

Doombot Recession Outlook

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Macroeconomic forecasters make their biggest errors because of a failure to predict future recessions.[1] The problems of predicting the timing of cyclical turning points or future shocks can, however, be mitigated by a prescient discussion of risks surrounding the central published forecast. For example, the recently published OECD Economic Outlook, warns “[T]he unusually fast and large-scale tightening of monetary policy ... could continue to expose vulnerabilities among households, firms, financial market participants and countries”, so that “[O]verall, the risks to the projections remain skewed to the downside”. Recent work at the OECD attempts to take such risk assessments further by quantifying the probability of a future recession (Chalaux and Turner, 2023).

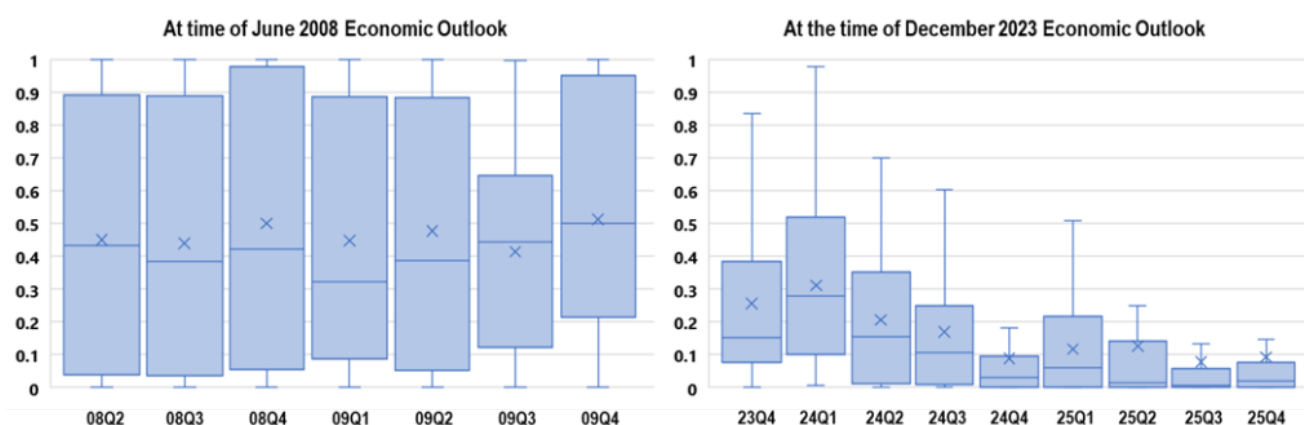
An algorithm, “DoomBot”, selects parsimonious models to predict recessions over different quarterly horizons covering the ensuing two years for 20 OECD countries. The models are country- and horizon-specific and are automatically updated as the estimation sample period is extended, so facilitating out-of-sample evaluation of the algorithm. A limited combination of explanatory variables is chosen from a much larger pool of potential variables that include those that have been most useful in predicting downturns in previous OECD work. The most frequently selected variables are financial variables, especially those relating to credit and house prices, but also

include equity prices and various measures of interest rates (such as the slope of the yield curve). Business cycle variables – survey measure of capacity utilisation, industrial production, GDP and unemployment – are also selected, but more frequently at short horizons. The variables selected do not just relate to the domestic economy of the country being considered, but also international aggregates, consistent with findings from previous OECD work.

Looking at the performance of the algorithm over past episodes, the models provide a clear out-of-sample early warning of the Global Financial Crisis (Figure 1, LHS panel). The models are less good at predicting the euro area crisis out-of-sample, but it is clear from the evolution of the choice of variables that the algorithm learns from this episode, for example through the more frequent selection of a variable measuring euro area sovereign bond spreads.

Figure 1. Distribution of recession probabilities among 20 OECD countries

Comparing Doombot projections made in June 2008 and December 2023



Note: The box and whiskers chart shows the distribution of recession probabilities among a sample of 20 OECD countries according to out-of-sample probit model predictions made using the DoomBot algorithm. The LHS panel shows the out-of-sample predictions using information available at the time of the publication of the June 2008 Economic Outlook, whereas the RHS

panel shows the current predictions made with the latest available data. The box shows the inter-quartile range for the 20 countries; the whiskers the extremes; the X is the simple average; and the horizontal bar is the median.

Recession risks to the current outlook

The latest Doombot predictions suggest that the probability of recessions among OECD countries is much lower than prior to the GFC (comparing RHS and LHS panels of Figure 1), although it still remains quite high in historical context, especially over the coming year and among European countries:

- There are 5 European countries – **Germany, France, Finland, Portugal and Sweden** – where recession probabilities exceed 50% in two consecutive quarters over the next year and a further four – **the United Kingdom, Italy, Switzerland and Belgium** – where they exceed 25%. The main driver in most of these cases is the turning of the house price cycle, often supplemented by weak signals from activity variables.
- For **Japan**, recession risks for the first two quarters have risen above 25%, partly because of the rise in oil prices. Although oil prices enter into many other country risk models, Japan seems particularly vulnerable in this respect. For **Canada**, recession risks reach 25% in coming quarters driven by weak survey measures of capacity utilisation and a negative yield curve slope.
- For the **United States**, risks of a recession in 2024 appear to be small; there is no warning signal from share prices or survey measures of capacity utilisation that usually pick up weakness at short horizons, and the slope of the yield curve (a popular signal of recession

risks) has recently become less negative. The turning of the house price cycle suggests recession risks increase in 2025, although the models are less reliable at longer horizons.

References

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Turner, D., T. Chalaux and H. Morgavi (2018), “Fan charts around GDP projections based on probit models of downturn risk”, *OECD Economics Department Working Papers*, No. 1521, OECD Publishing.

Chalaux, T. and D. Turner (2023) , “Doombot: a machine learning algorithm for predicting downturns in OECD countries”, *OECD Economics Department Working Papers*, No. 1780, OECD Publishing.

[1] For discussion and evidence of the difficulties in forecasting recessions, see An et al., (2018) and Turner et al. (2018) as well as references therein.