

Applied Economics Issues

Session 1: Introduction

Ewen Gallic

Master 2 DADEE – 2026

1. Short presentation and logistics

Instructor

- ▶ Ewen GALLIC
- ▶ Aix-Marseille School of Economics
- ▶ Maître de Conférences (Assistant Prof.) in Economics
- ▶ Research interests: data science, algorithmic fairness, environmental economics
- ▶ Contact: ewen.gallic@univ-amu.fr
- ▶ Office: 1-04, Îlot Bernard-du-Bois, Marseille

Course organization

- ▶ Duration: 7 sessions (4×3 hours and 3×4 hours)
- ▶ The course will be based on lectures combined with interactive discussions.
- ▶ You are expected to actively participate by preparing readings in advance and contributing to classroom debates.
- ▶ Some reading materials will be provided in advance.

Objectives of the course

- ▶ Train you to think like economists by applying economic reasoning to real-world issues.
- ▶ Help you become familiar with reading and summarizing academic articles.

Evaluation

You will be evaluated with a final written exam.

2. Introduction

Our role

What is the role of applied economists today?



Source: Sarah Blesener/The New York Times/Redux/eyevine



Source: Image generated with ChatGPT 5

First example: what drives climate protests?



Source: Sarah Blesener/The New York Times/Redux/eyevine

Based on [Fisher et al. \(2023, Nature\)](#):

Why do people protest?

- ▶ To voice political demands
- ▶ To express anxiety or concern
- ▶ To build collective identity / movement

Which tactics are effective?

- ▶ Wide repertoire of non-violent actions ([Sharp, 1973](#) lists 192)
- ▶ Confrontational tactics unpopular, but gain media attention
- ▶ Raises cost–benefit questions about visibility vs. legitimacy

Why repression?

- ▶ Global wave of criminalization of non-violent protest
- ▶ Evidence suggests repression not driven by public opinion
- ▶ Open question: what incentives drive governments?

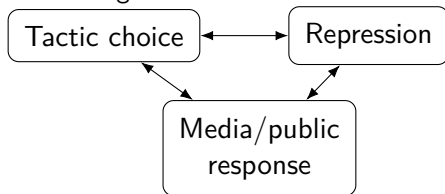
Where do applied economists come in?

► Collective action problem

- Why join if **individual impact is negligible**?
- Free-rider problem (Olson, 1971)

► Strategic behaviour

- protesters and governments: players in a game



► Externalities and welfare

- Climate change: negative externality.
- Protests: attempt to shift policy to internalize externality.
- Research question: which tactics minimize social cost while maximizing policy impact?

Economists as problem-solvers

Economists can act as problem-solvers. In the example of climate protests, they can ask (for example):

- ▶ How do protests affect the probability of policy change?
- ▶ What is the welfare impact of different tactics (costs, benefits, risks)?
- ▶ How does repression shift the incentives of citizens and governments?

Hence, economists bring a language of **incentives**, **costs**, and **welfare analysis** to social issues.

Second example: what is going on with AI in hiring? (1/6)



Source: Image generated with ChatGPT 5

- 1** According to you, why would firms adopt AI screening?
- 2** What consequences might there be?

Second example: what is going on with AI in hiring? (2/6)

Why would firms adopt AI screening?

- ▶ Screening is costly: “*The cost of screening applicants, for example reviewing resumes and conducting interviews, is one potentially important friction in the matching process.*” (Weinstein 2018, Labour Econ.).
- ▶ Scale and speed. “*[algorithmic recommendations] have zero marginal cost, and recommendation quality potentially improves with scale*” (Horton 2017, JLE).
- ▶ Perceived objectivity. “*Our review reveals a growing trend in the use of ‘blind’ screening algorithms to eliminate unconscious human bias by removing demographic markers from application materials, as their disparate influence on decision makers has been shown*” (Cheng and Hackett, 2021).

Second example: what is going on with AI in hiring? (3/6)

Why would firms adopt AI screening?

- ▶ A bit more on **perceived objectivity**. Miller (2018, Harv. Bus. Rev.) argues that since humans are bad (not accurate and biased) at making some decisions, this task should be assigned to algorithms: “*the humans who used to make decisions were so remarkably bad that replacing them with algorithms both increased accuracy and reduced institutional biases.*” His claim invokes economic theory: “*This is what economists call a Pareto improvement, where one policy beats out the alternative on every outcome we care about.*”

Second example: what is going on with AI in hiring? (4/6)

Biases everywhere, even for algorithms

- ▶ AI algorithms are trained on **historical data** which already contain biases. “*an extensive literature has documented that firms, and the recruiters that they employ, are often inaccurate or biased in their predictions*” (Li et al. 2025, Rev. Econ. Stud.).
- ▶ Masking discriminatory variables worsens discrimination for humans: “*before BTB [Ban the Box], white applicants received 7% more callbacks than similar black applicants, but after BTB this gap grew to 43%.*” (Agan and Starr 2017, QJE)
- ▶ Dropping a sensitive attribute does not prevent discrimination **if correlated features remain** (proxy issues, as discussed in Dwork et al., 2012).

Second example: what is going on with AI in hiring? (5/6)

The use of AI-guided recruiting decisions leaves us with **multiple concerns**, including:

- ▶ Adverse impact across groups. *“because this approach implicitly assumes that past examples extend to future applicants, firms that rely on this approach may favour groups with proven track records, to the detriment of non-traditional applicants.”* (Pisanelli 2022, Econ. Lett.).
- ▶ Opaque criteria:
 - the models themselves are usually not made public (Raghavan et al. 2020, FACCT),
 - how they operate is usually unintelligible (Ajunwa 2020, Cardozo L. Rev.).
- ▶ Feedback loops, as documented by Lum and Isaac, 2016 for crime prediction: *“the model becomes increasingly confident that the locations most likely to experience further criminal activity are exactly the locations they had previously believed to be high in crime: selection bias meets confirmation bias.”*

Second example: what is going on with AI in hiring? (6/6)

These concerns leave us with a lot of questions. A very simple one is the following:

Do AI tools improve match quality and equity, or do they just repackage previous biases?

2.1. The role of applied economists

Where do applied economists come in? (1/3)

Measuring causal links

- ▶ AI screening tools may alter who is chosen and also the counterfactual pool of who would have succeeded if given the chance.
- ▶ There is a need to document **selection and treatment effects**
 - (In)famous example of Amazon's hiring algorithm accused of showing bias against women.¹
 - Hoffman et al. (2017, QJE) shows, through an experiment, that HR managers who receive **additional signal** thanks to AI-driven job testing “*often overrule test recommendations because they are biased or mistaken*” .

¹<https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G/>

Where do applied economists come in? (2/3)

Document trade-offs and their costs

- ▶ Micro101: firms want to $\max \pi$. In **Hiring**: pick candidate that $\max$ **productivity**.
- ▶ But firms also face **legal and ethical constraints**:
 - Laws require equal treatment of individuals (wrt, e.g., gender, race).
 - Algorithms must not reproduce discrimination against **protected groups**.
- ▶ **Fairness**: “*A prediction is fair if it corresponds to the same standard across groups*” (Corbett-Davies et al. 2023, JMLR).
 - Note: there are multiple competing definitions of fairness...
- ▶ There may be a **trade-off** between **profit maximization** and **fairness**:
 - **Accuracy vs. fairness are not always aligned** (Kleinberg et al., 2016): Imposing fairness constraints can reduce predictive accuracy while relaxing fairness constraints can increase disparities.

Where do applied economists come in? (3/3)

Applied economists can therefore:

- ▶ Quantify the **efficiency gains** of AI screening:
 - [Hoffman et al. \(2017, QJE\)](#): algorithms predicted worker productivity better than humans (measure: tenure), but managers often overrode them.
 - [Li et al. \(2025, ReStud\)](#): hiring algorithms for screening lead to better hiring rates
- ▶ Investigate their impacts in terms of equity:
 - [Li et al. \(2025, ReStud\)](#) a common classifier (logit LASSO) increases discrimination wrt race; a contextual bandit decreases it.
 - [Agan and Starr \(2017, QJE\)](#): masking criminal records (Ban the Box) to target fairness turned out to increase discrimination by race.
 - [Pisanelli \(2022, Econ. Lett.\)](#): automated screening instead of human recruiters narrowed by 43 pp the gender gap in candidates' prob. of being interviewed.

Economists as problem-solvers

As in the climate protester example, we can frame economists as problem-solvers here. We might ask:

- ▶ What is the **causal impact** of AI screening on **productivity** and **diversity**?
- ▶ Which **fairness constraints** (if any) yield the best welfare trade-off?
- ▶ Can we design selection rules that are **interpretable**, robust, and efficient?

The role of applied economists

In summary:

- ▶ **Identify and frame problems**
 - Define what is at stake (equity, efficiency, welfare).
 - Clarify actors, incentives, and trade-offs.
- ▶ **Bring evidence**
 - Collect and organize data.
 - Document patterns and causal effects.

- ▶ **Propose and evaluate solutions**
 - Cost–benefit analysis.
 - Distributional impacts.
 - Feasibility and constraints.
- ▶ **Inform decision-making**
 - Communicate insights to policymakers, firms, and the public.

To go further: [Roth \(2002, Econometrica\)](#): economist as engineer; [Duflo \(2017, AER\)](#): economist as plumber.

From role to reality

But in reality...

We just mentioned what were the idealized roles of applied economists.

In practice, there are **challenges** and **limits**:

- ▶ How we ask questions.
- ▶ How we communicate results.
- ▶ How we deal with complexity, trade-offs, and uncertainty.

Pitfall: wrong questions, poor communication

Keynes (2024, Fin. Times)

*The fullest complaint is that too often **researchers ask the wrong questions**, then **communicate the answers badly**. Some of this isn't their fault. Academia rewards novelty rather than usefulness. It also can encourage precision ("did the dog tax affect spending on dog food over its first three months?") rather than breadth ("is taxing pets barking mad?"). And it offers the freedom to think about fixing a single problem with a perfect instrument. Meanwhile, **policy** is more often tasked with fighting **multiple distortions** with limited legal tools.*

Pitfall: jargon and complexity

Hamilton (1992, JEP)

*For me, the most important quality for economists to have when they are testifying or advising policy-makers is the ability to **express their ideas** on important policy issues **clearly** and **simply**, without jargon. I am most emphatically not asking that economists give overly simple or simplistic advice. In fact, one of the most useful roles an economist can perform is to remind policy-makers that the economy is complex, that we must be keenly aware of the unintended consequences of our actions, and that choices must be made among competing objectives.*

Pitfall: economists talk trade-offs

Dynan (2025, IMF Fin. and Dev. Magazine)

*There is a fundamental reason economists can sometimes be unpopular: Their thinking is grounded in **trade-offs** and **constraints**. Economists explain that a **choice must be made between A and B**, while politicians (and the public) often want both. Policymaking would be far easier if we could cut taxes and spend more without raising public debt, contain inflation without raising interest rates, expand global trade without losing jobs. But such trade-offs are unavoidable, even if acknowledging them is often politically inconvenient.*

Hamilton (1992, JEP)

*Tell us **what is known** and **with what degree of certainty**, where there is important **disagreement** and why, and the pros and cons of particular courses of action. Then offer your best judgment about the proper course of action.*

Pitfall: lack of consensus

Hamilton (1992, JEP)

We need help in distinguishing between policy advice that represents a broad consensus among economists and advice that has not yet achieved such a consensus or even represents only a fringe minority of economists.

Wrap-up

Let us wrap up. We mentioned the following pitfall:

- ▶ Asking wrong questions.
- ▶ Communicating poorly.
- ▶ Using overly complex jargon.
- ▶ Exposing trade-offs might be not well perceived.
- ▶ There is a lack of consensus among us on every topic...

Lessons for us

- ▶ Applied economists must **balance**:
 - Rigor vs. accessibility.
 - Precision vs. relevance.
 - Simplicity vs. complexity of real-world issues.
- ▶ Being transparent about limits and trade-offs is as important as providing answers.
- ▶ These are skills you will practice throughout this course.

What can you gain from this course?

- ▶ Learn new/complementary knowledge on core economic and societal concepts.
- ▶ Strengthen your own (informed) opinion
- ▶ Develop your critical thinking skills:
 - the discipline is unsettled on many topics and offers competing perspectives,
 - you need to learn to weight the strengths and weaknesses of contrasting readings.
- ▶ You will improve your communication skills (presenting ideas, synthesize arguments).
- ▶ This will help you if you want to work in academic research, in data science, in policy, or in industry: you will be better at spotting issues and at framing solutions.

Your opinion

What is one real-world issue you think economists could help address?

Write: a topic (or multiple) and specific questions.

For example:

- ▶ Topic: Labour market and AI.
- ▶ Questions:
 - Do AI tools improve match quality and equity, or do they just repackage previous biases?
 - Can an AI-based matching algorithm help reducing long-term unemployment?

3. Reading assignment for Session 2

Reading assignment for Session 2 (October 1, 2026)

For the next class, you will read the **introduction** of both papers below (the papers are provided with this assignment, on AMeTICE):

- ▶ **Angrist and Krueger (1991, QJE)**: Does compulsory school attendance affect schooling and earnings?
- ▶ **Ashenfelter and Card (1985, REStat)**: Using the longitudinal structure of earnings to estimate the effect of training programs.

You should be prepared to discuss the papers in class. In particular, think about how the authors use their introductions to tell the reader:

- ▶ **what** the paper is about,
- ▶ **why** the question matters,
- ▶ **how** they are going to answer it.

Part 1. Understanding the introductions

- ▶ Read the introduction of each paper carefully.
- ▶ Your goal is to understand:
 - what the paper is about,
 - how the authors construct an introduction to an empirical economics paper.
- ▶ For **each paragraph** of the introduction, write **one very short sentence** explaining what the paragraph is intended to do.
 - Ask yourself: why did they put this paragraph here? What does it do?
 - Describe the **function** of the paragraph, rather than summarizing everything it says.

Example

“This paragraph introduces the main research question and explains why it matters.”

Part 2. A closer reading of one paper

Choose **one** of the two papers and read it beyond the introduction. Write a short summary that addresses:

- 1 **What is the paper about?** What question are the authors trying to answer?
- 2 **Why is this an important question?** What makes it economically or socially relevant?
- 3 **What is the empirical strategy?** How do the authors attempt to identify the effect? What data do they use, and what source of variation do they exploit?
- 4 **What are the main results?** What do the authors find?
- 5 **Why is this subject of interest to an economist?** What does the paper teach us about an economic mechanism, a causal relationship, a policy question, or an empirical method?

You do not need to reproduce all the details, tables, or econometric specifications. Show that you understand the logic of the paper:

Research question → Motivation → Empirical strategy → Results → Economic interpretation

Expected Format

- ▶ **Part 1**: a simple list following the order of the paragraphs is sufficient.
- ▶ **Part 2**: keep your answer concise and structured. Aim for approximately **one page**.

In class

You will be asked to explain the papers to the rest of the class, before we look at them collectively.

4. Appendix

References I

- Agan, A. and Starr, S. (2017). Ban the box, criminal records, and racial discrimination: A field experiment. *The Quarterly Journal of Economics* 133: 191–235, doi: 10.1093/qje/qjx028.
- Ajunwa, I. (2020). The paradox of automation as anti-bias intervention. *Cardozo Law Review* 41: 1671–1742.
- Angrist, J. D. and Krueger, A. B. (1991). Does compulsory school attendance affect schooling and earnings? *The Quarterly Journal of Economics* 106: 979–1014, doi: 10.2307/2937954.
- Ashenfelter, O. and Card, D. (1985). Using the longitudinal structure of earnings to estimate the effect of training programs. *The Review of Economics and Statistics* 67: 648, doi: 10.2307/1924810.
- Cheng, M. M. and Hackett, R. D. (2021). A critical review of algorithms in hrm: Definition, theory, and practice. *Human Resource Management Review* 31: 100698, doi: 10.1016/j.hrmr.2019.100698.
- Corbett-Davies, S., Gaebler, J. D., Nilforoshan, H., Shroff, R. and Goel, S. (2023). The measure and mismeasure of fairness. *The Journal of Machine Learning Research* 24.
- Duflo, E. (2017). The economist as plumber. *American Economic Review* 107: 1–26, doi: 10.1257/aer.p20171153.
- Dwork, C., Hardt, M., Pitassi, T., Reingold, O. and Zemel, R. (2012). Fairness through awareness. In *Proceedings of the 3rd Innovations in Theoretical Computer Science Conference, ITCS '12*. ACM, 214–226, doi: 10.1145/2090236.2090255.
- Dynan, K. (2025). Reclaiming a policy role for economists. *IMF Finance & Development*
<https://www.imf.org/en/Publications/fandd/issues/2025/06/point-of-view-reclaiming-a-policy-role-for-economists-karen-dynan>.

References II

- Fisher, D. R., Berglund, O. and Davis, C. J. (2023). How effective are climate protests at swaying policy — and what could make a difference? *Nature* 623: 910–913, doi: 10.1038/d41586-023-03721-z.
- Hamilton, L. H. (1992). Economists as public policy advisers. *Journal of Economic Perspectives* 6: 61–64, doi: 10.1257/jep.6.3.61.
- Hoffman, M., Kahn, L. B. and Li, D. (2017). Discretion in hiring. *The Quarterly Journal of Economics* 133: 765–800, doi: 10.1093/qje/qjx042.
- Horton, J. J. (2017). The effects of algorithmic labor market recommendations: Evidence from a field experiment. *Journal of Labor Economics* 35: 345–385, doi: 10.1086/689213.
- Keynes, S. (2024). How economists could make themselves more useful. *Financial Times*
<https://www.ft.com/content/0f458670-417c-4aef-ae05-11a003fa48db>.
- Kleinberg, J., Mullainathan, S. and Raghavan, M. (2016). Inherent trade-offs in the fair determination of risk scores. doi: 10.48550/arXiv.1609.05807.
- Li, D., Raymond, L. and Bergman, P. (2025). Hiring as exploration. *Review of Economic Studies* doi: 10.1093/restud/rdaf040.
- Lum, K. and Isaac, W. (2016). To predict and serve? *Significance* 13: 14–19, doi: 10.1111/j.1740-9713.2016.00960.x.
- Miller, A. P. (2018). Want less-biased decisions? use algorithms. *Harvard business review* 26.

References III

- Olson, M. (1971). *The Logic of Collective Action: Public Goods and the Theory of Groups*, Second printing with new preface and appendix. Harvard Economic Studies. Harvard University Press, revised ed.
- Pisanelli, E. (2022). Your resume is your gatekeeper: Automated resume screening as a strategy to reduce gender gaps in hiring. *Economics Letters* 221: 110892, doi: 10.1016/j.econlet.2022.110892.
- Raghavan, M., Barocas, S., Kleinberg, J. and Levy, K. (2020). Mitigating bias in algorithmic hiring: evaluating claims and practices. In *Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency*, FAT* '20. ACM, 469–481, doi: 10.1145/3351095.3372828.
- Roth, A. E. (2002). The economist as engineer: Game theory, experimentation, and computation as tools for design economics. *Econometrica* 70: 1341–1378, doi: 10.1111/1468-0262.00335.
- Sharp, G. (1973). *The politics of nonviolent action. Part II: the methods of nonviolent action*. Porter Sargent Publishers.
- Weinstein, R. (2018). Employer screening costs, recruiting strategies, and labor market outcomes: An equilibrium analysis of on-campus recruiting. *Labour Economics* 55: 282–299, doi: 10.1016/j.labeco.2018.10.007.