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The problem with probability

With big-name speakers talking up the prospects of a global recession, we give this subject another look today. We are not alarmed.

Recession - its a drag

With big-hitting names like Paul Krugman and Ray Dalio openly embracing the prospect of global recession, we take another look at this today.

Off-the-shelf models, such as the New York Fed probability of a US recession are, as we noted some days ago, pointing to a 24.6% probability of recession in 12 months time. Though as we also noted, even with a relatively good track record of predicting recessions, the model more recently has in recent years, been showing much lower probabilities 12 months before a recession, hitting only just over 11% on average 12M before a recession is indicated by the National Bureau of Economic Research (NBER). Such figures usually go on to rise to higher probabilities as recession draws closer, but the point is, they don't seem to be sending strong signals 12 months out.

12%

My estimate of the probability of US recession

12M forecast

But surely...?

With these models proving a little hair-triggered (almost as binary as the recession event itself, nothing for ages and then Bam!) I decided to test whether there was any merit in respecifying the NY Fed's model. They use the 12m lag of the 3m-10Y spread as the sole variable in their regression. This is effectively a restricted version of a model in which the 3mth T-bill rate and 10Y bond yield were incorporated separately, and I thought it would be fun to see what happened to un-restrict the model (we economists certainly know how to have fun!).

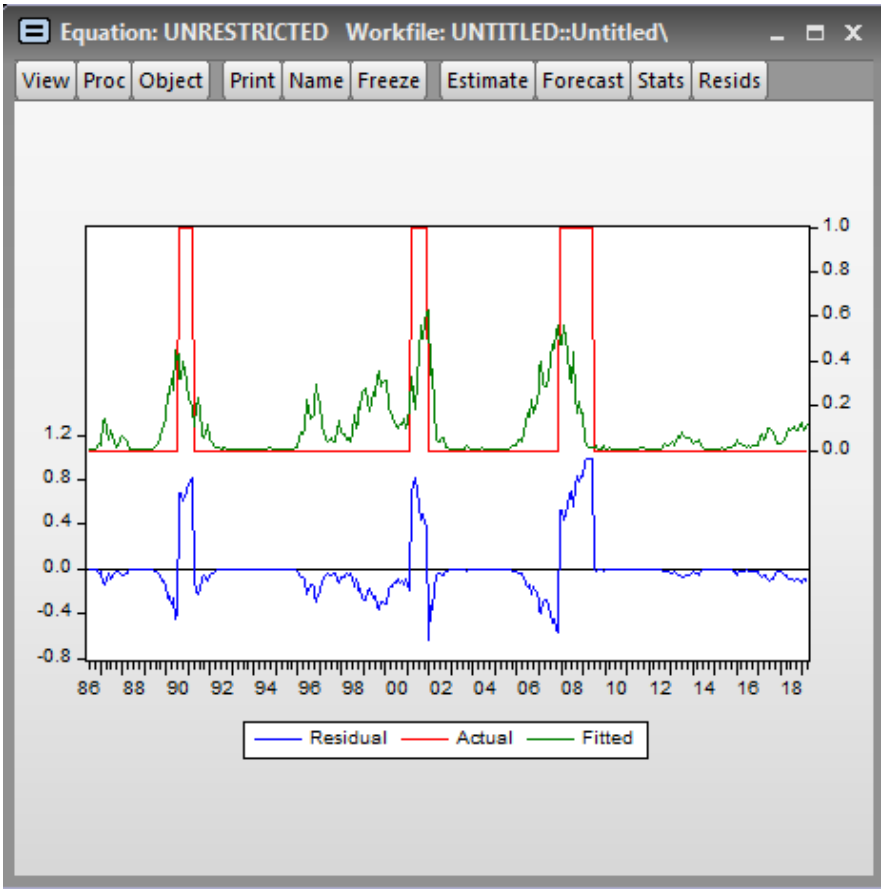
It doesn't help

The serendipitous finding of the exercise came from having a somewhat reduced sampling period than the NY Fed. My data feeds only started from 1986, theirs from the 1970s. Though this still gives me more than 30 years of monthly data, more than enough to draw firm conclusions. And the model works very nicely too, with 12M lags providing clear recession signals ahead of the actual events (see chart below). In fact, the model works rather better than the Fed model, with recent recessions coinciding with a 50% probability in 2 out of the three cases, and a 36% reading in one other case (not 11%!). There were no false signals. This contrasts with the much lower figures from the NY Fed model.

So conclusion one: there may well be a structural break (or several) in the NY Fed model, which they ought to take account of - it would not be surprising to find that the inference of a 3mth - 10Y yield spread had changed over the last fifty years. Think about how much economies have altered in this time. More data is not always better.

The subsequent test for the restriction on the NY Fed model proved to be a damp squib. So conclusion 2: There is virtually no difference between the restricted and unrestricted model in terms of data fit or the sum of squared errors. Without formally testing the restriction hypothesis, the eyeball test says, the restriction is valid.

Probit model output - probability of recession



So what percent probability of a US recession?

The final question is, if not 24.6% probability of US recession what probability is it? The answer is 12.3%. There is a long way to go yet before we need to worry, and that is based on the latest, flattest 3mth-10Y figures from this Friday's low 10Y yield figure filling in for the whole of March.

So what would we need to see to get a 50% recession probability reading? The 50% reading 12M before the 2008/2009 recession coincided with inversion of the 3mth-10Y yield of between 30 and 60bp. For 1990/1991, it was about -20 to -30bp. The current spread is closer to +20bp. Today, with the yield curve artificially flattened by the $11tr or more of printed money by global central banks, I wouldn't be surprised if we needed to see something even more negative to draw recession conclusions.

So, to sum up: Krugman and Dalio might yet be right. And yield curve models can be useful, as they theoretically incorporate all of the information in all the macro newsflow, political noise and market expectations in a very small and efficient package. But these sort of models seem to be particularly sensitive to starting points and data periods, and my tinkering with the data suggests things aren't all that bad yet. Slowdown, as our US Economist, James Knightley is forecasting, looks likely. But recession? Case not proven.

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