The 2022 Nobel Prize in Economics: A Step Backwards for the Discipline?

Matouš Fiala

IES FSV UK

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Abstract

The 2022 Nobel Prize in Economics was awarded to Ben Bernanke, Douglas Diamond and Philip Dybvig for their formal models of the financial system. The Nobel Committee's decision was criticised for rewarding proponents of the formalised, mathematical paradigm of macroeconomics, which failed to predict the effects of the 2008 financial crisis. This paradigm stems from the mathematisation project underlying modern macroeconomics with micro-foundations. This basic view of the economy arguably biased mainstream economists away from the risks which lead to the 2008 crisis. In this essay, I aim to connect the controversy to the deeper methodological rifts in macroeconomics and to the discipline's reflection of its role in the 2008 crisis and its aftermath.

1 Introduction

Every year, the awarding of the "Nobel"[1] Prize in economics presents a fascinating window into the workings, history and divides of economics as a scientific discipline. The Nobel committee has awarded the Prize to laureates pursuing widely different approaches to gleaming economic insights ranging from the mathematical economist Gérard Debreu to the psychologist Daniel Kahneman. This diversity means that the award often generates much discussion and controversy. The 2022 Prize was no different — the committee chose to award it to Ben Bernanke, Douglas Diamond and Philip Dybvig, three economists who constructed formal models of the financial system in the 1980s. The committee claims their work helped contain the 2008 financial crisis. The award elicited pushback from economists who argued that the dominance of the way the laureates conducted their research was itself one of the causes of economics' failure to foresee the crisis and that the Prize was unwarranted. In this essay, I will argue that the controversy revolves around the mathematisation of macroeconomics and the failure of it to predict the 2008 crisis. I will first briefly summarise the debate, then I will turn to explain the underlying methodological conflicts, and finally, I will reassess the discussion and the Prize in light of these conflicts.

2 The Prize and its Aftermath

In 2022, the Swedish central bank awarded the Nobel Prize to Ben Bernanke, Douglas Diamond and Philip Dybvig for their research into the mechanics of the financial system and its crises conducted in the 1980s. Three facets of the authors' work were highlighted by the committee: Diamond and Dybvig created "logically consistent mathematical models"[2] showing how financial intermediaries transform savings into investments. They describe how banks transform short-term savings deposits into long-term investments (*maturity transformation*) and how they monitor borrowers on behalf of their depositors (*delegated monitoring*). Ben Bernanke shed light on the importance of financial crises, highlighting their part in prolonging the Great Depression with the committee stating that "before Bernanke's (1983) work, the role of the financial sector had (with only a few exceptions)

[1] *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel* is not one of the "official" Nobel Prize categories as stated in Alfred Nobel's will

[2] Prize in Economic Sciences in Memory of Alfred Nobel 2022, p.6.

been neglected in macroeconomic analysis"[3]. The committee further noted that the author's work allowed policymakers to better respond to the 2008 financial crisis and helped avoid a widespread financial meltdown.

The Prize was given out amidst a difficult time in macroeconomics. The discipline was largely unable to foresee the depth and persistence of the 2008 crisis and, to some extent, failed in advising an appropriate policy response in the Eurozone[4], possibly stunting the block's recovery. This prompted a period of reflection and criticism of the pre-2008 consensus. A strain of this criticism attacked the very methods which were lauded by the Prize committee: using mathematically consistent simplified models as a way to understand the economy. They argued that awarding such methods — especially in relation to the 2008 crisis — ignored the lessons learned from the crisis and was a step backwards.

I will now present an account of a debate mainly between the economic historian Adam Tooze and the Nobel Prize-winning economist Paul Krugman, which nicely illustrates the underlying tensions in the discipline of macroeconomics. On the 14th of October 2022, Tooze shared his criticisms of the Prize on his blog[5], stating that the Prize falsely celebrated one of mainstream macroeconomics' biggest flaws — its inability to deal with instability on part of its prevailing 'mathematical' methodology. He notes that the working, instability and importance of the financial sector were explored in depth by economists such as Hyman Minsky or Charles Kindleberger, whose insights were largely marginal to the mainstream on part of their 'non-rigorous' methodology. He advises those who wish to understand the financial systems to turn towards more empirical treatments of its workings, not models which build the financial system up from first principles.

A period letter by Kindleberger reviewing Bernanke's Prize-winning paper (published on Bradford DeLong's blog[6]) proved relevant to the debate. In it, Kindleberger states: "I think you have provided a most ingenious solution to a non-problem. The necessity to demonstrate that financial crisis can be deleterious to production arises only in the scholastic precincts of the Chicago school with what Reder called in the last JEL its tight priors, or TP." He further criticises Bernanke's dismissal of his and Minsky's work for not following the assumption of rational economic behaviour: "Would you not accept that it is possible for each participant in a market to be rational but for the

[3]Prize in Economic Sciences in Memory of Alfred Nobel 2022, p.7.
[4]O. J. Blanchard and Leigh 2013.
[5]Tooze 2022.
[6]Kindleberger and DeLong 2022.

market as a whole to be irrational because of the fallacy of composition?"

Paul Krugman argued against Tooze, stating that economic models such as Bernanke's and Diamond and Dybvig's play an important role in clearing up understanding of economic phenomena. He notes that while many treatments of the financial system existed before the authors came along, they lacked clarity: "Richly layered discussions of economics and finance [such as Bagehot's, Minsky's or Kindleberger's] can contain valuable insights, but are much more useful when you have clear, stylized models to help figure out what's important"[7].

The economics writer Noah Smith equivocated the debate on his blog[8]. Smith argued that while Bernanke, Diamond and Dybvig's work was useful, a lot of the usefulness came out of counteracting the pitfalls of mathematical macroeconomics. This paradigm was biased against considering instability because of "insisting that smooth-functioning, perfectly optimized free markets were the baseline, and that any instability or inefficiency in markets had to be explicitly justified with complex and highly formalized math[.]"[9]

3 The Development of Mathematical Macroeconomics and its Biases

The Debate concerning the Prize revolved around many themes central to a deeper controversy in the discipline of macroeconomics: the mathematisation of (macro)economics and the biases of the discipline built upon it. I will now present an account of these topics.

After the Second World War, mainstream economics underwent a process of mathematisation (the account of which I base on Davidson's[10] and Debreu's[11] accounts). This project of formalising the largely prose-based field was influenced by the Bourbaki school, a group of mathematicians seeking to further formalise mathematics, whose project of formalisation found fertile ground in the social sciences seeking to become more rigorous. The mathematising effort proved successful within economics, with simplified, rigorous (in the sense of being derived from a central set of assumptions

[7] Krugman 2022, tweet 4.
[8] Smith 2022.
[9] Smith 2022.
[10] Davidson 2003.
[11] Debreu 1991.

using consistent logic) models becoming a mainstay of economic research. Proponents of mathematisation applaud the clarity and unambiguousness of mathematical economics, which serves to raise standards of research, makes building upon previous work easier and pushes economists towards creating simpler, more elegant and more general theories. Opponents argue that mathematical economics is insular, with the opaque and complex mathematics serving more to affirm the status of senior economists and alienate those who have not invested in learning it. They also warn that mathematisation marginalises concepts which are difficult or impossible to express mathematically.

A cornerstone of mathematical economics is the General equilibrium model, a very formal and mathematically rigorous treatment of market interactions devised by Kenneth Arrow, Gérard Debreu and Lionel McKensie in the 1950s. This model 'proved' the existence and Pareto efficiency of market equilibria from a set of mathematical assumptions comprising rational behaviour of economic agents. The model and its approach to behavioural assumptions became a base for modern microeconomics. Starting from the 1970s, economists searching for a more robust basis for their theories after the failures of Neo-Keynesian macroeconomics sought to build a theory extending sound micro-foundations to the macro-economy with the likes of Lucas and Seargent's theory of rational expectations[12]. This approach became entrenched in the New Keynesian economics, a framework encompassing most of mainstream macroeconomics to date. A point can be made that mainstream macroeconomics was unable to foresee the 2008 crisis because of this foundation. Blanchard and Summers[13] note that much of modern macroeconomics was built upon a view of fundamental stability. This was reflected in workhorse models such as DSGE and thus also in predictions and policy recommendations. The pre-2008 paradigm also deemphasised the financial system, often treating it as a 'black box' in models.

While it is impossible to pin responsibility for the failures of 2008 solely on the mathematisation project, we can clearly draw a relation between the rationality assumption-based General equilibrium model and the biases inherent in the macroeconomics based on its approach. Although this mathematical rigour allowed economists to make their thinking more exact, it gave the discipline a bling spot pertaining to phenomena that do not easily fit into the paradigm. This blindness proved disastrous in the 2008 crisis, and the discipline is well for reflecting on this approach.

[12]Lucas and Sargent 1981.
[13]O. Blanchard and Summers 2017.

4 Conclusion

Now that we explored the deeper methodological rifts underlying the controversy, let us return to the Nobel Prize and the ensuing discussion. We can see that the opponents echo the arguments of the critics of mathematisation, with Tooze pointing out the marginalisation of non-formal thinkers such as Hyman Minsky, who realised the importance of the financial sector more clearly than the mathematical mainstream. In his letter, Kindleberger criticises the axiomatic, rationality assumption-based approach, which serves as the base of mathematical macroeconomics. Paul Krugman argues the case for mathematisation and the clarity it brings, forcing mathematical economists to distil vague insights into prioritised models.

An answer to the question of whether the 2022 Nobel Prize in economics was justified or not lies outside of the scope of this essay. Arguably, Bernanke, Diamond and Dybvig have enhanced our knowledge of the financial system. Their insights proved very useful in containing the damage of the 2008 financial crisis and the 2020 coronavirus crisis. Yet the criticisms pertaining to the Prize are not baseless — it is certainly true that the mathematical macroeconomic project the laureates took part in has blindspots which prevented it from foreseeing the 2008 financial crisis. These are partly caused by the insularity and hubris of opaque mathematical models criticised by Davidson or Tooze. The Prize can be seen as an unwelcome harken back to a period where these shortfalls prevented insightful ideas of informal intellectuals from being integrated into our idea of the economy. However, mathematics certainly has a place in economics. We can all hope that through discussions like these, we can better reflect on what exactly that place should be.

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