Newsletter

NUMERO 22 - JANUARY 2026

Events to come

- January 20: Sciences Echos Conference '**Economics and climate**' by Fanny Henriet
- January 28: Conference '**Climate risks: a new financial risk**'
- March 17: Sciences Echos Conference '**How industry lobbies create doubt**' by Mathis Preti
- April 2-3: 'Doctoriales **MACROFI**'
- April 7: Sciences Echos Conference '**Women in science**' by Aliénor Bisantis
- April 10: Workshop on **sustainable finance**
- April 28 to 30: 2026 School & Conference in Applied Econometrics using **Stata**, France
- May 11: Announcement of the winner of the **Carine Nourry Thesis Prize**
- June 2 to 5: **QFFE** 2026 – Spring School & International Conference Quantitative Finance and Financial Econometrics
- June 18-19: 10th AMSE - Banque de France Workshop in **Macroeconomics**
- June 22 to 24: 7th **AMSE Summer School** on «Inequality, Wealth and Taxation»

Success

- **Tizié Bene**, a former AMSE PhD student, received the AMU Thesis Prize for his work entitled «Analysis of the interaction between formal insurance and informal insurance networks».
- **Nathan Vieira**, an AMSE PhD student received the Best Conference Paper Prize for his paper «The Deadweight Loss of Short-Time Work» at the Royal Economic Society Annual Conference 2025.
- **Federico Trionfetti** received the award for best paper at the 27th annual INFER conference for his work "Geography and City Size: an exploration between Past and Present".

25th JOURNÉES LOUIS-ANDRÉ GÉRARD-VARET

amse école d'économie d'aix-marseille aix-marseille school of economic

The Journées Louis-André Gérard-Varet
June 10-12, 2026 | Aix-en-Provence (France)

Venue :
Campus Pauliane,
Faculty of Economics and Management

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Visiting Researchers at AMSE

(first half of 2026)

Claire PALANDRI

Harris School of Public Policy, University of Chicago

Claire Palandri is a Postdoctoral Fellow at the Harris School of Public Policy, University of Chicago. She holds a PhD from Columbia University's program in sustainable development. Her research interests lie in environmental economics, animal farming systems, and applied statistics.

Date of visit: until 28/02/2026.
Site: MEGA

Ludovic RENOU

Queen Mary University of London

Ludovic Renou is a Professor of Economics at Queen Mary University of London. His research interests are Economic Theory, with a focus on mechanism and information design, and revealed preferences.

Date of visit: 18/05/2026 to 26/06/2026
Localisation: Îlot Bernard Dubois

Edith SAND

Bank of Israel

Edith Sand is a Researcher in the Macroeconomics and Policy Division at the Bank of Israel.
Her research interests lie in labor economics, economics of education, public economics and political economy.

Date of visit: until 30/06/2026
Site: MEGA

Daniel VENTOSA-SANTAULÀRIA

Center for Economic Research and Teaching, Mexico

Daniel Ventosa-Santaulària is a Professor at the Center for Economic Research and Teaching (CIDE) in Mexico.
His research interests lie in time-series econometrics.

Date of visit: until 30/06/2026
Site: MEGA

Hylke VANDENBUSCHE

University of Leuven, Belgium

Hylke Vandenbussche is a Professor in International Economics at University of Leuven. Her research interests lie in international trade and trade policy.

Date of visit: 01/03/2026 to 31/03/2026
Site: MEGA

Garance GENICOT

Georgetown University

Garance Genicot is a Professor at Georgetown University
Her research interests lie in development economics

Date of visit: 01/06/2026 to 31/07/2026
Site: MEGA

Orsolya TOMPA

Hungarian Academy of Sciences

Orsolya Tompa is a Research Associate at the Hungarian Academy of Sciences.
Her research interests lie in sustainable nutrition, econometrics, and behavioural economics.

Date of visit: until 31/08/2027
Site: MEGA

2025 Nobel Prize in Economics: Philippe Aghion, Peter Howitt and Joel Mokyr for "having explained innovation-driven economic growth"

By Cecilia García Peñalosa, Research Professor (CNRS, EHESS, AMSE)

> "Investments by individuals and firms aimed at creating novel technologies where visible everywhere, everywhere except in growth models."

On October 13th, the Nobel prize in economics went to three academics, one half being awarded to Joel Mokyr, professor of economics and history at Northwestern University, «for having identified the prerequisites for sustained growth through technological progress» and the other half being jointly awarded to Philippe Aghion (Collège de France, INSEAD, London School of Economics) and Peter Howitt (Brown University) «for the theory of sustained growth through creative destruction».

In 1987, Robert Solow received the same prize for his seminal model on economic growth. Developed in the 1950s, the model proposed a framework of great elegance that illustrated how various factors can contribute to sustained economic growth. In particular, Solow argued that two key elements determined per capita income levels. One was the accumulation of physical capital which, because of the law of diminishing returns, was bounded. Capital accumulation would hence eventually come to a halt. The other was the effect of exogenous technological innovations, which raised the productivity of new capital, offsetting diminishing returns and resulting in unbounded growth.

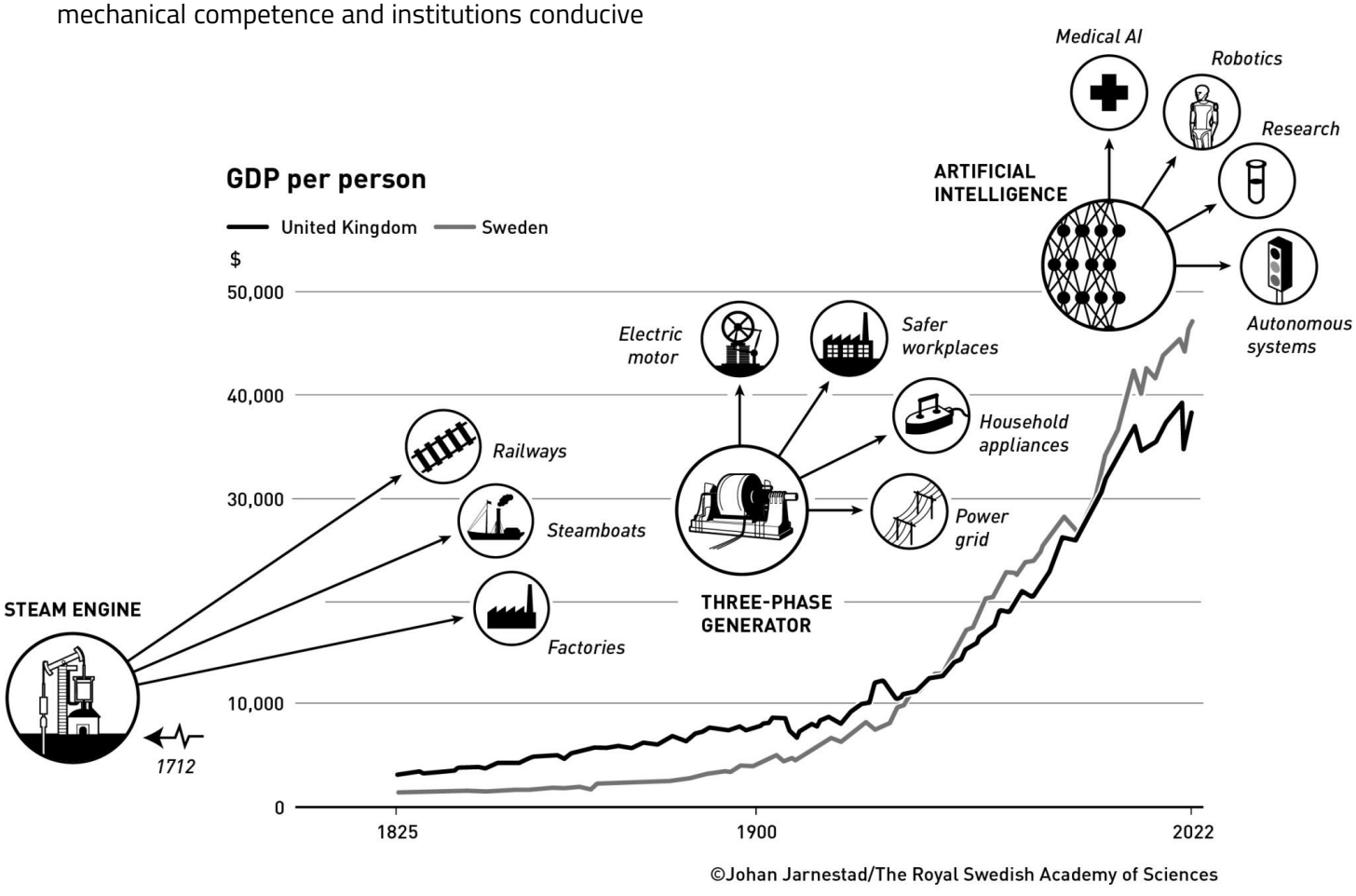
This framework fitted well the post-war economies that were accumulating capital at a fast pace in the wake of destruction and in which new technological know-how seemed to have appeared from nowhere – a nowhere that was largely the result of massive but little publicised public expenditure

on technologies as varied as the mass production of penicillin or early computers to break the Enigma code. Yet critics of Solow's work argued that he saw productivity growth as «manna from heaven», suggesting that technological progress was treated as an exogenous, unexplained gift rather than being a result of specific actions like research and development. By the 1970s, an array of empirical facts seemed not to fit the framework. Notably, investments by individuals and firms aimed at creating novel technologies where visible everywhere, everywhere except in growth models.

Although institutively simple, introducing intentional innovation into a growth model presented a major challenge. Imagine a production function using capital and labour that exhibits constant returns to scale. Assuming perfect competition so that factors are paid their marginal product, the payments to these factors would exhaust all output and nothing would be left to reward innovative effort. The work of this year's laureates moves away from this paradigm to examine the environment and economic conditions in which innovation can occur.

Joel Mokyr's work identifies three important requisites for growth: useful knowledge, mechanical competence and institutions conducive to technological progress. His analysis of Western European economies in the 18th and 19th centuries seeks to identify which institutions foster growth, pointing to how an innovation-supportive environment can emerge through mechanisms like property rights, intellectual property, education and a «market for ideas». In such a context, scientific breakthroughs and practical applications enhance each other and create a self-generating process, leading to sustained economic growth. Crucially, this is a process that challenges existing interests and rents, making openness to new ideas and to change essential for growth.

The importance of challenging existing economic power is the cornerstone of the growth framework developed by Philippe Aghion and Peter Howitt. Using tools developed in the literature of industrial organisation, their framework simultaneously allows for competition (to be the first to innovate) and monopoly (once a firm has innovated). This process of creative destruction, first described in the 1940s by the Austrian economist Joseph Schumpeter, sees technological change as a permanent conflict

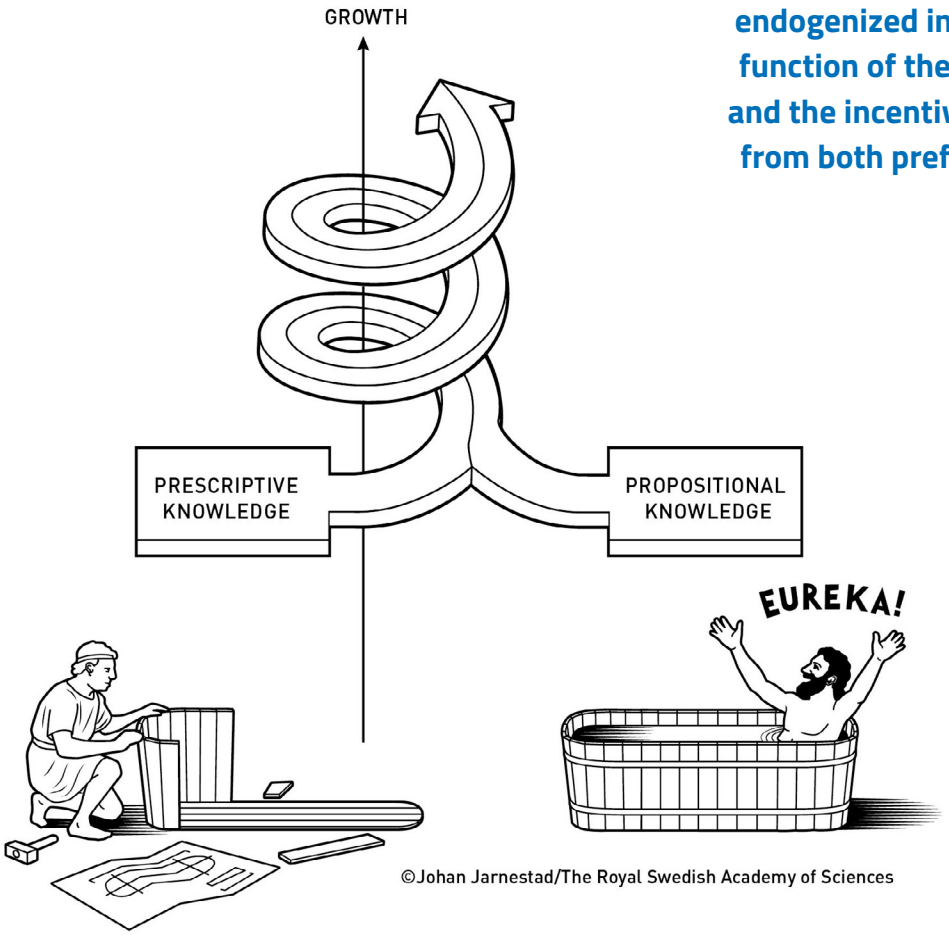


between the creation of new technologies (or goods or varieties of a good) and the destruction of existing ones. Each time a product is replaced by a better version, a monopolist appears and one disappears. The rents from innovation remain, but the firm to which they accrue changes as technologies emerge and per capita incomes grow.

Together, these two approaches have endogenized innovation, making it a function of the institutional context and the incentive system that results from both preferences and policies. They not only explain how sustained growth occurs, but also allow us to assess when growth is lacking or when it is excessive and which kinds of policy interventions can help. The wealth of predictions yielded – ranging from the education system to intellectual property rights legislation and the taxation of top incomes – illustrates the power of these approaches to address the growth prospects of both mature and emerging economies.

This year's prize comes in the wake of the 2024 award to Daron Acemoglu, Simon Johnson and James A. Robinson and the 2023 award to Claudia Goldin. Common to all three is a belief that economic history can provide theoretical insights into questions relevant today, such as what determines female labour force participation, which institutions foster growth and how to promote innovation. Yet over the past three decades, the teaching of economic history has fallen through the cracks in most economic departments. Cambridge University, known for its adherence to tradition, removed economic history as a compulsory course in the economic tripos (i.e., its undergraduate degree) in the 1990s. Today, it is rare to find an economics graduate who has even the most basic knowledge of the subject. These three consecutive Nobel prizes force us to rethink the importance of looking back in time and indicate that dusting off old volumes is as valid a way of testing current economic theories as any other.

> **"These two approaches have endogenized innovation, making it a function of the institutional context and the incentive system that results from both preferences and policies."**



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Academic Research and Environmental Accounting: a new AMSE initiative

By Raouf Boucekkine, Professor (AMU, AMSE)

Since September 9, 2025, AMSE and the sustainability consulting firm Goodwill-management have partnered to establish the Triple Accounting Chair. This initiative is supported by the Institut Louis Bachelier, under the academic supervision of AMU and the CNRS. Initially planned for a duration of 3 years, the Chair is led by Alan Fustec, a pioneer in environmental accounting and founder of Goodwill-management, with Raouf Boucekkine overseeing scientific direction. The associated research board comprises Stéphane Auray (ENSAI), Olivier Chanel (AMSE), Charles Figuières (AMSE), Aude Pommeret (University of Savoie), and Ullrika Sahlin (Lund University).

Corporate triple accounting includes financial accounting, but its distinctiveness lies in the consideration of a company's social and environmental impact. While evaluating the former— social and societal costs related to job insecurity, occupational health, training, gender pay gaps, etc.—does not pose a major scientific challenge, the second task is infinitely more difficult. This is primarily due to the broad scope and significant heterogeneity of the domains covered by environmental accounting. Not only does a given company's impact on greenhouse gas emissions need to be assessed, but also its impact on biodiversity, natural resources (including blue and green water, various mineral resources, and critical materials), and all forms of pollution that reduce the sustainability of ecosystems, while also integrating climate change. Of course, there is no shortage of databases, at least for physical impacts. The existing methodology relies on a very rich database, Exiobase, which aggregates sectoral economic data (an Input-Output Matrix of 160 sectors x 44 countries + 4 «Rest of the World» regions). Translating from sector to company level is first based on the company's share within its sector (in terms of production, employment, etc.) and then adjusted by considering certain intra- and inter-sector heterogeneity criteria. However, even for physical impacts, the scientific questions remain profound. For example, numerous biodiversity metrics exist; some have clear axiomatic foundations but produce different measurements (Figuières and Gravel, 2025). This already raises the sensitive question of measurement robustness.

Then comes the even more complex stage of financializing physical impacts—a necessary step to discriminate between economic projects in terms of sustainability. With no established literature akin to that on «carbon pricing» for every component of environmental accounting, different financialization methods inevitably have to be adopted in turn or combined, depending on the components, to calculate social cost or assess cost-effectiveness. And that's not all: there remains the challenge of aligning, as well as possible, accounting calculations for a given period with the objective of holding the company accountable for sustainability... over the longer term. A very interesting initial idea contributed by Alan Fustec is to measure how far the accounting exercise departs from the planetary boundaries established and regularly revised by the Stockholm Resilience Center (see Richardson et al., 2023). Adapting these boundaries to companies is a daunting challenge, even more so given the broader vision of environmental accounting that this Triple Accounting Chair is determined to adopt.

References

Figuières, C., and Gravel, N. 2025, «The Axiomatic Foundations of Biodiversity Measurement: a Survey» *mimeo*.

Richardson, J., Steffen W., Lucht, W., Bendtsen, J., Cornell, S.E., Donges, J.F., Fetzer, I. et al. 2023, «Earth beyond six of nine Planetary Boundaries», *Science Advances*, 9, 37.

Strategic flip-flopping in political competition

Gaëtan Fournier, Alberto Grillo, Yevgeny Tsodikovich, 2025, *International Economic Review*, forthcoming.

> **When candidates anticipate these dynamics, they may intentionally choose polarized positions at the beginning of the campaign.**

Gaëtan Fournier

Gaëtan Fournier obtained his PhD from Paris 1 University in 2015. He was a Post-doc at Tel-Aviv Universit and at the Institute for Advanced Study in Toulouse, before joining AMSE as an Assistant Professor in applied mathematics. His research interests include location games, political economy and repeated games with incomplete information.

RESEARCH QUESTION

During electoral campaigns, candidates receive information about voters' evolving preferences through public signals such as polls and media coverage. This information creates strong incentives to adjust political positions to gain more support, a phenomenon commonly known as flip-flopping. However, shifting one's stance publicly can be politically and personally costly : voters often dislike inconsistency or opportunism, and candidates incur internal costs when reorganizing their communication strategy.

Our research uses game theory to understand how candidates balance these competing forces. We examine how candidates choose their positions both before and after a new piece of information reveals the state of public opinion.

This framework was chosen to answer several central questions: who adjusts during the campaign, in which direction, how far, and with how much success ? By studying how candidates anticipate these dynamics, we can also explain why candidates sometimes begin with polarized positions, compared to the expected center of the electorate.

PAPER'S CONTRIBUTION

Flip-flops: small and preemptive. When new information places a candidate in a favorable position, the model distinguishes between a «strong favorite», whose victory is guaranteed, and a «vulnerable favorite», whose victory is still at risk if the opponent optimally adjusts. The latter case induces a strategic interaction, similar to the matching pennies game: the favorite adjusts only if challenged by an optimal move from the opponent, while this opponent adjusts only if the favorite does not. This leads to a mixed

strategies equilibrium, where the majority of flip-flops are small adjustments made by the favored candidate to secure victory. Large strategy shifts by an outsider, attempting (but often failing) to reverse the election, are less frequent. The most common adjustments are thus consolidation tactics, not desperate catch-up attempts. This highlights a critical role for minor and preemptive policy changes to consolidate an electoral advantage.

Divergence first, moderation later. We find that adjustments occur only if the information does not favor one candidate too strongly, keeping the outcome competitive. Such relatively neutral information incentivizes candidates to adjust exclusively toward a more moderate policy, never toward the extremes. While the fact that candidates only tone down their positions is already well-documented in multi-stage elections (between a primary and the main election for example), the mechanism revealed here does not depend on institutional rules.

When candidates anticipate these dynamics, they may intentionally choose polarized positions at the beginning of the campaign: by positioning farther from the median voter, they increase the likelihood of new information clearly promoting a favorite. While this strategy carries the risk of a guaranteed defeat, we find that it pays off on average: candidates avoid a competition that would involve costly repositioning. This mechanism mirrors the way firms use product differentiation to alleviate price competition.

FUTURE RESEARCH

While our model assumes a cost for flip-flopping, some politicians seem resilient to accusations of inconsistency or opportunism. Incorporating heterogeneity would help to understand why repositioning patterns differ across countries, parties, or political cultures.

Finally, the model generates predictions that can be tested empirically: favored candidates should adjust more frequently but less dramatically than their challengers and early divergence should be followed by moderation. These predictions could be evaluated through content analysis of campaign materials.

Bad oil, worse oil and carbon misallocation

Renaud Coulomb, **Fanny Henriet**, Léo Reitzmann, 2025, *The Review of Economic Studies*, forthcoming.

> **“These findings reposition supply-side reallocation as a powerful and underexploited complement to demand-side climate policies.”**

Fanny Henriet

Fanny Henriet is a CNRS Research Professor at AMSE since 2023, and a lecturer at École Polytechnique. She obtained her PhD in 2012 from EHESS. Before joining AMSE, she was a Professor at Paris School of Economics. Her research interests lie in the intersection of public economics, natural resource economics, and the economics of the energy transition. She is currently a member of the French Council of Economic Advisors.

RESEARCH QUESTION

Aligning the oil industry with planetary boundaries is usually framed as a demand-side challenge: reducing oil consumption through efficiency standards or carbon pricing. While essential, this perspective overlooks a key dimension of mitigation on the supply side. Oil extraction is highly heterogeneous: barrels differ not only in producer costs, but also in their greenhouse gas (GHG) emissions. Some deposits—such as Canadian oil sands—exhibit upstream CO_2-equivalent emissions per barrel that are roughly twice as high as those of lighter crudes from countries like Norway or Saudi Arabia. These differences stem from geological characteristics, extraction techniques, and upstream practices such as methane flaring and venting.

Given that global oil resources far exceed the amount that can be burned under climate constraints, a crucial question arises: can reallocating oil supply toward lower-carbon deposits substantially reduce emissions, thus complementing the necessary decrease in total oil production? More broadly, how much mitigation potential has been missed by ignoring carbon-intensity heterogeneity across oil deposits, and what role could supply-side policies play alongside demand-side measures in accelerating decarbonization?

PAPER'S CONTRIBUTIONS

Our research addresses this question by quantifying the climate costs of carbon misallocation in global oil production. Using detailed field-level data on oil deposits worldwide, we document large and persistent heterogeneity in carbon intensity across and within countries. We show that, since the 1992 Earth Summit, oil production decisions have largely

ignored these differences, resulting in significant avoidable emissions. Between 1992 and 2018, minimizing total social extraction costs—without reducing aggregate production—could have avoided around 10 gigatons of CO_2e, equivalent to roughly two years of global transport emissions, at a very low cost. Valued at a carbon cost of $200 per ton of CO2e, this represents nearly $2 trillion in climate damages.

Importantly, mitigation opportunities exist both across and within countries. While some nations host systematically higher-carbon deposits, carbon intensity also varies widely within national borders. We show that reallocating production across fields within each country—holding national output constant—yields emission savings of comparable magnitude, yet at a larger private cost for oil producers.

Looking forward, under a net-zero trajectory consistent with the International Energy Agency's World Energy Outlook, accounting for carbon-intensity heterogeneity in future supply decisions could save an additional 9 gigatons of CO_2e by 2060, without further reductions in oil demand. While incentives differ across producers, we find that estimates of aggregate stranded assets change little when carbon-intensity heterogeneity is taken into account, allowing supply-side reallocation to deliver climate benefits without materially altering national production paths.

These findings reposition supply-side reallocation as a powerful and underexploited complement to demand-side climate policies.

FUTURE RESEARCH

Future research will focus on expected profits and rents under alternative climate trajectories. Because carbon-intensity-based policies affect oil reserves asymmetrically, they are likely to reshape the distribution of profits across firms and countries, thereby influencing strategic behavior and positions in international climate negotiations. Understanding how oil companies' profits respond to climate policies is essential to explain producers' incentives, their resistance or support for coordinated action, and the feasibility of global supply-side mitigation strategies.

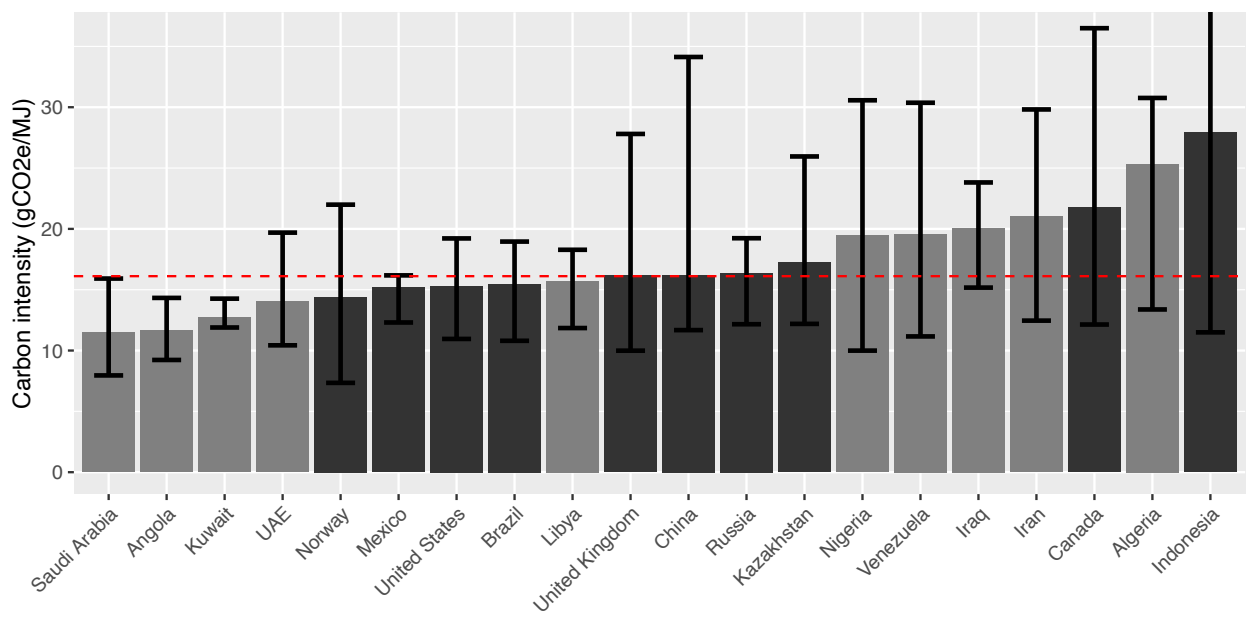

Figure 1: Carbon intensity by country: 1992–2018

Note: The graph shows, for each country amongst the top-20 oil producers over the 1992-2018 period, the average carbon intensity of oil production and refining per megajoule (MJ). The segments indicate the range between the 10th and 90th percentiles of estimated carbon intensities within each country. Bars for OPEC countries are shown in light grey. The dashed red line indicates the global average.

Regional trade policy uncertainty

Céline Poilly, Fabien Tripier, 2025, *Journal of International Economics*, vol.155, 104078.

Our estimation shows that higher exposure to trade policy uncertainty has a significant and sizable negative effect on economic activity.

Céline Poilly

Céline Poilly is a Professor of Economics at AMSE since 2017, junior member of the Institut Universitaire de France and a research affiliate of the Center for Economic Policy Research (CEPR). She obtained her PhD from the University of Cergy-Pontoise in 2008. Before joining AMSE, she was an Assistant Professor at University of Louvain-la-Neuve, and at University of Lausanne. Her research includes monetary economics, international economics and labor economics.

RESEARCH QUESTION

Many countries have recently experienced economic and political upheaval due to revised trade agreements and growing trade protectionism. The most recent episode was «Liberation Day» on April 2, 2025, when the U.S. administration issued a series of decisions to raise customs duties. These events led to rises in uncertainty regarding future economic outcomes.

Several papers have investigated the aggregate effects of trade policy uncertainty on economies (Handley & Limão, 2022, among others). These impacts can be expected to differ, however, depending on trade exposure, which raises the following question: What are the regional effects of trade policy uncertainty on macroeconomic aggregates? Do different regions suffer the same degree of trade policy uncertainty when their degrees of exposure to trade differ? This paper addresses these questions by building a novel empirical measure of trade policy uncertainty (TPU) that captures import tariff volatility at the U.S. state level.

PAPER'S CONTRIBUTION

One contribution of the paper is its novel empirical measure of trade policy uncertainty at the U.S. state level. We capture trade policy uncertainty using the volatility of import tariffs.

We proceed in two steps. First, we resort to national series of tariffs at the sectoral level. Tariffs are measured as the share of duties (collected by U.S. customs) over imports for each sector. We then estimate the time-varying volatility of these sectoral tariff series using a stochastic volatility model. This enables us to capture unanticipated changes in sector-based tariff volatility that can be interpreted as uncertainty shocks. Second, we build exposure to uncertainty at the state level by weighting sector-based volatility by the share of sectoral imports among total imports within the state. Sectors «Stone and Glass» or «Textile» suffer the greatest tariff volatility, and states like New-York, which intensively import these products, are especially exposed to trade

policy uncertainty. Figure 1 shows the average degree of exposure to tariff volatility for each state. Darker colors indicate the states most exposed to sectors with high volatility in import tariffs.

With our U.S. state-level measure of tariff volatility in hand, we can investigate the effects of uncertainty shocks on U.S. states' economic activity. To do so, we estimate a cross-sectional regression to measure the relative effects of an exogenous increase in exposure to TPU on state-level real GDP at different horizons. Our estimation shows that higher exposure has a significant and sizable negative effect on economic activity, whether measured by employment or GDP growth at the regional level. In particular, after two years, the cumulative drop in real GDP reaches 0.93% when the state is affected by a rise in volatility that corresponds to a 90th percentile of the shock distribution, relative to an unaffected state.

Given these results, we also develop an open two-region model to shed light on the mechanisms behind the TPU impact on U.S. states' activity. In line with the empirical findings, we find that the most exposed region experiences a recession when hit by volatility shocks to national import tariffs. This can be explained by the precautionary behavior of agents: because of uncertainty about the future state of the economy, households build precautionary savings and firms choose a price higher than in the absence of uncertainty, which generates a drop in economic activity.

FUTURE RESEARCH

Our results show that trade policy uncertainty not only affects economic activity as a whole, its impact also varies across regions. In a companion paper, Tripier and Poilly (2025), we focus on TPU's regional effects on the labor market. We find that the extensive margin of labor (employment) is more sensitive than the intensive one (hours) and that the reduction in employment is twice as large in the goods sector compared to the services sector.

One natural extension of our work would be to apply our methodology to the construction of a regional measure of trade policy uncertainty for countries of the Euro Area. This would help determine whether European countries are differently affected by trade uncertainty.

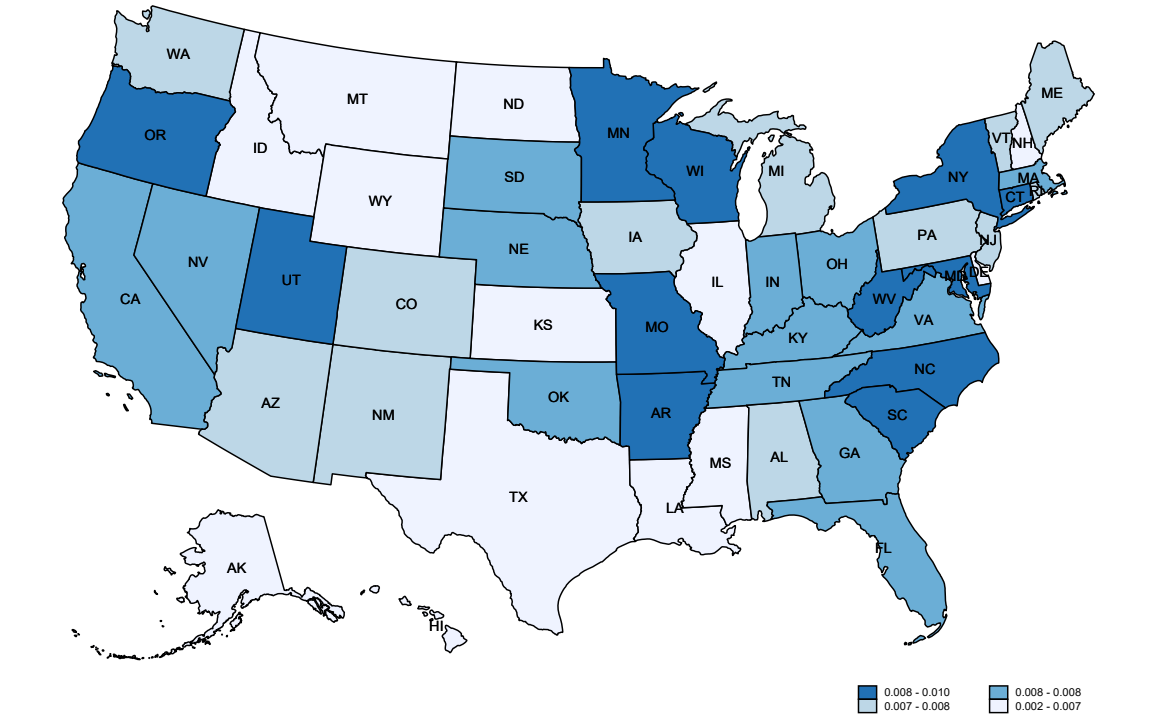

Figure 1: Tariff-volatility exposure across U.S. states

Note: Colors illustrate states' exposure to tariff volatility, which are computed plugging σ_p^{τ} in Eq. (5) and averaging over the sample 2008m2-2020m12. Darker colors represent states which are the most exposed to tariff volatility.

References:
Kyle Handley, Nuno Limão, 2022, «Trade Policy Uncertainty», *Annual Review of Economics*, 14, 363–395.
Céline Poilly, Fabien Tripier, 2025, «Trade Policy Uncertainty and the Labor Market: State-Level Evidence», *AEA Papers and Proceedings*, 115, 172-76.

The toll of tariffs: The impact of protectionism on education and fertility in late 19th century France

Vincent Bignon, **Cecilia García-Peñalosa**, 2025, *Journal of Economic Growth*, 30, 461–495.

Vincent Bignon

Vincent Bignon is a Professor at AMSE, a Senior Research Advisor at the Bank of France and a research fellow of the Center for Economic Policy Research (CEPR). He obtained his PhD from Ecole Polytechnique in Paris in 2002. Before joining the Bank of France in 2011, he was Associate Professor at the University of Paris East, at Sciences Po Paris and at the Graduate Institute for International and Development Studies in Geneva. His research interests lie in monetary economics, applied economics and economic history.

Cecilia García Peñalosa

Cecilia Garcia Peñalosa is a CNRS Research Professor, EHESS Director of Studies and and a research fellow of the Center for Economic Policy Research (CEPR). She obtained her PhD in 1995 from Oxford University. Before joining AMSE in 1999, she was a lecturer at Universitat Autonoma de Barcelona and research fellow at Oxford. Her research interests are economic growth and development, income inequality, and gender in labour markets.

BACKGROUND

At the cross-roads of trade economics and growth theory, this paper explores one of the central questions for growth economists, namely, how, after millennia of roughly constant living standards, did modern growth, driven by the accumulation of physical and human capital, emerge. While human history has always been characterized by innovation, productivity growth that temporarily raised living standards in an economy subsequently resulted in an increase in the population, which in turn reduced per capita incomes once again. Modern growth required breaking away from this Malthusian effect. Growth theorists claim that this occurred when a fertility transition induced couples to decide to have fewer children and invest in their education, thus decreasing the quantity of children in order to increase their quality. This approach has been criticized on the grounds that in 19th century Europe, changes in fertility were the result of social transitions and did not respond to macroeconomic forces. Our work focuses on late 19th century France and examines to what extent fertility and education react to aggregate shocks by focusing on the introduction of a tariff on cereal, a major macroeconomic policy change.

METHODS

The paper examines the impact that the Méline tariff, a large tariff on cereal introduced in 1892, had on education and demographic behaviour in France. A growth model is used to examine the impact of the policy. It shows that protectionism increases the relative return to working in agriculture (where human capital is not very productive) and reduces that to working in manufacturing (where more education substantially raises productivity and thus wages), thus inciting parents to have more children and school them less. The model also predicts that

this effect should be stronger in areas that are more intensive in cereal production.
We then take this prediction to the data, exploiting geographic variation in cereal production across 85 French administrative departments (départements). We focus on the period 1872-1913 and assess the effects of the tariff on educational outcomes (school enrolment and absenteeism) and fertility, controlling for department fixed effects. Two measures of local cereal-intensity are used. The first is the share of employment in cereal production just before the tariff was introduced; the second consists of using the suitability of land for cereal production, as determined by agro-climatic factors.

RESULTS

Our empirical findings show that the Méline tariff significantly reduced school enrollment rates in those departments more specialized in cereal production. Conversely, fertility rates, which were already declining, fell more slowly in these departments. The robustness of these results is confirmed by alternative specifications that include dynamic models and controls for potential confounders such as religiosity, migration, and landownership.

CONTRIBUTION

This study offers important insights into the long-term consequences of protectionist policies, particularly in terms of educational attainment and demographic shifts, which are crucial drivers of economic growth. The reduction in school enrolment and the slow-down in the fertility decline following the Méline tariff suggest that protectionism can diminish a country's growth potential. By discouraging the accumulation of human capital, protectionist policies can hinder long-term economic development, especially in economies with a high reliance on sectors that are intensive in unskilled labour. The findings highlight the need to consider the broader, longer-term implications of trade policies, a question of particular relevance in the current climate of trade tensions and demands for protectionism.

> **"Our empirical findings show that the Méline tariff significantly reduced school enrollment rates in those departments more specialized in cereal production."**

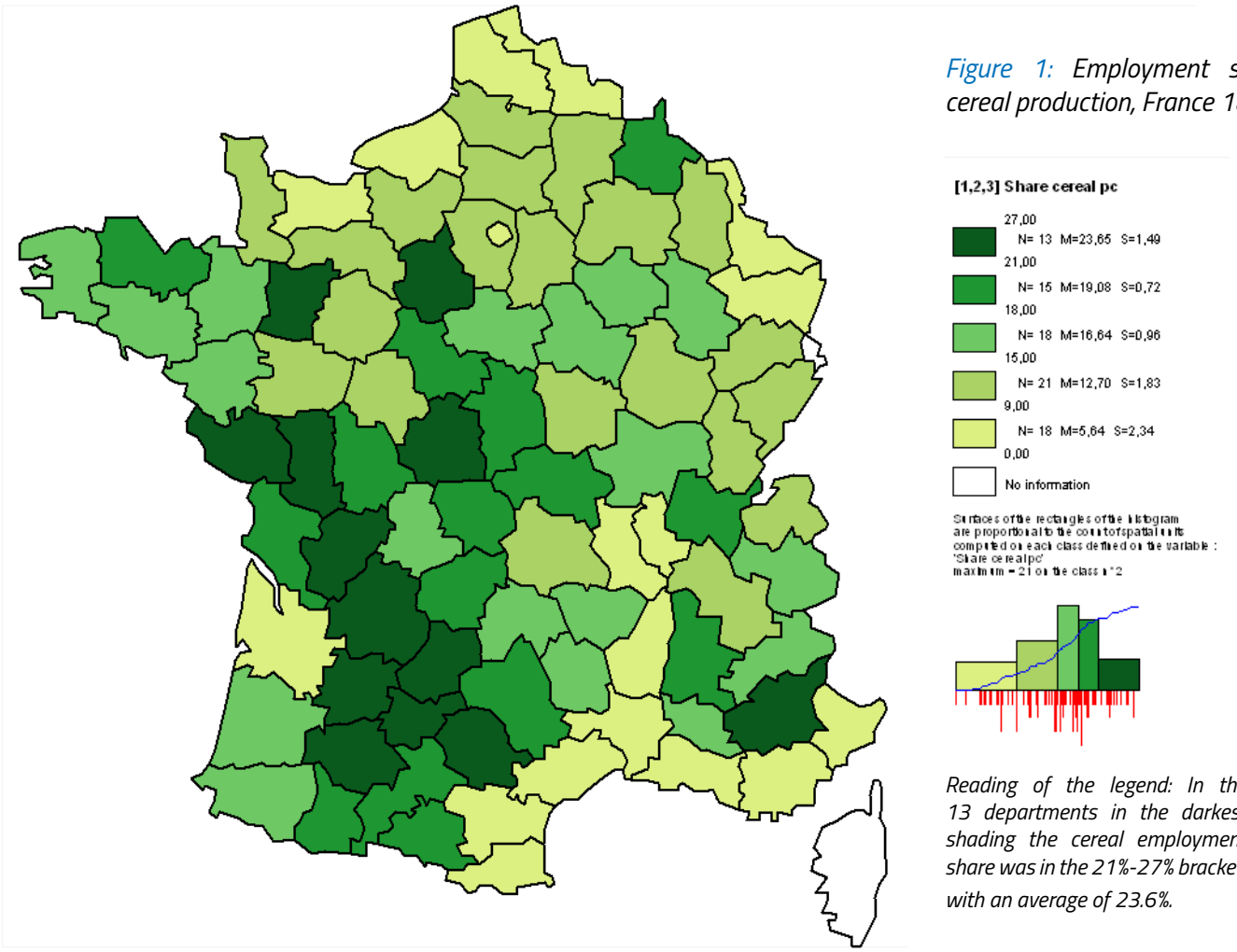

Figure 1: Employment share in cereal production, France 1892

Reading of the legend: In the 13 departments in the darkest shading the cereal employment share was in the 21%-27% bracket, with an average of 23.6%.

AMSE School 10th anniversary

By **Habiba Djebbari**, Director of Graduates Studies

On Saturday, November 29, AMSE School celebrated its 10th anniversary, reflecting on its trajectory and reaffirming its core values. Since its founding, the school has placed students at the heart of its mission, through rigorous academic training and ambitious professional preparation.

AMSE's international reach testifies to this commitment: strong partnerships with international programs, teaching largely in English, and mobility to and from 17 destinations. These levers make graduates more competitive, enabling them to meet the complex challenges of international relations that shape global exchanges.

The celebration explored new challenges ahead. Christopher Sorensen, CEO and founder of GreenLab, delivered a keynote address on concrete responses to sustainability challenges. At two roundtables, leaders discussed how to rebuild trust in scientific expertise and how to prepare for the innovations in quantum technologies that will reshape financial and scientific sectors. The lessons are clear: we need to continue training critical minds capable of navigating complexity, and prepare students for tomorrow's challenges.

The school's growth testifies to our collective success. AMSE set out with one Master's program and approximately one hundred students, but now hosts nearly 500 students across three Master's programs, plus fifty doctoral students. Most importantly, AMSE lives through its graduates, who carry the school's core values into the world. This success was made possible by a dedicated community: faculty, researchers, collaborators from industry and civil society, backed by institutional support.

As evening fell, we gathered to celebrate together. Former leaders and alumni shared their journey, revealing the profound human connections the school has fostered. Together we blew out the candles, collectively honoring a decade of remarkable achievements. The celebration continued in the early morning hours, as AMSE's spirit extended far beyond the classroom walls.

Christopher Sorensen,
CEO and founder of GreenLab

AMSE Career Day

By **Elisabeth Barthélemy**, Head of communication

On Friday, November 28, AMSE came alive to the rhythm of its Career Day! Graduates, partners, and students gathered for an edition rich in encounters and inspiration. A highlight of the year, this event allows our students to concretely explore the many career paths available to them, connect with professionals — including many alumni — and seize opportunities for internships or work-study programmes.

For professionals, it is the ideal occasion to spot tomorrow's talent, share their day-to-day experience, and convey their passion for their work.

The morning, dedicated to alumni, set the tone: 13 graduates came to talk about their career paths, open new perspectives, and spark the curiosity of the 377 students in attendance, who were eager to continue the conversation later at booths.

The afternoon took on an even more dynamic aspect with 43 company booths and 70 professionals showcasing the diversity of careers, professional trajectories, and opportunities: internships, apprenticeships, VIE programs, and much more.

The high attendance throughout the day and the energy of the discussions confirmed students' strong interest in the participating companies. They also benefited from guidance offered by the SUIO (student guidance office), particularly on how to write their CVs and on the importance of soft skills.

New in 2025

AMSE Career Day was awarded the SAE (Synergies AMU-Entreprises) label by Aix-Marseille University in September 2025, further strengthening our commitment to supporting students' career development and success.

Portrait of Sandrine Lunven

CEO of TAC Economics

By Léa Dispa

Can you describe your career trajectory since your time at AMSE?

I joined TAC Economics in 2007, shortly after completing a Master's degree in Economic and Financial Engineering at the University of Rennes. TAC Economics is a company specializing in applied research on country risk, serving corporations, banks, and asset managers that need international risk analysis. I was hired as a Quantitative Economist, responsible for developing econometric and machine-learning models applied to macroeconomic analysis.

In 2010, I decided to go part-time and start a PhD, a project I had been considering for several years. I wanted to conduct an academic research project focused on a single topic over three or four years. I joined AMSE, under the supervision of Eric Girardin. In 2015, I defended my thesis, entitled "Determinants and Transmission of Monetary Policy in China."

I chose to work on China because its economic model differs significantly from those of Western economies, and its complex monetary policy remains relatively understudied in France. My research focused on deciphering the mechanisms of Chinese monetary policy by building monitoring indicators based on the analysis of official speeches.

From 2011 onward, alongside my PhD, I further developed business-cycle analysis models at

TAC, in a context shaped by the 2008 financial crisis. Our clients were expressing a new need: to monitor not only emerging economies, but also developed economies, which had themselves become sources of risk. This required quantitative research and the development of economic models covering both country risk and global economic risks. I subsequently became Head of Developed Economies.

From 2018, I supervised strategic analysis and data-science projects for clients seeking to internalize their own analytical tools. In 2023, I was appointed Chief Executive Officer of TAC Economics, leading a team of 12 people based in Rennes.

What are you working on currently?

At TAC Economics, our activities cover several areas: country-risk monitoring, geopolitical risk analysis, cyclical analysis, and the production of quantitative analyses, publications, and presentations. My PhD equipped me to handle both fundamental and quantitative economics, which means I can contribute to model development and also explain the results clearly to our clients. These fall mainly into three types: strategy departments, risk management departments, and finance departments of large organizations with strong international exposure.

TAC has long been convinced of the value of artificial intelligence for country-risk analysis. We have been using AI-based methods for over 35 years, even before the term "AI" became common. These tools allow us to develop rating-based models that identify economic, financial, and political risks, as well as early warning signals of crises. When it comes to detecting financial crises, for example, we are dealing with complex, non-linear dynamics involving numerous macroeconomic factors—an area where AI tools are particularly effective.

That said, AI alone is not sufficient. Results must always be interpreted. Our goal is not only to shed light on what may happen, but also to explain why. This requires a combination of skills in fundamental econometrics and AI—being comfortable with data processing and analysis, while also relying on theoretical frameworks to make sense of the results.

How do you feel about your time at AMSE ?

I completed my PhD remotely, traveling once a month to work with Éric Girardin for one or two days. Those exchanges were invaluable. What I take away from AMSE is its scientific excellence, as well as the quality of the discussions with researchers. Doing a PhD certainly allows you to deepen your knowledge and strengthen your expertise. But I see it, above all, as a human experience. It is an opportunity to meet excellent researchers, to take the time to attend conferences, present your work, listen to others' research—and ultimately to build intellectually enriching relationships.

> **"What I take away from AMSE is its scientific excellence, as well as the quality of the discussions with researchers."**

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If we knew what we were doing,

it would not be called research, would it?

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Albert Einstein

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