

NAVIGARE NECESSE EST: MARKETS, CRISES, AND OUR MODELS¹

István P. Székely²

ABSTRACT

The events of the past decade and a half have posed unprecedented challenges to macroeconomic policymaking. Modern policymaking has long been relying on a spectrum of models both at national and supranational levels. However, none of the standard models have predicted any of the major crises of the past decade and a half, nor could they capture the dynamics of the ensuing readjustment processes well. In general, standard workhorse models make several assumptions that may not hold in the economies they are applied to. Moreover, they perform particularly poorly during crisis episodes. This short article reviews the issues surrounding these models and proposes a simple modelling strategy to be applied in the face of such large model uncertainty.

JEL codes: E10, E17, E27, E47

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1 INTRODUCTION

“We rely on past regularities to understand the distribution of shocks we are likely to face, how they will transmit through the economy, and how policies can best respond to them. But if we are in a new age, past regularities may no longer be a good guide for how the economy works.”

Christine Lagarde (2023)

The events of the past decade and a half have posed unprecedented challenges to economic policymaking. First, the global financial crisis hit. It originated in the US financial system but quickly spread to Europe because of a massive failure of

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2 István P. Székely, European Commission and Corvinus University of Budapest. E-mail: Istvan-Pal.SZEKELY@ec.europa.eu.

corporate governance in many European banks. It was followed by a sovereign credit crisis in Europe, which besides a policy coordination failure reflected a fundamental change of views on the growth potential of some European economies (*Van den Noord–Székely, 2011, Costello et al., 2009*).

In the background, much less visible for most, major reforms were reversed in some of the former command economies in Central and Eastern European countries, not predicted by any of the standard political economy models (*Székely–Ward–Warmedinger, 2018*).

As the European economy was settling on a moderate path of recovery, the prospect and eventually the reality of Brexit emerged, fundamentally testing again the capacity of our models to predict such major events and the way their impacts unfold. Finally, the COVID-19 pandemic triggered a major global crisis. It was soon followed by an energy crisis triggered by the Russian war of aggression in Ukraine and the subsequent globally imposed economic sanctions against Russia. After a long period of low (below target) inflation, high inflation is back, testing the models central banks use to formulate their policy responses.

Modern policymaking has long been relying on a spectrum of models both at national and supranational levels. However, none of the standard models have predicted any of the major crises of the past decade and a half, nor could they capture the dynamics of the ensuing readjustment processes well. Moreover, the crisis revealed many of their fundamental problems that had been there before but had not been revealed during the period of great moderation.

The workhorse model of policymaking, the New Keynesian DSGE model could not capture the interaction between real economy and finance and the financial system, simply because it was built on the assumption that the interaction was broadly irrelevant. As some put it, DSGE models crashed when the crisis hit, that is, when they were needed the most. However, it was not the only problem with the models, and challenges did not end with the financing link, albeit it did play a major role throughout the crisis (*Székely, 2017*).

In the recent crisis triggered by the Russian war of aggression in Ukraine, inflation shot up in an unpredicted manner. The workhorse models of central banks, which were seriously questioned but not much changed following the 2010–2013 double crisis in Europe (*Blanchard, 2016; Caballero, 2010; Stiglitz, 2011*), apparently failed to capture the way the shocks transmitted through economies (*Lagarde, 2023*).

2 OUR MODELS AND REALITY

Our standard macroeconomic and financial models suffer from a host of misspecifications (Stiglitz, 2018; 2023; Romer, 2016). Models, by their very nature, simplify the complex reality they describe. This is justified based on the assumption that the different aspects of the complex reality are separable and hence one can disregard their interactions. Moreover, many of the simplifications are driven by the desire to keep our models within our technical capabilities, that is, to work with models that we can explicitly solve using the available mathematical methods. The fact that most of our models are linear is very much attributable to this motivation.

As mentioned above, a usual feature of standard macroeconomic (DSGE) models before the turn of the century was that they did not have money or banks explicitly in them. There were no banks or financial systems in the models, while the interactions between financial systems and real economies was perhaps the one factor that led to the Great Financial Crisis in the previous decade. This made them unhelpful when the 2008-2010 financial crisis hit, and the balance sheet weaknesses of banks drove developments in the world economy. Similarly, to the situation today with models with heterogeneous firms, the models including an explicitly described banking sector were available but not used in major national or European policymaking centres (Christiano et al., 2010).

The heterogeneity of households and firms is another major area where macroeconomic models have developed significantly but they are still far from fully capturing economic reality. For long, most macroeconomic (DSGE) models entailed a single type of household, which made it impossible for them to capture the difference between the reactions of households with financial savings and access to bank loans and of those of cash-constrained ones.

Incorporating different types of households increased significantly the capacity of policymaking centres to model the behaviour of the economy and help good policy design (Roeger et al., 2011, Roeger et al., 2012). Nonetheless, the most widely used macroeconomic (DSGE) models still have only one type of firm that never dies. An essential feature of the green transition will be the emergence of disruptive new technologies, such as the electric vehicle that is likely to drive out traditional vehicles and many of their producers. Therefore, it is difficult to see how models with homogeneous firms can capture the process and help design policies that can promote green transition. Models with homogeneous firms are equally unfit for capturing the process of innovation and its implications for the economy, particularly disruptive innovation and firms. As both areas will be at the forefront of economic policies in Europe, this is a particularly hindering weakness of these models.

Understanding the role of economic and social inequality in economic development is another important area where most macroeconomic models perform poorly. They do not explicitly model distributional features and assume that the growth path of an economy is not impacted by inequalities. There are satellite models that can determine the distributional consequences of certain growth paths but there is no feedback from them to the core model.

More generally, the vital interactions among the different dimensions of development may render our standard models focusing entirely on the economic dimension unhelpful, or even fatally misspecified.³ Besides the distributional aspects mentioned above, the quality of institutions is another aspect neglected by these models.

Stiglitz (2023) gives an exhaustive list of the misspecifications our standard macroeconomic models still suffer from.

3 CRISES

Shocks to the economy are inherent parts of the growth process. Nevertheless, when an economy and society is hit by a series of large shocks it cannot respond to fast enough, the normal adjustment process to shocks turns into a crisis. Therefore, crises are special periods when the behaviour of economic agents and that of economic policymakers and politicians differ significantly from their behaviour during “normal times”.

While some of the simplifications of our models may be perfectly admissible during normal times, many tend to turn out fatal during crisis periods (Székely, 2017). By nature, the inadequate specification of the dynamic structure of our models significantly reduces their predictive capacity during a crisis when economies are subject to multiple large shocks.

Most importantly, the level of uncertainty in the economy jumps during crisis episodes significantly modifying economic agents’ behaviour (Bloom, 2009). Moreover, the heterogeneity of agents, an important feature of a modern economy, which, as we mentioned above, is almost fully neglected by most of our standard models, becomes more important for describing how economies respond to major shocks (Seiler, 2021; Muellbauer, 2016). Moreover, in crisis periods, trust

3 SZÉKELY (2024) identifies four dimensions of development i.e., economic, social, institutional, and environmental. We have discussed the former three above, but it is also evident that the environmentally unsustainable nature of economic development will make it critical in the future to include the latter dimension in our standard models explicitly.

in government also tends to be severely damaged, especially when policy performance is poor (Aksoy et al., 2020; 2023).

As also mentioned above, standard macroeconomic models, without exception, fail to explicitly model institutions and hence cannot capture the impact of weak institutions (e.g., widespread corruption). Institutional quality, like other fundamentals, changes slowly and has a relatively smooth effect on the functioning of the economy. Hence, most macroeconomic models can somehow capture its effect, for example in the total factor of productivity in the production function or the fiscal multiplier. However, when an economy is hit by major shocks and needs to adjust in a major way, weak institutions may have a devastating effect. Frequently, it is the dominant factor that turns the episode into a full-blown crisis.

Our standard models have not been built to predict crises, nor to capture the way an economy works during a crisis. Hence, it is not surprising that they cannot predict crises or capture major developments during crises (Fawcett, 2015).

Crisis episodes have a major impact on the reliability of our models not only during the crisis but also afterwards. The way an economy adjusts to a major crisis and the way economic policy handles it may have long-lasting implications on the growth of and convergence among regions and countries in a regional integration such as the EU (Ratto–Székely, 2023). None of the standard macroeconomic models predicted the strong divergence among EU countries that we experienced following the recovery from the 2008–2013 double crisis in the EU. An important aspect of these developments was the renationalization of the banking sectors and the lack of credit in many of the southern European EU economies.

Some periods are not crises, nonetheless, economies are exposed to major shocks. One such important episode for Central and East European economies was the accession to the European Union.⁴ Unlike crises, it was a foreseeable event. The likelihood of accession continuously increased after the turn of the century. Moreover, some of the impacts of accession, such as improved market access to the European single market, were speeded up as part of the accession process. Nevertheless, EU accession gave rise to a major change in economic fundamentals (Landesmann–Székely, 2021). Globally, the liberalization of capital flows in the early 1990s and the subsequent wave of globalization resulted in similar effects. Looking forward, our models are not well suited to describe economic de-

4 Economic transition in the former centrally planned economies in Central and Eastern Europe was similar albeit it changed the way the economy worked in those countries more fundamentally than EU accession. Not surprisingly, it led to a breakdown in formerly relatively well-behaving economic relationships in those economies, such as the aggregate consumption function (SZÉKELY, 1993).

velopments during the next wave of EU enlargement or to support policymaking in this area.

4 HOW SHOULD WE USE OUR MODELS?

The fact that our models are misspecified and may fail in certain episodes does not mean that they are not useful tools for policymaking. Despite all their weaknesses, they do a better job of showing the implications of our numerous assumptions about the behaviour of economic agents than most human minds. However, when using them, we should start by accepting the fact that our standard macro-economic models are misspecified. Most of the misspecifications do not render them useless in normal times when the economy is moving along its potential and no major shocks hit it.

Nonetheless, even in normal times, when fundamentals evolve slowly, we should continuously watch out for signs of lethal misspecifications in the models we use, particularly when we use them to formulate public policies. Our models need to be regularly re-estimated and retested to see whether their continued use is justified.

Even if slowly, the profession is developing new, better models, albeit many remain largely untested. While it is essential to incorporate the new models into our toolkit, doing so too fast without learning their characteristics and fully understanding their new features is equally dangerous. Our standard small and mostly linear models are admittedly oversimplified but very intuitive, which is not necessarily true for new, more complex models.

In crisis periods, when an economy is exposed to a variety of major shocks and the level of uncertainty economic agents and policymakers face is high, much more vigilance is needed. As we argued before, during crisis periods many of the factors that cause misspecifications get more pronounced and thus their impact on model predictions gets magnified. We should be open to the possibility of regime change in the behaviour of economic agents and recall the results of empirical analyses of previous crisis episodes (*Kóbor–Székely, 2004*).

Ultimately, we should be prepared for the eventuality that we have to abandon our models temporarily in crisis periods and rely on our (and on policymakers') instincts. Flying at night without (reliable) instruments is inherently dangerous but once one is up in the air, the alternative of abandoning the cockpit is infinitely more dangerous, almost surely fatal. Pretending that policy makers know more than what they do does not nurture their credibility, because economic agents can spot the increased level of uncertainty and know that it is very difficult to predict the behaviour of an economy in such a situation. Instead, what could make eco-

conomic policymakers more credible in such times is admitting the weaknesses of their models (toolkit) and indicating the need for a vigilant and cautious attitude.⁵ Sticking to failing models and policies calibrated on them during crises is a sure way of diminishing policy credibility.

Following crisis periods, it is essential to reflect on the performance of work-horse policy models and learn as much as possible from the crises in this regard, too (Fawcett, 2015). This is a sure way to repair the inevitable damage to policy credibility during a crisis. The more open and systematic the process, the more helpful it is.

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5 President Lagarde has reportedly expressed similar thoughts suggesting that the ECB should “accept the limitations in its ability to predict the future or risk a further erosion of public trust.” *Financial Times* (2023).

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