



Finance Durable et Investissement Responsable

Activity report 2023



Introduction

The research projects of the Research Initiative on Sustainable Finance and Responsible Investment¹ (hereafter FDIR) are run by the Toulouse School of Economics and the Economics department at Ecole Polytechnique. At the initiative of the AFG, the Research Initiative FDIR was made possible for 2023 thanks to the financial support of the following 9 members:

- ABN AMRO IS
- Amundi AM
- Caisse des dépôts
- Candriam Institute for Sustainable Development
- Edmond de Rothschild AM
- Fonds de Réserve pour les Retraites (FRR)
- HSBC Global AM (France)
- La Banque Postale AM
- Square management

Scientific Orientation Committee

Projects undertaken by FDIR are supervised by a scientific orientation committee chaired by Guillaume Lasserre (president of the association FDIR), and composed of internationally-renowned researchers, including Rob Bauer (University of Maastricht), Marcel Boyer (Université de Montréal), Caroline Flammer (Columbia University), Jean-Pascal Gond (Cass Business School, City University, London) and Bouchra M'Zali (ESG-Université du Québec à Montréal), representatives of the SRI industry, Claude Jouven (ex-chairman of the Fondation HEC) and Isabelle Laudier (Institut CDC pour la Recherche), as well as representatives of the partners of FDIR.

The insights and guidance of the members of the orientation committee is gratefully acknowledged.

¹ Initiative de Recherche Finance Durable et Investissement Responsable (Initiative de Recherche FDIR)

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II. Main research activity

The Research Initiative FDIR was launched in 2007, at the initiative of the French Asset Management Association AFG, Christian Gollier from Toulouse School of Economics and Jean-Pierre Ponsard from Ecole Polytechnique. Now co-directed by Catherine Casamatta and Sébastien Pouget from Toulouse School of Economics and Patricia Crifo from Ecole Polytechnique, FDIR has been running for sixteen years with about twenty internationally renowned scholars and has produced numerous scientific contributions to help our understanding of responsible finance.

FDIR in a few numbers

- Started in 2007
- 20+ researchers
- 2 academic institutions: Toulouse School of Economics & Ecole Polytechnique
- 9 current partners: Association Française de la Gestion Financière (AFG), ABN AMRO IS, Amundi AM, Caisse des dépôts, Candriam Institute for Sustainable Development, Edmond de Rothschild AM, Fonds de Réserve pour les Retraites, HSBC Global AM (France), La Banque Postale AM, Square management

Research since 2007

- 3 fields of practical implications for the design, management, and marketing of SRI funds
 - Long-term risk valuation
 - Governance, CSR and financial performance
 - Engagement and dialogue
- 54+ academic workshops with partners
- 10+ bilateral scientific meetings with partners
- 150+ scientific studies published
- 150+ presentations in scientific conferences
- 5 books on responsible finance
- 12+ scientific conferences organized

Teaching

- 10+ PhD students in 2023
- 10+ courses every year on responsible finance topics (Master Level)

Visibility

- 90+ articles in popular press (Le Monde, Les Echos, La Tribune, Libération, Financial Times, L'Opinion, Le Figaro, Challenges, L'Usine Nouvelle, ...)
- 5 Best PhD Thesis awards from FIR-PRI
- 1 Nobel prize in Economic Science for Jean Tirole (TSE)
- 1 Peace Nobel prize for Christian Gollier as a member of the IPCC
- 4 Cahiers de l'Institut Louis Bachelier dedicated to FDIR

The main objectives of FDIR are to:

- Contribute to the development and dissemination of theory and practice in the field of responsible investment, both through research and training programs;
- Facilitate direct contact between the academic partners and the members of the initiative, to their mutual benefit.

- Increase and consolidate the level of excellence of the academic partners and members by organizing an activity of reflection, training and research of international dimension around a theme of general interest.

To achieve these objectives, FDIR carries out research around three main topics:

- Long-term ESG performance and risk evaluation,
- Corporate Governance,
- Shareholder engagement.

For the period 2022-2025, the General Assembly meeting of FDIR, the researchers involved in the Initiative, in conjunction with the sponsors, have defined six high-priority research projects that pertain the three main topics of FDIR. The achievements on these six high-priority projects for the final year (2025) are detailed below.

A. The six high priority research projects

The following section presents the current achievements of the six high priority projects defined for the period 2022-2025. The achievements of these high priority projects are presented at workshops with sponsors and discussed in the FDIR final reports.

1. *Social performance indicators, by Patricia Crifo (Polytechnique)*

Objectives

After formally adopting a goal of carbon neutrality by 2050 in March 2020, European states have implemented recovery plans in which the fight against climate change is a clearly stated objective. In September 2020, the European Union announced the issue of €225 billion in green bonds to finance its recovery, representing 30% of the total budget deployed to deal with the consequences of the coronavirus crisis. France has also set itself the goal of "becoming Europe's leading low-carbon economy. To achieve this, 30 billion of the total budget will be devoted to four priority sectors: energy-efficient renovation of buildings, transport, agricultural transition and energy. These investments will enable France to develop through sustainable and fair growth". But can the goal of carbon neutrality for states, and the green investments required to achieve it, be a source of higher incomes, job creation and reduced inequality? And what social performance indicators are used to help answer this question?

Methodology

Reconciling energy transition and social impact is a difficult challenge requiring taking into account social and environmental issues in a simultaneous and integrated manner (Robins et al 2019). On the one hand, environmental risks are not distributed equitably, which raises the issue of "distributive justice"; on the other hand, the various stakeholders do not have the same opportunities to influence decisions concerning their immediate environment, which raises the issue of "procedural justice" (Crifo, 2023).

We propose to address these two challenges by focusing on the firm level. In particular, we use three French databases. A first employer-employee database is called Enquête sur le Coût de la Main-d'Oeuvre et la Structure des Salaires. A second database, called Enquête Changements Organisationnels et Informatisation (COI), provides information on companies' CSR practices. Finally, the third database, the Annual Business Survey, provides information on company revenues and exports. Overall, we use data from over 13,000 employees over the period 2003-2006.

Results

In Crifo, Diaye and Pekovic (2023) we analyze the impact of environmental and social strategies, i.e. CSR policies, on wages. As a signal of corporate culture, CSR can attract productive or highly qualified employees. Studies show that green companies can also recruit motivated employees with teamwork values, thereby reducing costly staff turnover or ensuring the company's long-term survival and performance. While these studies are informative, they are only part of the story, as they ignore the direct impact on employee salaries, which can go in two opposite directions.

On the one hand, while a proactive human resources policy tends to increase company performance through improved productivity, motivated employees may also be likely to accept salaries below fair market value because they are intrinsically motivated by the alignment between their work and their personal values. In fact, companies' commitment to sustainable development can translate into lower labor costs. On the other hand, investment in CSR may improve employees' skills and human capital, enabling them to earn higher salaries. In addition, CSR companies could offer employee remuneration that goes beyond what is defined by employment contracts and regulations, with the aim of redistributing part of the added value created by the potential increase in profitability due to CSR.

Thus, economic theory does not predict a one-to-one link between CSR and wages. On the one hand, socially-responsible companies may wish to attract employees through ethical concerns and a green corporate culture, in contradiction with motivation based solely on purely financial wage incentives (inducing a negative CSR-wage link). On the other hand, socially responsible companies may, on the contrary, wish to combine CSR with more generous salaries as part of strategies that combine environmental and social performance

References

Crifo, P. 2023. Normes ESG et transition juste : comment prendre en compte simultanément les enjeux environnementaux et sociaux ? *Servir*, 520, 16-20.

Crifo, P., Diaye, M.-A. and Pekovic, S. 2023. Wages and corporate social responsibility: entrenchment or ethics? *Employee Relations*, 45 (2), 495-515.

2. The Value of Green Innovation: Evidence from Climate-Related Patents, by Ulrich Hege, Sébastien Pouget, and Yifei Zhang (TSE)

Objective

Climate change is one of the major environmental and social challenges of our time, to which firms are playing an important role via their greenhouse gas (GHG) emissions. Some firms decide to take climate action in order to mitigate their impact. What are the consequences of such climate action? How to make sure that this is not greenwashing? Are these firms recognized as green by Environmental, Social and Governance (ESG) rating agencies? Do these firms attract more (responsible) investors? Do they offer higher returns to their shareholders? Do they emit less GHG than their peers? The objective of this project is to provide answers to these questions.

Methodology

Answering these questions is challenging in terms of scientific methodology. Indeed, establishing a causal link between corporate climate action and its consequences is plagued by two issues: reverse causality and omitted variables. To cope with these issues, we propose to use an instrumental variable approach, based on two-stage least square regressions, that enables us to better establish causality. Our identification strategy relies on the granting of climate change mitigation patents in the US. Focusing on patents enables us to mitigate the risk that firms engage in greenwashing and to address an important topic in corporate

climate action, namely green innovation. The literature demonstrates that some patent examiners, although they deal with the same field, are more lenient than others, for idiosyncratic reasons, and grant patents more easily (Gaulé, 2018, Sampat and Williams, 2019, Farre-Mensa, Hegde, Ljungqvist, 2020, Melero, Palomeras, Wehrheim, 2020). This offers us the opportunity to study firms that applied for climate change mitigation patents and differentiate them, not on the basis of whether they were actually granted a patent, but on whether they were (quasi-randomly) assigned to a more or less lenient examiner. We can then verify, in a first-stage regression, that firms that are assigned to a more lenient examiner are indeed more likely to receive a green patent. We then use the predicted probability to receive a green patent as an explanatory variable in second-stage regressions aiming at studying whether climate action impacts firms' financial and environmental outcomes (ratings, returns, emissions...).

Results

We provide here the main results of the empirical analysis carried out so far. The first set of results relates to the financial performance of firms which obtain such green patents, while the second set of results relates to the real climate change mitigation effects of such patents.

Regarding realized stock returns, we find that companies that are granted climate-related patents by luck in the patent examiner "lottery" benefit from a significant cumulative abnormal return of about 10% over the next 12 months, which translates into an approximately 2% 12-month abnormal return per climate patent. Such large abnormal returns could be generated by a permanent improvement in perceived corporate performance or risk or be a financial market reaction to the information contained in the green patent approval. The second interpretation appears plausible in light of our subsequent findings on the effect of attention to climate change and on the changes in ESG-minded investors' stock holdings. Indeed, we consider the effect of changes in public attention to climate change, using a daily index of the coverage and negativity of climate topics in leading US newspapers. We find that abnormal returns after random shocks in patent approvals are substantially higher in periods of high climate change attention. They are less than 8% and insignificant in periods of lower climate change attention. This result suggests that positive abnormal returns realized after lucky climate-related patent draws are related to climate change issues and not to a general tendency for financial markets to react positively to the granting of patents.

After analyzing realized returns, we turn to their counterparts, expected returns. We use implied cost of capital (ICC) to measure expected returns and find that a one standard deviation increase in the number of newly issued climate patents leads to an approximately 0.9% drop in ICC over the subsequent 12 months. Thus, the positive abnormal returns are accompanied by a concomitant reduction in the ICC over roughly the same horizon. Importantly, further analysis confirms that the drop is most pronounced (and only consistently significant) when patents are granted during top-tercile periods of public attention to climate change. This finding is in line with the idea that the temporary change in ICC is mainly the effect of the financial market reaction, not an anticipation of any decrease in future risks that could reduce the cost of capital.

We then turn to real climate change mitigation effects of climate-related patents. We investigate whether firms with climate-related patents use these technologies to reduce their CO₂ emissions. When we look at random variations in patent approvals, we find no significant effects of climate-related patent grant shocks on CO₂ emissions or on total energy used. This is in line with the idea that firms that have been unlucky in the climate patent lottery still have access to new climate change mitigation technologies that are on average as effective as those of firms with lucky patent draws.

The more interesting question is about the real impact of the climate-related technologies that all of these firms are developing, i.e., of the underlying innovations that the inventors can use even if no patent protection is granted. We thus conduct OLS regressions of the effects of increased climate-related innovation. We find significant reductions in direct (Scope 1) emission intensity starting in year 3 after the climate-related patent application year. Thus, climate-related patents are associated with significant improvements in patent holders' carbon efficiency, but the effect appears to be slow and to be entirely linked to the underlying technology and not to it being granted patent protection.

Reference

The Impact of Corporate Climate Action on Financial Markets: Evidence from Climate-Related Patents, Ulrich Hege, Sébastien Pouget and Yifei Zhang, TSE Working Paper 23-1400

<https://www.tse-fr.eu/fr/publications/impact-corporate-climate-action-financial-markets-evidence-climate-related-patents>

3. *The economics of biodiversity and food systems, by Nicolas Treich (TSE, INRAE)*

Objective

Biodiversity loss is considered as a major environmental threat. The global food system is the main cause of this trend. For instance, deforestation -which is a major driver of biodiversity loss- is mostly due to the development of animal agriculture and in turn to the demand for meat. However, food systems are also characterized by severe market and political failures. For instance, no country has yet implemented an environmental tax on meat. In that context, several instruments can be used to cope with the loss of biodiversity. This research project will explore how various instruments such as information tools and nudges as well as financial schemes may help mitigate biodiversity loss, through the incentives that are given to the various stakeholders involved in food systems.

1) A first research project explores the potential use of consumption taxes on meat in high-income countries to address the negative environmental and health-related externalities of meat. A main reason for focusing on meat is that there is a growing consensus within the environmental research community that the recent global trajectory of meat production and consumption is unsustainable. Livestock farming is significantly more resource intensive than other forms of agriculture. To illustrate, animal-based agriculture and feed crop production account for approximately 83 percent of agricultural land globally and are responsible for approximately 67 percent of deforestation. This makes livestock farming the single largest driver of greenhouse gas (GHG) emissions, nutrient pollution, and ecosystem loss in the agricultural sector. A failure to mitigate GHG emissions from the food system, especially animal-based agriculture, could prevent the world from meeting the climate objective of limiting global warming to 1.5°C, as set forth in the Paris Climate Agreement, and complicate the path to limiting climate change to well below 2°C of warming. Why considering a tax on meat? Clearly, a tax on meat is not a “first-best” option and would indeed be unnecessary if appropriate prices on carbon and other externalities were in place. However, in the absence of such first-best policies, the strategy of targeting meat (or possibly meat and dairy) as a high-polluting food category is supported by environmental research. The environmental impacts of most animal products are much higher than those of plant-based products, and research indicates that carbon taxes on plant-based foods would be close to zero. As a consequence, regulators appear to be increasingly receptive to the idea of raising meat prices. This project seeks to provide policy makers with guidance on how to approach meat regulation in the presence of multiple externalities and regulatory challenges.

Methodology

To assess the desirability of a tax on meat, we first need to estimate the social cost of meat. To do so, we first identify what is the social cost of the environmental damages and public health issues provoked by meat consumption.

Regarding environmental externalities of meat, our valuation exercise draws from existing research in lifecycle analysis (LCA) and social cost(-benefit) analysis. Our review combines a valuation of the social cost of carbon induced by livestock for a range of meat types, together with the social cost of nutrient pollution (acidification and eutrophication). We obtain our central value of the social costs of carbon (100 USD/kgCO₂e) from an approximate average of earlier studies (Pindyck (2019), Hänsel et al. (2020) and Cai et al. (2016)). Social cost estimates for nutrient pollution are scarce, and hence subject to large uncertainty :

indeed, there is spatial variation in the dose-response relationship of pollutants ; it is also difficult to assess the counterfactual condition of natural ecosystems. We chose to rely on The European Nitrogen Assessment (Brink et al., 2011) and CE Delft's Environmental Prices Handbook for the EU28 (2015). The obtained values are hence specific to the European Union and may not necessarily be transferable to other geographies. Our central value for the social costs of eutrophication (resp. acidification) is 5.04 USD/kgPO_{4e} (resp. 20.9 USD/kgSO_{4e}).

Next, to evaluate the health cost of meat, we first need to quantify the value that society places on a human life. To do so, we use the value of statistical life (VSL), a measure eliciting the willingness to pay for mortality risk reduction. This approach is commonly used in cost-benefit analyses to convert lives saved from healthier diets to monetary units and is the most common measure to estimate the privately incurred harm from unhealthy choices, focussing on mortality risk, not morbidity. It is well-known that the VSL differs across countries and settings due to a variety of factors. For example, Moran and Monje (2021) place a central value of VSL for the US at \$11.8 million. The WHO puts a central value of VSL for the UK at a more conservative, \$4.36 million with a range of \$2.2m-12.6 million. Following OECD recommendations, this implies a VSL base value for the EU-27 of USD 3.5 million. We then used a benefit-transfer method to calculate VSLs in other high-income regions.

Equipped with these numbers, we are then able to provide an estimate of the social impact of meat. But livestock farming and meat consumption also contribute to other externalities, and a tax on meat could affect several -imperfectly regulated- markets. For example, agricultural land use is a significant driver of deforestation and biodiversity loss. This means that increasing or decreasing meat consumption will have a general equilibrium effect on global land markets, which will increase or decrease pressure on other forms of land use (e.g., arable farming for human consumption). We therefore review the main economic distortions that livestock farming and meat consumption create, and discuss to what extent a tax on meat would interact with these other economic distortions, and what drivers should affect the level of the tax rate.

Results

Given these elements, we find that meat is currently significantly underpriced, with the external costs of beef due to its impacts on climate change and nutrient pollution adding up to on average US \$5.75–US\$9.17 per kilogram. Accounting for biodiversity loss and diet-related health impacts would further increase costs substantially.

We then identify several key elements that motivate regulatory efforts to tax meat: (1) the interaction of multiple environmental externalities, (2) “alternative protein” technologies, (3) the adverse effects of meat consumption on one's own health (health internality), (4) animal welfare, and (5) distributional effects.

Regarding (1), we highlight that livestock farming entails indirect land-use and water-use effects. Since these resource markets are suboptimally regulated, taking these externalities into account should lead to increase further the level of the tax rate on meat.

Regarding (2), if there are uncorrected innovation-related market failures for alternative protein technologies, a higher tax on meat should be beneficial and accelerate innovation in alternative protein technologies.

Regarding (3), the fact that consumers display behavioral failures in food choices calls for increasing the tax rate, while the concern that consumers may react to higher meat prices by substituting toward other unhealthy products should have a negative impact on the tax rate.

Last, while animal welfare considerations (4) generally call for a higher tax rate, the optimal tax should also take into account distributional effects, and in particular the effect on poorer households. On that point, the effect of a meat tax is ambiguous, as on the one hand, the tax incidence falls disproportionately on poorer households (suggesting therefore to reduce the tax rate), while on the other hand, the health benefits from taxing meat fall on poor households (suggesting to increase the tax rate).

Discussion

While at this time, we cannot precisely estimate what should be the optimal second-best tax rate for meat products, our results can help to inform future economic modeling studies as well as regulators. In particular, we argue that the design of an optimal meat tax depends on normative concerns such as animal welfare and distributional impacts. Last, our study explores the political economy of taxing meat, and highlights several avenues for governments to implement a socially acceptable tax on meat.

2) A second project focuses on eliciting consumers' willingness to pay for novel products. Knowing the demand for novel products at a pre-market stage is central to the development of greener technologies. Indeed, since the success of novel products ultimately depends on their adoption by consumers, public and private investors seek to invest in green technologies that have the potential to be widely demanded. Unfortunately, it is probably during this pre-market stage that the demand for novel products is the hardest to estimate as economists cannot rely on real purchase decision data to quantify the consumers' willingness-to-pay (WTP). This project proposes a new experimental method to estimate the demand for such novel products. It uses real incentives (i.e., a non-hypothetical setting), despite the fact that the product cannot be delivered to participants and thus cannot be actually purchased during the experiment. As a proof of concept, we apply this method to a novel product that could significantly reduce the environmental footprint of the food sector, i.e., cultured meat. Cultured meat can significantly reduce the negative externalities of meat production on the environment, health and animals. Cultured meat is produced in vitro from animal cells and does not require animal slaughtering. Although there is still a lot of uncertainty about its environmental impacts, preliminary life-cycle analyses suggest that it has a significantly lower environmental impact than conventional meat. Cultured meat should indeed reduce greenhouse gases emissions compared to conventional meat (especially methane emissions) and it should also reduce air and water pollution as well as water use. Cultured meat is also expected to significantly reduce land use, which should create natural regeneration opportunities with associated carbon-capture and biodiversity benefits. The production of cultured meat can also virtually eliminate the risks of infectious disease associated with traditional meat production, and reduce the use of contaminants and antibiotic. While a number of food experts consider that cultured meat may well revolutionize the future market of animal products, a necessary condition for the successful development of greener products such as cultured meat is consumer acceptance, which remains an open question as some previous work has underlined consumer reluctance to accept innovative technology.

Methodology

As cultured meat products are not available on food markets, consumer acceptance typically relies on hypothetical questionnaires about the willingness to try or buy the new product, or on experiments in which the same conventional meat is labelled conventional or cultured to elicit consumers' willingness to taste and buy the new product. We depart from that literature by offering a novel experimental procedure that allows us to elicit a subject's non-hypothetical WTP for a novel product, despite the fact that this product cannot be delivered to the subjects. The design is incentive-compatible under standard expected utility, and does not convey false information to subjects. The central idea is to use the subjects' imperfect knowledge about the possibility that the new product will be delivered, and to make them decide under a veil of ignorance.

More precisely, in the experimental instructions we present two scenarios to the subjects: either the product is available (scenario 1) and can be delivered, or it is not and cannot be delivered (scenario 2). We inform the subjects that the scenario to be implemented was determined before the experiment (in a non-random way), but the result of this decision is not transmitted to the participants, and participants are aware of it. Unlike previous work on non-marketed products we do not make false statements and explicitly tell participants that only one scenario is real and the other is not.

Then, the subjects' WTP for the new product is elicited using a standard Multiple-Price-List (MPL) mechanism given the availability contingency. Moreover, the subjects' probabilistic beliefs about the scenario that has been selected are also elicited using a scoring rule. This WTP elicitation procedure is incentive compatible if and only if the subject's elicited probability that the product is available (i.e. the scenario with delivery) is strictly positive.

We apply this new experimental procedure to elicit the WTP for cultured meat. Importantly, we selected a real cultured foie-gras product. This product is obtained from the culture of liver cells extracted from a duck egg and is developed by Gourmey, one of two startups currently working in cultured meat in France, where the experiment was run. Given previous results that emphasize the importance of framing, the product was introduced to the participants using Gourmey's own marketing material that is available on their website. This permits to mimic real market conditions and avoid relying on a specific framing conceived by researchers as in all previous studies. However, it is important to keep in mind that the presentation of the product and the associated technology is thus positively framed, as would be expected from standard marketing practices.

Results

The experiment was carried with a sample of 158 students. Our main results are the following. About 18% of subjects do not want to buy/try the product, even when it is free. The average WTP is about 3 Euros per 100g, and only one out of seven participants is willing to buy 100g for about 5-6 Euros (the average price for 100g of duck-farm foie gras). Flexitarians, as well as subjects with more positive perceptions of conventional foie gras, have a higher WTP, suggesting the emergence of a new market segmentation once the product is on the market. We also find a high price elasticity, emphasizing the importance of the market price on top of acceptance issues. As in previous hypothetical work, neophobia, disgust and lower academic performance reduce the WTP. More positive perceptions of the positive attributes of both products (such as healthiness, naturalness and tastiness) increase the WTP for cultured meat. Fewer than 10% of subjects estimate a zero probability that the product will be delivered, so that the WTP elicitation procedure is in theory incentive-compatible for a large majority of participants. Also, we find that simple participation in the experiment, in which subjects are exposed to this new product, reduces subjects' pro-meat justifications. We also explore whether our results can be generalized outside the lab using an additional survey study on a sample of French students (N=300) and on a representative sample of the French population (N=1,200). Overall, we find similar WTP profiles (i.e., the proportion of participants who always or never buy), and the average (hypothetical) WTP in both samples is also in the vicinity of 3-4 Euros as in our lab experiment.

References

Toward Optimal Meat Pricing: Is It Time to Tax Meat Consumption?, Franziska Funke, Linus Mattauch, Inge van den Bijgaart, H. Charles J. Godfray, Cameron Hepburn, David Klenert, Marco Springmann, and Nicolas Treich, *Review of Environmental Economics and Policy* 16, Summer 2022

<https://www.journals.uchicago.edu/doi/10.1086/721078>

Eliciting Non-hypothetical Willingness-to-pay for Novel Products: An Application to Cultured Meat, Romain Espinosa and Nicolas Treich, *Environmental and Resource Economics* 85, 2023

<https://link.springer.com/article/10.1007/s10640-023-00780-8>

4. Green and social finance labels: Evolution and impact in France and Europe, by Patricia Crifo (Polytechnique)

Objective

Green and social finance labels aim to guarantee practitioners and savers the ecological and/or socially responsible quality of their investments. Overall, about ten green and social labels have been created in the financial markets of the European Union member states since the creation of the first label in 1997 in France. These labels were attributed to nearly 2700 financial products, demonstrating a quantitative success, particularly in France. In this project we propose to analyze the evolution of these green and social labels in France and in Europe over the last decades, their emergence and development dynamics, in perspective with regulations, as well as individual pro-environmental and risk behaviors.

Data and Methodology

Two types of data will be analysed: survey and experimental questionnaire data.

A first project relies on the data collected by Novethic on assets under management of sustainable finance labelled funds in Europe. This database is complemented by the MSCI Climate Change and ESG Metrics, providing fund level classification (art 8, art 9) as well as firm level data on Carbon Emissions, Fossil Fuel exposure, environmental impact data and screens, as well as climate-related risk exposure and management assessment on companies such as Low Carbon Transition scores and categories. This project proposes to examine the different configurations of labelling structures adopted by European funds, using the Qualitative Comparative Analysis (QCA) methodology, a new analytic technique that uses Boolean algebra to implement principles of comparison in the qualitative study of macro social phenomena.

A second project uses experimental questionnaire data at the individual level to examine the relationship between risk behavior and pro-environmental attitude.

Results

The awareness about climate change impact has integrated climate risks into decision-making processes, prompting individuals to weigh the adoption of green behaviors or assets as a means of contributing to climate change mitigation. This project relies on the premise that understanding the underlying motivations for adopting green goods, behaviors or assets is crucial for crafting green labelling policies that promote such behaviors at the individual level, and the interplay between the notions of climate change, risk, and behavior is believed to be a central key to this question.

Evaluating environmental characteristics is a difficult task and green labels have been shown to be imperfect drivers of credence attributes (Giraudet, 2020, Crifo, 2022). Moreover, in the presence of uncertainties, individuals' willingness or reluctance to take risks will be important to take into account.

We examine here the relationship between risk preferences measured experimentally and individuals' green attitudes outside the lab. In particular, we assess individuals' intentions to account for environmental characteristics of goods through a survey capturing everyday habits, opinions, and socio-demographic information. Our experimental results show that there exists a positive relationship between decreased risk aversion and heightened pro-environmental attitudes. Furthermore, individuals exhibiting coherence in risk preference exhibit stronger pro-environmental attitudes, which may reveal a higher focus of the more pro-environmental oriented participants to the study (Bousselmi, Crifo & Troitin, 2023).

A major implication of this result is that in order to foster the adoption of green goods or assets at the individual (retail) level, the design of environmental labels should rather present pro-environmental characteristics as a change in habits rather than as an effort made to reduce a larger environmental risk.

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Crifo P, Durand R, Fangwa A, Gond, Slager CR, 2023. Green and Solidarity Finance labels: a qualitative comparative analysis. Work in Progress.

5. Are We Becoming Greener? Life-time Experiences and Responsible Investment, by Milo Bianchi (TSE)

Objective

This project aims at studying how individual investors' characteristics shape their ESG investment behavior and trading over time. We are particularly interested in studying how investors' pro-social attitudes affect ESG demand, and whether these attitudes are shaped by economic and non-economic life-time experiences,

such as growing up in a region with more pro-social values, being exposed to an increased level of pollution or to a natural disaster.

Methodology

To answer the above questions, we rely on account-level data from the Shanghai Stock Exchange, reporting complete trading records for individual investors over nine years. A distinctive feature of these data is that all orders can be associated to the investor who has initiated them, thereby providing an exhaustive picture of the investor's stock trading over time. Moreover, for each individual investor, we can obtain information about her gender, age, education, place of birth and of residence. This information is key for our analysis. We study the determinants of individual demand for ESG stocks over time and relate this demand not only to demographic and portfolio characteristics, but also to life-time experiences along both economic and noneconomic dimensions.

Precisely, we first exploit a discontinuity induced by the so-called Huai River policy, which provides heavily subsidized coal for indoor heating to residents to the north, and not to the south, of the Huai River. Previous studies have shown that the policy leads to a significant increase in pollution in cities just north relative to those just south of the river. Using the same regression discontinuity design as in those studies, we show that investors living just north of the river display a significantly larger demand for ESG.

We also investigate the role of pro-social attitudes by considering the so-called Rice-Theory of cultural differences. For instance, individuals who grow up in rice-growing areas have significantly more pro-social attitudes than those in wheat-growing areas, which can be explained by the fact that growing rice requires much more public investment (for irrigation) and social interactions (for sharing labor). We show that investors living in rice-growing cities have significantly larger exposure to ESG stocks than those in wheat-growing cities, supporting the view that pro-social attitudes can be an important determinant of ESG demand.

Results

A first set of results indicates that recent experiences tend to matter more than ancient ones to shape investors' demand for ESG stocks. This suggests that, even for the same investor, the propensity to invest in ESG stocks can evolve considerably over her trading life, possibly in response to accumulated experiences. We also show that economic experiences tend to be more persistent. Non-economic experiences, instead, tend to have more volatile effects on the demand for ESG stocks.

A second key finding is that both economic and non-economic life-experiences affect the propensity to invest in ESG stocks. Living through favorable stock market conditions, for example, positively affects ESG investing. At the same time, living in polluted areas or being exposed to corporate scandals also increases ESG demand. According to our estimates, economic experiences tend to be important to explain between-investors variations in ESG investing, while non-economic experiences matter more for within-investor differences.

These findings support the view that pro-social attitudes are an important determinant of ESG investing and shed light on how these attitudes evolve as investors are exposed to various life experiences. As we show, these experiences affect ESG demand over and beyond any time-invariant investor characteristic and any attitude that an investor may have acquired before entering the stock market.

Reference

Are We Becoming Greener? Life-time Experiences and Responsible Investment, Milo Bianchi, Zhengkai Liu and Gang Wang, TSE working paper 2022-1382.

https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2022/wp_tse_1382.pdf

6. Asset management and regulatory framework of long-term investment, by Olivier Gossner (Polytechnique)

Objective

This project focuses on the management and allocation of risky assets for long-term investments.

For asset managers whose investments cover long-term commitments, and/or investments that are complex to manage, it is important to consider management costs if one wants to avoid biasing investment strategies by encouraging investors to overweight assets that are relatively inexpensive to manage.

Moreover, in terms of sustainable development and climate, aligning portfolios with a carbon budget based on scientific data and compatible with keeping the temperature increase below 1.5°C and/or the SDGs is a complex task that requires taking into account several sources of risk and uncertainty (physical and transitional in particular).

This project will analyze, on the one hand, the role of management costs of risky assets that may apply in the face of Solvency II or IFRS17 type regulations and, on the other hand, the constraints of constructing "zero net emissions" portfolios and/or aligned with the SDGs.

Methodology and results

Regarding the role of management cost of risky assets, the project highlights the double accounting of management fees for insurance assets in the current majority interpretation of the Solvency II directive. This double accounting leads to unjustified provisions totalling what we estimate to be around 100 billion euros, and to a distortion in the investment of savings that considerably penalizes productive, long-term investment. Here, we set out the facts of the problem, the means of solving it, and the significant positive impact that a correction would have on French and European productive investment. (Gossner and Florig, 2023).

Regarding the constraints of constructing zero net emissions portfolios, the goal is to analyze the impact of net zero commitments at the firm level, highlighting notably the impact of green (net zero) innovation and motivation on inequalities. From a theoretical point of view, the model shows that policies stimulating net-zero innovation, by increasing the need for "skilled green labor", are likely to create upward pressure on the demand for green and skilled workers. If the supply of labor does not also increase, this effect will translate into upward pressure on wage inequality. To document these theoretical results, an empirical illustration is conducted on a sample of more than 2000 companies belonging to the MSCI ACWI Index in 2022, located in the USA, Japan, UK, Canada, China, France, Switzerland, Germany, Australia, Netherlands, Sweden, Denmark, Italy, Spain, Israel, Belgium, Finland, Norway, Ireland, Austria and Portugal. Statistical analysis shows that inequality between skilled and unskilled workers is higher the higher the level of the green workforce, and inequality among skilled workers is higher the higher the company's net-zero performance. It is also interesting to note that the higher the level of education expenditure at company level, the lower the level of inequality between and within skills (Crifo, 2024).

A major implication of this analysis is that to ensure that net-zero innovation policies at the firm level are not "absorbed" by higher wages and simply result in greater inequality, they need to be accompanied by sustained training and education policies at company level. As green human capital incorporates an essential company-specific, i.e. non-transferable, component, corporate spending is crucial to avoid increasing inequality.

Future research on this topic in 2024/25 will focus on how investors make their portfolio allocation decisions based on the companies' net-zero announcements, which provide signals on the long-term climate risk exposure of stocks.

References

Crifo P., 2024. Green human capital, innovation and growth. *Environmental Modeling and Assessment*. 29, 1-18.

Gossner O. and Florig M. 2023. Double comptabilisation des frais de gestion sous Solvabilité II. Revue Risques.

B. Workshops and specific activities

Additional objectives of FDIR are to maintain a fruitful dialogue between researchers and sponsors, as well as to disseminate results of academic research to the world of practice.

To fulfil the first objective, the agenda of the workshops with the sponsors includes sessions in which researchers and sponsors confront the academic and practitioner views on a topic of practical interest. The idea of such workshops is to help sponsors identify relevant theoretical frameworks for their practices, and to help researchers identify relevant practical questions and obstacles to the development of Socially Responsible Investment.

To meet the second objective, researchers of FDIR have organized conferences involving the world of practice, including FDIR partners.

1. Workshops with sponsors

- The Value of Green Innovation: Evidence from Climate-Related Patents, June 22, 2023

With Ulrich Hege (TSE)

Links : [Outreach](#) / [Working paper](#) / [Presentation](#)

Abstract:

"We study the impact of climate-related patents on financial markets. We exploit the quasi-random assignment of patent examiners with different degrees of leniency as an exogenous shock in patent approvals to allow for causal interpretations. We find that firms with more lucky climate-related patents subsequently display higher positive cumulative abnormal stock returns and enjoy a lower cost of capital, compared with similarly innovative but unlucky firms. These results hold especially during periods of high attention towards climate change and for initial climate patent granting. Firms with more lucky climate-related patents also exhibit better environmental ratings and attract more responsible institutional investors. OLS regressions show that firms developing more climate-related technologies reduce more direct carbon emission intensity."

- Impact of Carbon Pricing on the Economy, January 31, 2024

With Noémie Lisack (BCE): ["Carbon Tax in a Production Network: Propagation and Sectoral Incidence"](#)

Abstract:

"We analyse the propagation of carbon taxation through input-output production networks. To do so, we use a static multi-sector general equilibrium model including France, the rest of the European Union and the rest of the world to simulate the impact of carbon tax scenarios on economic activity. We find that a tax increase on sectors' and households' greenhouse gas emissions corresponding to a carbon price of 100 euros per ton of carbon dioxide equivalent entails a decrease in French aggregate real value added by 1.2% at a 5-to10-year horizon when implemented in France only, vs. 1.5% when implemented in the whole EU. Impacts on sectoral real value added range from -20% to negligible. The most affected sectors are generally the most polluting ones, but the tax also propagates across sectors via intermediate inputs. Specifically, the network structure tends to affect comparatively more upstream sectors than downstream ones, given their taxation"

levels. International financial markets also play an important role by neutralizing the positive response of final demand that would result from the redistribution of the tax proceeds to domestic households."

And with Marie Brière (Amundi): "[Cascading Effects of Carbon Price Through the Value Chain](#)"

Link: [Presentation](#)

Abstract:

"To avoid the worst climate change scenario, Greenhouse Gas (GHG) emissions need to be drastically reduced over the coming decades. Placing an adequate price on GHG emissions, by countries adopting of a carbon tax or firms implementing internal carbon pricing mechanisms, is key to internalize the external cost of climate change. In this paper, we assess the impact of carbon pricing in a global framework considering both the cost of idiosyncratic corporate emissions and their cross-sector diffusion. The impact on corporate valuation is shared among intensive firms and less intensive ones through the introduction of a carbon cost pass-through in a sector diffusion model, based on a World Input-Output table. Focusing on the constituents of the MSCI World Index, we show that apart from the usual carbon-intensive sectors, such as Energy, Utilities and Materials, less carbon-intensive ones, such as Industrials, Consumer Staples, Consumer Discretionary and Information Technology can contribute significantly to the global risk, due to the expected pass-through of the carbon cost in the value chain. World indices could experience significant changes in their investment universe and sector composition."

- [Green Finance and Carbon Emissions](#), April 5, 2024

With Adrien Desroziers (University of Paris 1 Panthéon Sorbonne)

Link: [presentation](#)

"This study is the first to simultaneously investigate the relationship between financial banking and market development and CO2 intensities. Using cross-country panel data from 38 OECD and BRICS countries spanning 1995 to 2019, it suggests that financial banking development significantly contributes to mitigating carbon intensities by financing greener technology, more energy efficient facilities and, more recently, by lending to firms based on their environmental performance. In contrast, it also shows that financial market development is carbon-intensive presumably due to stimulating effect on consumption leading to higher energy use and economic growth. Furthermore, the study investigates these relationships at the country-industry level among 32 OECD and BRICS countries from 2000 to 2014. Results show that financial banking development mitigates carbon intensity in the construction, mining, service, and transport industries, while exacerbating carbon intensity in the manufacturing industry. Conversely, financial market development exhibits no significant effect. Finally, the study show no significant effect of the financial structure (more market or bank oriented) on CO2 intensities. It underscores the effectiveness of renewable energy use and carbon leakage practices in reducing carbon intensity. While, technology, economic growth, and industrial expansion appear as contributing factors to larger carbon intensity."

And with Franck Amalric & Hugo Marin, Square research center : "The contribution of banks to the ecological transition"

Link: [presentation](#)

2. *Affiliated FDIR conferences*

In addition to the workshops with sponsors, we organized two events under the aegis of FDIR that spoke directly to projects currently supported by FDIR.

- **Reflexions Conference : Together for Climate Action**, June 9, 2023

Institut Polytechnique de Paris organized the international conference REFLEXIONS, whose ambition is to become a reference academic and scientific forum, contributing to the understanding and resolution of issues related to climate change and more broadly to the sustainable transition.

20 speakers, including Patricia Crifo (Ecole Polytechnique) and Pierre-Alix Binet from la Banque Postale

Link: [Replay](#)

- **Investing for biodiversity Workshop** with Nicolas Treich, September 21, 2023

Co-organized by TSE researchers Nicolas Treich and Anouch Missirian, this event on biodiversity and sustainable finance took place in Toulouse (TSE).

During this event, Ingela Alger, Stefan Ambec, Sophie Moinas and Nicolas Treich intervened. Also, Guillaume Lasserre (La Banque Postale AM) took part in the roundtable dedicated to "The stakeholders' perspective".

Link: [Round table summary](#) / [Program](#)

- **TSE Sustainable Finance Conference**, December 7 and 8, 2023

TSE held the 3rd edition of its Sustainable Finance Conference on December 7th and 8th in Toulouse, with a session dedicated to FDIR topics. During the panel "Climate risks and regulation", Sophie Moinas (TSE), Marie-Laure Fandeur (SCOR), Laurent Clerc (ACPR), Jean-Philippe Desmartin (Edmond de Rothschild AM) and Sébastien Pouget (TSE) provided valuable insights into the latest advancements in measuring companies' vulnerability to climate change.

Also, the afternoon of December 7th was dedicated to the topic "finance and biodiversity".

Links: [Round tables summaries](#) / [Program](#)

3. *Other conferences*

- **Common Good Summit**, June 1 and 2, 2023

The 3rd Common Good Summit, jointly organized by Challenges, Toulouse School of Economics and Les Echos-Le Parisien Evénements on June 1 and 2, 2023, brought together economists, economic decision-makers, representatives of public authorities and civil society to reflect on a central question: how can we save the common good? With over 1,300 participants and rich exchanges, this third edition confirms the importance of discussing tomorrow's issues together, from climate, mobility, food and inflation to health and artificial intelligence.

Christian Gollier opened this event and spoke during a roundtable about mobility, and Nicolas Treich participated to "Animal welfare, a new concern" panel ([a summary](#) of the discussions at this

panel is available on TSE website). Guillaume Lasserre (LBP AM), as well as Catherine Casamatta attended the event.

– **Second edition of the “Rencontres du Climat”**, October 11, 2023

Sébastien Pouget (professor of finance, TSE), shared the floor with Yann Leriche (CEO, Getlink), and Estelle Castres (France & BeLux Director, BlackRock), at a panel on “Climate action by companies: what impact on their cost of capital?” during the second edition of the “Rencontres du Climat”, organized by Getlink and Toulouse School of Economics.

Link: [Tribune by Sébastien Pouget](#)

– **UN Conference of the Parties on climate change COP28 & COP27 side events Ecole Polytechnique**

- December 8, 2023 “Transforming education to empower youth in climate change science”, in coll. with IPPPC, WMO & UNEP
Francisca Cortés Solari-President Philanthropy Cortes Solari, Larissa Demel UNICEF Climate and Sustainability, Eric Gilyardi-Office for Climate Education, Patricia Crifo-Professor, Ecole Polytechnique, Juliet Oluoch–YOUNGO
- December 9, 2023 “ Decarbonization Ecosystems: The Impact Of University Partnerships”, in coll with University of Toronto & Climate Positive Energy
Erwin Franquet, Professor of Engineering at Université Cote D’Azur, France, Patricia Crifo, Professor of Economics at Ecole Polytechnique, France, Patrizia Lombardi, Professor of Urban Studies at Politecnico di Torino, Italy, Michela Gallo, Professor at Università degli Studi di Genova, Italy, Carmela Cucuzzella, Dean of Faculty of Environmental Design at Université de Montreal, Canada (virtual), Paola Visconti Arizpe, Sustainability Engagement Manager, Tecnológico de Monterrey México, and Second Nature, Respect Musiyiwa, MSC Student at University of Edinburgh, UK, Kimberly R. Marion Suiseeya, Associate Professor in the Department of Political Science and the Environmental Policy and Culture at Northwestern University, USA, Shatha Qaqish-Clavering, Director, Strategy and Operations, Climate Positive Energy, University of Toronto, Canada
- December 10, 2023 “Unleashing Innovation: How Universities Can Drive Progress Towards Net-Zero”, in coll with University of Toronto & Climate Positive Energy
Patricia Crifo, Professor of Economics and Director of Smart Cities and Urban Policy Master at Ecole Polytechnique Paris, France, Stella Fors, PhD student in Chemistry, Northwestern University, Chicago, USA, Ahmed Hanafy, Director at Dunsky Energy + Climate Advisors, Montreal, Canada

III. Publications

Researchers of FDIR have written some of these articles with researchers from other institutions based in France or abroad.

- Ingela Alger and Laurent Lehmann, “Evolution of semi-Kantian preferences in two-player assortative interactions with complete and incomplete information and plasticity” *Dynamic Games and Applications*, Vol. 13, 2023, pp.1288-1319.
- Ingela Alger and Jörgen W. Weibull, “Evolution and Kantian morality: A correction and addendum”, *Games and Economic Behavior*, Vol. 140, 2023, 585-587.
- Ingela Alger, “Evolutionarily stable preferences” *Philosophical Transactions of the Royal Society B*, Vol. 378, March 2023, 20210505
- Arjalies DL, Chollet P., Crifo P., Mottis N., 2023. The Motivations and Practices of Impact Assessment in Socially Responsible Investing: The French Case and its Implications for the Accounting and Impact Investing Communities. *Social and Environmental Accountability Journal*, 1-29
- Arjaliès, D-L., Bouchet V., Crifo P. and Mottis N. 2024. La mesure d’impact et l’Investissement Socialement Responsable (ISR): Un tour d’horizon, in Tchotourian E., Bres L. and Geelhand de Merxem L. (Eds.), *Zone frontières et entreprise socialement responsable – Perspective multiple: droit, administration et éthique*, Editions Thomson Reuters and Yvon Blais
- Olivier Blanchard, Christian Gollier and Jean Tirole, "Fighting the war against climate change", 2023, *Annual Review of Economics* 15 (1), 689-722.
- Marie Brière, Karen Huynh, Olav Laudy et Sébastien Pouget, « Stock market reaction to news: Do tense and horizon matter? », *Finance Research Letters*, Volume 58, Part D, December 2023
- Marie Brière, Sébastien Pouget, Martin Schmalz, and Loredana Ureche-Rangau, « Delegated Philanthropy in Mutual Fund Votes on Climate Change Externalities », book chapter in “Climate Investing: New Strategies and Implementation Challenges”, Ed. Emmanuel Jurczenko, décembre 2022
- Catherine Casamatta and Sébastien Pouget, “Actionnaires, responsabilité sociale des entreprises et biens publics mondiaux”, *Revue d’économie financière*, 3e trimestre 2023, N°151
- Patricia Crifo, 2023. Normes ESG et transition juste : comment prendre en compte simultanément les enjeux environnementaux et sociaux ? *Servir*, 520, 16-20
- Patricia Crifo, 2024. Green human capital , innovation and growth. *Environmental Modeling and Assessment*. 29, 1-18.
- Patricia Crifo, 2024. ESG Integration and Disclosure in Private Equity. In: Cumming, D., Hammer, B. (eds) *The Palgrave Encyclopedia of Private Equity*. Palgrave Macmillan, Cham.
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- Frédéric Cherbonnier and Christian Gollier, "Fixing our public discounting systems", 2023, *Annual Review of Financial Economics* 15, 147-164.
- Romain Espinosa, Nicolas Treich, "Eliciting Non-hypothetical Willingness-to-pay for Novel Products: An Application to Cultured Meat". *Environ Resource Econ* 85, 673–706 (2023)
- Romain Espinosa, Nicolas Treich, "Animal welfare as a public good", *Ecological Economics*, Volume 216, February 2024, 108025

- Christian Gollier, Frederick van der Ploeg and Jiakun Zheng, "The discounting premium puzzle: Survey evidence from professional economists", 2024, *Journal of Environmental Economics and Management* 122.
- Gossner O. and Florig M. 2023. Double comptabilisation des frais de gestion sous Solvabilité II. *Revue Risques*.
- Ulrich Hege, Sébastien Pouget & Yifei Zhang, "Climate Patents and Financial Markets", February 6, 2024, European Corporate Governance Institute – Finance Working Paper No. 961/2024
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- Lydia Mechtenberg, Grischa Perino, Nicolas Treich, Jean-Robert Tyran, Stephanie W. Wang, « Self-signaling in voting », *Journal of Public Economics*, Volume 231, March 2024, 105070
- Silvia Rossetto, Nassima Selmane, Raffaele Staglianò, "Ownership concentration and firm risk: The moderating role of mid-sized blockholders", *Journal of Business Finance and Accounting* Volume50, Issue1-2, January-February 2023 Pages 377-410 (CNRS AND FNEGE 2).
- Nicolas Treich (with Jochen Krattenmacher et al.; 23 authors), « Universities should lead on the plant-based dietary transition » May 2023, *The Lancet Planetary Health* 7(5):e354-e355
- Claude Crampes, and Thomas-Olivier Léautier, "Les Certificats d'Economie d'Energie entre économie et politique", *Revue Économique*, August 2023
- Claude Crampes, and Nils-Henrik Von Der Fehr, "Decentralised Cross-Border Interconnection", *The Energy Journal*, vol. 44, n. 4, July 2023, pp. 147–169
- Romain Espinosa and Nicolas Treich, "Eliciting non-hypothetical willingness-to-pay for a novel product: A application to cultured meat", *Environmental and Resource Economics*, vol. 85, août 2023, p. 673–706
- Lydia Mechtenberg, Grischa Perino, Jean-Robert Tyran, Nicolas Treich and Stephanie Wang, "Self-signaling in voting", *Journal of Public Economics*, vol. 231, n. 105070, March 2024

IV. Working papers

- Milo Bianchi, Zhengkai Liu and Gang Wang, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment"
- Bousselmi, W. , Crifo P., Troitin, J. Risk behavior and pro-environmental behaviors.
- Daniel Brodback., Nadja Guenster, Sébastien Pouget, Ruichen Wang, « The Valuation of Corporate Social Responsibility: A Willingness-to-Pay Experiment », under revision at Management Science
- Cavaco S., Crifo P., Rebérioux A. Codetermination and the bonus culture: Does shared governance increase corporate sustainability? Working paper
- Frédéric Cherbonnier, Christian Gollier and Aude Pommeret (2023), "Stress discounting"
- Patricia Crifo, Durand R, Fangwa A, Gond, Slager CR, Green and Solidarity Finance labels: a qualitative comparative analysis, work in progress
- Fabien Delaere, Sophie Moinas, and Sébastien Pouget, "Integrating health impacts in corporate decision-making tools: A case study on sugar in the Food and Beverage industry"
- Christian Gollier (2024), "Evaluating sustainability actions under uncertainty: The role of improbable extreme scenarios"
- Christian Gollier (2023), "The welfare cost of ignoring the beta"
- Christian Gollier and R.E. Kihlstrom (2023), "Recursive asset pricing with nonrecursive preferences"
- Ulrich Hege, Kai Li, Yifei Zhang, "Climate Innovation and Carbon Emissions: Evidence from Supply Chain Networks", August 31, 2023
- Gossner O. and Florig M. 2022. Market equilibrium with management costs and implications for insurance accounting. CREST Working Paper
- Sophie Moinas, Sébastien Pouget, Angela Torres (2023), "Intermittent power generation and risk premia in electricity futures markets."

V. Communication of the Research Initiative FDIR achievements and awards

The advances made by the researchers of FDIR have been presented to a wide audience including academic researchers, finance practitioners, and the general public, both in France and abroad. The Initiative has been instrumental in the creation of the knowledge communicated in the various events described below.

A. Communication to finance practitioners

In 2023, FDIR has organized various events during which researchers have presented the implications of their results for CSR and SRI. The presentations and programmes are available on FDIR website at <https://www.tse-fr.eu/fdir>

1. Workshops with the sponsors

- **The Value of Green Innovation: Evidence from Climate-Related Patents**, June 22, 2023
- **Investing for biodiversity Workshop** with Nicolas Treich, September 21, 2023
- **Impact of Carbon Pricing on the Economy**, January 31, 2024

- Green Finance and Carbon Emissions, April 5, 2024

2. Presentations

- Ingela Alger - Futurapolis Planète 2023: Participation in the round-table discussion: "Changer les règles du jeu et atteindre l'objectif zéro carbone en 2050", November 30, 2023
- Patricia Crifo, 2023. Cour des comptes, 05/12/23 keynote speech at the general assembly of the 1st chamber
- Patricia Crifo, 2023. La finance de demain. La cité de l'économie
- Patricia Crifo, 2023. Finance durable et ESS. Journées de l'économie, Lyon 2023.
- Christian Gollier, "Quel rôle climatique pour la finance", Occitanie Place Financière (BdF), Toulouse, January 12, 2023
- Christian Gollier, Conseil scientifique du Lobby Climatique Citoyen (CCL France), online, January 16, 2023
- Christian Gollier, Institut de la finance durable – Meeting to launch the project on financing the ecological transition, online, January 17, 2023
- Christian Gollier, OCDE-AEN « Challenges of using cost-benefit analysis within the nuclear sector », online, January 18, 2023
- Christian Gollier, GT new Global Financing Pact, online, January 31, 2023
- Christian Gollier, Rapport INSP/Ecole des Mines on collective sobriety, Paris, February 11, 2023
- Christian Gollier, Citéco Conference « Comment concilier économie et écologie ? », Paris, February 11, 2023
- Christian Gollier, Afterwork Parti Horizons 31 « La sobriété peut-elle être heureuse ? », Toulouse, February 13, 2023
- Christian Gollier, Événement joint BdF, INSEE, CCI, Université de Rouen et NEOMA : « Les entreprises face à l'incertitude des prix de l'énergie », online, March 02, 2023
- Christian Gollier, IFD, working group on the green industry law project, online, March 23, 2023
- Christian Gollier, Inspection générale des finances : mission sur l'adaptation de la fiscalité aux exigences de la transition écologique (entretien avec la commission), online, March 27, 2023
- Christian Gollier, Initiative for Effective Corporate Climate Action (chaire Getlink-TSE), Paris, April 05, 2023
- Christian Gollier, Total Energies masterclass sur l'économie du climat, Paris, April 11, 2023
- Christian Gollier, Conférence sur la réforme des retraites, UTC Toulouse, April 14, 2023
- Christian Gollier, CESER conférence-débat « L'urgence climatique et la transformation de nos modèles », Toulouse, April 17, 2023
- Christian Gollier, Université Libre de Bruxelles : débat public sur le développement durable, Bruxelles, April 20, 2023
- Christian Gollier, CINOV : TR sur risques environnementaux, Avignon, April 21, 2023
- Christian Gollier, 14ème Forum de l'Ecologie Libérale consacré à la taxe carbone, online, April 25, 2023
- Christian Gollier, SCOR Foundation webinar: "Climate change, Carbon price & LT discount rates", online, May 11, 2023
- Christian Gollier, Atécopol séminaire : dialogue critique entre l'écologie politique, dont se réclame l'Atécopol, et l'économie, telle que portée par TSE, Toulouse, May 17, 2023
- Christian Gollier, Sommet du Bien Commun Toulouse, June 01 & 02, 2023
- Christian Gollier, SGPI – IGF: taxation du carbone, Paris, June 20, 2023
- Christian Gollier, Comité de mission de la Poste, online, June 21, 2023
- Christian Gollier, Soirée du Score Carbone Axylia « Comment parler d'ESG sans parler de valeur ? / La tarification du carbone. », online, June 27, 2023

- Christian Gollier, Comité du financement de la transition écologique Ministère de l’Economie, des Finances et de la Souveraineté industrielle et numérique, online, July 12, 2023
- Christian Gollier, Citeo : échanges avec le DG pour établir un panorama du secteur de l’économie circulaire et imaginer de possibles actions communes, online, July 26, 2023
- Christian Gollier, TR Conf Réseau Batigère (logement social) Intervention sur les enjeux économiques du changement climatique, Toulouse, August 29, 2023
- Christian Gollier, 24th global conference on Environmental taxation « Fit for 55 & climate policies evaluation », Paris, September 08, 2023
- Christian Gollier, Forum Toulouse Demain : TR gestion des ressources énergétiques et anticipation des crises d’approvisionnement, Toulouse, October 07, 2023
- Christian Gollier, La Nuit de l’écologie (Les Républicains), Versailles, October 10, 2023
- Christian Gollier, Débat public avec Jean-Marc Jancovici (association Shift project de Toulouse), Toulouse, October 23, 2023
- Christian Gollier, Comité de mission du Groupe La Poste, online, October 24, 2023
- Christian Gollier, 3ème édition du dialogue d’avenir franco-allemand : table ronde consacrée au financement de la transition énergétique, Berlin, November 06, 2023
- Christian Gollier, Comité d’accompagnement Cour des Comptes : évaluation des politiques publiques achats durables, Paris, November 10, 2023
- Christian Gollier, Conférence “Prince Bertil”: The role of alternative climate policies, climate finance, corporate responsibilities, and environmental activism, Goteborg, Novemer 14, 2023
- Christian Gollier, Futurapolis Planète 2023 « L’énergie pas chère, c’est fini ? », Toulouse, December 02, 2023
- Sébastien Pouget - Discussion at "2ème Rencontres du Climat" organized by Getlink, October 11, 2023, about « Le coût du capital des entreprises vertes »
- Sébastien Pouget - Discussion at Forum des Entreprises Familiales Andorranes, November 24, 2023, about « the socially responsible investment »

B. Communication to academic researchers

The researchers of FDIR have been invited to share their work and ideas in various academic conferences and workshops. In their publications or during their presentations, the researchers always gratefully acknowledge the support of FDIR.

1. *Examples of academic conferences*

- Ingela Alger, “Evolutionary foundations of morality and altruism – recent advances”: Lancaster Game Theory conference, in honor of Jörgen Weibull, Lancaster, UK
- Catherine Casamatta, organizer and chair of the session “responsible finance and long term investment” at the 3rd TSE Sustainable Finance center conference, December 2023
- Patrica Crifo, Johanne Trotin, Wael Bousselmi, Climate risk and individual behaviors - Entretiens de la finance durable (Kedge), Paris15/12/2023
- Patrica Crifo, Johanne Trotin, Wael Bousselmi, Climate risk and individual behaviors French Association of Experimental Economics (ASFEE) 2023, Montpellier Mai 2023
- Patrica Crifo, Johanne Trotin, Wael Bousselmi, Climate risk and individual behaviors French finance association (AFFI) Sustainable Finance Forum, Paris December 2023

- Patrica Crifo, Johanne Troitin, Wael Bousselmi, Climate risk and individual behaviors - Economic Science Association Lyon 26-29/06/2023
- Patricia Crifo, 2023. Climate Change: Toward A Paradigm Shift? Science Po Alliance Conference 15/03/23
- Patricia Crifo 2023. The just transition. Round table of the 16th financial risk international forum, Paris, March 2023
- Patricia Crifo 2023. ESG performance and international law. American society of international law 2023, Washington DC
- Christian Gollier, University Lausanne Conference "Quelles responsabilités climatiques face à l'(in-)acceptabilité sociale des efforts de transition ? », online, February 09, 2023
- Christian Gollier, Keynote Lecture, Annual Conference of the Society for Benefit-Cost Analysis, Washington DC, March 2023
- Christian Gollier, INRIA : " stratégie numérique éco-responsable", online, April 25, 2023
- Sébastien Pouget, "Who benefits from the bond greenium", Conference at Sherbrooke University, May 5, 2023, Concordia University, May 9, 2023, MIT, May 10, 2023, NY Federal Reserve Bank, May 12, 2023
- Christian Gollier, Keynote lecture Congrès annuel Société canadienne de science économique, Québec, May 10, 2023
- Christian Gollier, "Macroeconomics and Climate Change", Chicago Coase Conference, Chicago, May 10, 2023
- Christian Gollier, Keynote Lecture, Annual Conference of the Association Française de Sciences Economiques, Paris, June 2023
- Christian Gollier, Atkinson Memorial Lecture « The economics of discounting and carbon valuation under deep uncertainties », Oxford, June 07, 2023
- Christian Gollier, AFSE conference: plenary lecture « How Do We Express Our Responsibility to Future Generations? Discounting and Carbon Value”, Paris, June 14, 2023
- Christian Gollier, "The welfare cost of ignoring the beta", Colloque Collège de France, Paris, June 20, 2023
- Christian Gollier, David Cass Lecture, Society for the Advancement of Economic Theory, Paris, July 2023
- Christian Gollier, Keynote SAET plenary session David Cass Lecture: Sustainability, discounting and the social cost of carbon, Paris, July 19, 2023
- Christian Gollier, "Measuring the Social Cost of Carbon under Uncertainty", Durham conference, online, July 19, 2023
- Christian Gollier, Conference on Risk and Insurance in Honor of Pierre Picard "Stress Discounting", Paris, September 14, 2023
- Christian Gollier, 75th anniversary of the Scientific Council of the German Federal Ministry of Economic Affairs. "International Aspects of Climate Policy: Future of the Paris Agreement, Climate Clubs, and CBAM", Berlin, September 28, 2023
- Christian Gollier, Symposium on Action Inaction Climate Change « Climate uncertainties and carbon value », Paris, September 29, 2023
- Christian Gollier, Conférences en mémoire du Professeur Jacques Drèze « Décisions climatiques en incertitude », Louvain-la-Neuve, October 04, 2023
- Ulrich Hege - "Climate Patents and Financial Markets" with Sébastien Pouget & Yifei Zhang, 16th Financial Risks International Forum, March 2023
- Sophie Moinas, "Intermittent power generation and risk premia in electricity futures markets", TSE - Banque de France workshop, Toulouse, France, May 2023
- Sébastien Pouget, "Who benefits from the bond greenium", AMF Scientific concil, November 16, 2023
- Sébastien Pouget, "Who benefits from the bond greenium", Keynote speech at Entretiens de la Finance Durable, December 15, 2023

- Sébastien Pouget, “Who benefits from the bond greenium”, EUROFIDAI - ESSEC Paris December Finance Meeting, December 19, 2023
- Sébastien Pouget - Discussion at Western Finance Association meeting about the paper “The Great Carbon Arbitrage” written by Tobias Adrian, Patrick Bolton & Alissa Kleinnijenhuis, June 26, 2023

2. *Examples of workshops and seminars*

- Ingela Alger, “Evolution of semi-Kantian preferences”: Seminar for Learning, Evolution, and Games online seminar series
- Ingela Alger, “Homo moralis – on the evolutionary foundations of morality”c: Seminar at Université Paris Dauphine
- Ingela Alger, “Estimating social preferences and Kantian morality in strategic interactions”: Seminar at University of Exeter, and University of Bath
- Patricia Crifo, 2023. Social performance and environmental question, E4C summerschool, Institut Polytechnique de Paris, Juin 2023
- Sébastien Pouget, “The impact of corporate climate action on financial markets: Evidence from climate-related patents”, Seminar at Indiana University, February 24, 2023
- Sophie Moinas, “Intermittent power generation and risk premia in electricity futures markets”, Transpyrenean Macro Workshop, Andorra, March 2023
- Sébastien Pouget, “Who benefits from the bond greenium”, Seminar at UC Riverside, March 3, 2023, Seminar at USC, March 7, 2023, Seminar at University of Utah, April 7, 2023
- Christian Gollier, University of Lausanne seminar « The welfare cost of ignoring the beta », Lausanne, May 01, 2023
- Christian Gollier, 13th Episode of the EAERE/CEPR Webinar Series on Climate Policy, online, June 07, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Applied micro seminar at Toulouse School of Economics, September 18, 2023,
- Christian Gollier, 50th Annual EGRIE Seminar “Evaluating Sustainability Actions under Uncertainty: The Role of Improbable Extreme Scenarios”, Malaga, September 18, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Economics seminar at HEC Montreal, October 3, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Finance seminar at University of Toronto Rotman, October 11, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Finance seminar at McGill University, October 17, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Economics Seminar at University of Montreal, October 18, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Environmental Economics Seminar at McGill University, October 20, 2023
- Milo Bianchi, "Who Becomes a Green Investor? Life-time Experiences and Responsible Investment (with Zhengkai Liu & Gang Wang)", Environmental Economics Seminar at Toulouse School of Economics, November 16, 2023
- Ulrich Hege - "Climate Patents and Financial Markets" with Sébastien Pouget & Yifei Zhang, FDIR Chair Seminar, June 22, 2023, 1er ACPR-HEC-TSE Workshop, April 5, 2023, TSE Internal Workshop, April 12, 2023, HEC Paris-HKUST Sustainable Finance Workshop, online, April 26, 2023

- Ulrich Hege - "Climate Innovation and Carbon Emissions: Evidence from Supply Chain Networks" with Kai Li & Yifei Zhang, HEC Paris-HKUST Sustainable Finance Workshop, Hong Kong, October 2023, Peking University HBS Business School, September 2023, Tsinghua University, September 2023
- Sébastien Pouget - Discussion at CEPR conference on Politics, Corporations and the Common Good about the paper « Is Sustainable Finance a Dangerous Placebo? » written by Florian Heeb, Julian F Kölbel, Stefano Ramelli & Anna Vasileva, October 22, 2023
- Sébastien Pouget - "The impact of corporate climate action on financial markets: Evidence from climate-related patents", Conference on "CSR, the Economy and Financial Markets", November 9, 2023

C. General audience reports and communications

1. Book

- Nicolas Treich - Commentary of the book "Faut-il sauver l'ours blanc ?" de Thomas Lepeltier. Revue des Questions Scientifiques 194, n°1-2, pp. 1-4, Autumn 2023.

2. Tribunes

- Christian Gollier - Retraites ou climat, chiffrer les enjeux permet de faire des choix de consensus - Challenges, January 26, 2023
- Christian Gollier - L'Europe n'a pas laissé voler en éclats ses ambitions climatiques - Le Monde, February 16, 2023
- Christian Gollier - Climat : pourquoi une démocratie libérale vaut mieux qu'une "dictature écologique" - Challenges, June 6, 2023
- Christian Gollier - "Contrairement à ce que dit la parole publique, la transition sera inflationniste" - Le Monde, September 28, 2023
- Christian Gollier - "Cette COP28 est un désastre" - L'Opinion, December 14, 2023
- Christian Gollier - Grands chantiers : « Est-on encore capable d'un débat public argumenté et rationnel ? » - with Julien Bétaille - Le Monde, December 10, 2023
- Christian Gollier - Le « tout-sauf-l'université » conduit à préférer des bachelors du secteur privé – Challenges, December 14, 2023

3. Press articles and interviews

- Patricia Crifo, Investissement responsable ou greenwashing : comment faire la différence ? Polytechnique insights, 2023
- Patricia Crifo, Ghosh E. 2023. Say on climate. Polytechnique insights.
- Patricia Crifo, Say on climate, France culture Mai 2023
- Patricia Crifo, 2023, transition écologique et emploi, Radio France international Mai 2023
- Patricia Crifo, 2023, Global finance pact, Radio France international Juin 2023
- Patricia Crifo, Elkington M 2024. La guerre de l'eau ne fait que commencer. Les echos 06/02/2024
- Patricia Crifo, Elkington M 2024. COP28: Guerre de l'eau et climat Polytechnique insights
- Patricia Crifo, Dall'Aglio S. 2024. COP28: a critical conference for small island states Polytechnique insights
- Patricia Crifo, Dupre M. 2024. COP28: Why the world needs private investment in climate adaptation projects?
- Patricia Crifo, 2024. Inégalités et neutralité carbone : comment s'engager en faveur d'une transition juste ? Blog de la Caisse des dépôts et consignations

- Christian Gollier, Face à la crise climatique, un dialogue de sourds très politique entre économistes et scientifiques - Le Monde, January 16, 2023
- Christian Gollier, Les zones à faibles émissions, un système chaotique et inégalitaire - Le Figaro, February 1, 2023
- Christian Gollier, Transition énergétique : le défi d'une électrification de la France d'ici 2050 - Le Monde, February 2, 2023
- Christian Gollier, L'Hémicycle : Regards croisés avec Xavier Piechaczyk (RTE), February 07, 2023
- Christian Gollier, La transition écologique sera-t-elle supportable sur le plan économique ? - Le Figaro, February 14, 2023
- Christian Gollier, Interview « Philonomist », February 14, 2023
- Christian Gollier, Une épargne abondante mais mal orientée - Challenges, February 16, 2023
- Christian Gollier, Subventions : un autre cactus sur le chemin de la transition - L'Opinion, February 21, 2023
- Christian Gollier, Climat : ce paradoxe qui ruine nos efforts - L'Opinion, February 21, 2023
- Christian Gollier, "Ceux qui veulent sauver la planète en empêchant l'investissement dans les énergies fossiles commettent une erreur suicidaire" - Atlantico, February 25, 2023
- Christian Gollier, Trois questions sur le prix de la tonne de CO2 qui a franchi les 100 euros en Europe - L'Usine Nouvelle, March 1, 2023
- Christian Gollier, La tonne de carbone peut-elle rester supérieure à 100 euros ? - L'Opinion, March 15, 2023
- Christian Gollier, L'énergie, une variable économique qui reste très incertaine - La Gazette Normandie, March 20, 2023
- Christian Gollier, The economic impact of french protests and strikes - Al-Jazeera English, March 28, 2023
- Christian Gollier, Décarbonation des mobilités, AUAT, March 28, 2023
- Christian Gollier, Pratiques environnementales des grandes banques françaises - Le Monde, March 28, 2023
- Christian Gollier, Le point de vue de l'économiste - France Info, April 5, 2023
- Christian Gollier, Notation EST : et si un compte de résultat carbone était la solution ? - WanSquare, April 5, 2023
- Christian Gollier, Capture et stockage carbone, L'Express, April 12, 2023
- Christian Gollier, Le tunnel sous la Manche calcule sa marge décarbonée - Le Monde, April 14, 2023
- Christian Gollier, Entretien sur l'indicateur financier qu'a développé le cabinet Axylia permettant de calculer un EBITDA ajusté du carbone - L'Express, April 18, 2023
- Christian Gollier, "Facture carbone" : l'initiative qui bouscule les grands groupes du CAC40 - L'Express, April 19, 2023
- Christian Gollier, Concurrence : l'Europe fait sa révolution - L'Opinion, May 17, 2023
- Christian Gollier, Pourquoi on dit « Fin du monde, fin du mois, même combat » ? - Nowu, May 2023
- Christian Gollier, Industries vertes : la course à l'échalote - L'Echo, May 20, 2023
- Christian Gollier, Face au réchauffement climatique, la nécessaire mobilisation des finances publiques - RCF, May 22, 2023
- Christian Gollier, Pour sauver le climat, faut-il court-circuiter la démocratie ? - Heidi.news, June 07, 2023
- Christian Gollier, TSE : « Notre devoir est de faire bouger les lignes » ; le projet de C. Gollier pour l'établissement - News Tank, June 8, 2023
- Christian Gollier, 110 km/h sur autoroute : trop de temps perdu par rapport au gain écologique, selon un chercheur - Auto-Moto, June 15, 2023

- Christian Gollier, Décarbonation : les trois non-dits de l'avenir de l'industrie automobile - Challenges, July 2, 2023
- Christian Gollier, "Il est essentiel de mettre une valeur sur le carbone" - Acteurs Publics, July 3, 2023
- Christian Gollier, Projection sur la mise en place d'une taxe carbone équitable en fonction des niveaux de vie - NiceMatin/Var-Matin, August 04, 2023
- Christian Gollier, "Les décroissantistes se trompent" : le capitalisme, meilleur allié de la transition écologique - L'Express, August 21, 2023
- Christian Gollier, Vente à perte du carburant : Face au refus des distributeurs, quelles pistes pour le gouvernement ? - 20 Minutes, September 20, 2023
- Christian Gollier, 1 000 milliards en sept ans : l'interdit du financement des énergies fossiles - Le Monde, September 26, 2023
- Christian Gollier, Planification écologique : "On cache aux Français la réalité des coûts de la transition" - L'Express, Septembre 28, 2023
- Christian Gollier, Taxe carbone aux frontières : l'usine à gaz sans CO2 - L'Opinion, October 2, 2023
- Christian Gollier, Pourquoi le monde politique réfléchit-il systématiquement à court terme ? - La Libre Belgique, October 12, 2023
- Christian Gollier, Transition énergétique : l'auteur Jean-Marc Jancovici donnera une conférence à Toulouse - La Dépêche du Midi, October 18, 2023
- Christian Gollier, Climat : l'expert Jean-Marc Jancovici en conférence à Toulouse - L'Opinion Indépendante, October 18, 2023
- Christian Gollier, Jean-Marc Jancovici à Toulouse pour un débat et une conférence - ToulEco, October 19, 2023
- Christian Gollier, Sobriété énergétique : ces cinq idées reçues qui vous trompent - L'Express, October 22, 2023
- Christian Gollier, Avec Jean-Marc Jancovici, Toulouse réfléchit à la décarbonation de l'économie - ToulEco, October 23, 2023
- Christian Gollier, « Que devient l'autoroute A69 dans un monde confronté à une pénurie de pétrole ? » (Jean-Marc Jancovici) - La Tribune, October 24, 2023
- Christian Gollier, Conférence TSE et The Shifters : « Quels outils économiques pour décarboner nos modes de vie ? » - Telmi Studio, October 26, 2023
- Christian Gollier, Décarboner les territoires – AUAT, October 31, 2023
- Christian Gollier, COP 28: « L'ombre de Donald Trump va planer sur ce sommet climatique » - L'Opinion, November 30, 2023
- Christian Gollier, Peut-on imaginer une fiscalité verte à la fois juste et efficace ? - France Culture, December 1, 2023
- Christian Gollier, France Bleu Occitanie chez Airbus, l'avionneur accueille pour la première fois une matinale radio - France Bleu Occitanie, December 1, 2023
- Christian Gollier, 110 km/h sur autoroute : une association veut clore ce débat - Auto-Moto, December 4, 2023
- Christian Gollier – Podcast - Revivez notre matinale spéciale : France Bleu Occitanie était chez Airbus - France Bleu Occitanie, December 8, 2023
- Christian Gollier, Loi Immigration : 5 minutes pour comprendre la « caution étudiante », dénoncée par les facs... et par Macron - Le Parisien, December 21, 2023
- Christian Gollier, « Nous avons besoin des étudiants étrangers » - Libération, December 21, 2023
- Christian Gollier, Loi immigration : de nombreux économistes vent debout - La Tribune, December 23, 2023

- Christian Gollier, Jean Pisani-Ferry : après la COP28, « les alarmes des militants du climat restent tout à fait justifiées » - Avec Christian Gollier and Jean Tirole - Le Monde, December 23, 2023
- Nicolas Treich - « La viande cultivée peut représenter un atout pour répondre aux défis environnementaux » Le Monde, 22 April 2023 (collective contribution, 16 authors)

4. *TSE Reflect, newsletter of the TSE Sustainable Finance Center*

The sponsors of the Research Initiative FDIR, along with all the other partners of the TSE Sustainable Finance Center, have contributed to the development of initiatives aimed at increasing the visibility of the work of TSE researchers to a non-academic audience.

The stakeholders of FDIR have been kept informed of the latest development of research on sustainable finance through the newsletters of the TSE Sustainable Finance Center. Since 2022, they have been the recipients of a new format of newsletter called "TSE Reflect". This e-newsletter, whose theme varies each month, allows TSE to share the latest work of its researchers with economic decision-makers and, in the first instance, with TSE's partners. Finance is a topic covered twice a year and the other themes regularly addressed are digital, energy and climate, infrastructure and networks, health, and regulation and competition.

Latest issues on sustainable finance: [June 2023](#) and [February 2024](#).

See all past issues: [on sustainable finance](#).



5. *The FDIR website*

All information related to the research initiative are disseminated on the [FDIR website](#). This website is updated regularly. The support team at TSE ensures that the website provides information on events, research projects, members...

D. Awards and memberships

- Catherine Casamatta: member of the Scientific Council of the Autorité des Marchés Financiers (renewed in 2023)
- Catherine Casamatta: ILB fellow
- Catherine Casamatta: member of the jury of the FIR-PRI awards
- Catherine Casamatta: member of the jury of the first Gasperini ESG Awards sponsored by the European Federation of Financial Analysts
- Patricia Crifo: Science deputy director of the interdisciplinary center Energy4Climate (E4C)
- Patricia Crifo: Member of the scientific committee of Ecole Polytechnique's climate action plan, CREST sustainability committee and listening unit
- Patricia Crifo: Member of the editorial board of Polytechnique insights, 2024
- Patricia Crifo: Scientific advisor, X-Exed, 2024
- Patricia Crifo: Member of the French monitoring committee a "climate indicator" for non-financial companies by Banque de France, appointed by the Ministry of economics and finance, 2024

- Patricia Crifo: Member of the Prudential Supervision and Resolution Authority (ACPR)'s supervisory college and Vice president of its Climate and Sustainable Finance Commission renewed in 2022
- Patricia Crifo: Member of the Sustainable finance committee, appointed by the Ile de France Region since 2022
- Patricia Crifo: Member of the FIR-PRI awards and FIR Jury on Employee Savings Plans
- Patricia Crifo: ILB fellow, member of the ILB nomination committee and scientific advisory panel, and member of the PARC foundation expert commission, 2024
- Patricia Crifo: Member of the ESG committee of Centre des Professions Financières, 2024
- Christian Gollier - Member of the Advisory Council of the European Systemic Risk Board (ESRB), 2023
- Christian Gollier - Member of the Académie des Technologies, 2024
- Christian Gollier – Member of the One Planet Lab Group of economists
- Ulrich Hege - Member of the Commission Climat et Finance Durable, ACPR, since December 2022 (until 2025)
- Ulrich Hege - Member of the Scientific Council ESG of the Centre des Professions Financières (CFP), since June 2023
- Sébastien Pouget - Member of the Haut Comité Certificateur de Place de l’Autorité des Marchés Financiers (AMF), to monitor training and certification organizations for the AMF exam and the AMF Sustainable Finance exam, five meetings a year, in conjunction with the FDIR Chair.
- Sébastien Pouget - member of the Scientific Council of the Autorité des Marchés Financiers
- Sébastien Pouget - Co-director of the Getlink-TSE Initiative for Effective Corporate Climate Action
- Nicolas Treich - Award for the best paper “The Animal welfare levy” (with Romain Espinosa) at the EAAE 2023 congress. <https://www.tse-fr.eu/fr/nicolas-treich-recompense-pour-un-papier>
- Nicolas Treich - Member of the scientific team of “La fresque des animaux”: <https://fresquedesanimaux.fr/>
- Sophie Moinas - Member of Consultative Working Group of the European Securities and Markets Authority's (ESMA) Risk Standing Committee Financial Stability and Risk Working Group (RSC FRWG).

VI. Education and training

FDIR is fostering the diffusion of knowledge on CSR and SRI within the young generations of finance practitioners and researchers. State-of-the-art techniques and ideas of CSR and SRI have been taught in various courses offered to Master’s in Economics and Finance at the Ecole Polytechnique, at Toulouse School of Economics (TSE), and at Toulouse School of Management (TSM) of the University of Toulouse. Moreover, seven PhD students are currently working on issues related to FDIR.

A. Courses

- Ingela Alger - M2 ETE: Behavioral and Experimental Economics: non-standard preferences
- Ingela Alger - Reading group for PhD students: Behavioral and Experimental Economics
- Milo Bianchi - Behavioral and Household Finance (PhD) – lecture related to responsible investment
- Milo Bianchi - Economics for Finance (M2) – group projects related to responsible investment
- Sophie Moinas - Advanced Corporate Finance: climate risk and the quantification of climate-related financial exposures (15h, including a students’ project on the quantification of climate risk exposures or of negative externalities on health)
- Catherine Casamatta, Ulrich Hege, Sophie Moinas, Sébastien Pouget, and Silvia Rossetto, “Corporate Tools for Climate Action: An Internal Carbon Price for Getlink?”, Case Study and Teaching note, 2023.

- Patricia Crifo, CSR, Bachelor Econ&Math, Ecole Polytechnique
- Patricia Crifo, Impact and ESG, Master EET, AgroParistech
- Patricia Crifo, COPclimat, MSct ESCLIP, Ecole Polytechnique
- Patricia Crifo, Capstone projects on climate and sustainable finance action plan evaluation, MSct ESCLIP, Ecole Polytechnique.
- Ulrich Hege, Teaching and organization of “Understanding Global Risks” in the Master Economics of Global Risks (EGR), with a focus on climate-related risks
- Ulrich Hege, Expansion of Climate Finance module in the course Asset Pricing, Master M2 Master in Finance, TSE/TSM
- Ulrich Hege, Supervision of two Empirical Projects in the Master M2 EGR, on stock market performance of green versus brown stocks, the other on carbon emissions and distance-to-default
- Ulrich Hege, Mini course at Peking University HBS Business School on carbon Pricing and climate policies, May 2023

B. PhD Students

PhD students working on FDIR topics in 2023 included:

- Ruichen Wang, start of thesis in September 2020, theme: « Corporate Social Responsibility: valuation, tools and governance » (advisor: S. Pouget)
- Murad Nuriyev, start of thesis in September 2022, theme: « Machine learning and Corporate Social Responsibility » (advisor: S. Pouget)
- Esteban Muñoz, theme: "morality, taxation, and charitable giving" (advisor: I. Alger)
- Pau Juan Bartroli, theme: "morality, norms, and recycling" (advisor: I. Alger)
- Enrico Mattia Salonia, theme: "morality and game theory" (advisor: I. Alger)
- Xinyue Wen, TSM, start of thesis in 2023, theme: “Sustainability Preferences of Individual Investors” (advisor: M. Bianchi)
- Angela Torres (2019-2023) (with JH Keppler, Université Paris Dauphine), researcher and economist for EDF R&D: “The Efficiency of Short-Term Electricity Markets with Variable Renewables and their Impact on Forward Prices and Hedging Strategies” (advisor: S. Moinas)
- Li Bao (2018-2023), Science Associate Equity Research for UBS in Hong Kong: “Three essays in green finance” (advisor: S. Moinas)
- Keller Martinez Solis, start of thesis in 2021, theme “green bonds, ESG and real investment decisions” (advisor: S. Moinas)
- Lea Bou Sleiman: “Urban-related public policies, with a special focus on environmental and transportational aspects”, Ecole Polytechnique, 2019-2023. (Advisors: B. Schmutz & P. Crifo)
- Aatish Seewoolall: Dual class shares and corporate governance, Toulouse School of Management, started in 2020 (advisors: C. Casamatta and S. Rossetto)
- Johanne Troitin, start in sept 2023: “Pro-environmental preferences” (advisors: P. Crifo & Ivaylo petev)

VII. Perspectives

Common Good Summit, June 13 and 14, 2024

The 4th edition of this Summit, jointly organized by Challenges, Toulouse School of Economics and Les Echos-Le Parisien Evénements, is due to take place in Paris next June.

The media sphere raises the crucial question: producer, citizen-student-consumer, or community, who will foot the bill for a sustainable common good? Even with financial progress for developing countries, the financing needs remain substantial.

Nobel laureates in economics, researchers, political figures, business leaders, and representatives of civil society will be present to find answers to these concerns that span various domains such as climate, mobilities, food, health & AI, education, Trust and Consent. Website [here](#).

Appendix

A. Agenda for the meeting of the FDIR Scientific Orientation Committee

21 May 2024

1. Approbation of the 2023 annual report
2. Review of research projects and activities for 2022-2025
3. Miscellaneous

Ordre du jour de la réunion Du Comité d'Orientation Scientifique FDIR

21 Mai 2024

1. Approbation du rapport annuel 2023
2. Revue des projets de recherche et activités de FDIR pour 2022-2025
3. Divers

Scientific Coordinators:

Catherine Casamatta, Patricia Crifo, Sébastien Pouget

<https://www.tse-fr.eu/fdir?lang=en>