change between periods b and c	Net effect of enrollment
Specialist care - **Low or medium density**			
Probability of any use	8.8% [1.4%, 17.4%]	26.8% [18.4%, 35.5%]	**16.0%**
Conditional expenditure	-3.8% [-10.5%, 3.3%]	-8.6% [-14.5%, -2.2%]	-4.8%
Expected total expenditure	4.6% [-5.6%, 16.5%]	15.9% [4.4%, 29.0%]	11.3%
Prescription drugs - **High density**			
Probability of any use	6.2% [1.3%, 11.0%]	7.7 [3.6%, 12.2%]	1.5%
Conditional expenditure	8.8% [1.0%, 17.3%]	8.9% [1.3%, 17.1%]	0.1%
Expected total expenditure	15.6% [7.2%, 25.2%]	17.2% [8.8%, 27.2%]	1.6%
Prescription drugs - **Low or medium density**			
Probability of any use	11.8% [8.7%, 15.2%]	6.0% [3.6%, 8.6%]	**-7.8%**
Conditional expenditure	-0.7% [-4.6%, 3.4%]	7.6% [3.5%, 11.9%]	8.3%
Expected total expenditure	11.0% [4.9%, 18.3%]	14.0% [9.0%, 19.5%]	3.0%

Sources: EPAS 1998-2000, Eco-Santé France 2000.

Notes: N = 685 individuals or 8,042 quarters for all analyses involving individuals living in regions with a high density of physicians. N = 1,478 individuals or 14,229 quarters for all analyses involving individuals living in regions with a low or medium density of physicians (oversea territories are not included in the analysis). Period a corresponds to the first four pre-enrollment quarters, period b to the last four pre-enrollment quarters, and period c to the post-enrollment quarters. The probability of any use is the probability of having any type of health-care expenditure during the period covered. The conditional expenditure is the average quarterly expenditure of those individuals who used any health care during the period covered. The expected total expenditure is the product of the probability of any use and the conditional expenditure. A change of x% between two periods indicates that the difference between the values in the two periods is divided by the value in the first period. The 95% confidence interval is provided in brackets. Enrollment significantly affects utilization in regions with low or medium physicians' supply only, and through the probability of any use. The probability of using all types of care, or prescription drugs decreases after enrollment in these regions, but the probability of using speciasist care increases in these same regions after enrollment.

To explore how the net effect of enrollment in the free plan varied by the regional supply of physicians, we examined the net effect of enrollment separately for those who lived in regions with a high density of physicians and for those who lived in regions with a low or medium density of physicians. The aim of such an analysis was to control that changes in utilization were not driven by physicians inducing totally covered individuals to over consume (through recall visits for instance). Our findings show that this should not be the case since enrollment significantly increases the probability of any use of specialist care as well as expenditures (any use and conditional expenditures) on prescription drugs in regions with low or medium density of physicians, but not in regions with high density of physicians as would be expected under the supplier induced demand assumption.

Discussion

The lack of a net effect from a free supplementary health insurance plan for the average non-elderly poor person in France can likely be attributed largely to the fact that the majority of enrollees (87% of our sample) already benefited from a relatively generous means-tested plan, therefore enrollment meant for them an incremental change only. For those individuals already covered by the means-tested plan, the marginal benefit of being automatically enrolled in the free plan -- the removal of a few forms of out-of-pocket payments at the point of use -- appears not to have been large enough to influence their care-seeking behaviour. Indeed, individuals covered by a means-tested plan in 1998 tended to reduce their use of health care after enrollment in the free plan relative to those covered by a commercial plan or those without supplemental coverage.

This decrease in the probability of using and in health care expenditure is somewhat surprising. A possible explanation is that forbidding balance billing has prompted some

physicians (mainly specialists) to discourage patients covered by the free plan to seek care. The two following findings are suggestive of such a possible explanation:

- the trend towards individuals with a means-tested plan or a commercial plan in 1998 using less specialist care after enrollment; and
- The lack of a net effect of the free plan on expenditures on specialist care even in regions with a high density of physicians. In these regions, even though physicians should compete for patients, we observe a higher rate of balance billing (using data on 22 regions from Eco-Santé 2000, we have calculated that the correlation between physician supply and balance billing is 0.25).

Individuals facing the biggest financial barriers benefit most

Individuals who enrolled voluntarily in the free plan had a higher probability of using all types of care, generalist care, specialist care and prescription drugs after enrollment, as well as increased health-care expenditure for all types of care, generalist and specialist care, and prescription drugs.

This stems partially from pent-up demand (hence, it is not expected to last in the long run), partially from previously unmet needs (this effect will last in the long run), and the overall effect is biased by an enrollment effect (expectations that health care will be needed and used appear to have prompted voluntary enrollment in the free plan).

The net effect of enrollment among those who enrolled voluntarily in the free plan was likely driven by those with no previous supplemental coverage prior to enrollment rather than by those previously covered by a commercial plan. Individuals with no supplemental coverage constituted 58% of our sample of voluntary enrollees and they moved from facing all forms of out-of-pocket payments at the point of use and being only partially reimbursed later from the social sickness fund to facing no out-of-pocket payments at the point of use. Because coverage under the free plan is near the median for coverage under commercial plans [22], the marginal

benefit of voluntary enrolment for individuals with a commercial plan was much smaller: no longer having to pay the premium for the commercial plan and no longer being temporarily out of pocket for health-care payments until they were reimbursed by the social sickness fund and their commercial plan.

Strengths and limitations of the study

Three differences between our study and the two previous evaluations of the free plan warrant comment [29,30]. First, the reason we found no net effect from the free plan whereas the other two studies found an effect is that our design allowed us to identify an effect net of the "natural" trend for this population. Individuals covered by the means-tested plan had a higher rate of growth in the probability of using any health care prior to enrollment in the free plan (from 0.76 in 1998 to 0.81 in 1999) compared to the general population (0.90 in both 1998 and 1999) [29].

Second, our design allowed us to comment on both the probability of using any health care and health-care expenditure (with and without those who used no health care), whereas the two previous studies examined only those who used health care. As well, we examined both ambulatory and hospital care whereas the one longitudinal study examined only ambulatory care.

Third, our design allowed us to confirm that enrollment bias would confound any estimation of the net effect of the free plan that does not focus only on those who were enrolled automatically in the free plan, which both of the previous studies failed to do. Automatic enrollment removes the possibility that unobserved individual characteristics influence the decision to enroll in the free plan, just like randomization would do. A more direct test for enrollment bias would involve comparing those who enrolled in the free plan and those who were eligible to enroll but did not. However, the income data on which assessments of eligibility would be made come from self reports and not all individuals reported their income. Moreover, the number of individuals who were eligible to enroll but did not is relatively small.

There are three main limitations to our study: having no data on health outcomes, having only one year of data on both ambulatory and hospital care after the free plan was introduced, and having to rely on merged data from a general population survey to examine how the net effect of enrollment in the free plan varied by the nature of previous supplemental insurance coverage. With no data on health outcomes, we could not examine the health consequences of introducing the free plan. With only one year of data after the free plan was introduced, we could not examine whether the enrollment bias has a transient impact only, as would be the case if individuals remain enrolled in the free plan as long as they remain eligible for it, or a permanent impact, as would be the case if individuals did not maintain their enrollment when they no longer expected to use health care. As well, we could not examine the full effect of the free plan on dental prostheses and prescription eyewear because (for technical as well as political reasons) many dentists and opticians were not ready to welcome those enrolled in the free plan until the end of the plan's first year. Relying on merged data from a general population survey for one type of analysis created problems because the resulting sample was small and excluded individuals living overseas, whose use of health care was much more influenced by the free plan than individuals living in continental France.

Policy implications

A free supplementary health insurance plan that was introduced in 2000 to help the non-elderly poor to access health care appears to have largely succeeded in its objective even though it only amounts to an incremental improvement in coverage for most (87%) of its beneficiaries. The individuals facing the biggest financial barriers to access (i.e., those with no supplemental coverage) benefited the most from the plan. Moral hazard did not appear to be any more of a problem among the individuals for whom a few out-of-pocket payments were removed at the point of use (i.e., those already covered by the means-tested plan), at least in the short term, than it is among those covered by the universal plan (that rarely covers 100% of expenditures). The total cost of the plan is less than had been forecasted. Our study suggests

that concerns may be justified about physicians refusing to treat patients under the free plan (even though this is legally forbidden), due to strict payment ceilings. These concerns, coupled with concerns about the much more difficult-to-detect differences in the quality of care provided to these patients, are challenging to address.

The debate in France now focuses on two issues. First, supplementary insurers still argue that health care consumption under the free plan is higher than expected which, while at odds with our results, leads them to argue for changes in the free plan. The difference between expected and actual expenditures per enrollee is important for insurers because, under the law implementing the free plan, beneficiaries were given a choice as to whether they enrolled in a plan administered by the universal social health insurance program (Securité sociale) or by a private health insurance company. In the latter case, the company received a capitation fee (calculated approximately as the average expenditure on supplementary insurance coverage for the overall population) and they could retain any difference between the fee and actual spending. But the company is also liable for any over-spending. Our study indicates that the higher than expected value of per capita expenditures in the plan may not stem from the impact of coverage on consumption, but rather from enrollment bias. Insurers could therefore decrease average expenditures by expanding enrolment to currently eligible individuals who chose not to enroll due to administrative barriers. Second the current means-test cut-off gives rise to two *de facto* excluded populations: the near poor and the elderly and disabled. The exclusion of the near poor raises the poverty trap issue: the implicit tax rate of the first € earned above the cut-off is more than 100%. The exclusion of the elderly and the disabled might reinforce the active - inactive gap: occupation is an important determinant of access to comprehensive supplementary health insurance coverage and inactivity, due to retirement or disability, is often a barrier to health care utilization [4].

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