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Editorial

TSE is expanding the frontiers of our knowledge in energy and environmental economics – as you will discover in these pages – and contributing to the fierce debate on climate change. The upgrade of the climate ambition to reduce EU emissions by 55% in 2030 creates a formidable challenge for Europe and its citizens. A higher carbon price will be necessary, with a fair redistribution of the carbon dividend. We should celebrate the recent impressive increase in carbon price on the EU market for permits, but this raises the urgency of the fight against environmental dumping and carbon leakages by less ambitious economies. This summer, we will see how the EU will shape the Carbon Border Adjustment Mechanism. As noted by Stefan Ambec and Claude Crampes, this should eliminate the distribution of free allowances.

The already large costs of the transition could be made much larger and less socially acceptable if we do not implement efficient climate policies in the transport and agroforestry sectors, among others. Please read and re-read this newsletter's excellent interviews with my colleagues Kevin Remmy, Nicolas Treich, and Stefan Ambec in this domain. This should convince you once again that economists can help to serve the common good.

Christian Gollier

TSE Director



News

AWARDS



Yuting Yang wins 2021 EAERE Award

Yuting Yang, Thomas Douenne and Frikk Nesje are the three laureates of the European Association of Environmental and Resource Economists (EAERE) Award for Best Doctoral Dissertations in Environmental and Resource Economics.

Yuting is a TSE PhD student and has been given the prize for her work on the energy transition and environmental regulations. The 26th EAERE Annual Conference (online on June 23-25, 2021) will host a special session dedicated to the Best Doctoral Dissertations.

More information: <http://www.eaere-conferences.org/>

You can read Yuting Yang's portrait in our [April 2020 newsletter](#).

SBCA prizes for two TSE members

Two TSE members are among this year's recipients of the prizes awarded by the Society for Benefit-Cost Analysis.

James Hammitt received the Outstanding Achievement Award, created in 2016 to recognize individuals who make significant contributions to the field of benefit-cost analysis.

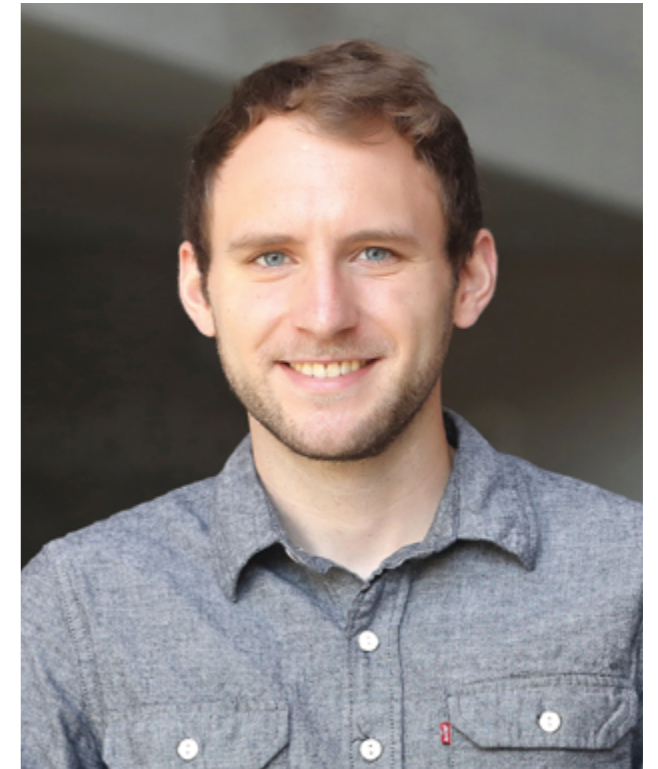
Henrik Andersson received the Richard Zerbe Distinguished Service Award jointly with Massimo Florio. In 2014, the Board of Directors sought to honor Richard Zerbe's contributions by creating a prize for individuals who make significant contributions to helping the SBCA further its mission.

More details about these awards on the [SBCA website](#).



Portrait

Kevin Remmy



New research by **Kevin Remmy**, a promising young TSE economist, investigates the impact of subsidy schemes for electric vehicles (EVs). He shows that successful policy design requires careful consideration of priorities regarding CO2 emissions, establishing EVs on the market, and consumer welfare. Here, he reflects on his TSE experiences, his research, and his hopes for the future.

How has TSE influenced you as an economist?

I will join the University of Mannheim as a postdoctoral researcher this fall – I'm really excited because it's a great place to continue my career. TSE has been a great preparation. First, the training we receive in the doctoral program is extremely rigorous. We learn how to conduct research, but also how to present our work well through many internal workshops and seminars, as well as international conferences. Second, at TSE we have the privilege to interact with leading researchers in their respective fields. This environment is extremely stimulating, helps us get exposure in the research community, and teaches us how to talk about our research. Finally, TSE provides us with many opportunities to get exposure outside of TSE. As such, I was able to spend three months at Harvard University, gaining valuable feedback from many researchers and an insight into US academic life. These experiences have helped me immensely in shaping my research interests, especially in environmental topics. I have been particularly motivated by the debates around topics such as electric car subsidies and being exposed to scholars using cutting-edge tools to answer policy-relevant questions.

What were some of the challenges for your analysis of electric car subsidies?

In 2018 alone, world-wide government spending on EV purchases through subsidies totaled \$15 billion. Subsidy design differs across countries, with some basing subsidies on product attributes and others granting the same amount to every EV. It is relatively easy for EV firms to adjust the driving range (i.e. the distance that can be driven with a fully charged battery), giving them an additional dimension along which to react to subsidies. There exists little guidance in the existing literature on the effect of subsidies in multi-product oligopolies when firms can adjust prices and product attributes. Answering this question in the EV market requires a demand model with rich substitution

In 2018 alone, world-wide government spending on EV purchases through subsidies totaled \$15 billion. Subsidy design differs across countries, with some basing subsidies on product attributes and others granting the same amount to every EV

LIC prices estimates (USD per kWh)

Source: Hsieh et al. (2019)

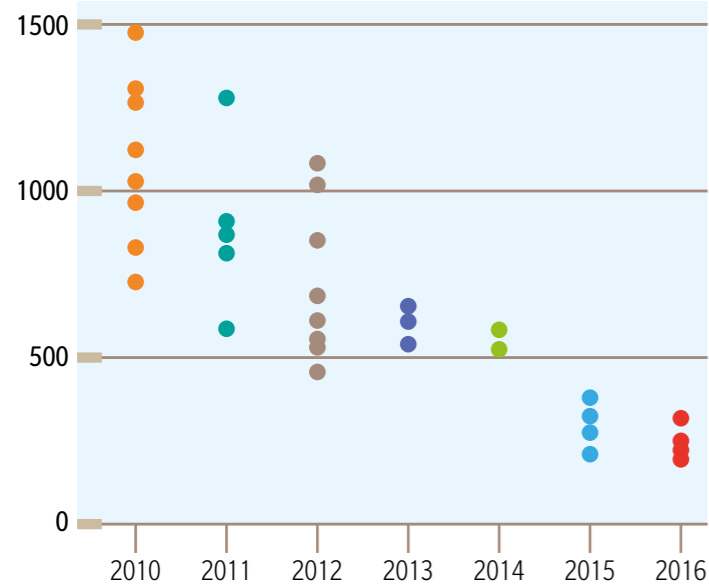


Figure 1 shows different approximations of the evolution of lithium-ion cell prices. Although there is considerable variation in the estimates, there is a clear downward trend.

providing range. My framework allows both endogenous provision of range and a multi-dimensional response in terms of price and range to changes in the marginal cost of providing range. For manufacturers, I find that the cost of providing range decreased by 33% from 2012 to 2018. Firms pass on this negative shock to the marginal cost of range by selling EVs with a greater range at higher prices. The markup on EVs increases. These findings are important for subsidy design, as a decrease in the marginal cost of providing range is equivalent to a subsidy purely based on range. Moreover, pass-through occurs through the product attribute channel rather than the price channel. This finding underscores the importance of accounting for a channel through which EV manufacturers can adjust range.

I evaluate a scheme introduced in Germany in 2016 consisting of a flat subsidy, meaning that the amount did not depend on any product attributes. My findings show that the subsidy led to both price and range decreases for EVs, with firms collecting a lower markup. These outcomes are the converse of the adjustment that occurs in response to a lower marginal cost of providing range. In this case, pass-through occurred mainly through the price channel. Prices decreased by more than the amount of the subsidy. Firms used the product attribute channel to reduce range to allow for further price reductions. The subsidy increased sales by approximately 27% in 2018, far from sufficient to meet the governments' sales targets.

I then compare the flat subsidy imposed in Germany to a wide range of alternative schemes used in other countries and their effect on policy goals. I find that policymakers face a tradeoff between maximizing diffusion, minimizing CO2 emissions, and addressing distributional concerns. However, a mix of these three policy goals is possible as the subsidies always increase consumer surplus and diffusion, and decrease fleet emissions.

patterns between electric and combustion vehicles, given that the goal of EV subsidies is to generate more substitution towards EVs. In addition, the supply model should allow firms to react to a subsidy by adjusting not only the price but also the range of EVs.

Using a novel state-level dataset from Germany, I address these challenges by estimating a structural model of demand and supply. On the demand side, consumers can choose between new cars of different engine types, allowing for flexible substitution patterns across electric and combustion cars. On the supply side, firms compete in a static oligopoly in which they set the prices and driving range of their EVs. This model provides a framework for studying the impact of subsidies and marginal cost changes in imperfectly competitive markets when firms choose the price and product attributes. I use the estimated model to assess a rich set of counterfactuals.

What do your results reveal about the impact of cheaper batteries and different subsidies?

Prices of lithium-ion cells, an essential input for EV battery packs, have dropped substantially over the past decade, lowering the cost of

For manufacturers, I find that the cost of providing driving range decreased by 33% from 2012 to 2018. Firms pass on this negative shock to the marginal cost of range by selling electric vehicles with a greater range at higher prices. The markup on EVs increases

Evolution of price and range of battery electric vehicles

(averages, base = 2012)

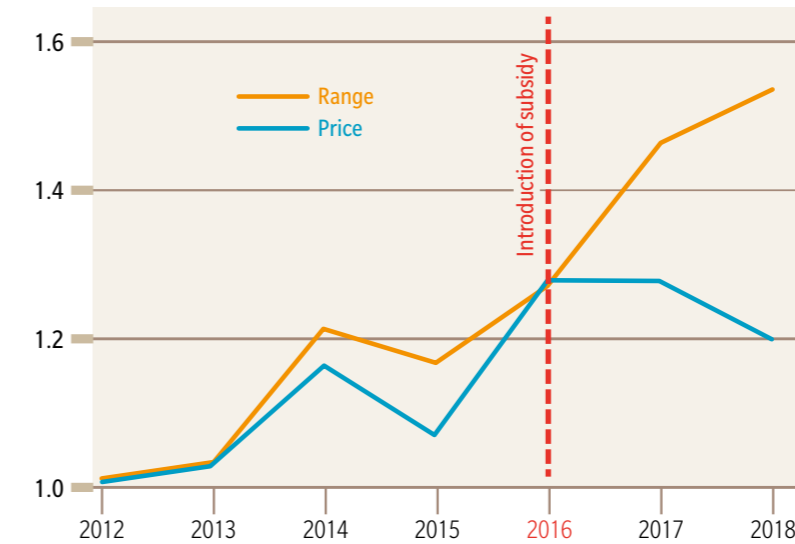


Figure 2 shows the average price and range of battery electric vehicles from 2012 to 2018. Prices slightly increased, and the range rose by almost 60%. It is unclear from this picture to what extent falling lithium-ion cell prices and subsidies drove these trends.

policymakers will feed back into what economists work on. For instance, my interest in electric car subsidies was catalyzed by the public debate about future mobility.

Unfortunately, public discussion of climate change and the pandemic is often dominated by reasoning that is simplistic, erroneous, or both. As economists, we possess tools to show causal effects of different policies, as well as their – sometimes unintended – consequences. Economists can and should play an important role in providing sound, research-based solutions.

Combating pandemics and climate change requires collaboration across disciplines. The increasing trend of interdisciplinary research will hopefully continue and help us to fight pressing global issues.

Different substitution patterns ultimately determine market outcomes. Flat subsidies and schemes with low-incentive mixed schemes induce firms to employ a strategy of selling EVs with less range at a lower price, capturing a large number of consumers on which firms collect a smaller markup. In contrast, pure range-based subsidies and high-incentive mixed schemes induce firms to sell EVs with more range at a relatively higher price – attracting consumers with a high willingness to pay – on which firms collect a relatively higher markup.

How do you think the new generation of economists will be shaped by the pandemic and the climate crisis?

Economics can provide policymakers with the tools they need to make good policies. As such, important global events necessarily shape research agendas and ways of thinking. The fact that climate change is receiving more attention from the public and



Research highlights



The economics of cultured meat

Nicolas Treich

Nicolas is a research associate at INRAE and member of TSE. His work focuses on decision theory, environmental economics, benefit-cost analysis, and animal welfare. He has published scientific papers on subjects including the precautionary principle, the value of statistical life, and climate policy. He has written numerous articles for the general public, as well as reports on policy issues.



Where's the beef?

Animal products in the form of meat, aquaculture, eggs, and dairy use about 83% of the world's farmland and contribute about 57% of foods' different emissions, while providing only 37% of our protein and 18% of our calories.

Source: Poore and Nemecek, 2018

Nutritionists recommend that an individual should consume no more than 100 grams of red meat and no more than 200 grams of poultry per week.

Source: Willett et al., 2019

Lab-grown meat has the potential to revolutionize the food industry, with broad implications for climate change, the environment, health, and animal welfare. A new paper by Nicolas Treich discusses issues of demand and supply, morality, regulation, and the need for public support to the innovation. Here, he focuses on the technology's environmental promise and uncertainties.

What is cultured meat?

Cultured meat is produced from animal cells cultured in a growth medium in a bioreactor, rather than from slaughtered animals. Long advocated by scientists, politicians and artists, the idea of producing meat in vitro is now becoming a technical reality. In December 2020, the Singapore Food Agency became the first regulator to authorize cultured meat. Dozens of companies are working to develop and market their product in the coming years.

Why do we need alternatives to conventional meat?

Animal farming contributes significantly to climate change, and various forms of global and local pollution. It uses a great deal of water and three-quarters of the world's agricultural land. It is also a major driver of deforestation and loss of biodiversity. As Covid-19 has made us painfully aware, animal food is at the origin of most emerging infectious diseases. However, the regulation of animal farming and meat consumption seems limited compared to the large negative externalities it generates. Instead, the conventional meat sector is heavily subsidized, as exemplified by the Common Agricultural Policy in Europe.

In this economic and political context, given that many consumers do not want to change their food habits, and with demand for meat expected to grow in the developing world, cultured meat is perhaps the most serious alternative to significantly reduce the deleterious environmental impacts of meat production and consumption. Since cultured meat can be produced indoors during unfavorable external conditions, it may increase global food

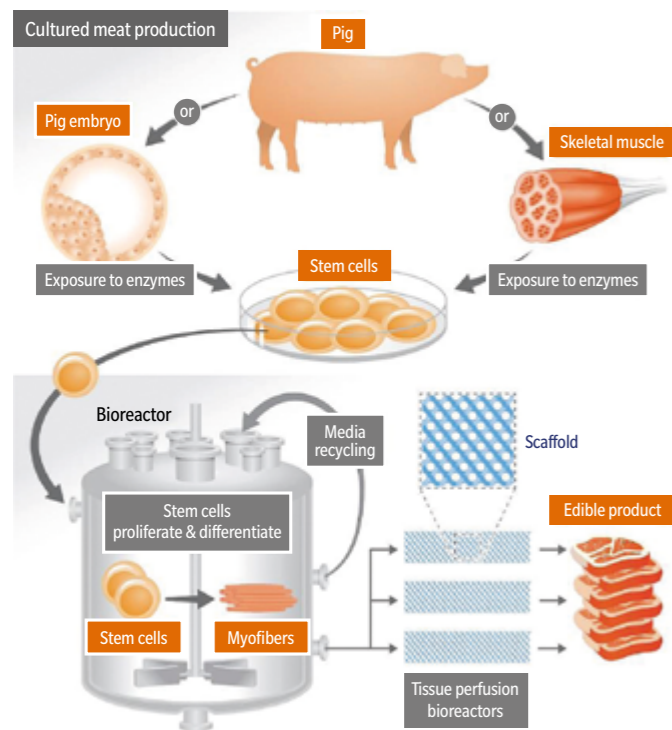


Figure 1: The production process of cultured meat. Source: Tuomisto (2018).

This figure represents the threemainstages of the production of cultured meat. First, stem cells are taken from muscle tissue or embryos and are expanded and then differentiated into muscle cells. Second, these cells are further grown in a bioreactor to increase their number. Third, the cells are then transferred to a scaffold to grow these into muscle fibres and larger tissue. (Figure reproduced under the Creative Commons Attribution 4.0)

for the growth medium and to run the bioreactor. However, the production of cultured meat, once optimized, is expected to require much fewer resources.

Anticipated reductions include targeted tissue cultivation, higher production rates, growth medium recycling and vertical production systems. Alternative sources of amino acids and peptides, such as biomass from algae, could provide cheap sources of enriched amino acids, fats, vitamins and minerals, and in turn offer opportunities for more sustainable processes. Cultured meat might also reduce transportation and refrigeration costs, and possibly also waste products, because it is expected that cultured meat should have a longer shelf life than conventional meat. Cultured meat production also avoids issues of carcass waste management.

The overall environmental benefits heavily depend on how the released land from livestock production is used and hence on assumptions regarding biodiversity gains and carbon-storage opportunity costs.

How can environmental and energy economists contribute to research on this topic?

Cultured meat may reduce drastically the environmental footprint of meat, but requires energy to be produced. Researchers will need to combine life cycle analysis with more coherent scenarios regarding the transition to clean energy sources. Large changes in land usage

security. Produced under sterile conditions, it can also virtually eliminate contamination with disease-causing pathogens. Moreover, this innovation can significantly reduce the immense suffering of farm animals.

What about plant-based options?

Interest in and consumption of plant-based alternatives has increased markedly. Some food experts believe they will be the main competitor to conventional meat. From an environmental viewpoint, plant-based food options seem to systematically dominate conventional meat, as well as the cultured meat alternatives. Hence, a large shift toward plant-based food seems necessary in the short term. However, the key difficulty is to reproduce the taste and texture of meat. Recent plant-based products, such as the popular burgers from Beyond Meat or Impossible Foods, have made significant progress, but they are also criticized for being ultra-processed food with the associated health concerns.

Will cultured-cell innovation deliver on its environmental promise?

Although the potential benefits of cultured meat are considerable, wide uncertainties remain. Muscle development has evolved over millions of years – producing muscle differently may be costly and inefficient in terms of resource use. A large amount of energy is required to produce the ingredients

Researchers will need to combine impact analysis with more coherent scenarios regarding the transition to clean energy sources. Large changes in land usage and crop production will affect prices, with further impacts on economic incentives

and crop production will affect prices, with further impacts on economic incentives. Moreover, energy inputs from cultured meat are typically more flexible and substitutable than those of conventional meat. For example, the choice of a production site should be less dependent on geography and weather conditions, and may be positioned closer to the demand or to sunny locations with solar panels. This should reduce the environmental impact of global supply chains, such as shipping and trucking.

Overall, a full-fledged analysis of the various trade-offs requires an integrated approach connecting agricultural, food, land use, environmental and energy issues. Additionally, uncertainty (and thus learning) is prevalent, and economists master tools for decision-making under uncertainty, such as option value theory. Hopefully, an emerging body of economic research will provide insights and useful policy recommendations.

What are some of the other challenges?

My paper aims to initiate a consideration of the economics of cultured meat as the current literature on this topic is essentially nonexistent. As well as evaluating the environmental impacts, there are many important questions to be studied. Can cultured meat become globally beneficial? What are its possible economic, health, and moral impacts? How will cultured meat be produced, and by whom? What action should regulators take? Where are the main uncertainties?

Supply-side issues include market power, production costs, supply chains, and public support for innovation. At the same time, we need to better understand the drivers of demand, in particular by using non-hypothetical preference elicitation methods. Which consumers will buy cultured meat? What are the likely substitution effects?

I also consider the evolution of the political context. Public awareness of meat-induced environmental externalities, such as climate change, may determine the efficiency of lobbying by the conventional meat sector. As information technologies render the intensive rearing conditions of animals increasingly visible, they are also becoming less socially acceptable. Policymakers may feel pressure to intervene, especially in countries such as Singapore where cultured meat may help ensure food self-sufficiency. However, a portion of the public may prefer eco-friendly, local and low-scale forms of agriculture. A related question concerns the reaction of environmentalist NGOs and political green parties. Here, again, the environmental impact of cultured meat is probably instrumental to its acceptance and development.

Summing up

Cultured meat may allow society to escape the deleterious environmental impacts of conventional meat, in particular through a large reduction in land use. However, its production may require a lot of energy, thus linking issues of food, agriculture, and land use with those of climate, the environment, and energy. Studying these links and trade-offs properly is likely to require a full-fledged economic analysis.

Further reading

Cultured meat: 'Promises and challenges' is published in *Environmental and Resource Economics*.

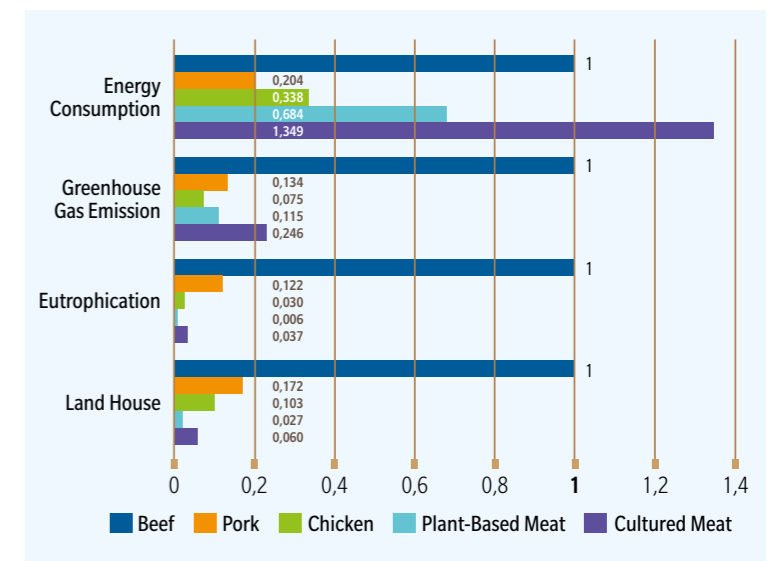


Figure 2: Comparison of environmental impacts of cultured meat with other meat products

Source: Rubio et al. (2020). Data are normalized to the impact of beef production. This Figure is slightly adapted from Figure 5 in Rubio et al. (2020), which uses data from Mattick et al. (2015) and from life-cycle analyses of specific plant-based meat products.

Can environmental taxes help us set air pollution standards?

Stefan Ambec and Jessica Coria

Stefan Ambec is INRAE Research Professor at TSE and Director of the TSE Energy and Climate Center. He is Editor-in-Chief for Resource and Energy Economics. His research focuses on the impacts of environmental policies in terms of efficiency, fairness properties, firms' strategies, social welfare and behavior. Topics include the energy transition, water use, air quality and climate change.



Jessica Coria is Associate Professor at the Department of Economics of the University of Gothenburg and Vice-Director of the FRAM Centre for Future Chemical Risk Assessment and Management Strategies. Her research focuses on the effects of the multi-governance of environmental issues and pollutants' interactions on optimal policy design.

Environmental regulations are often issued and enforced by different levels of government using multiple policy instruments to tackle the same problem. TSE's Stefan Ambec suspected this overlap could provide regulators with an opportunity to inform and refine their policies. Co-authored with Jessica Coria (University of Gothenburg), their recent working paper develops a model to characterize the value of this informational spillover and tests the results in the context of Sweden's efforts to cut nitrogen oxide (NOx) pollution.

Why do many environmental policies overlap?

The laws pertaining to many major environmental problems – such as air and water pollution, or management of hazardous waste – are typically enacted and managed at all levels of government, implying that many regulations covering the same emission sources overlap each other. For instance, all countries and regions that have implemented policies to combat climate change seem to rely on several policy instruments, rather than a single one, to cover the same emission sources.

Economists have traditionally argued for the superiority of market-based regulations over command-and-control, primarily because of the relative cost savings expected with market-based approaches. Market-based regulations, such as environment taxes and emission trading schemes, are increasingly being used to implement environmental policy, but command and control are still the most common regulations in place. An overlap between these two types of regulation often occurs. In China, for example, a large number of

Silent killer

In France, local air pollution causes around 48,000 premature deaths per year, 9% of annual mortality, and reduces life expectancy by up to two years. Around the world, poor air quality is responsible for about 4.2 million deaths per year.

Our study is the first to investigate the informational value of an economic instrument for the design of a command-and-control instrument. More precisely, we examine whether and how a tax can help regulators set and update a standard (or cap) on the emissions of a pollutant

technological measures to save energy and improve air quality have been adopted in addition to the implementation of emissions trading schemes on carbon dioxide. European countries are increasingly using taxes to reduce carbon emissions and pesticide use, which overlap with technical requirements and the issuance of limit values on polluting inputs or emissions.

The multiplicity of policy instruments to address a single pollution problem has been justified on several grounds. For instance, some market failures, regulatory failures or behavioral failures may reduce the economic efficiency of market-based instruments and justify additional policy instruments. Our paper introduces another rationale: the informational value of the policy overlap.

How can a pollution tax be used to improve other environmental regulations?

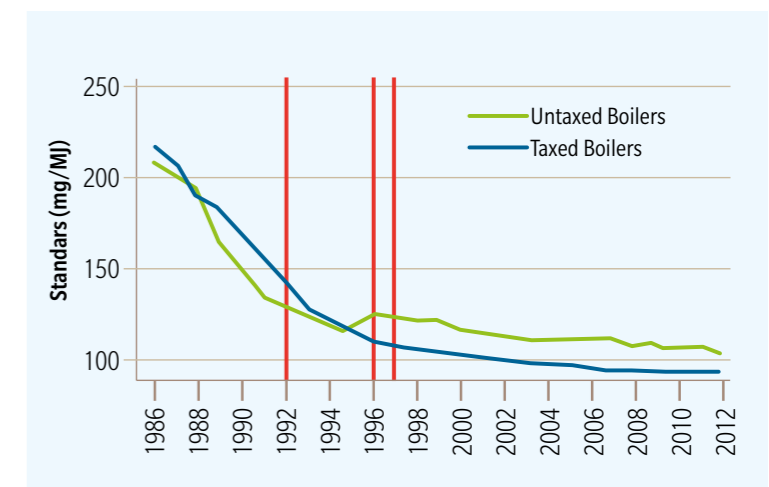
Our research highlights the value of the informational spillover from a pollution tax for the design of other environmental regulations when a firm's costs of abating pollution are unknown by the regulatory authorities. To the best of our knowledge, our study is the first to investigate the informational value of an economic instrument for the design of a command-and-control instrument. More precisely, we examine whether and how a tax can help regulators set and update a standard, or cap, on pollutant emissions.

To align its abatement costs with the tax rate, a firm might abate pollution beyond what is required by the standard and thereby reveal information about its abatement cost. Our idea is that a regulator can take advantage of this information about the cost of compliance by more accurately targeting the standard at the firm's true cost. Observing the abatement induced by the tax, a regulator can conclude that the cost of reducing emissions is lower than expected and can respond by strengthening the standard in the future, to better balance benefits with costs.

Does taxing polluters lead to stricter standards?

In our dynamic setting, the regulator relaxes the initial standard in order to induce more information revelation, allowing the standard to be set closer to the optimal level in the future. However, low-cost firms might strategically hide their cost by abating no more than required by the standard. As a result, updating standards can generate a ratchet effect that reduces information revelation. Nevertheless, the tax can still be used to reveal information about abatement costs when the costs are high enough. We characterize the optimal standard and its update across time, depending on the firm's abatement strategy.

Our empirical analysis of the regulation of NOx emissions in Sweden provides support for our theoretical predictions. To protect its lake and forest ecosystems, which are vulnerable to acidification, Sweden has made NOx emissions an important environmental policy target. NOx emissions by stationary pollution sources are regulated through a combination of a nationally determined



Swedish NOx standards

Average NOx standards in Sweden for taxed and untaxed boilers follow a similar trend prior to the introduction of the NOx tax in 1992, 1996 or 1997 (depending on the boiler's annual energy use). The two lines then diverge, as the standards of taxed boilers become more stringent.

rr *We find empirical support to our theoretical findings by examining the extent to which informational spillover from Sweden's diverse regulatory approaches has been used in the design of its NOx standards. Our analysis shows that firms that pay the NOx tax experience more frequent standard updates and more stringent revisions*

emission tax and locally negotiated emission standards. Standards are boiler-specific so that similar firms might end up with different standards assigned to their boilers within the same jurisdiction.

We examine the extent to which informational spillover from these diverse regulatory approaches has been used in the design of Swedish NOx standards. We find evidence that firms that pay the NOx tax experience more frequent standard updates and more stringent revisions than those which are exempted. Since regulators often implement similar standards for similar pollution sources, one can expect that over time the increased stringency spills over to untaxed firms.

What are some of the wider policy implications that arise from your study?

The rationale for the informational value of the policy overlap could be easily generalized to other environmental policy mixes where a market-based instrument is used. Tradable emission permits, for instance, reveal the same type of information about abatement costs as taxes.

Our rationale could also be generalized to other policy overlaps. In the regulation of public utilities, for example, the regulator often encounters asymmetric information about the cost of production, and the regulation of prices is usually complemented with the regulation of the quality of the products or of pollution. If the costs of improved quality are revealed when the firms make their production decisions, the regulator might be able to infer relevant information about the firms' costs that can be used to improve the design of quality standards.

What lessons can be learned for the fight against pollution?

Studies on the impact of local air pollution are becoming increasingly alarming. In France, it causes around 48,000 premature deaths per year, 9% of annual mortality, and reduces life expectancy by up to two years. Around the world, poor air quality is responsible for about 4.2 million deaths per year. These figures are comparable to those of Covid-19 in 2020. But the health impact of air pollution is less visible, so policymakers tend to be more sensitive to industry lobbies on the economic costs of depollution.

Market instruments make it possible to reveal, at least in part, the true cost of reduced pollution. This can be done by setting a cap on emissions while allowing companies to trade offset credits, as in the United States, or by setting the price of pollution in the form of an environmental tax, as in Sweden. In both cases, the costs associated with cleaning up pollution have often proved to be much lower than anticipated. Market instruments can tell you that air quality standards must be strengthened.

Summing up

Stefan and Jessica propose informational spillovers as a new rationale for the use of multiple policy instruments to tackle a single problem. They analyze how a regulator can take advantage of the information revealed by a tax on emissions to improve the design of a pollution standard. In support of their theoretical predictions, they find evidence that firms that pay the Swedish NOx tax experience more frequent standard updates and more stringent revisions than those which are exempted.

Further reading

"The informational value of environmental taxes", Journal of Public Economics, 2021, forthcoming.



Outreach



Saving the climate

The fight against global warming was at the heart of the discussions at the 2021 Common Good Summit, with an introduction by French Minister for the Ecological Transition Barbara Pompili followed by a panel on the cost of the transition, with ExxonMobil Europe President Philippe Ducom, SNCF Chairman and CEO Jean-Pierre Farandou, and TSE Director Christian Gollier. A second panel on the challenges of decarbonizing transport engaged the minds of Transdev Chairman and CEO Thierry Mallet, TSE's Mathias Reynaert, and VP Groupe La Poste – CEO DPDgroup Boris Winkelmann. Here are some of the key highlights from the exchanges.



The market has limits, and the ecological shift will have political consequences that will mark our entire century. It is together that we will succeed, and we will because the dominant ideology is gradually crumbling. The Common Good had long disappeared from the scene and today it is back with a bang, at the center of the debate.

Barbara Pompili
French Minister for the Ecological Transition

Solar panels and windmills will not be enough to change our whole society. We will need massive innovations and technologies. We are working on carbon capture and storage. These technologies, once made cheaper, will be easier to develop on a large scale. We are looking into low-carbon fuels from agriculture, or algae, as well as hydrogen. We need technology, a regulatory framework, infrastructure, and a carbon market, with a long-term vision of the carbon price.

Philippe Ducom
ExxonMobil Europe President



Electric vehicles could be a great solution to global warming and air pollution. The issue is the generation of electricity as only a greening of the electricity system would mean green electric cars. Economists agree that a carbon price would help pass down the cost of using a thermic vehicle to the consumers. This solution would be much more efficient than the current different regulations: France has the bonus-malus, for example.

Mathias Reynaert
TSE Researcher



We aim to divert 10% of road traffic to our business, which means doubling the use of trains for passengers and goods within 10 years. This will require new infrastructures, especially for freight. In France, we need solutions: for instance, 20% of our trains run on fossil fuel because the local network is not electrified. I am a strong believer in hydrogen. It could be the solution for a successful transition. The world will always need more energy. If we make massive investments, we could reach net zero by 2050.

Jean-Pierre Farandou
SNCF CEO



If we look at the big picture, we will have to replace the cheap fossil fuels by renewable energies that will cost us much more. We should prepare populations for this cost. Massive green R&D investments will be crucial in the coming years because we need breakthrough innovations for cheaper green energy. A carbon price will push innovators to work because, right now, green innovations are not profitable. As with the pandemic and the need for vaccines, we need solutions very fast and a massive collaboration of economic actors in the same direction.

Christian Gollier
TSE Director

Transport in city centers has been electrified and developed so that there are many alternatives to cars. But in the suburbs there aren't many solutions for consumers and companies. People are currently trapped in their cars. They don't necessarily have other options, so the objective is to propose a better alternative in terms of public transport. When we propose a high-quality service, as we've done in Germany on small train lines, consumers switch to public transport.

Thierry Mallet
Transdev Chairman and CEO



The pandemic took us to an incredible activity level as the transport of goods skyrocketed. A revolution of our logistics system is coming, with new micro-hubs located in the city centers, allowing less traffic in cities as consumers can get their goods more easily (home delivery or in a Pickup point, in a locker...). La Poste is aiming at net-zero emissions when delivering in city centers across Europe. While the price of electric vehicles is still high, it's now reasonable and we've been able to make significant investments in that regard.

Boris Winkelmann
VP Groupe La Poste – CEO DPDgroup



COMMON GOOD SUMMIT
100% DIGITAL

Saving the Common Good

INEQUALITIES | CLIMATE
HEALTH | DIGITAL | FINANCE

Les Echos
Le Parisien
ÉVÉNEMENTS

Watch the replay of the Common Good Summit on the TSE Youtube channel



Six Nobel laureates for the Common Good

“What happened to the Common Good?” This question has long been a central concern for Jean Tirole, 2014 Nobel laureate in economics, and has become even more pressing in today’s context of Covid-19 pandemic.

The “Common Good Summit” was organized by TSE, les Echos and Challenges business magazine on May 27 and 28, 2021. Five Nobel laureates (Abhijit Banerjee, Angus Deaton, Esther Duflo, Bengt Holmström, Amartya Sen) joined Jean Tirole to exchange ideas with international economic leaders, top executives, and academics from the world’s major universities on topics covering the regulation of capitalism and helping the notion of the common good to help survive the pandemic (or to help find answers).

French Minister for the Ecological Transition, Barbara Pompili’s keynote and two round tables were devoted to Energy and Climate: “The climate transition, at what cost” and “The challenge of energy transition in transport”.

#CommonGoodSummit

TSE-SBCA European webinar

Online, May 7



The Society for Benefit-Cost Analysis and TSE were proud to co-host their first European webinar together. The inaugural speaker was **Sir Professor Dasgupta**, who has been Professor of Economics at the University of Cambridge since 1985, serving as Chairman of the Faculty of Economics from 1997 to 2001. He has won numerous awards and was named Knight Bachelor for services to economics in 2002.

His research interests cover welfare and development economics, technological change, population, environmental and resource economics, game theory, and the economics of undernutrition and social capital. In 2019 he was commissioned by the UK Treasury to lead a global independent review on the economics of biodiversity.

More information here: www.tse-fr.eu/conferences/2021-sbca-european-webinar

Meet the experts: The economics of animal welfare

Online, March 29

In this “Meet the experts” webinar, TSE experts **Nicolas Treich** (a research associate at INRAE, and member of TSE and IAST) and **Romain Espinosa** (a researcher in economics at the CNRS) talked about the economics of animal welfare and presented their analyzes on the determinants of meat consumption, the evolution of our diet, income, consumption and its impacts on our health and on the planet.



Find out more on the event page: www.tse-fr.eu/meet-experts-economics-animal-welfare

Watch the webinar’s replay on the [TSE Youtube channel](#)





Media & Analysis

Op-Eds

Préparer les territoires au monde d'après

Marion Guillou and Jean Tirole, *Le Point*, October 1, 2020

It is at the local level (regions, departments, cities) that we must imagine the measures for recovery, and not exclusively from Paris. The future of the country is at stake.

Aux collectivités de sortir des sentiers battus pour tirer parti des plans de relance

Jean Tirole and Marion Guillou, *Le Monde*, October 7, 2020

The agronomist Marion Guillou and the economist Jean Tirole present the approach taken in Toulouse to propose an optimal use of the means provided by the national and European stimulus plans in regional projects.

La France risque de passer à côté de la viande "artificielle"

Frédéric Cherbonnier, *Les Échos*, April 7, 2021

Credible alternatives to conventional meat production are emerging, although it remains difficult to predict which one will become efficient, safe from a health and environmental point of view, and satisfactory for the consumer's palate. Let's take a look at one of them, "cultured meat".

Interviews

Lundi vert : S'interroger sur nos habitudes alimentaires n'est pas anecdotique pour l'environnement

Nicolas Treich, *20Minutes*, October 4, 2020

La prochaine catastrophe

Christian Gollier, *Les Échos*, December 21, 2020

Une taxe carbone n'aurait pas d'impact sur l'économie belge

Christian Gollier, *LaLibre*, December 22, 2020

Faut-il changer de manière durable notre rapport à l'aviation ?

Christian Gollier, *Europe 1*, February 21, 2021

Les normes internationales sauveront-elles la planète ?

Stefan Ambec, *France Culture*, September 23, 2020

Video

Futurapolis Planète : la décennie des choix

Jean Tirole, *Le Point*, November 17, 2020

Debates

TSE Debate is a portal that gathers the opinions and analysis of TSE researchers on topics of public interest such as electric cars, the European carbon market, and renewable energy. Members of the center regularly publish blog posts and newspaper op-eds that can be consulted in TSE Debate's "Energy" section. Here we feature some of the recent posts.

Concessions for hydroelectricity

Claude Crampes and Stefan Ambec - *May 5, 2021*

The hydroelectric power plants installed in France whose concession contracts have expired are coveted by current or potential competitors of EDF and SHEM (Société Hydro-Électrique du Midi). While a competitive bidding process is in line with the European Commission's doctrine, it is not exclusively beneficial because it concerns the management of a common good: water.

The European carbon market borders

Claude Crampes and Stefan Ambec - *April 8, 2021*

The border carbon adjustment mechanism adopted by the European Parliament will change the way the EU-ETS operates.

A winter in Texas

Claude Crampes and Stefan Ambec - *March 5, 2021*

How do you ensure that an economy is still running under critical weather conditions? The polar episode that recently hit Texas provides us with some answers on the economic and political dimensions of the question.

Relying on the market to fight air pollution

Claude Crampes and Stefan Ambec - *February 24, 2021*

How far should we go to improve air quality? Market instruments inform us about the costs of depollution. This information is useful for improving our public policies with regard to health and environmental damage.

The economic regulation of electricity storage

Claude Crampes and Stefan Ambec - *January 22, 2021*

With the deployment of wind and solar installations, electrical power generation becomes more variable with circadian and seasonal cycles, cloud cover, and wind patterns. Smoothing the supply of green energy through storage is becoming a necessity. So not only must we make progress in energy storage technologies, but we must also create a regulatory framework that provides incentives for storage.

EU's climate pledges: from 20/20 to 100/50

Claude Crampes and Stefan Ambec - *January 5, 2021*

After the famous 20-20-20 target in 2020, the European Union has committed to carbon neutrality by 2050. Assessment and prospects.

The regulation sandbox

Claude Crampes and Stefan Ambec - *December 2, 2020*

On November 5, 2020, the French Energy Regulatory Commission (CRE) ruled on the eligibility of the applications submitted as part of the regulatory experimentation mechanism provided for by the Energy and Climate Law. Why, out of the 41 applications received, did the CRE only declare 19 applications eligible?

Barriers to the exit of fossil fuels

Claude Crampes and Stefan Ambec - *November 9, 2020*

Faced with the slowdown in their activity due to the pandemic and the transition to a decarbonized economy, companies exploiting fossil fuel deposits will have to reduce their activity, or even shut it down for good. What will become of their extraction facilities? Stopping their operations will not be without consequences for the environment and the climate.

Plugging carbon leaks

Claude Crampes and Stefan Ambec - *October 22, 2020*

The border adjustment mechanism proposed by the European Commission is designed to reduce imported CO2 emissions. This initiative is attractive on paper but its implementation is a real headache. It conflicts with the trade negotiations conducted by the Commission.



Dallas, Texas, during the February 2021 snow and ice storm.

The TSE Energy & Climate Center – alongside the existing TSE Digital, Health and Sustainable Finance Centers – showcases our academic activities, supporting Toulouse experts in their efforts to build new analytical tools to meet contemporary challenges. Bringing together the skills and experience of leading industrial and academic partners, the Center focuses on the economics of energy industries, natural resources, and the environment.

Our scientific outreach publications and events are regular opportunities to share ideas and knowledge with practitioners, policymakers, and the public. The Center is particularly focused on providing expertise on the institutional framework within the European Union and beyond, as well as empirical observations and basic theoretical modelling.

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