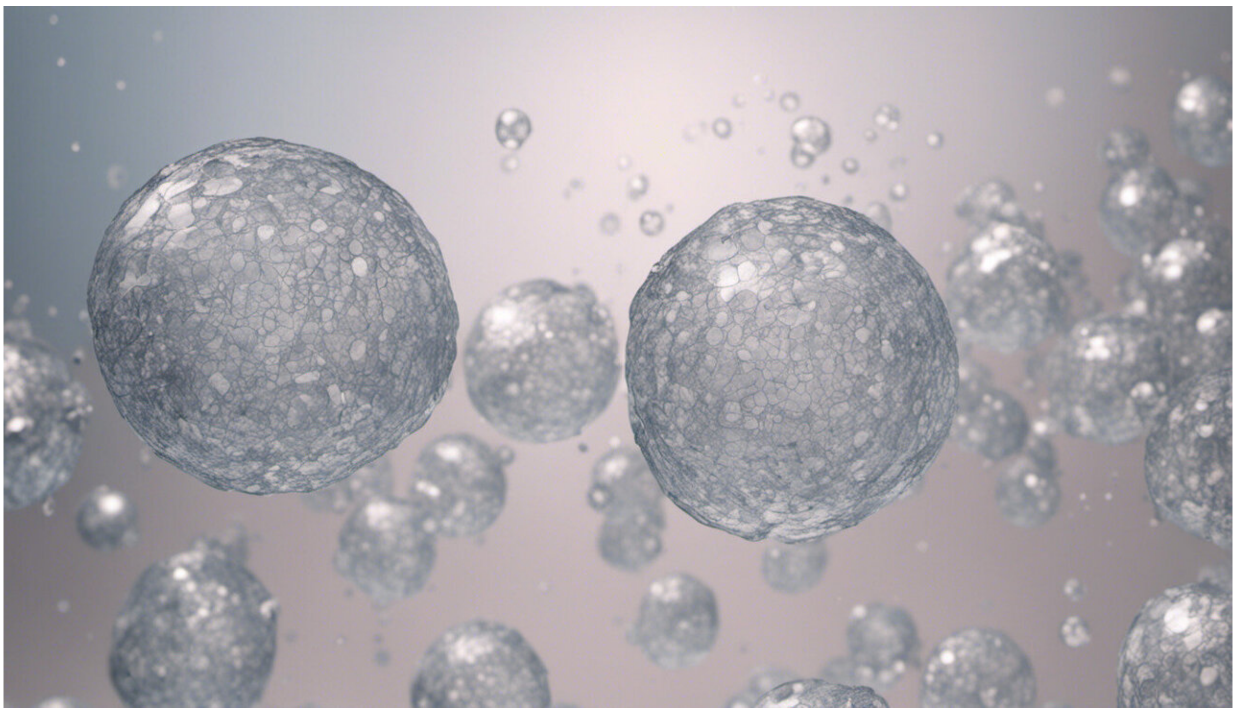
More sensitive modelling for better economic forecasting

July 23 2018



Credit: AI-generated image (disclaimer)

How can policymakers avoid being wrong-footed by 'black swan' events such as the global financial crisis, when their modelling proves limited and rigid? One project employs sophisticated algorithms that uses localised data for better forecasting.

The global financial crisis (GFC) that started in 2008 prompted a rethink of economic forecasting. Modelling has long been a standard management tool for central banks to make assessments of the worldwide and domestic economic outlook, which then underpin monetary policies.

However, with economies ever-evolving, if the models don't incorporate the ability to reflect these changes, the ensuing policies, while perhaps suitable for the past, may no longer be viable. A large part of the challenge for economic forecasts lies in the difficulty of identifying these changes, the individual triggers which help shape macroeconomics, requiring corrective policies to offset negative consequences.

The EU-funded Post-GFC Monetary Policy project proposed a new methodology which, by incorporating local data, sought a faster reaction to macroeconomic changes than existing methodologies allowed. The project found it bore fruit when taking healthcare pricing as an indicator of policy success but was less applicable to monetary policy, when looking at financial data.

Using local data as predictors of change

One of the problems with traditional economic models is that many operate according to linear regression principles, with constant coefficients. Here, effects are considered to be constant over time. However, as Marie Curie Fellow Dr. Isabel Casas says, "Actually, in the real world, effects change over time as they respond to the wider economic climate or sudden unexpected economic or financial shocks." Consequently, these models can only really reflect very general trends, creating something akin to an average value of the changing effects.

One method to counter this limitation is to apply nonparametric regression, whereby the model itself is actually constructed by the data, rather than being built from predetermined predictors. Explaining the efficacy of the methodology Dr. Casas says, "The relationship between any two variables changes over time, whether it be days, weeks or years. The methodologies we used can detect those changes automatically, giving a less biased picture of reality."

The project's information came from localised data as a way to represent time-varying effects. The researchers created a statistical package called tvReg, using the R programming language, which applied time-varying coefficient algorithms to the data. Due to their programming complexity, these algorithms have been, until now, largely the preserve of specialists.

The monetary policy application of the methodology used financial data, including variables measuring industrial production, short and long-term interest rates, inflation, foreign exchange data and Credit Default Swaps. However, the researchers found that the modelling did not throw up different predictive results to those generated by traditional modelling, concluding that this time-varying technique did not offer a significant advantage for this data.

On the other hand, when it came to the healthcare policy application, one approach they took was to look at the extent to which healthcare can be considered a luxury good within EU and OECD countries.

Their findings differ from previous results in the literature where healthcare was always positioned (based on price) as a luxury good in the EU. Dr. Casas concludes, "Clearly the EU countries are converging to common policies, with the price of health care fairly stable over the years and cheaper than across the wider OECD countries, so we can see that health policies after 2008 in the EU are moving in the right direction."

The next step in the research is to focus on modelling that forecasts the behaviour of processes in other contexts, such as those for renewable energy production based on oceanic data, which includes information on swell, tide, wind or wave height. This will prove to be beneficial for both producers and consumers in the EU electricity market.

Provided by CORDIS

Citation: More sensitive modelling for better economic forecasting (2018, July 23) retrieved 17 July 2024 from https://phys.org/news/2018-07-sensitive-economic.html