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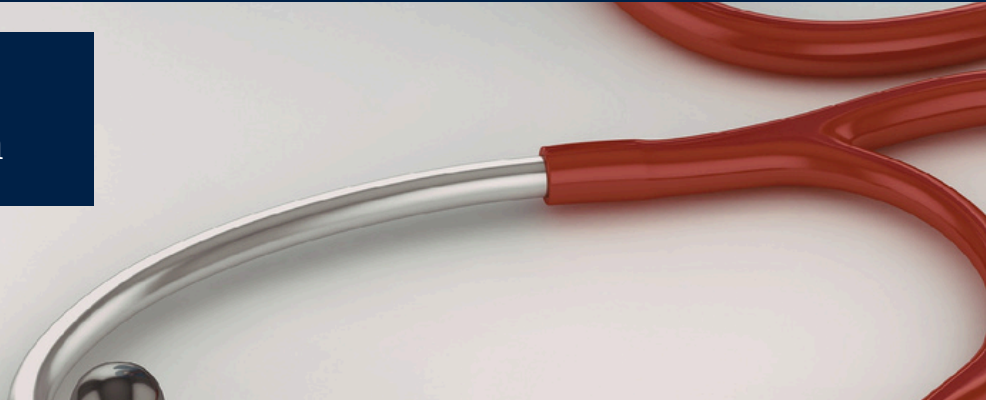
UMEÅ SCHOOL OF BUSINESS, ECONOMICS AND STATISTICS

Jameel Institute



Workshop on the Economics of Pandemic Preparedness

Event Report
1-2 June 2026, Stockholm



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Foreword

We were truly pleased to welcome colleagues to the Workshop on the Economics of Pandemic Preparedness, held in Stockholm on 1–2 June 2026. Over two days, the workshop was lively, open, and highly productive, shaped by thoughtful presentations and rich discussion across economics, epidemiology, and policy. What stood out most was the extent to which participants actively engaged across disciplinary boundaries to develop a shared understanding of how preparedness can be improved in practice.

A central conclusion was that pandemic preparedness is a whole-of-system challenge. Infectious disease risks interact with behaviour, institutions, labour markets, public communication, and health system capacity. For this reason, preparedness cannot be approached through narrowly health-focused or purely sectoral models. Instead, participants repeatedly argued for integrated analytical frameworks that combine epidemiological, economic, behavioural, and operational perspectives and that speak directly to real policy decisions under uncertainty.

Several themes emerged. First, participants emphasised the **importance of heterogeneity**: disease burden, contact patterns, vulnerability, and the effects of interventions differ across countries, occupations, households, and socio-economic groups.

Second, **behaviour and perception are central to epidemic dynamics**. Risk communication, trust, and individual adaptation can substantially reinforce or undermine the effectiveness of policy.

Third, **better decisions require stronger links between data, models, and action**. This includes the use of integrated data systems, clearer scenario design, and models that are adaptive, policy-relevant, and transparent about their assumptions and intended use.

Finally, many **discussions framed preparedness as an investment problem**: societies must decide how much to spend today on surveillance, diagnostics, stockpiles, vaccines, and institutional capacity to reduce the risk of rare but extremely costly future events.

At the same time, the workshop highlighted several important blind spots. Participants noted the under-representation of low-income settings in modelling and evidence generation, the difficulty of rewarding collaboration and data collection, and the persistent gap between sophisticated models and the concrete questions policymakers need answered in real time.

The workshop therefore pointed not only to exciting research advances, but also to an institutional agenda: improving incentives, building trusted interdisciplinary networks, and developing shared tools that connect evidence to decision-making before the next crisis emerges.

Best wishes,

Giovanni Forchini,
Professor of Econometrics, Umeå University
Katharina Hauck,
Professor in Health Economics and Deputy Director Jameel Institute, Imperial College London



Setting the Scene: Pandemic Preparedness as a Systemic Challenge

The workshop opened with remarks by Katharina Hauck, who framed pandemic prevention and preparedness as an inherently interdisciplinary endeavour. She emphasised that infectious diseases pose distinctive challenges for economic analysis, including externalities, public good characteristics, and deep uncertainty. Economics has a key role to play in generating evidence on the value of preparedness investments - such as surveillance systems, diagnostics, vaccines, and health system capacity - especially when these investments are intended to prevent or mitigate low-probability but high-impact events.

The opening keynote by Julia Fitzner from the WHO Global Hub for Pandemic and Epidemic Intelligence reinforced this perspective by presenting pandemics as the product of interacting complex systems. She noted that many indicators have improved since the start of the century, but that major gaps remain in how signals are interpreted, communicated, and translated into timely action. A recurring message was that different stakeholders need different types of evidence at different moments, and that the value of any signal depends on whether institutions are ready to react to it appropriately.

Julia also highlighted several practical blind spots exposed by COVID-19. These included limited integration of behaviour into economic thinking, the under-representation of low-income countries in modelling and global evidence systems, and the proliferation of models that are technically sophisticated but do not align closely with the decisions policymakers actually face.

Practical COVID-19 blind spots :



Limited integration of behaviour into economic thinking



Proliferation of sophisticated models misaligned to policymaking decisions



Under-representation of low-income countries in modelling and global evidence systems

This led to a wider discussion of the need for models that are not only rigorous but also relevant, adaptive, and clearly communicated. Participants stressed the importance of linking data to modelling and modelling to decisions, and of creating incentives that reward collaboration, co-production, and data stewardship.

Within this broader agenda, Julia described the WHO effort to build a global network of trusted partners able to co-create useful models for decision-makers, as well as initiatives such as a global repository of epidemiological parameters.

Together, these contributions established a clear narrative for the workshop:

“preparedness is a systems problem that requires interdisciplinary tools, trusted institutional arrangements, and analytical frameworks designed for real-time decision support.”

Heterogeneity, Vulnerability, and Targeted Investment

A recurring theme throughout the first day was the importance of recognising heterogeneity in both disease burden and socio-economic vulnerability. Aggregate indicators can obscure critical differences across countries and populations, which in turn can lead to poorly targeted investments and weak policy prioritisation.

Pablo Perez-Guzman presented a composite index measuring socio-economic vulnerability to malaria across endemic countries. The work offered a common language for comparing vulnerability across settings and for identifying how resilience depends not only on exposure to disease but also on institutional capacity, preparedness, and response systems. The presentation generated discussion about the conceptual purpose of such indices, whether and how they should be updated over time, and how changes in an index can be interpreted and explained to decision-makers. Participants also raised broader questions about climate change, disease-specificity, and whether similar tools could be developed for other infectious diseases.

An important policy issue emerging from Pablo's presentation was the alignment between vulnerability and funding. Participants noted that a useful index must clarify what exactly is being measured - burden, susceptibility, resilience, or some combination of these - and how that measure should guide action.



The discussion also underlined that different transmission settings may require different interventions, and that transparent weighting, validation, and communication are therefore essential if vulnerability metrics are to inform resource allocation credibly.

Parameters and translated these scenarios into cost estimates.

This emphasis on targeted preparedness also emerged in Janetta Skarp's presentation on stockpiling the Ervebo Ebola vaccine. Using an individual-based transmission model for north-eastern Democratic Republic of Congo, she evaluated the performance of different stockpile sizes under a range of outbreak parameters and translated these scenarios into cost estimates



The analysis suggested that even relatively modest stockpiles can substantially reduce the risk of severe outbreaks and may be highly cost-effective, or even cost-saving, when the social costs of uncontrolled epidemics are taken into account. The discussion also noted modelling choices such as the exclusion of health-care worker vaccination and emphasised that the value of stockpiling ultimately depends on societal willingness to pay for risk reduction under uncertainty.

Taken together, these contributions reinforced a central policy message: preparedness investment should be targeted, evidence-based, and explicitly linked to the heterogeneity of risk, vulnerability, and intervention performance.



Behaviour, Contacts, and Transmission Dynamics

Another major strand of the workshop focused on both individual and collective behaviour, and its implications for epidemic dynamics. Several presentations demonstrated that how people live, work, and interact is as important as biological characteristics of pathogens in determining who is exposed, how outbreaks spread, and which policies are likely to work.



Kanchan Parchani presented evidence on occupation-specific contact patterns during the COVID-19 pandemic in England. Her work moved beyond standard age-based contact matrices to show that contact linking contact patterns to downstream outcomes such as rates vary systematically across occupational groups, with some categories of workers maintaining substantially higher levels of exposure even during periods of strict restrictions. By hospitalisation and broader disease burden, the presentation highlighted why occupational heterogeneity matters for both risk assessment and policy design.

Christian Morgenstern then showed how Denmark's extensive testing system, registry infrastructure, and genomic sequencing data can be combined to infer likely transmission trees for SARS-CoV-2. A particularly striking finding was the degree of over-dispersion in transmission: a relatively small number of individuals appeared to account for a large number of infections. This has obvious implications for targeted interventions, but it also

raised methodological questions about selection and measurement biases in the available data. The discussion underscored that richer linked datasets can greatly improve intervention design, while also requiring careful attention to what such data may miss.

Across these sessions, a consistent lesson emerged.

Granular evidence on contacts, occupations, households, and behavioural patterns can move policy away from blunt instruments and towards more precise, context-specific strategies that better balance health protection and social costs.



Behavioural Responses, Perceptions, and Policy Design

The second day placed even greater emphasis on behavioural responses and their implications for policy. In his keynote, Flavio Toxvaerd provided a broad overview of economic epidemiology and argued that epidemics are shaped not only by pathogen dynamics but also by incentives, risk perception, and policy-induced behaviour change. Behaviour is therefore not a secondary complication to be added later, but a central part of the mechanism that determines how disease spreads and how interventions perform.



Flavio also outlined several directions for future research and policy analysis. These included endogenous matching (i.e. modelling who people choose to meet rather than only how many contacts they have) sectoral interdependences that create spillovers between policies, and the need to account more carefully for heterogeneity and targeting. He emphasised that second-best policy design is unavoidable in practice: policies interact with one another, constraints are real, and the optimal intervention in theory may be unattainable or politically difficult to implement. These insights help explain why epidemiology alone cannot drive policy and why integrated economic reasoning is essential.

Several empirical and theoretical contributions deepened this behavioural perspective. Jonatan Riberth examined vaccine hesitancy driven by risk perception and misattribution, using the example of blood-clot concerns following vaccination. His presentation illustrated how temporal coincidence can be mistaken for

causality and how communication strategies must balance transparency with careful framing to avoid amplifying misplaced fears. Gunnar Brådvik, in turn, considered whether vaccination accelerated a return to normal behaviour across Europe and argued that individuals often adjusted behaviour more quickly than governments relaxed restrictions, highlighting the importance of aligning public policy with changing public expectations.

Fausto Gozzi and Haokun Pang provided complementary theoretical perspectives on how private decisions and public communication interact with epidemic dynamics. Fausto emphasised the complexity of modelling forward-looking agents in epidemiological settings, where multiple equilibria and non-convexities can arise even in simple SIR environments. Haokun focused on the role of communication and perceived risk, asking whether low-cost public messaging can meaningfully alter epidemic outcomes. The ensuing discussion emphasised the importance of horizon length, trust, and the credibility of governments and scientific institutions. Participants noted that information policies are powerful but delicate: disagreement among experts, poor communication, or reputational damage may reduce the effectiveness of even otherwise well-designed interventions.restrictions, highlighting the importance of aligning public policy with changing public expectations.

Across these sessions, the message was clear:

> “behaviour, perception, and trust are not peripheral issues. They are central policy levers in preparedness and response, and they must be incorporated into the design, timing, and communication of interventions.”.

Pandemic Preparedness as an Economic Investment

Running through the entire workshop was the recognition that:

> Pandemic preparedness must be treated as a long-term economic investment under deep uncertainty.

Preparedness measures are often intended to prevent or mitigate events that may not occur in the near term, yet whose consequences would be severe if they did. This creates a distinctive policy problem in which standard short-run evaluation can undervalue resilience and option value.

Patrick Doohan presented a practical framework intended to help the UK Health Security Agency and HM Treasury connect epidemiological and economic models through an integrated software platform. Rather than forcing all analysis into a single model, the approach aims to preserve existing institutional tools while enabling them to produce coherent evidence for policy. This was seen as an important practical step toward more holistic decision support during crises.

Francesco De Pretis extended the workshop's interdisciplinary logic by applying epidemiological concepts to labour-market dynamics. By modelling unemployment as a contagious process with propagation through the wider system, the framework highlighted the possibility of self-reinforcing economic downturns and the importance of early intervention. More broadly, the presentation illustrated how preparedness thinking can travel across domains, helping policymakers understand cascading effects and the interaction between health shocks and macroeconomic outcomes.

These contributions reinforced the idea that preparedness is not a cost to be minimised, but an investment to be optimised. Economic analysis can help societies decide how much resilience to build, where to build it, and how to weigh present expenditure against the avoided social, health, and economic losses of future crises.

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Discussion Sessions and Institutional Priorities

The breakout sessions focused on how interdisciplinary research can better support policymaking and on the institutional conditions needed to make such work sustainable.

Participants discussed the possibility of a **joint interdisciplinary research programme that could support advisory bodies such as SAGE by bringing epidemiological and economic evidence together** from the outset. The shared view was that advice during crises is often fragmented because models rely on different assumptions, metrics, and time horizons. Developing common frameworks in advance was seen as a way to improve coherence, comparability, and policy readiness.

A second major theme concerned **incentives**. Participants noted that academic reward structures often prioritise disciplinary publication and methodological novelty over timeliness, policy relevance, and collaborative work. Similar concerns were raised about the incentives facing data collectors and operational partners, whose contributions are essential but not always sufficiently recognised. This misalignment can weaken the production of usable evidence at precisely the moment it is most needed.

The workshop also returned repeatedly to a practical question: what **types of analysis are decision-makers actually asking for, and how can models be designed to answer those questions more directly**? This linked back to several earlier discussions about live updating, transparent interpretation of indices, adaptive modelling, and the need to connect surveillance signals to clear decision pathways. Across both breakout sessions and the wider plenary discussion, a common conclusion emerged: strengthening pandemic preparedness requires not only better models and better data, but also better institutional design, stronger trusted networks, and more effective translation of analysis into action.

Concluding Reflections

The workshop demonstrated how rapidly the field of pandemic preparedness is maturing. The quality of the research, the openness of the discussion, and the willingness of participants to challenge disciplinary assumptions all pointed to a research community increasingly capable of addressing complex policy problems. At the same time, the discussions made clear that substantial work remains to be done: modelling must become more adaptive and policy-facing, evidence systems must better represent low-income settings, and research incentives must better support interdisciplinary and policy-relevant work.

What emerged most strongly from Stockholm was the value of integration—across data sources, modelling traditions, institutions, and policy communities. Preparedness is shaped by biological risk, economic incentives, human behaviour, public trust, and the practical realities of governance before crises occur.





