Introduction – From Theory to Practice and Vice Versa or How Economists Contribute to Understanding and Improving the Healthcare System

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For the third time, the journal *Economie et Statistique / Economics and Statistics* and the *Collège des Économistes de la Santé*, the French learned society in health economics, are working together to promote French Annual Health Economics Conferences (in French, JESF). These yearly events are organised by the French Health Economists Association. After publishing two special issues in 2015 and 2021, respectively associated with the 35th (Barnay *et al.*, 2015) and 41th JESF (Franc, 2021), *Economie et Statistique / Economics and Statistics* is publishing a new edition compiling a selection of articles from the 44th JESF held at the University of Lille in December 2022.

Since 2006, these events have given rise to the publication of a selection of articles in a peer-reviewed generalist journal every other year. This promotion of the work carried out reflects the commitment to exploit economic expertise in a particularly complex sector where debate often arises about access to care, the remuneration of healthcare professionals, optimal patient care and the regulation of healthcare spending.

The healthcare sector is a particularly good field for economic analysis, on the one hand, and for public intervention, on the other hand. This introduction highlights the concerns held by French health economics researchers about these two aspects, and their research is represented for the occasion by the seven articles in this special issue. More specifically, we show how these articles contribute to discussions on public health policies and fit in with the traditional approach taken by economic science, which involves the interaction between theoretical models and empirical studies. These articles are summarised at the end.

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An Ever-Evolving Sector

First of all, it is well established that the health sector is a source of wealth. From a purely accounting perspective, INSEE states that the pharmaceutical sector generates pre-tax value added of 14,438 million euros (more than the IT, electronics and optical products manufacturing sector, for instance). Moreover, health professionals accounted for 1.23 million workers in 2023. The relative weight of the healthcare and medical-social sectors is also expanding rapidly as a result of the growing need for care and support for dependent elderly people. As a result, 370,000 additional positions for doctors, nurses, home support workers and care assistants are expected to be created between now and 2030 (France Stratégie & Dares, 2022). Since Solow's exogenous growth model (Solow, 1956) was challenged in the 1980s, economic theory has argued that healthcare expenditure can be productive. Endogenous growth models show that health capital, not only as a component of Human Capital but also due to spillover effects to other sectors (such as chemistry or imaging) and intergenerational reproduction, is a source of production (Mushkin, 1962; Becker, 1964 and Grossman, 1972). At a more microeconomic level, the good health of working-age individuals ensures productivity gains and a higher likelihood of working and increasing one's income (Barnay & Jusot, 2018).

Of course, the health sector is also expensive. The ONDAM (*Objectif national de dépenses d'assurance maladie* – National Objective for Healthcare Spending), voted by Parliament every autumn and set at 254.9 billion euros for 2024, represents nearly 9% of gross domestic product. While the exceptional expenditure allocated to the health crisis was halved between 2021 and 2022 (Arnaud & Lefebvre, 2023), budget constraint remains extremely strict. The French Social Welfare Budget Bill of 2024 estimated the health insurance deficit at 9.4 billion euros in 2023. The latter is explained in particular by rising health spending fuelled by ageing population, the rise of chronic diseases and technological innovations.

Given that four-fifths of the consumption of healthcare and medical goods is covered by statutory health insurance, the public authorities are working hard to enact reforms. This work appears entirely consistent with the economic analysis which identifies numerous market failures in the health sector. One frequently cited example is the presence of externalities. Negative externalities include second-hand smoke and forest fires caused by cigarettes, which cause damage to society that is not financially compensated by smokers. In contrast, vaccination against infectious diseases brings benefits to society. On one hand, this positive externality justifies recourse to public insurance because individual risks are neither independent nor random, thereby compromising the optimal functioning of the private health insurance market; on the other hand, subsidising vaccines means they can be promoted among the most disadvantaged populations. Strong levels of information asymmetry between stakeholders and the interdependence of supply and demand for healthcare are also weaknesses that create a loss of efficiency in the healthcare system. Moreover, in his words "*recovery from disease is as unpredictable as its incidence*", the 1972 Nobel Prize winner in economics, Kenneth Arrow, in his pioneering 1963 paper underlined the high level of uncertainty characterising this highly unusual market (Arrow, 1963).

In many respects, therefore, it seems imperative to manage healthcare expenditure, in a context where rapid innovation is very costly (genetics, biomedicine, artificial intelligence) and where the need to reduce carbon emissions is becoming ever more pressing. Reforms to the healthcare system are therefore common and may have competing objectives; sometimes focusing on the efficiency of the health system, sometimes aiming at reducing social inequalities in health and access to care. The articles presented in this special edition of the journal *Economie et Statistique / Economics and Statistics* therefore stem from a context of intense reforms.

Within the Healthcare market, Public Finance uses the whole range of regulatory tools: Market price changes (contracting of sector one doctors, administered drug prices, etc.), volume regulation (number of doctors via the *numerus apertus*[1] principle), publication

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1. As part of the "My Health 2022" plan, the numerus clausus *principle has been replaced by the* numerus apertus *one. The latter sets a minimum number of students admitted in the second year of medical school, depending on intake and places available at the University.*

of guidelines for healthcare professionals or modification of competition rules in the pharmaceutical market through patents.

On the patient side, reforms focus on protecting the most vulnerable, "empowering patients" and addressing emerging needs. On the protection side, one of the flagship reforms (inspired by Beveridge) is undoubtedly the creation of CMU coverage (*Couverture maladie universelle* – Universal Health Insurance) in 2000 making healthcare cover available to all, and CMU-C coverage (*Couverture maladie universelle complémentaire* – Complementary Universal Health Insurance) for the most disadvantaged.[2] The legislator also strives to better define and protect the rights of specific populations such as disabled people (French disabled workers act in 1987 and 2005; French act prohibiting discrimination against persons with disabilities or on health grounds in 1990), a population group that is at the core of **Thomas Blavet**'s contribution to this issue. Instead, the more coercive reforms carried out in 2008 aim to introduce deductibles and fixed contributions on boxes of medicines and paramedical services, paramedical procedures, hospital care or health transportations in order to limit the risk of overuse of care caused by an insurance policy deemed too generous (this relationship has never been rigorously demonstrated). Two decrees published in the Journal Officiel on 17 February 2024 provide for an increase in the fixed contribution and a doubling of medical deductibles. These provisions will automatically lead to an increase in patient co-payments. The work of **Florence Jusot and Adèle Lemoine** presented in this issue demonstrates, based on European data collected from people aged 50 and over, that final[3] out-of-pocket expenses undermine equity in the healthcare system.

In addition, special attention is paid to emerging needs. As the large post-war generation advances in age, France, like most developed countries, is facing an acceleration in the ageing of its population. Despite dedicated legislative measures such as the act on adapting society to an ageing population (ASV) of 1 January 2016 or specific measures (*Allocation personnalisée d'autonomie*, APA – Personal Autonomy Allowances), the model of care is mainly based on caregivers. This leads economists, such as **Quitterie Roquebert** in this issue, to question the effects of this informal care that continues to be administered even to people living in nursing homes (*Établissements d'hébergement pour personnes âgées dépendantes*, EHPADs). Special categories of workers such as the self-employed are also targeted by support schemes for older adults (PARI programme) that **Estelle Augé and Nicolas Sirven** propose to evaluate.

In terms of care services, the way in which healthcare professionals are remunerated and the way in which care is organised are being radically overhauled. Although they remain the most common, traditional remuneration methods linked to activity are being brought into question because of their inflationary nature, in favour of mixed models incorporating incentive mechanisms often linked to performance, care pathways, patient follow-up and public health objectives. Thus, performance-based payments for self-employed doctors, initially introduced on a voluntary basis with the CAPI (*Contrats d'amélioration des pratiques individuelles* – Contracts for the Improvement of Individual Practices) in 2009, have been generalised with the ROSP (*Rémunération sur objectifs de santé publique* – Remuneration Based on Public Health Objectives) since 2011. Since 1 January 2024, the share of funding allocated to medical, surgical and obstetric activities has been increased to contain the effects of activity-based payment (T2A) introduced in 2004 for hospital funding. In this issue, **Vincent Attia, Mathilde Gaini, Edouard Maugendre and Catherine Pollak** evaluate pay-for-performance schemes to support prescriptions for biosimilars delivered in towns and cities. Moreover, experiments in innovative payments are being carried out in community medicine with, for example, "lump sums per episode of care" to be distributed among the various professions involved in treating the disease, sometimes grouped together in a Multidisciplinary group practice. These new incentives also aim to combat the still very high social inequalities in health and access to care and

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2. *Assistance with the payment of supplementary health (ACS), granted on a resource-tested basis, was also introduced in 2005. The CMU-C and ACS were finally replaced in 2019 by the* Complémentaire santé solidaire *(CSS) top-up insurance.*
3. *Direct payment made by patients after public and private health insurance coverage.*

medicines in France. Two million people have three disadvantages in terms of access (general practitioner, nurse or physiotherapist), three quarters of whom live in rural areas (Legendre, 2021). **Julien Silhol**'s contribution explores new factors affecting the location of doctors that are likely to lead to levers of action.

Finally, the theme of prevention runs through healthcare policies, whether in terms of the way doctors are remunerated or in terms of efforts to change patient behaviour. It is discussed in this issue from an international perspective in the study by **Pauline Kergall and Jean-Baptiste Guiffard**, which analyses the effects of the Internet on the prevention of infectious diseases and the use of prenatal care.

From Theory to Practice

Like the work carried out in all fields of economics, the complementarity between theoretical models and empirical studies underpins the advances made in health economics. In a sector beset by major societal challenges and a sustained pace of reform, health economics is unique in that it is an applied discipline, one purpose of which is to fuel public debate. The contribution of economic theory is, therefore, decisive in constructing public health policies *ex nihilo*, in that it helps to predict how healthcare system stakeholders will react following an intervention that could, for example, alter the price of care or the income of healthcare professionals.

An example of this mutual benefit comes from the United States. In order to shed light on discussions about health cost sharing, the largest American experiment ever conducted was by the RAND Corporation between 1976 and 1982, led by Joseph Newhouse. This included establishing whether or not theoretical mechanisms of *ex post* moral hazard were proven (Pauly, 1968) within the framework of an *ex post* evaluation. Patients were randomly assigned (in particular to ensure that their care needs were similar) to relatively generous health insurance contracts including a 100% cover option. The aim of this experiment was to measure the elasticity of demand for healthcare to price changes. The aim was to compare theoretical insights with the behaviour revealed by the experiment. As expected, one of the findings of this study is that the consumption of medical goods and services is negatively correlated with price, with a price elasticity of −0.2 (Newhouse *et al.*, 1993; Newhouse, 1996).

This special issue of *Economie et Statistique / Economics and Statistics* illustrates the importance of this interaction between theoretical frameworks and empirical studies through some of the discipline's classic subject areas. The articles published in this issue use empirical tools to answer the various research questions they examine. However, the literature to which each of them belongs highlights the way in which the research themes they address have been inspired by economic theory or shaped by the existing dialogue between theory and empirical research.

The importance of the interaction between theoretical and empirical work in the literature on individual demand for care is highlighted in two articles in this special issue, devoted respectively to the use of medical treatment (Estelle Augé and Nicolas Sirven) and disease prevention measures (Pauline Kergall and Jean-Baptiste Guiffard).

In their contribution, Estelle Augé and Nicolas Sirven measure the effect of the PARI programme (literally: Action Plan for Independent Retirement) on the use of care for self-employed workers. The latter is significantly lower during working life, mainly because of better health and longer working hours (Augé & Sirven, 2021). The theoretical starting point for the empirical work of Estelle Augé and Nicolas Sirven is Grossman's health capital demand model (1972). In the latter, individuals inherit an initial health capital, the natural depreciation of which can be offset by an investment in the form of time devoted to health and the acquisition of market goods such as medical care, food, housing, etc. According to Grossman, individuals adjust their investment in order to reach a level of health capital deemed optimal. The benefits of this investment are twofold: over and above its intrinsic value, good health also makes it possible to increase labour productivity and generate higher income. The model is therefore particularly well suited

to the decisions made by the self-employed. It has also been widely criticised because it implies – contrary to what has been shown in the empirical literature – that the health capital depreciation rate is exogenous on the one hand, and that the demand for care and health status are positively correlated on the other hand. There are various possible reasons for this discrepancy. The reason of particular interest to us in the work of Estelle Augé and Nicolas Sirven was formulated by Wagstaff (1986), who suggests that the negative correlation observed between demand for care and health may potentially result from the fact that – contrary to what Grossman's model implies – individuals do not necessarily instantly adjust their health capital to the optimal level. Wagstaff (1993) therefore provided a new empirical formulation of the Grossman model, the results of which seem to be more in line with observed behaviours. As a result, Galama & Kapteyn (2011) proposed a theoretical extension of Grossman's model in which individuals do not instantly adjust their investment to reach their optimal level of health capital, which is instead defined as a threshold level above which individuals do not use healthcare. This would be the case for self-employed workers who, in accordance with the empirical literature, are believed to underutilize healthcare services at the beginning of their employment and then catch up during retirement. However, this one-off approach, which is only used when the patient's health has deteriorated sufficiently, is problematic. It justifies the introduction of measures to encourage workers to adopt a more proactive and forward-looking attitude. The work of Estelle Augé and Nicolas Sirven aims to evaluate the effects of one of these measures.

The article by Pauline Kergall and Jean-Baptiste Guiffard analyses the effects of developing high-speed connectivity on the use of mosquito nets, the use of antenatal care and the vaccination of children in Senegal. This article is part of the literature devoted to the determinants of disease prevention actions, the level of which is considered too low in developing countries. Dupas (2011), for example, highlighted that malaria and diarrhoea, which account for a substantial share of infant mortality in Africa, could be effectively prevented through the use of nets and chlorination of drinking water. Outside the specific context of developing countries, theoretical and empirical literature in health economics have converged to elucidate individual prevention decisions. *Ex ante* moral hazard, which refers to the lower use of prevention when the financial consequences of a claim are covered by an insurance contract, has been identified as a natural candidate to explain the limited investment in disease prevention measures (Arrow, 1963). However, the existence of this moral hazard has not been demonstrated in the empirical literature (Newhouse *et al.*, 1993). Other factors have been suggested to explain the low level of prevention against health risks. From a theoretical point of view, this literature is based on the article written by Ehrlich & Becker (1972), which provided the first model of actions that modify the characteristics of an event by reducing its probability (self-protection or, according to the terminology more commonly adopted in health economics, primary prevention) and its severity (self-insurance or secondary prevention). Ehrlich & Becker's (1972) analysis, based on the expected utility model, assumes that individuals are rational. However, empirical and experimental literature has largely shown that this is not generally the case. In the specific context of prevention, Keeney (2008), for example, highlighted the fact that individual decisions are the leading cause of death in the United States. Based on this observation, recent theoretical research has focused on how different behavioural elements could improve the understanding of prevention decisions. In particular, Baillon *et al.* (2020) show that low perception of the likelihood of illness could, by diminishing the benefits of prevention, elucidate the lack of investment in this endeavour. In the same vein, this insufficiency could be explained by loss aversion (behavioural bias whereby a loss is perceived as more severe than a gain of the same amount) that would heighten the perception of the cost of preventative effort (Bleichrodt, 2022). Finally, time preferences are also likely to influence the use of preventive actions, the cost of which is immediate and the benefit of which delayed. The link between time preferences, disease information and prevention (based on vaccination decision) is explored by Nuscheler & Roeder (2016). Based on a theoretical model validated by an empirical study, the latter show that the effect of information on the propensity to be vaccinated depends on whether or not individuals' time preferences are rational and on their awareness of their irrationality (that is, whether they are naive or sophisticated). In connection with the work of Pauline

Kergall and Jean-Baptiste Guiffard described in this issue, the analysis by Nuscheler & Roeder (2016) points out that access to medical information may not be sufficient to promote disease prevention actions.

At the intersection of the demand for care discussed in the two previous articles and the supply of care, the literature on informal care for dependent persons serves as another illustration of the interaction between theoretical models and empirical studies in health economics. Quitterie Roquebert's contribution highlights the importance of intra-family relationships, which is a very specific aspect of this literature. Since informal caregivers and claimants are often members of the same family, care may be the result of a joint decision to maximise the family's well-being, or it may result from strategic interactions between family members.

More specifically, Quitterie Roquebert analyses the effect of informal care on different health outcomes (depression or fatigue, lack of appetite and sleep disorder) for nursing homes residents. In order to address the potential endogeneity bias between informal care and health status, the author uses, as an instrumental variable, the fact that the beneficiary of informal care has at least one daughter. Dependence studies have largely shown that girls are more likely than boys to provide informal care to their parents. The question of the effects of intrafamily relationships on the provision of informal care takes on different aspects in the economic literature on care. These relate to – in addition to the effect of formal and/or informal care on the dependent person's health status discussed by Quitterie Roquebert – the distribution of the amount of formal and informal care offered, the appropriateness of placing the individual in a nursing home or of sharing accommodation between the dependent person and the caregiver, other financial decisions jointly determined with those relating to long-term care and so on. The theoretical contributions that have addressed these issues have assumed either that there was only one child in the family (Kotlikoff & Morris, 1990), or that only one child in the family made decisions about long-term care (Sloan *et al.*, 1997), or that the family constituted a single entity, in terms of both its well-being and decision-making (Hoerger *et al.*, 1996). More realistic contexts were then proposed, using game theory models which assume that decision-making results from interaction between siblings, in order to analyse the effect of formal and informal care on the health of the dependent parent (Byrne *et al.*, 2009) or on the identity of the sibling providing informal care (Engers & Stern, 2002). A second aspect of the link between intrafamilial relationships and informal care provision is what is known in the literature as intrafamily moral hazard. The latter occurs when some parents, preferring to receive informal care rather than formal care or being moved to a retirement home, influence the behaviour of their relatives by not purchasing a long-term care insurance contract (Pauly, 1990). Empirical work on the subject has led to relatively mixed conclusions: Mommaerts (2024) shows that the availability of potential informal caregivers does reduce the demand for long-term care insurance, but Coe *et al.* (2023) nuance the dynamics of intrafamily moral hazard in that they do not observe that informal care decreases when dependent persons are insured against the financial consequences of long-term care. While it is therefore theoretically a determining factor in the demand for long-term care insurance and, indirectly, in the supply of informal care, the existence of intrafamily moral hazard nevertheless needs to be more formally established by the empirical literature. The empirical conclusions of Quitterie Roquebert, which demonstrate that informal care has a limited effect on the health of dependent people, could be integrated into theoretical models describing how siblings interact to provide a combination of formal and informal care for their parents.

Agency theory, which analyses agreements between a principal who pays for the delivery of a service and an agent who delivers it, forms the theoretical basis for health economics work that studies the effects of care providers' payment structure. More specifically, contributions under this category focus on the propensity of different funding structures to incentivize providers to adopt behaviours considered desirable (providing quality care, minimising costs, not selecting patients, etc.).

The article by Vincent Attia, Mathilde Gaini, Edouard Maugendre and Catherine Pollak, which assesses the effects of a pay for performance-scheme to encourage private

practitioners and hospitals to increase their prescriptions of biosimilars dispensed in towns and cities, contributed to this literature. Empirical work highlights the relatively mixed effects of pay-for-performance on the efficiency of care (see, for example, Maynard, 2011). This highlights the importance of dialogue between theoretical and empirical contributions in order to identify the optimal structure of performance payments. The latter cover different aspects. The first concerns the very definition of performance and its observability, which forms the contractual basis of the scheme. This question is particularly complex in health economics, the quality of care being multi-dimensional and often only observable by the actual provider.[4] The level and structure of the payment (linear vs. non-linear) constitute two other aspects of the scheme. While the theoretical literature has shown, for example, that non-linear payment is more suitable in cases of high patient heterogeneity (Baron & Meyrson, 1982), a linear payment is easier to implement in practice (Chalkley *et al.,* 2020). Similarly, the trade-off between an additional payment if the target is met or a financial penalty if it is not met is another question linked to the definition of pay for performance (Chalkley *et al.*, 2020). Finally, the optimal structure of the scheme needs to be defined in the light of the objectives pursued, but also in such a way as to avoid (or at least minimise) the various undesirable effects highlighted by the empirical literature. In this regard, the pay-for-performance scheme initiated in the United Kingdom by the National Health Service in 2004 for the financing of primary care (quality and outcomes framework) has been rich in lessons learned. For instance, in the context of funding the monitoring of hypertension and diabetes indicators, Serumaga *et al.* (2011) showed that the scheme remunerated providers for actions they would have carried out in its absence, and Gravelle *et al.* (2010) suggest abuses of the scheme by providers. Other unintended effects of pay-for-performance would include incentives for providers to – where possible – exclude certain patients from the scheme (Doran *et al.,* 2008) and neglect aspects of their activity that are not directly remunerated (Campbell *et al.*, 2009). In addition to being considered in the design of performance-based remuneration for healthcare providers, these unintended effects must be compared with the beneficial effects on the quality of care. The latter are proven but, as shown by the work of Vincent Attia, Mathilde Gaini, Edouard Maugendre and Catherine Pollak, which confirms the conclusions of the British experiment (Roland & Campbell, 2014), remain below what is expected by public authorities.

The other three articles of this special issue deal with the topic of health inequalities in a broad sense (the equity of healthcare funding in the contribution by Florence Jusot and Adèle Lemoine and the distribution of doctors across the country in the contribution by Julien Silhol) or by targeting a vulnerable population (people with disabilities for Thomas Blavet). While these three articles do not systematically draw on a body of theory, the lessons taught by theoretical analysis are valuable in trying to reduce health inequalities, which are considered unfair.

It is, for example, well established that one of the tools for combating inequalities in access to health insurance is the requirement mandating the purchase of health insurance. This legal provision is rooted in the theoretical work carried out by Rothschild and Stiglitz in 1976. These authors show that in case of asymmetric information, the high-risk individuals, i.e. those in the poorest health, are more likely to take out an insurance policy than those in good health. This situation will generate very high-risk premiums, making it impossible for the poorest people to obtain insurance. The obligation to subscribe to health insurance makes it possible to pool risk by providing a broad base for funding, initially employee and employer social security contributions, but now a combination of contributions and tax.

The contributions of Florence Jusot and Adèle Lemoine identify indicators that measure the propensity of healthcare systems to meet conditions considered desirable, such as equity in the use of care or in its financing. The work measuring the equity of care financing is based on fairly old theoretical literature. The principles that have emerged

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4. *However, this problem is relatively limited in terms of the contribution made by Vincent Attia, Mathilde Gaini, Edouard Maugendre and Catherine Pollak given the objective laid down for prescribers.*

from this process are the result of a consensus among public authorities and the general public. For example, the principles of horizontal and vertical equity, raised in the article by Florence Jusot and Adèle Lemoine, appear to be widely accepted and shared, at least in European countries (Hurst, 1992; Wagstaff *et al.*, 1992), and used into work on equity in health systems. They are found, for example, in the contributions of Wagstaff *et al.* (1999) and O'Donnell *et al.* (2008) which break down the redistributive effect of health system financing for 12 OECD countries and 13 Asian countries, respectively. Like many of the works in this literature, Florence Jusot and Adèle Lemoine use the Kakwani index (1977) to determine the extent to which health systems address vertical and horizontal equity concerns. This index was originally proposed to measure the progressiveness of tax systems, before being used to answer questions specifically raised by the evaluation of healthcare systems. O'Donnell *et al.* (2008) adapt it to measure the progressiveness of care financing by comparing the Lorenz curve for income distribution and the concentration curve for healthcare payments. The technique will then be used to highlight the effect of the different sources of financing of health systems and in particular, as proposed by Florence Jusot and Adèle Lemoine, the effect of out-of-pocket expenses on the progressive nature of the system.

Julien Silhol's contribution questions another facet of inequalities in access to care, namely the freedom for doctors to set up practice. Theoretical analysis produces knowledge that highlights the extent to which market failures linked notably to the interdependence of supply and demand and differences in medical demographics can alter the conditions of the outpatient care market (volume of care potentially created – Evans (1974) – as a result of the dominance of a fee-for-service payment, excess fees in sector two, adjustment of the consultations length and even potentially of the quality of care). Combating the shortage of doctors in certain areas therefore requires detailed knowledge of doctors' preferences at the time they set up practice and their sensitivity to the monetary and non-monetary incentives offered by the public authorities. Among the structures for access to primary care, Multidisciplinary group practice (*Maisons de santé pluriprofessionnelles*), set up mainly in medically underserved areas, seem to be gaining increasing support among young doctors. They are characterised in particular by mixed payment methods, fee-for-service and capitation payments, but also coordination payments to promote group work. The theoretical literature highlights the benefits of mixed payment through channels such as information gains, reduction of strategic behaviours (Lipman, 2000) or risk sharing (Robinson, 2001). Moreover, it provides strong arguments for promoting teamwork, which is also popular with physicians, while the complementary nature of tasks increases marginal productivity (Lazear & Shaw, 2007) and reinforces intrinsic motivations. Alongside the findings of Julien Silhol's study on the role of birth place and place of internship, promoting these schemes would undoubtedly help to combat inequalities in the geographical location of doctors.

Finally, studying a specific situation such as disability also feeds into the issue of inequalities, through the measurement of needs. Although Thomas Blavet's primary aim is to estimate the additional cost of disability in measuring household living standards in France, the issue is not so far removed from a conceptual and theoretical framework that could be very usefully applied. Guided by the data, Thomas Blavet adopts a pragmatic and standard definition of disability, i.e. limitations in activity over the last six months (the Global Activity Limitation Indicator). Beyond the specific needs created by the onset of disability in terms of care or technical aids, adopting a more societal view of disability by highlighting an alteration in opportunities or even capabilities (Sen, 1985) would undoubtedly make it possible to reconsider the public aid paid to offset the damage suffered. As such, the theory produces a particularly appropriate analytical framework for assessing the discrimination faced by people with disabilities in schools, in the labour market or on transport. Traditionally, two major theories have been advanced: the *taste-based discrimination* that underlies perfect information (Becker, 1957) and *statistical discrimination* (Arrow, 1972; Phelps, 1972). In the second case, statistical discrimination could be based on simple beliefs (Arrow) or measurement errors (Phelps), with both leading to, for example, under-employment of people with disabilities due to biased information about their productivity. Explicitly taking account of these lost

opportunities on the labour market or, more generally, of indirect costs would clearly alter the assessment of the additional cost associated with disability when measuring household living standards.

Summary of Articles

The first three contributions in this special issue on health economics are part of a topic on inequalities and vulnerability.

Julien Silhol's contribution, which opens this special issue, examines the effect of the distribution of medical interns on the geographical distribution of practice locations. It focuses on doctors who completed their internship between 2004 and 2007. During this period, the number of general medical interns doubled due to the combined effect of an increase in the *numerus clausus* and a change in the distribution of students between specialities in favour of general medicine. The data used matches different sources: INSEE databases on self-employed GPs from 2016 to 2019 who completed their internship between 2004 and 2007, the SIRENE (Système national d'Identification et du Répertoire des ENtreprises et de leurs Établissements – National Identification System and Register of Companies and their Establishments) and internship assignment decrees. The results show that, on average, an increase of one percentage point in university interns is associated with an increase of around 0.4 percentage points in the number of self-employed GPs in this cohort who set up in the region of this university. The allocation of internship positions would thus appear to be a lever for regulating doctors as they set up practice.

Thomas Blavet looks at how the statistical measure of living standards can be adapted to include the increased needs of households containing a person with a disability. In support of the French SRCV survey (Statistiques sur les ressources et conditions de vie – Statistics on Income and Living conditions) on standards of living, this methodology is applied to ordinary households residing in metropolitan France for the period 2017 to 2019. The author compares the results obtained for two standard-of-living indicators: the feeling of financial comfort and material deprivation. The handicap is defined from the GALI indicator (Global Activity Limitation Indicator). Estimates show that the additional cost of disability exceeds 30% of disposable income, regardless of the standard of living indicator considered. Taking into account this additional cost, it appears that four out of ten households with one disabled person are suffering income poverty.

The last article in this section is written by Florence Jusot and Adèle Lemoine. The authors assess the contribution of final out-of-pocket payments to vertical and horizontal equity in the financing of care for individuals aged 50 and over in Europe, using data from the SHARE (Survey of Health, Ageing and Retirement in Europe). The final out-of-pocket expenses are analysed for doctor's consultations, hospital treatment and dental care. The results indicate a lower equity in the financing of care in private insurance systems despite the presence of redistributive mechanisms. Universal health care systems seem to respect this principle better for outpatient care than for hospitalisations, thereby underlining the need to adapt these systems to their gradual privatisation by introducing exemptions for people on low incomes. Moreover, although universal health care systems appear to be more effective for medical consultations and hospitalisations, particular attention should be paid to improving dental coverage, which often remain insufficiently covered across all health systems.

Two other articles then focus on analysing changes in health care consumption and prevention behaviour in two extremely different contexts: a programme to support self-employed people in France and the effects of broadband on health prevention behaviours observed in Senegal.

The purpose of the study by Estelle Augé and Nicolas Sirven is to evaluate the causal effect of the PARI plan (*Programme d'actions pour une retraite indépendante* – Action Plan for Independent Retirement) on the consumption of care by self-employed older workers using a double difference method. The PARI programme, established in 2015 by the social system for self-employed individuals, aims to promote a comprehensive,

proactive and targeted approach, aimed at encouraging access to various social benefits for artisans and traders aged 60 to 79, with a view to preventing loss of autonomy. The identification of the effect is based on the implementation of the PARI programme in voluntary regions. The results show that the programme tends to reduce one-time care use behaviours in favour of a more regular relationship with the health system.

Based on demographic and health survey data, combined with the Afterfibre database, and using a difference of differences methodology, Pauline Kergall and Jean-Baptiste Guiffard are interested in the effect of the arrival of broadband on preventive health behaviours in Senegal. The installation of submarine fibre optic cables in 2010 introduced broadband connectivity in Senegal, including access to online medical information. The results show that broadband access is positively correlated with mosquito-net use, but with mixed results in access to antenatal care and immunisation for children. If the positive effects of Internet access were proven, then the expansion of broadband connectivity could be of paramount importance for improving health.

The last section brings together two contributions dedicated to support structures for dependent people (EHPADs) and more generally for patients (hospitals). Quitterie Roquebert estimates the causal effect of informal care provided by children on the health of EHPAD residents. She uses the French cross-sectional survey Care-Institutions (2016), which provides a representative sample of approximately 2,400 residents aged 60 and over, with children. Health is assessed in terms of depression, sleep disturbances, decreased appetite and feelings of fatigue. To correct the endogeneity of informal care, the author uses an instrumentation strategy where family help depends on the gender composition of the siblings. It turns out that informal care has little impact on health overall, and this is true regardless of gender and level of education.

Finally, the article by Vincent Attia, Mathilde Gaini, Edouard Maugendre and Catherine Pollak evaluates the effect of an incentive system to promote hospital prescriptions of biosimilars delivered in towns and cities. This system combines profit-sharing between hospitals and the health insurance fund with direct reimbursement of the incentive for prescription services. A difference-of-difference analysis method, using data from the National Health Data System (SNDS), compares the proportion of biosimilars prescribed by public hospitals benefiting from the incentive to that observed in similar non-beneficiary institutions. Between 2018 and 2021, this experience led to a significant increase in the share of biosimilars, with prescriptions for insulin glargine and etanercept increasing by 6.0 and 10.8 percentage points, respectively. From the point of view of efficiency, this measure resulted in savings, estimated at 0.5% of expenditure for insulin glargine and 0.1% for etanercept. Therefore, although the scheme has led to a significant increase in the prescription of biosimilars, savings for health insurance remain moderate, in part due to rapidly changing drug prices. □

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