

# LOUIS BACHELIER

Economic and financial news seen through research

## Health policies analysed by scientific research

With Brigitte Dormont, Margaret Kyle, Anne-Laure Samson,  
Clémence Thébaut, Florence Jusot, Mathilde Péron and Michel Mougeot



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# A

ta time when public spending is subject to tight budgetary control, it is essential to understand how health insurance can offer good coverage without causing expenditure to soar.

Like many countries, France has a healthcare system that brings together public and private actors in terms both of insurance and provision of healthcare. Within an institutional framework such as this, how can a country best achieve the goals it has set for social protection and health?

Supported by the Istya group, the Health Chair is a research programme labelled by the Louis Bachelier Finance and Sustainable Growth LABEX. Its ambition is to contribute to improving the quality of the debate on efficiency and regulation of the health system. The research projects funded are organized around themes related to health insurance organization, the regulation of healthcare provision, inequalities of health opportunities, the value of health and the links between health and labour markets.

This new issue of the Cahiers Louis Bachelier presents work that addresses crucial questions concerning the efficiency of healthcare systems.

The first article focuses on the orientation of medical research. It shows that the international distribution of the medical research effort may be strategically motivated and that, in particular, public spending in the United States has spill-over effects on other countries.

Efficiency also concerns allocative efficiency, that is, the decision-maker's capacity to define a basket of healthcare covered that conforms to citizens' preferences. The criteria for current medico-economic assessment methods fall far short of such a requirement. The second article proposes a method for basing

public trade-offs on ethical criteria. It stemmed from the team assembled by Marc Fleurbaey around a survey conducted by the Health Chair of more than 3,000 French individuals, with the aim of finding out about the value they attach to their health. The researchers developed an innovative approach that includes respect for individual preferences and the distributive consequences of decisions in the evaluation criteria. The third article describes a controlled experiment that seeks to understand how the response to breast cancer screening campaigns can be improved, given that this disease is the main cause of female mortality in France.

The two final articles address major issues for the efficiency of the French health system, in that they look at how complementary health insurers interact with social security in managing healthcare provision. Two topics are examined: the impact of the generosity of complementary coverage on balance billing; the effectiveness of care networks on medical prices.

Enjoy your reading!



**Brigitte Dormont,**  
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## Partners



# DOES US MEDICAL RESEARCH EXPENDITURE HAVE REPERCUSSIONS ON RESEARCH EFFORTS ELSEWHERE IN THE WORLD?

While the United States is often the driving force in military, space and energy spending around the world, little attention has been paid in the academic literature to its role and influence in basic medical research.

**M**edical research requires huge investment to continue the steady progress it has been making since the early twentieth century. At the same time, medical advances and related research are non-rivalrous public goods, which the private sector typically underinvests in. Intellectual property rights, such as patents, are one means of addressing this problem. However, patents generally do not apply to basic research. Consequently governments and public agencies, especially in developed countries, need to play a major role and are essential for financing and promoting medical research through subsidies, tax credits and innovation awards. “Government incentives to support medical research can be problematic, because when a country decides to fund research into a particular disease and it turns out successfully, the findings will cross borders and become a public good. The incentives for other governments to fund research are therefore reduced and may result in other countries changing their policies, or even adopting free-rider behaviour,” Margaret Kyle says.

## VERIFICATION OF A THEORETICAL INTUITION

Economic theory suggests that one country’s research spending has an impact on that of other countries. Various studies have demonstrated this effect in the areas of military expenditure and environmental regulation, but not in regard to health. “This is the first economic analysis that examines how a country responds strategically to US spending on medical

**The choice of the United States as the country of comparison was determined by the fact that it funds more than half of the world’s public and charitable medical research on parasitic and infectious diseases.**

research. We wanted to find out if there was any influence and, if so, to measure its extent,” Margaret Kyle says. In order to carry out this econometric work, the researchers first needed to overcome a particularly tricky obstacle, namely accessing homogeneous data that can be compiled and compared. “We managed to get around the problem by using the database produced by the NGO Policy Cures. We decided to focus our study on research funding for 15 parasitic and infectious diseases in 41 countries over the period 2007-2014.” The choice of the United States as the country of comparison was determined by the fact that it funds more than half of the world’s public and charitable medical research on parasitic and infectious diseases. In addition, it should be noted that these diseases take a particularly high toll in developing countries and were prioritized in 2012 by the Third Copenhagen Consensus, a body that brings together a panel of experts with the aim

Based on the paper *Strategic Interaction Among Governments in the Provision of a Global Public Good*, by Margaret Kyle, David B. Ridley and Su Zhang, and on an interview with Margaret Kyle.



**Margaret Kyle** currently holds the Chair in Markets for Technology and Intellectual Property at MINES ParisTech. She is an associate editor at the International Journal of Industrial Organization and a Research Fellow at the Centre for Economic Policy. Margaret Kyle (PhD, MIT Economics) studies innovation, productivity and competition. Her papers have been published in various journals of economics, strategy, and health policy.

### Methodology

The researchers wanted to look at possible correlations between US medical research spending and that of other countries. They collected and analysed data on research funding for 15 parasitic and infectious diseases in 41 countries. To carry out their econometric study, they used the instrumental variable method in a linear regression model, which then allowed them to calculate and analyse their results.

of improving public welfare worldwide. These different arguments convinced the researchers about the need to find out more about the behaviour of countries with regard to funding medical research.

### A MODEL TO IDENTIFY COUNTRIES' REACTIONS

As well as the data issue, the researchers were also faced with the challenge of identifying countries' responses to decisions made in the United States. "When we observe a change in US funding, it is possible that other countries change for the same reason, which may be unobservable to us. This makes it hard to identify the causal effect of the US policy change," Margaret Kyle points out. To solve this problem, the researchers used instrumental variable techniques. Essentially, this required finding a variable that would shift US spending, but not have any direct effect in other countries. One such variable is the composition of US congressional committees responsible for setting research budgets in the US, but which have no authority over budgets in other countries and which change for reasons specific to the US. On that basis, they were able to observe upward or downward fluctuations in US federal budgets and to analyse the reactions of other countries. "By using the US political situation as an instrumental variable, we were able to determine the causal impact of increased funding for medical research in the US on that of other countries," Margaret Kyle says. "When US medical research spending on a disease increases by 10%, it results in a 2-3% decrease in spending

on that disease by other countries the following year. This outcome covers spending both by public government agencies and by NGOs."

### COORDINATION AT THE HIGHEST LEVEL IS PREFERABLE

The above finding can be interpreted in two ways. First, as free-rider behaviour by other countries. If the United States increases research funding for a particular disease, other countries may feel that they do not need to do the same thing and that they will also be able to benefit from US spending in the near future. For example, in Latin America, especially in Brazil, research expenditure is much higher on dengue fever and Chagas disease, whereas AIDS entails the heaviest medical burden. The United States is the largest donor of AIDS research. The second possible interpretation of US influence on research spending is that other countries may be induced to reallocate research funding for other diseases in an optimal manner. "At this point, we do not know why other countries cut funding for medical research when the United States increases it. Future research on the topic is needed. Nevertheless, at the political level, this finding calls for the establishment of coordination between countries in order to develop medical research and make it more effective. Such multilateralism could, for example, take place within the World Health Organization (WHO)," Margaret Kyle suggests. At a time when international negotiations are making no headway in various areas, medical research needs more than ever needs to be discussed at the highest level if it to move forward. ●

### Key points

- Increased expenditure on US medical research leads to a decrease in spending in other countries..
- The negative correlation between US research spending and that of other countries may be due either to free-rider behaviour by other countries or to the optimal reallocation of their resources. Future research will help resolve this question.
- Coordination between countries in the field of medical research is needed because it represents a public good. Multilateral discussions between states would thus optimize spending and make medical research more effective worldwide.

# AN INNOVATIVE APPROACH TO GUIDE DECISIONS IN HEALTH POLICY

Public choice on subjects like public health or environmental questions must be based in accordance with ethical criteria. Researchers have developed a new approach that takes into account individual preferences, as well as distributional consequences of decisions.

**T**he maximization of collective well-being and the optimization of public spending are objectives that the authorities aim for when introducing public policies, particularly in the health sector. In fact, in France and in several other countries, the health system is largely funded by the state, which imposes fair and equitable control over the allocation of these resources. To determine how they can be best allocated, there need to be evaluations prior to and/or subsequent to the decisions made. For this purpose, a number of methods exist.

## COST-BENEFIT AND COST-EFFECTIVENESS ANALYSES ARE OPEN TO VARIOUS CRITICISMS

Many economists and policy-makers believe that cost-benefit analysis (CBA) is a valuable decision-making tool because it allows the gains and losses stemming from the implementation of public policy to be calculated. This method – which does not focus solely on the purely financial aspect – takes into account the consequences with regard to collective well-being, by means of a social utility function. However, CBA has its ethical drawbacks. The problem is that CBA basically involves adding up consumers' individual utility gains, estimated through their willingness to pay in order to benefit from a change of situation. But people on low incomes are necessarily penalized more than those on high incomes: their willingness to pay is often lower on average because they have less disposable income. This disparity seems particularly unacceptable in an area such as health. Consequently the evaluation of health benefits by means of this monetary standard gives rise to discriminatory biases and thus a form of social injustice.



**The problem is that cost-benefit analysis basically involves adding up consumers' individual utility gains, estimated through their willingness to pay in order to benefit from a change of situation.**



To overcome this shortcoming, another method is in practice often used, namely cost-effectiveness analysis (CEA), which compares the effectiveness of a policy to the extra costs it generates. CEA applied to a health policy measures the sum of the health outcomes for each individual under treatment. This tool is very useful for guiding political choices when the health budget and the main objective of the programme are finalized. Nevertheless, CEA also has its shortcomings, as it is based only on health outcomes, whereas it ought to take into account other aspects of life. In addition, CEA also raises ethical questions, because it considers only the individual sum of health outcomes without considering how these health outcomes are distributed within the population.

"In our paper, we wanted to demonstrate that it was possible to adapt traditional CBA methods to take account of various ethical requirements, for example in terms of redistribution. In doing so, this new approach simultaneously allows us to resolve certain problems arising within CEA. It was a matter of seeing how recent theoretical framework in social justice could be applied in the evaluation of health technologies," Anne-Laure Samson and Clémence Thébaut say.

Based on the paper *Fairness in cost-benefit analysis: a methodology for health technology assessment*, by Anne-Laure Samson, Erik Schokkaert, Clémence Thébaut, Brigitte Dormont, Marc Fleurbaey, Stéphane Luchini and Carine Van de Voorde, and on an interview with Anne-Laure Samson and Clémence Thébaut.



**Anne-Laure Samson** is associate professor in Economics at Paris Dauphine University, in the Economics and Management of Health Organizations Laboratory (LEDa-Legos). She obtained a doctorate in economics from Paris Nanterre University in 2008 and accreditation to supervise research in 2017 from Université Paris-Dauphine. Her research is concerned mainly with applied microeconometrics in the field of health.



**Clémence Thébaut** is associate professor in Economics at the University of Limoges, in the Observatory of Institutional and Legal Mutations (OMIJ) Laboratory. She obtained a doctorate in economics from the Université Paris-Dauphine in 2012. She previously worked for eight years at the French National Authority for Health as project manager in the Economic Evaluation and Public Health department. Her research focuses on the economic evaluation of health interventions and economic theories of social justice.

### Methodology

For all individuals in their sample, the researchers simulated the consequences of implementing three antihypertensive treatments, in particular their impact on the individual's health status, income and health equivalent income. The best treatment was the one that maximized collective well-being, defined as the sum of each individual health equivalent incomes over the time horizon, for each possible pathways, weighted accordingly to their probability of occurrence. This empirical work was used as a demonstration, in order to confirm the feasibility of the researchers' novel method of evaluating public health policies.

### A NEW INDICATOR FOR ESTIMATING INDIVIDUAL HEALTH PREFERENCES

In contrast with CBA, which involves measuring people's willingness to pay in order to prevent a deterioration in their health status, the researchers used another indicator: health equivalent income. This concept was developed by Marc Fleurbaey, one of the co-authors of the paper. "This indicator of individual well-being represents an individual's income, reduced by the proportion of that income that he or she would be willing to sacrifice to be in perfect health, while maintaining the same level of satisfaction in terms of income and health status that his/her present situation provides. This is the first time that it has been used in CBA", Anne-Laure Samson and Clémence point out. "Health equivalent income allows us to introduce inequality aversion into the evaluation of public health policies. By using it in CBA, we can introduce a coefficient that gives varying degrees of weight to the improvement of the situation of the most disadvantaged individuals – in other words, the poorest and/or least healthy individuals – who also have strong health preferences compared to other aspects of their lives."

This new method makes it possible to avoid

people's level of income having an impact on the estimation of the consequences of public health policies in terms of well-being, as occurs with conventional CBA. It can also take into account all the consequences linked, for instance, with the decision to prescribe and reimbursed a treatment on people's health and income, depending on the type of health care funding, while respecting individual preferences. For the time being, these evaluations are not intended to replace traditional CBA and CEA evaluations, but simply to supplement them. The aim is to provide the deliberative process with as much information as possible on the issues associated with the various public health policies that may be envisaged.

### APPLICATION TO A REAL SITUATION TO VALIDATE THE METHOD

To validate this innovative methodology, the researchers decided to test it in a context close to the actual context of health technology assessment, for instance with an identical level of information using as an application example the evaluation of antihypertensive treatments. They used data collected with a survey of 3,331 individuals representative of →



**This new method makes it possible to avoid people's level of income having an impact on the estimation of the consequences of public health policies in terms of well-being.**



the French population, in order to collect data on their health status, income and the amount they are willing to pay to be in perfect health. The researchers then calculated each individual's health equivalent income. At the same time, medical data provided by a model developed for the Haute Autorité de Santé (National Authority for Health) allowed them to ascertain the probabilities of occurrence (by age and gender, in particular) of diseases related to hypertension (angina pectoris, stroke, heart failure, kidney failure, etc.) over a ten-year time frame. The methodology then involved comparing the consequences of three different anti-hypertension treatments on the health status, income and health equivalent income of the individuals surveyed, taking into account all possible combinations of illnesses associated with hypertension over a 10-year period. They then estimated and compared the level of collective well-being by aggregating individual health equivalent income, on 10 year, for each possible pathways, weighted accordingly to their probability of occurrence, within a social welfare function for each of the three therapeutic strategies. They took into account various degree of inequality aversion. "The application to hypertensive treatments demonstrated the feasibility of our method for evaluating a public health policy in a real situation. It turned out to be no more difficult to implement than CBA and CEA, and in addition it has the advantage of shedding light on aspects that these traditional

methods do not address, especially with regard to questions of fairness," Anne-Laure Samson and Clémence Thébaud are pleased to report. They add, "We would like to apply our methodology to other diseases for instance for treatments which would raise difficulties due to high costs." There is no doubt that such future studies will be useful for demonstrating more clearly the feasibility of this approach. ●

### Key points

- The researchers showed that the concept of health equivalent income could be combined to be used in health technology assessment. This innovative approach costs no more and requires no more information than implementing CBA or CEA (cost-effectiveness analysis) methods.
- The new method developed by the researchers is able to take into account different degrees of inequality aversion. In contrast to CBA and CEA, the method provides policy-makers with information on underlying issues of fairness related to different public health policies.
- This method takes into account individual preferences, as provided by CBA and in accordance with the theoretical framework of welfare economics, whereas these are only partially included in cost-effectiveness analysis (CEA).

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# HOW CAN BREAST CANCER SCREENING PARTICIPATION BE BOOSTED?

For several years, participation in the national breast cancer screening programme has remained at a standstill. To increase breast cancer screening participation, researchers conducted a scientific study on a large sample of women in two French departments.

**I**n France, breast cancer is the most common form of cancer among women, accounting for more than 50,000 new cases every year. This disease is also the main cause of female mortality, with about 12,000 deaths in 2015. Given these figures, early and regular screening is crucial for successful treatment, thereby reducing the number of mastectomies and maximizing patients' survival rate. France as well as many developed countries, set up a national screening programme for women aged 50 to 74, in addition to the possibility to screen with a prescription from a gynaecologist or a generalist practitioner. Established in 2004, this national programme sends an invitation letter to eligible women by the post every two years. This invitation letter contains a voucher to obtain a free mammogram. "Initially, this national programme performed well, increasing the average 12-point mammography uptake rate, especially in underprivileged areas, but it then levelled off and the participation rate in the programme has hovered at around 52% for several years," Florence Jusot says. However, encouraging breast cancer screening is a primary public health objective with a view to limiting this cause of death, making better use of the national programme and reducing the costs of public health care provision. It should be emphasized that treatment for breast cancer is very expensive, varying between 5,200 and 31,000 euros, depending on the molecule used.

## THE USE OF BEHAVIOURAL ECONOMICS...

It was in this epidemiological and socio-economic context that the researchers began their study. "We wanted to see whether, using a

**According to standard economic theory, providing people with incentives and additional information will influence their decisions.**

behavioural approach, we could boost the overall uptake rate for mammograms and encourage women from disadvantaged backgrounds to undergo screening. Our study was the first of its kind in France," Florence Jusot says.

According to standard economic theory, providing people with incentives and additional information will influence their decisions. "The screening programme already deploys both of these. The programme is free of charge, and letters containing information on the benefits of screening are sent out to invite women to have a mammogram. In other countries, rewards in the form of shopping vouchers have been tried, with mixed results. In France, a supplementary information brochure was also tried out, but it didn't work," Florence Jusot points out.

The researchers therefore decided to use the findings of the academic literature in behavioural economics to change the letters inviting women to participate in the screening programme, in collaboration with the Regional Health Agency and the programme's management organizations in the Normandy region. In other words, they altered the context of decision-making, using so-called "nudges" to bring about potential changes in women's behaviour. "Our idea was to carry out four easy-to-implement, low-cost behavioural interventions within

Based on the paper *Increasing breast-cancer screening uptake: a randomized controlled experiment*, by Léontine Goldzahl, Guillaume Hollard and Florence Jusot, and on an interview with Florence Jusot.



**Florence Jusot** is Professor of Economics at Université Paris-Dauphine (LEDa-LEGOS). She heads the French section of the SHARE survey on health, aging and retirement in Europe, is vice-president of the Collège des Economistes de la Santé and is director of European and international associations in health economics. Her research focuses on the analysis of inequalities in the field of health and the evaluation of access policies to health insurance.

### Methodology

The researchers conducted a randomized trial in two French departments to test four behavioural interventions embedded in the invitation letter for breast cancer screening. The purpose of this work was to determine whether letter changes could affect mammogram uptake rate. The researchers divided their sample of 26,495 women into five subgroups (including a control group), measured participation in breast cancer screening and compared the results across the five subgroups. They also devote special attention to the uptake rate among disadvantaged women and among those aged 50 years old who received the invitation letter for the first time.

the existing programme. Behavioural interventions aim to make use of the biases affecting agents' decision-making," Florence Jusot explains.

### ... IN A RANDOMIZED FIELD EXPERIMENT

The randomized field experiment – which took place in the departments of Eure and Seine-Maritime – involved 26,495 women eligible for the screening programme. Specifically, the researchers made four different changes to the invitation letter:

- 1 Health insurance fund logos were placed on the envelope, in addition to the programme management organization logo. The idea was to encourage women, through a saliency effect, to open the letter and to improve their trust in the content of the message, since it was associated with a well-known public body.
- 2 The letter was simplified and made clearer, and additional information was included on the risk of developing breast cancer in a lifetime. The revised letter was developed and selected by 100 women at a meeting dedicated to this selection process.
- 3 The two above-mentioned changes were then combined.
- 4 Information was added on the number of women screened during the previous year. This amendment sought to create a social norm effect and mimetic behaviour from the recipients.

The researchers then divided their sample into five subgroups, one of which was a control group. In April 2015, they sent the four modified letter and the existing letter to the women who were supposed to be invited at that time.

"The women were randomly assigned to each sub-group, in order to observe the causal effect of the letter," Florence Jusot says.

### THE REVISED INVITATION LETTER HAD NO SIGNIFICANT IMPACT

After one year of data collection, the researchers were able to measure breast cancer screening rates and compare them across the five subgroups. The data were geocoded, in order to link the socio-economic status of the women participating in the study with that of their place of residence. In the end, no significant differences were detected between the modified letter and the control letter in the two departments. "Our behavioural interventions in the letters did not increase the mammography uptake rate. The content of the letter and the envelope had no effect. It seems difficult to intervene effectively by modifying the letter, even though, in the United Kingdom, having the letter signed by the woman's doctor has been found to be effective", Florence Jusot says. In a further step, the researchers analysed the behaviour of 50-year-old women, who were invited for the first time, as well as women living in relatively disadvantaged areas. In both cases, the letters had no impact on the uptake rate. "Possibly the fact that it is free of charge greatly increased the mammogram uptake rate in the early years of the programme. Another possible interpretation is that these results simply reflect women's optimal choice, especially among those aged 50-year-olds. In any case, we observed a continuity in their behaviour: those who have been screened before will go again, and those who haven't, won't start," Florence Jusot says. "The national programme could be

benefit from modifications involving health professionals such as women's general practitioners and pharmacists. It could also use e-mails and text messages to contact women, and even geolocation, to invite those from the same geographical area and create a ripple effect." ●

### Key points

- Altering the invitation letter for breast cancer screening has no overall effect on their likelihood to obtain a mammogram.
- Altering the invitation letter does not reduce social inequalities in mammography utilisation.
- The national screening programme could be redesigned using other instruments such as e-mail, text messaging and geolocation to invite women from the same area and to involve health providers (general practitioners, pharmacists, etc.).

# DOES THE ADDITIONAL HEALTH INSURANCE LEAD TO EXCESS FEES FOR SPECIALISTS?

While supplementary fees may be charged by sector 2 doctors, especially specialists, their overall size and significant growth is of concern to health insurance and the public authorities, and raise questions about the fairness of access to health care.

**T**he size of the excess fees charged by Sector 2 doctors regularly comes to the attention of health insurance and the public authorities, which often attempt to limit them. These additional fees (also known as balance billing) amount to more than two billion euros a year (€2.66 billion in 2016). This situation can lead to reduced health care for disadvantaged categories and thus induce inequalities in access to health, because of possible outstanding fees due on the part of patients. While the growth in excess fees has been decreasing in recent years, the total amount still doubled between 2000 and 2015. As a reminder, excess fees are allowed for doctors in sector 2, mainly specialists, while doctors in sector 1 (generalists and specialists) apply the rates agreed by the state health insurance scheme. The state reimburses 70% of the costs of care provided in sector 1, while the remainder is covered by complementary health insurance or has to be paid by patients if they do not have additional coverage. The same reimbursement schedule is applied to medical treatment provided in sector 2. In these cases, depending on the additional insurance taken out, the excess fees may be paid partly or totally by the organization concerned (insurance companies, mutual insurance companies).

“The rapid growth in excess fees coincided with the increase in guarantees provided by certain forms of complementary coverage. However, these excess charges raise questions about the effectiveness and fairness of the healthcare system. In particular they lead to price rises for medical goods and to a deterioration in the coverage provided by social security. We therefore

**Identifying a change in the level of coverage is necessary for estimating the causal effect of insurance on the consumption of care involving excess fees.**

wanted to evaluate the impact of generous coverage on patients' resort to specialists and on the excess fees charged,” Mathilde Péron explains.

## **AN ORIGINAL AND GROUND-BREAKING STUDY OF COMPLEMENTARY HEALTH COVERAGE IN FRANCE**

Before beginning their econometric study, the researchers had to overcome a number of obstacles related to the availability of data. For it is difficult to simultaneously observe the consumption of health care and the amount of additional coverage taken out by the insured parties. Identifying a change in the level of coverage is also necessary for estimating the causal effect of insurance on the consumption of care involving excess fees. The researchers then contacted one of the financial partners of the Health Chair – MGEN (Mutuelle Générale de l'Éducation Nationale) – which is responsible for managing the mandatory coverage of its members and offering them additional coverage. “With the data provided by MGEN, we built an original database, with 43,111 individuals observed over a three-year period from 2010 to 2012,” Mathilde Péron says. In the first year,

Based on the paper *Does health insurance encourage the rise in medical prices? A test on balance billing in France*, by Brigitte Dormont and Mathilde Péron, and on an interview with Mathilde Péron.



**Mathilde Péron** is a Lecturer in the Department of Economics at the University of York, United Kingdom. She holds a doctorate in economics (PSL, Université Paris-Dauphine). She specializes in health economics and her research interests include in particular the regulation of health insurance systems and the economic evaluation of health care technologies.

### Methodology

The researchers carried out an empirical study with the aim of estimating the causal impact of better complementary health insurance on the consumption of care provided by sector 2 specialists charging excess fees. They studied a sample of 43,111 individuals in 2010 who were not insured against excess fees and again in 2012 after 3,819 of them acquired new coverage. The estimates take into account non-observed individual heterogeneity and the non-exogeneity of the decision to change complementary coverage.

2010, none of sample was insured against excess fees. By the third year, 2012, 3,819 of them had switched to complementary coverage. “We therefore have a control group consisting of individuals who are not insured against excess fees and a test group made up of 3,819 people, who were not insured against them in 2010 but who in 2012 benefited from coverage that was at least the same and possibly better,” Mathilde Péron says. “We compare the two groups in 2010 and again in 2012. This methodology allows us to take into account the possibility that policyholders who choose better coverage are different from the rest. We are thus able to isolate the impact of the complementary insurance alone on the consumption of care involving excess fees.”

### GENEROUS COMPLEMENTARY INSURANCE CONTRIBUTES TO HIGHER EXCESS FEES

The results of the study reveal significant trends. In fact, individuals in the test group with better complementary coverage increase their consumption of specialist care in sector 2 without increasing the total number of visits. On average, the proportion of consultations in sector 2 increases by 9%, pushing up the average level of excess fees per person by 32%. However, this finding depends very much on the density of care provision. When there are sufficient sector 1 specialist physicians in a geographic area, generous complementary insurance has no effect on excess fees. “In departments with, on average, at least 52 sector 1 specialists per 100,000 population, we find no impact of better coverage on excess fees. However, below this

threshold, the impact is much stronger, with the proportion of specialist sector 2 consultations rising by 14% and a 47% increase in the average amount of the excess fee per consultation,” Mathilde Péron says. In extreme cases, as in departments such as Ile de France where the number of sector 1 specialists is very low, better coverage also increases the total number of visits, thus giving rise to fears of a real problem of access to care for less well-off people, who do not have sufficient coverage against the excess fees.

### INAPPROPRIATE PUBLIC POLICIES

To curb the surge in fees, the government has tried by means of tax measures to encourage private practice doctors in sector 2 to reduce them. They have also limited certain types of additional coverage by setting up so-called responsible contracts, which grant fiscal aid to the organizations that issue them. “The current policy of limiting insurance against excess fees does not seem to be the best solution and is only relevant in regions where the supply of sector 1 specialists is insufficient. Our findings also show that ensuring equal access to medical care requires a sufficient supply of specialists with enforceable rates throughout the country, which appears not to be the case today,” Mathilde Péron says. ●

### Key points

- Better complementary health coverage leads to an increase in demand for sector 2 specialist practitioners who charge excess fees.
- The preceding result depends mainly on the density of care provision and the availability of sector 1 specialists. In departments where they are sufficiently numerous (at least 52 per 100,000 inhabitants) better complementary coverage has no impact on recourse to sector 2 specialists, and vice versa.
- The study shows that limiting complementary coverage in order to reduce excess fees is not relevant throughout the country. The appropriate solution would be to regulate the provision of care so as to ensure a minimum number of specialists in sector 1 in geographical areas where they are in short supply.

# HOW ECONOMICALLY EFFICIENT IS HEALTHCARE PROVIDED BY COMPLEMENTARY ORGANIZATION NETWORKS?

While the rise of medical service provider networks aims to improve poorly reimbursed healthcare, it raises questions such as to its economic efficiency for the various stakeholders (patients, insurers, and providers).

**1**00% reimbursement, to be phased in by 2022, for those requiring eyeglasses, dental treatment and hearing aids, which is now poorly reimbursed, was high on the list of Emmanuel Macron's campaign promises. Until such time as this pledge is made good, complementary bodies (insurance companies, mutual benefit insurance companies, and provident institutions) play a major part in reimbursing this type of care. The patients themselves are required to pay the difference after reimbursement for such care. The amount they are liable for depends on their additional coverage, but care of this kind is generally expensive.

However, since the implementation of the Leroux Act in January 2014, any willing providers are able to create approved care networks in which health professionals, particularly opticians, are included. Most importantly, this legislation also allows complementary health insurance organizations to use differentiated (or modulated) reimbursements for insureds or members who consult a professional either within or outside their networks. For example, if a woman buys glasses from an optician belonging to her complementary network, she will be better reimbursed, hence subject to a smaller or zero out-of-pocket expense, than if she was dealing with a provider who was not in the care network.

## TWO DIFFERENT TYPES OF CARE NETWORK

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whose prices (unlike those of drugs) are unregulated and are reimbursed only to a small extent by health insurance. These organizations can choose between creating two different types of care networks. First, **closed care networks** have a limited number of providers set by the complementary organization. These offer better reimbursement for care given by providers belonging to of its network. Membership of the network is decided through a participating in an auction, which makes it possible to select those providers offering the lowest rates, in accordance with the qualitative specifications established by the complementary health organization.

Second, **open networks** do not have a *numerus clausus* (i.e. a fixed number of entrants). The complementary body itself determines the price of the providers' services, as well as the reimbursement conditions within and outside the network. Health care providers have the option of joining or not joining. "These two types of network are based on totally different mechanisms.

Based on the paper *Medical Service Provider Networks*, published in *Health Economics*, by Michel Mougeot and Florence Naegelen, and on an interview with Michel Mougeot.



**Michel Mougeot** is Emeritus Professor of Economics at the University of Franche-Comté. He is also a researcher at the Economic Strategies Research Centre and at the Health Chair. He was president of the French Association of Economic Science and member of the Council of Economic Analysis. He is the author of numerous scientific articles and books on public economics, industrial economics and health economics, including *Tarification et Régulation des Hôpitaux*, with Florence Naegelen, published by Éditions Economica.

### Methodology

The researchers carried out a theoretical analysis to compare and model the strategies and economic utility of different stakeholders (patients, insurers, providers) in a closed care network and in an open care network. Starting from certain basic assumptions, they first defined the equilibrium prices of health goods for which there is little reimbursement in the absence of a healthcare network. They repeated the work to model the equilibrium prices first in a closed care network, then in an open network, before analysing and comparing the different results.

In closed networks, prices depend on fierce competition between suppliers taking part in auctions. In open networks, on the other hand, the complementary organization must offer a sufficiently attractive price to deter suppliers from not joining. There is thus no price competition for the right to be a member of the network,” Michel Mougeot says. “To my knowledge, there is little academic literature comparing the effectiveness of these two types of network. This question, however, ought to be of concern to economics.”

### A MODEL BASED ON REALISTIC ASSUMPTIONS

In order to carry out their theoretical work, the researchers made certain basic assumptions prior to constructing their model. “Demand on the part of insurees is price-dependent. We also assumed that the complementary health premium is exogenous when patients decide whether to use a provider inside or outside a network, because the premium paid is known in advance every year at the time of subscription or renewal of contract. In addition, our comparative analysis is based on healthcare goods, which are not perfectly substitutable. Eye glasses are a good example: even though the products sold are relatively similar and have the same technical characteristics, consumers nevertheless have different perceptions as regards opticians. For example, their choice may be influenced by geographical proximity, advertising, after-sales service, etc. Because glasses are imperfectly substitutable, out-of-network suppliers still have customers,” Michel Mougeot explains.

In addition to their assumptions, the researchers first considered a non-network situation in which two providers produce similar but imperfectly substitutable goods. Prices then depend on competition between providers, thus making it possible to define equilibrium prices in the model. In the second stage, the researchers included both a closed and an open network in their model, so as to observe the differences in equilibrium prices. In addition, they replicated their model with two types of complementary organization having different objectives: mutual benefit societies aiming to increase their members’ utility, and insurance companies aiming to maximize their own profits.

### NETWORKS ARE BENEFICIAL TO PATIENTS

The theoretical model described above generated a number of significant results, that could be of guidance to the public authorities. In fact, the creation of healthcare networks helps reduce overall healthcare expenditure, at a time when economies are essential for safeguarding the system. Healthcare networks are also beneficial to patients, by increasing their economic utility through the use of providers within the network. However, care networks reduce the profits of insurers and providers. “This finding suggests that insurance companies have little economic incentive to set up care networks, unlike non-profit organizations such as mutual benefit societies,” Michel Mougeot says. With regard to closed and open networks, the results differ according to the relevant stakeholders. “Closed networks provide a greater utility to patients, because prices are lower than in

open networks. The opposite reasoning applies to insurers and providers,” Michel Mougeot adds. Lastly, the researchers incorporated the parameter of a third-party provider into their model, when this mechanism only concerns goods purchased within the network: “Third-party payment represents an additional competitive advantage for providers who are in a network, while reducing the substitutability of the goods concerned. In this context, competition between suppliers within a network is less intense and is therefore less beneficial for patients,” Michel Mougeot says. ●

### Key points

- Setting up one or more care networks is an effective tool for limiting overall health expenditure.
- Care networks provide financial benefits to patients. On the other hand, the profits of insurers and providers decrease, compared to the situation where there is no network.
- Closed networks are better for consumers, while open networks are more advantageous for insurers and providers.

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