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# TSE expertise in the field of health economics

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Growing health care expenses in developed economies raise concerns about the sustainability of our health care organization. It is thus important to look for ways to reduce inefficiencies in a complex regulatory environment where private and public providers interact with different intermediaries, regulators, and public or private insurers. Economists have developed useful research to understand and improve regulations. Yet there is still a lot to be learned as new challenges appear with rapid medical innovation, digitalization, new epidemics, population growth and ageing.

The Toulouse School of Economics (TSE) aims to undertake research that helps organizations in both the public and the private sector to address health issues, and improve quality and access to care both in France and worldwide. For more than a decade, TSE economists have been studying such diverse topics as healthcare, innovation, ageing, pharmaceutical regulation, food and nutrition issues. The set of questions and problems for economists is huge. TSE is currently expanding its footprint in this research area. Researchers in economics can develop and use new tools to address questions of regulation and organization of healthcare and innovation. Inventing a new vaccine is a science and medical research problem but having firms and governments financing such research, and providing the right incentives to do so as efficiently as possible is a problem for which economists can help.

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## Pierre Dubois

*Director of the future TSE Health Center*

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Professor of Economics at TSE, his work includes research on industrial organization, demand models, health and pharmaceuticals, food demand and nutrition, development economics and applied econometrics.

He has been visiting professor at the Department of Economics at Harvard University and visiting scholar at Northwestern University and the University of California at Berkeley. He has published his research on pharmaceutical regulation, innovation, health, food demand and regulation of food markets in the best economics journals such as the American Economic Review, the Review of Economics Studies, the Journal of Political Economy, Econometrica and many other top scientific journals.

His work has had important impact on evaluations of reforms of the pharmaceutical regulation or public health policies on food markets.





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# Our ambition: creating the TSE Health Center

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TSE would like to develop a research center of excellence in the field of health economics. It will combine TSE's own expertise with its private and public partners' financial support and knowledge.

By providing a centralized and recognizable source of support for research in health economics, this center will foster new collaborations between academics willing to undertake research initiatives in this field. The overarching aim will pull together different strands of research on health economics (health, healthcare, food), and encourage multidisciplinary research projects involving economists and researchers with other backgrounds (epidemiology, medicine, pharmacy, psychology, biology...), attracting post docs and PhD students, in an area underdeveloped in Europe.

## Main research areas:

- Pharmaceutical industry and regulation
- Innovation in health
- Public healthcare, long term care & aging
- Food & healthy behavior economics
- Economics of pandemics



The future of health care holds many promises.

Yet, our societies will reap the benefits from digital health, artificial intelligence and genetics, only if they achieve the right balance. It requires equilibrium between innovative but expensive treatments and affordability of health care, also between the innovation imperative and fair access to drugs and health care across social classes, regions and countries.

It is up to health specialists within and outside academia to help invent such smart regulation. Located in Europe, the Toulouse School of Economics is well-placed to contribute to this exciting endeavor, thanks to its tradition of excellence in industrial organization, innovation economics, regulation and public finance. Its long-held culture of interaction with industry experts and public policymakers will guarantee that the rigor of its research is matched by relevance for the policy debate. Finally, its sister institution, the multi-disciplinary Institute for Advanced Study in Toulouse will bring the broader social science angle and shed a new and relevant light on societal challenges associated with health trade-offs.

I am looking forward to be part of this intellectual adventure!

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## Jean Tirole

*Honorary chair of TSE and IAST,  
2014 Nobel laureate in economics*

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# Pharmaceutical industry and regulation

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## Head of research team Pierre Dubois

Pierre Dubois has worked extensively on the regulation of the pharmaceutical sector with national and international perspectives, stemming from the effect of regulation on innovation, on pharmaceutical expenses to the role of parallel trade in the industry.

He published a study on the effect of price regulation on the pharmaceutical industry margins in the American Economic Review in 2018, and another on the role of Parallel Trade of drugs in Europe in Econometrica. His work published in the Rand Journal of Economics in 2015 is currently used to evaluate the effect of reforming pricing policies on innovation by the US Congress.

Pierre Dubois was visiting Professor at Harvard University Economics Department during the academic year 2019-2020.



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## Overview

Economists have developed useful research to understand the role of regulations and provide frameworks for improving regulatory rules. There is still a lot to be learned and studied and new challenges appear also because of continuing medical innovation, digitalization, new epidemics, antimicrobial resistance, population growth and ageing.

### Current research questions include the following:

- What's the best trade-off between maintaining incentives to innovate with high rewards to new useful medicines and financing health care expenses?
- What is the impact of regulatory rules on profitability and welfare in an international context ?
- What is the role marketing authorizations, detailing effort in fostering access and diffusion of medicines?
- What are the ways to reduce inefficiencies in regulatory environment where private and public providers interact with different retail and trade intermediaries, regulators?

## Objective

The objective is to understand the effects of regulation of the pharmaceutical sector and provide guidance for better regulation.

Concerning price regulation of pharmaceutical drugs, the objective is to extend the usual trade-off between welfare, expenses and firms' profits in a broader international context than national regulation, because of the growing externalities generated by direct cross country reference pricing regulations, by parallel trade of drugs and by globalization of innovation and research. Another objective will be to study the role of competition policy and market structure on innovation of pharmaceuticals.

The innovation on new medicines relies strongly on the private pharmaceutical sector at the world level. The trade-off between maintaining incentives to innovate with high rewards to new useful medicines and financing health care expenses is a challenge in which the patent system has an important and essential role. While price controls are clear determinants of profitability, other regulatory aspects (like merger policy, reimbursement and market authorization policies or off-label prescription regulation and advertising regulation) matter and have not been studied carefully in this regard.



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# Innovation in health

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## Head of research team **Philippe De Donder**

CNRS Research Director at the Toulouse School of Economics, Philippe De Donder's main fields of research are public economics, regulation and health economics.

He has been visiting professor at the University of Rochester, Yale University and University of Québec in Montreal.

He has published more than fifty peer-reviewed articles in international journals, including in The Economic Journal, the Journal of Health Economics, the Journal of Public Economics, and American Economic Journal: Economic Policy.



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## Overview

Health innovation promises new ways to identify individuals at risk of specific ailments, to prevent these ailments from occurring or at least delay their occurrence, to diagnose health issues and monitor their development and of course to treat them. These innovations come from advances both in biological research and in digital technologies. They are at the root of the development of personalized medicine, which tailors therapy with the best response to ensure better patient care. As such, personalized medicine has the potential of improving health care while also lowering costs.

The advent of personalized medicine raises economic questions, including how to provide the correct incentives to the various actors. How to reward innovation when personalized medicine necessitates huge investments for the development of molecules that will be prescribed to a limited subset of individuals? How to give the right incentives to induce pharmaceutical firms to look for the biological markers that make the drugs they develop especially efficient, if this reduces their market share?

Also, how do we incentivize health providers such as hospitals or doctors to invest time and money in including personalized medicine in their everyday practice? And since most advances in personalized medicine are based on genetic tests, how do we incentivize patients to undertake these tests? This last question also raises the problem of privacy and of the regulation of the information generated by genetic tests.

## Objective

Our objective is to develop cutting edge economic research on the incentive and privacy problems raised above, and to transfer this knowledge to our partners, to practitioners and to decision makers. We make use of the economic methodology by developing analytical models, by testing their predictions with existing empirical and experimental data.

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# Public healthcare, long-term care & aging

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## Head of research team **Jean-Marie Lozachmeur**

CNRS Research Director at the Toulouse School of Economics, Jean-Marie Lozachmeur has published more than 30 scientific articles in the fields of public economics, health economics and industrial organization.

He was appointed in 2018 by the minister of Health and Social affairs in France as a scientific expert on health care financing, for a period of three years



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## Overview

This focused research program deals with the industrial organization and the financing of the healthcare and long-term care services. Our work in the health sector concerns the optimal design of private or public health insurance systems (level of reimbursement, type of reimbursement and patients' out-of-pocket expenses) and payments to health care providers (hospitals, practitioners) mainly using the tools from the economics of public finance, industrial economics and regulation. Our work focuses on redistribution and social justice together with efficiency.

Regarding the old-age dependency issue, the objective is to design the optimal financing policy. Here, public intervention is constrained by the way informal care and markets interact to provide long-term care. Therefore, it is also important to study the motivations of family solidarity. Informal care can be motivated by altruism, resulting from an implicit exchange between generations, or imposed by social norms. The underlying motivation in turn determines the extent to which informal care is crowded out by the public or private insurance programs which in turn determines the role of private as well as public entities.

## Objective

Our first topic of research focuses on problems emanating from the health sector in general. The aim is to have a better understanding of the complex relationships between the different actors in this sector namely patients, insurers and different types of care providers including practitioners, hospitals or the pharmaceutical industry.

Our second topic deals with the economics of aging in general and old-age dependency in particular. In light of the recent demographic and societal developments, the demand for formal long-term care services is rapidly and steadily increasing. Our research aims at studying the different possibilities to finance these expenditures.



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# Food and healthy behavior economics

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## Head of research team **Céline Bonnet**

Director of research at INRAE and member of TSE, Céline Bonnet is a specialist of consumers' and firms' behavior in the agrofood chains.

Her recent research addresses the assessment of food policies for better health and more generally, for sustainable consumption.

She was an expert for the Ministry of Economy and Finance and the Ministry of Agriculture, the OECD in the Food Chain Analysis Network, the "Fonds Français pour l'Alimentation et la Santé" and participated in many funded projects on health public policy evaluation.



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## Overview

According to the World Health Organization (WHO), non-communicable diseases (NCDs) cause about 35 million deaths each year representing about 60% of all deaths. Only four diseases account for 80% of all NCDs premature deaths: cardiovascular diseases, cancers, respiratory diseases and diabetes. Nonetheless, NCDs are highly preventable. The WHO estimates that 75% of heart diseases, stroke and type 2 diabetes, and 40% of cancers would be prevented if the major risk factors were eliminated (WHO, 2019). These major risk factors are an unhealthy diet, physical inactivity, and tobacco and alcohol consumption.

## Objective

We aim to understand the determinants of an unhealthy diet. An unhealthy diet is mainly characterized by low fruit and vegetable consumption and high intakes of salt, added sugar and fat. To understand the determinants on dietary choices of an unhealthy diet, we study the role of socio-economic factors, peer effects, food availability and prices, and the environment.

Several economic arguments can justify the recent worldwide spread of food policies use. These include fiscal policies, nutritional labels, information campaigns and nutritional recommendations, advertising regulations, food innovations and nutritional reformulation.

We also aim to develop theoretical and empirical analyses to evaluate the impact of food policies on health and social welfare more generally, and how firms and markets react to policies.



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# Economics of pandemics

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## Head of research team **Nour Meddahi**

Nour Meddahi is a Professor of Economics and an expert in financial econometrics, time series modeling, forecasting, risk management, and econometrics.

He has published papers in top journals of Economics, Finance, and Statistics like *Econometrica*, the *Review of Financial Studies*, and the *Journal of the American Statistical Association*.

He is a fellow of the Econometric Society and the Society for Financial Econometrics.



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## Overview

The Covid-19 pandemic has raised new social and economic issues that require novel analyses. Economic science and other social sciences offer cutting-edge analytical tools for guiding decision-makers. These tools can be used to manage health crisis pandemics and their devastating health and economic consequences. Economic, risk management, and statistical models can be useful to analyze the cost and benefits of different policies when large contagious risks create important externalities within society. These externalities directly affect health risks, the insurance system and health care sector organization. In the absence of treatment, prevention efforts also create large externalities on labor markets, firms' organization, education... The crisis also calls for better preparation for the future in terms of supply of health care, protective gear and pharmaceutical products.

## Objective

The impact of the Covid-19 pandemic is multidimensional. Economic and social aspects of the crisis are as important as health consequences. We aim to study the consequences of this crisis and the economic policy tools that governments should use to best respond in the short run. We also intend to provide studies with an international perspective to prepare our society to deal with possible future pandemics.

Different research projects will be developed, starting with using state of the art econometric methods, time series analysis, and credit risk management knowledge, to model, estimate and predict the outcomes of pandemics such as Covid-19. This research will characterize the optimal public investment policy in intensive care units, diagnosing test capacities and protective gear to anticipate uncertain pandemic crises and better evaluate the different trade-offs. This research will feed into better cost-benefit analysis of the different policies that a government can consider.

As among the critical policies used for diminishing the spread of a very contagious disease, self-containment behavior and precautionary individual responsibility play a crucial role. Our experts in political science and psychology will analyze the factors that affect compliance with public health recommendations.

Finally, the crisis has also put forward the problem of drugs and protection shortages, in times where a world pandemic unexpectedly raises demand in all countries. The analysis of the organization of those markets from a national, European and world perspectives will shed light on the trade-offs between risk reduction, efficiency and cooperation. This is essential to better inform governments about the consequences of trade regulation, tariffs in the area of health care, taking into account the riskiness of the environment.

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# TSE and IAST researchers

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Today, more than twenty of TSE and IAST researchers have an interest in health, healthcare or nutrition

- Lauren Bader, *IAST*
- Céline Bonnet, *INRAE, TSE*
- Jane Conway, *IAST*
- Helmuth Cremer, *UT1 Capitole, TSE*
- Philippe De Donder, *CNRS, TSE*
- Pierre Dubois, *UT1 Capitole, TSE*
- Christian Gollier, *UT1 Capitole, TSE*
- Yassine Lefouilli, *UT1 Capitole, TSE*
- Jean-Marie Lozachmeur, *CNRS, TSE*
- Thierry Magnac, *UT1 Capitole, TSE*
- Nour Meddahi, *UT1 Capitole, TSE*
- Josepa Miquel-Florensa, *UT1 Capitole, TSE*
- Manh-Hung Nguyen, *INRAE, TSE*
- Sabine Noebel, *IAST*
- Francesca de Petrillo, *IAST*
- Harilanto Razafindrazaka, *IAST*
- Mathias Reynaert, *UT1 Capitole, TSE*
- Arnaud Reynaud, *INRAE, TSE*
- Paul Seabright, *UT1 Capitole, TSE, IAST*
- Jonathan Stieglitz, *IAST*
- Stéphane Straub, *UT1 Capitole, TSE*
- Jean Tirole, *EHESS, TSE, IAST*
- Nicolas Treich, *INRAE, TSE*
- Vivek Venkataraman, *IAST*

Moreover, TSE and IAST researchers collaborate with numerous researchers in universities around the world to work on health-related research questions.

- Rossi Abi-Rafeh, *TSE PhD Student*
- Léa Bignon, *TSE PhD student*
- Gokce Gokkoca, *TSE PhD Student*
- Malgorzata Majewska, *TSE PhD Student*



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# Highlights

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## Related publications

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- P. Dubois , P. Albuquerque, O. Allais, C. Bonnet, P. Bertail, P. Compris, S. Lahlou, N. Rigal, B. Ruffieux, P. Chandon, *"Effects of front-of-pack labels on the nutritional quality of supermarket food purchases: evidence from a large-scale randomized controlled trial"*, Journal of the Academy of Marketing Science, 49:119-13, 2021
- Pierre Dubois & Morten Saethre, *"On the Effect of Parallel Trade on Manufacturers' and Retailers' Profits in the Pharmaceutical Sector"*, Econometrica, vol. 88, n. 6, p. 2503-2545, November 2020
- Pierre Dubois, Rachel Griffith & Martin O'Connell, *"How well targeted are soda taxes?"*, American Economic Review, vol. 110, n. 11, p. 3661-3704, November 2020
- Christian Gollier, *"If the objective is herd immunity, on whom should it be built?"*, Environmental and Resource Economics, vol. 76, p. 671-683, August 2020
- Martin Boyer, Philippe De Donder, Claude Fluet, Marie-Louise Leroux & Pierre-Carl Michaud , *"Long-Term Care Insurance: Information Frictions and Selection"*, American Economic Journal: Economic Policy, vol. 12, n. 3, pp. 134-169, August 2020
- Christian Gollier & Olivier Gossner, *"Group testing against Covid-19"*, Covid Economics, vol. 1, n° 2, p. 32-42, April 2020
- Pierre Dubois & Laura Lasio, *"Identifying Industry Margins with Unobserved Price Constraints: Structural Estimation on Pharmaceuticals"*, American Economic Review, 2018
- Berndt Ernie & Pierre Dubois, *"Impacts of Patent Expiry on Daily Cost of Pharmaceutical Treatments in Eight OECD Countries, 2004-2010"*, International Journal of the Economics of Business, 2016, 23, 2, 125-147
- Helmuth Cremer, Jean-Marie Lozachmeur and Pierre Pestieau, *"The design of long term care insurance contracts"*, Journal of Health Economics, vol. 50, p. 330-339, December 2016
- Pierre Dubois & Margaret Kyle, *"Are Cancer Drugs Worth the Price? The Effects of Pharmaceutical Innovation on Cancer Mortality Rates"*, TSE Working Paper, n. 16-688, September 2016
- David Bardey, Helmuth Cremer & Jean-Marie Lozachmeur, *"The design of insurance coverage for medical products under imperfect competition"*, Journal of Public Economics, vol. 137, p. 28-37, May 2016
- David Bardey, Bruno Jullien & Jean-Marie Lozachmeur, *"Health insurance and diversity of treatment"*, Journal of Health Economics, vol. 47, p. 50-63, May 2016
- Alice Mesnard & Paul Seabright, *"Migration and the Equilibrium Prevalence of Infectious Diseases"*, Journal of Demographic Economics, vol. 82, n° 1, p. 1-26, March 2016
- Pierre Dubois, Olivier de Mouzon, Fiona Scott Morton & Paul Seabright, *"Market Size and Pharmaceutical Innovation"*, RAND Journal of Economics, Vol 46, No 4, p. 844-871, Winter 2015
- Chiara Canta & Pierre Dubois, *"Smoking within the Household: Spousal Peer Effects and Children Health Implications"*, B.E. Journal of Economic Analysis and Policy (Topics), Vol. 15, Iss. 4, 1939-1973, 2015
- Jean Tirole & Glen Weyl, *"Market Power Screens Willingness-to-Pay"*, The Quarterly Journal of Economics, Volume 127, Issue 4, November 2012, Pages 1971-2003



## Contributions to books and reports

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- Brigitte Dormont, Pierre-Yves Geoffard and Jean Tirole, *"Rebuilding the health insurance system"* published by the French Council of Economic Analysis, March 6, 2014

## Scientific events

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- Workshop on Food and Health Economics, organized by TSE, Toulouse, June 7-8, 2018
- Technical Workshop on *"Applying Lessons from Economics to the Procurement of Global Health Commodities"*, organized by TSE and the Center for Global Development, Toulouse, April 26-27, 2018
- Health Economics Workshop on *"Prescription Behavior of Physicians"*, organized by TSE, Toulouse, June 23, 2016
- 16<sup>th</sup> European Health Economics Workshop (EHEW) Toulouse, 2015
- TIGER Forum, Conference on *"Health and Pharmaceutical Economics"*, organized by TSE, Toulouse, June 2-3 2014

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# Join forces

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Philanthropic support and research partnerships have played a significant role in the creation of TSE and in its development ever since. Over the last quarter-century, Toulouse economists have developed a model that brings academic research at the highest level to focus on real-world problems, through interactive dialogue with industrial partners and national policy-makers.

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By joining the community of donors and project sponsors of the future Center, you will help us achieve our ambitious scientific goals and encourage the emergence of a leading team in this research field.

The Center is designed to encompass the participation of a wide range of partners, whether corporations, individuals or charitable organizations from France and worldwide. That is because there is a need for increased analysis and collaboration on topics related to health economics.

You can support research and training undertaken with this specific research initiative, or help us create a fund dedicated to the long running operations of the future TSE Health Center. This fund could help us secure existing posts and endow new ones. With your help we could also create new research projects and visiting programs, fund research grants and scholarships. In addition we value the provision of databases our researchers can work on. And last but not least, we enthusiastically welcome financial support for projects with a multidisciplinary approach.

Donations made to TSE through the Jean-Jacques Laffont - TSE Foundation or through American Friends of TSE provide tax benefits to the donor.

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## Our partners

We are proud and grateful to all our partners and donors. We are particularly thankful to our partners currently supporting TSE research projects in health economics: **bioMérieux, GIE GERS & LEEM.**

Over the years we have worked with many other companies and institutions such as the **Center for Global Development, G5 Santé, Pfizer, Pierre Fabre** and **Sanofi** on health related matters. Thanks to their support, we are working towards our ambition of using economics as a force for good in the world.



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# Contact us

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## New building

TSE's brand new building, spread over eight levels and 15,300m<sup>2</sup>, is now open.

The TSE centers showcase the research and other academic activities at TSE in a thematic area.

TSE Health Center will come in addition to the three existing TSE centers which are: the Digital Center, the Sustainable Finance Center, and the Energy & Climate Center.

These centers are created with a broad scope to cover a range of industrial and policy issues affecting society at all levels.

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## Donors



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*Publication director:* Pierre Dubois  
*Project manager and managing editor:* Tiffany Naylor  
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