



Lessons from Recent Experiences in Macroeconomic Forecasting

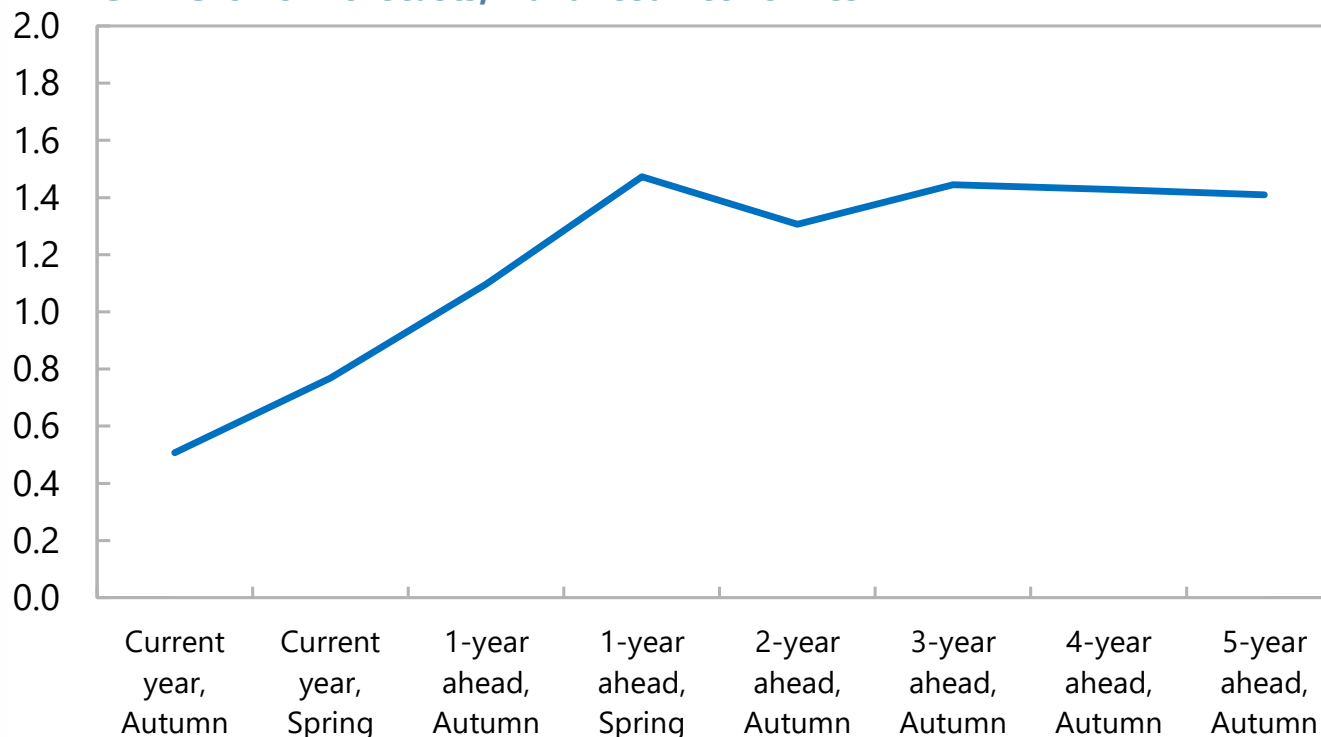
JUNE 2023

ECB Forum on Central Banking

Alfred Kammer, IMF

Forecasts lose accuracy fast as horizon lengthens

Forecast Accuracy: Median Root Mean Squared Errors of WEO Real GDP Growth Forecasts, Advanced Economies

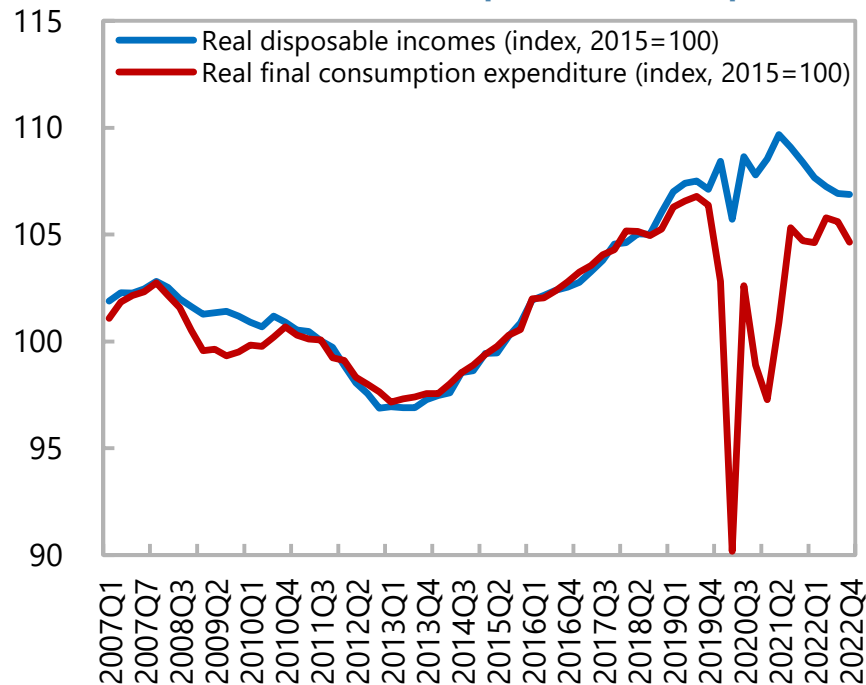


Source: Celasun et al. (2021).

Note: Autumn and spring refer to projections as published in the autumn and spring World Economic Outlook, respectively. "Current year, Autumn" would thus refer to, for example, the 2015 GDP growth projection as published in the autumn 2015 World Economic Outlook. And "1-year ahead, Spring" would refer to the 2015 GDP growth projection as published in the Spring 2014 World Economic Outlook.

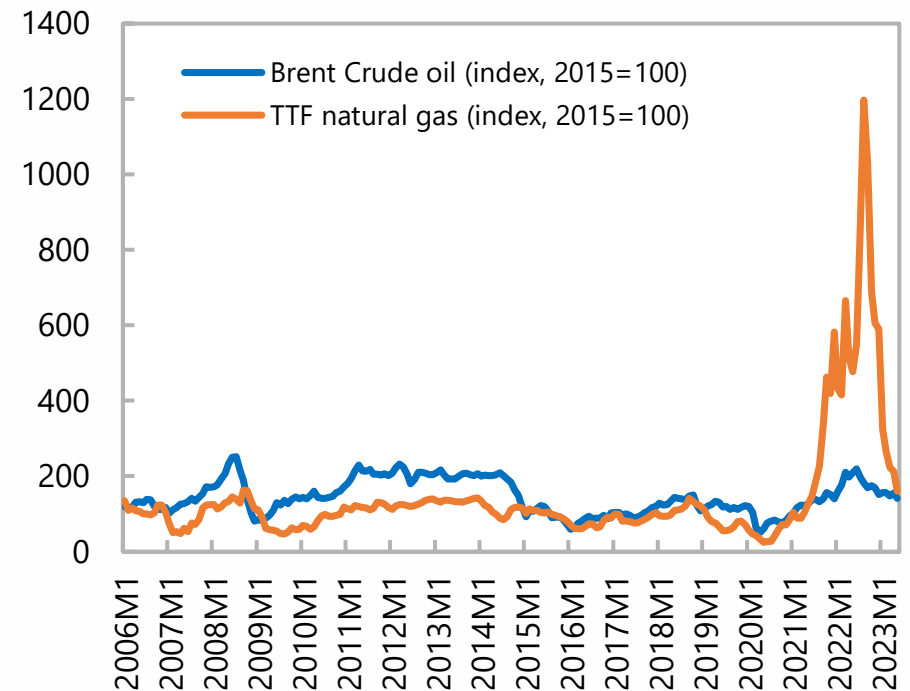
In 2020-22 standard macro relationships broke down amidst extreme volatility

Household Income and Expenditure Decoupled...



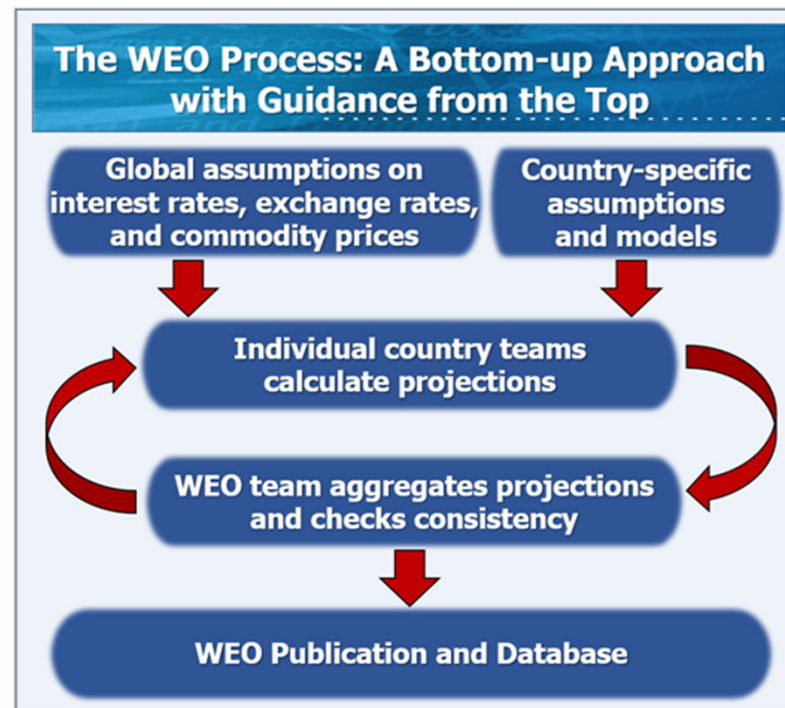
Sources: Eurostat; and IMF staff calculations.

... as did Oil and Natural Gas Prices.



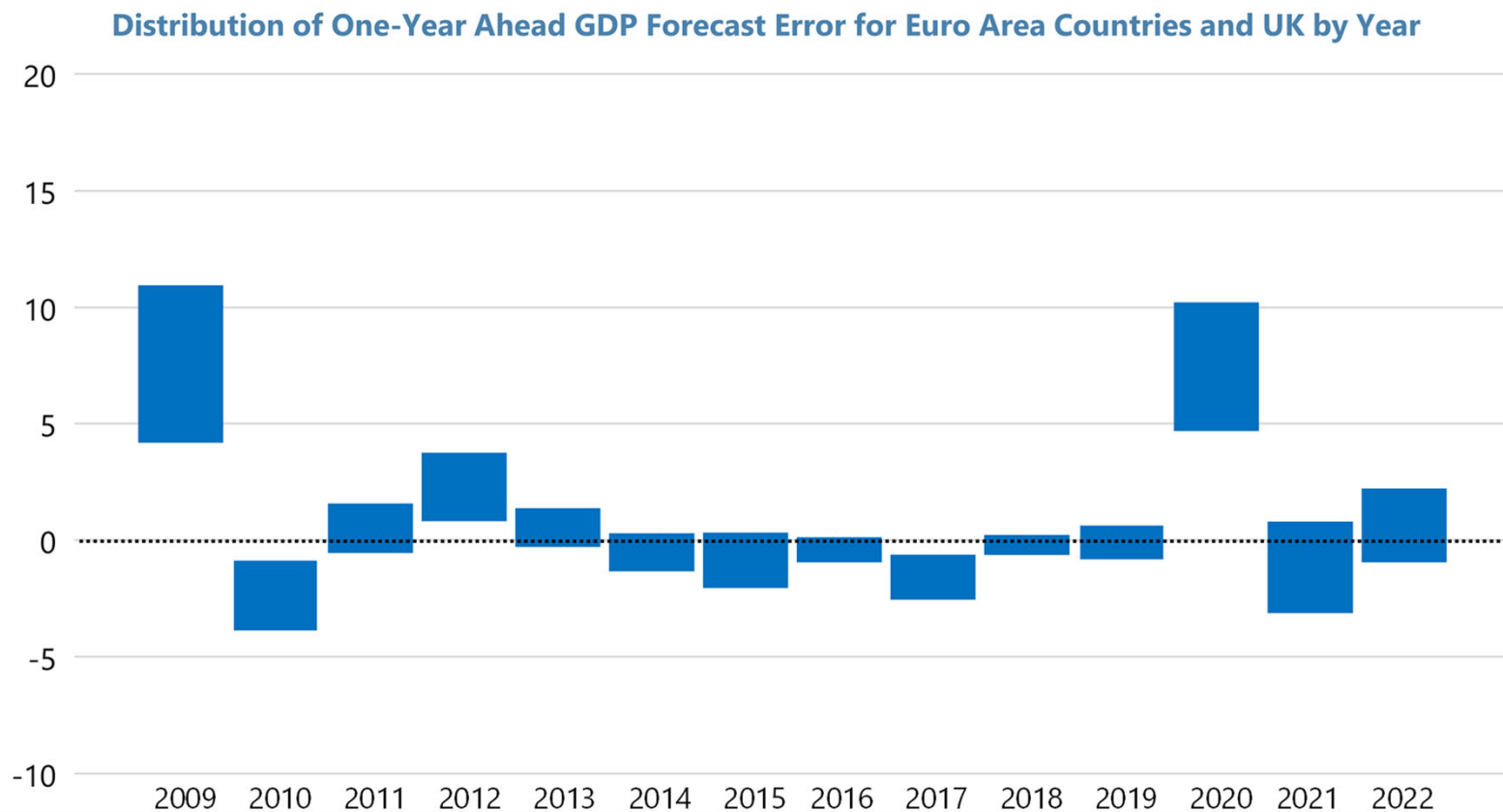
Sources: Bloomberg Finance L.P.; and IMF staff calculations.

The IMF's World and Regional (including European) forecasts are aggregated up from individual country team forecasts



Source: IMF.

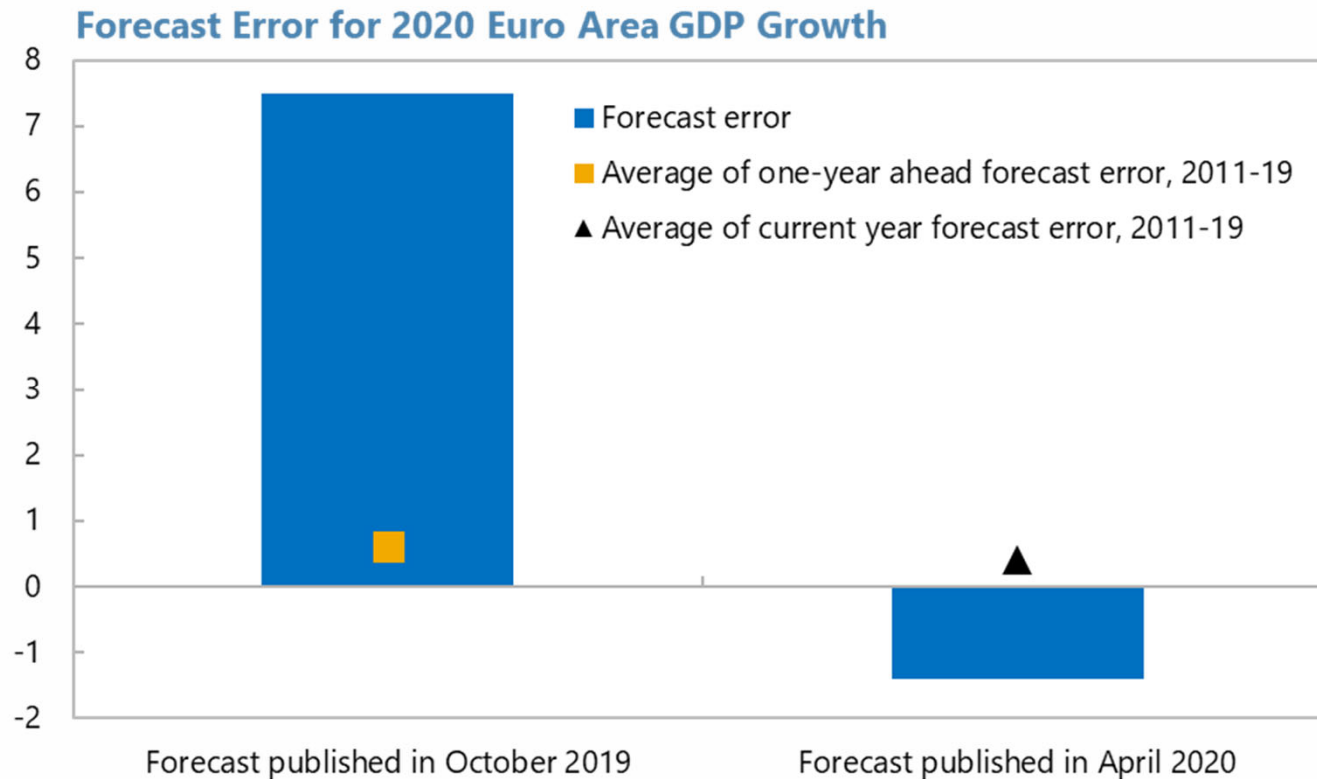
Co-movement increase with large shocks



Source: IMF World Economic Outlook Database.

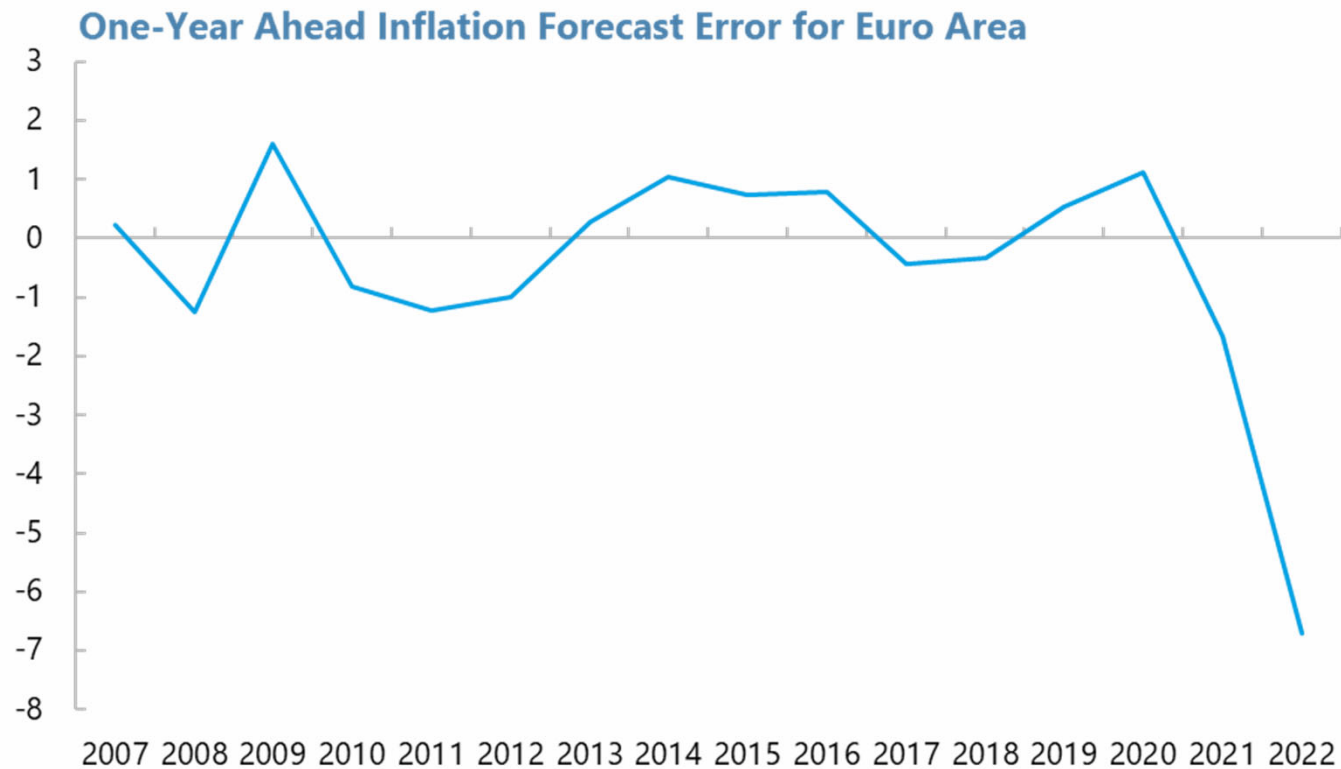
Note: Forecast errors are here defined simply as the annual GDP forecast made in autumn of year t-1 for year t, minus the actual GDP growth outcome in year t. The box shows the 25th to 75th percentile of the country forecast error distribution.

The 2020 GDP dynamics were captured reasonably well in the April 2020 WEO based on a more centralized approach



Source: IMF World Economic Outlook Database. The average forecast errors over 2011-19 show the average of the absolute value of the difference between forecast and actual turnout.

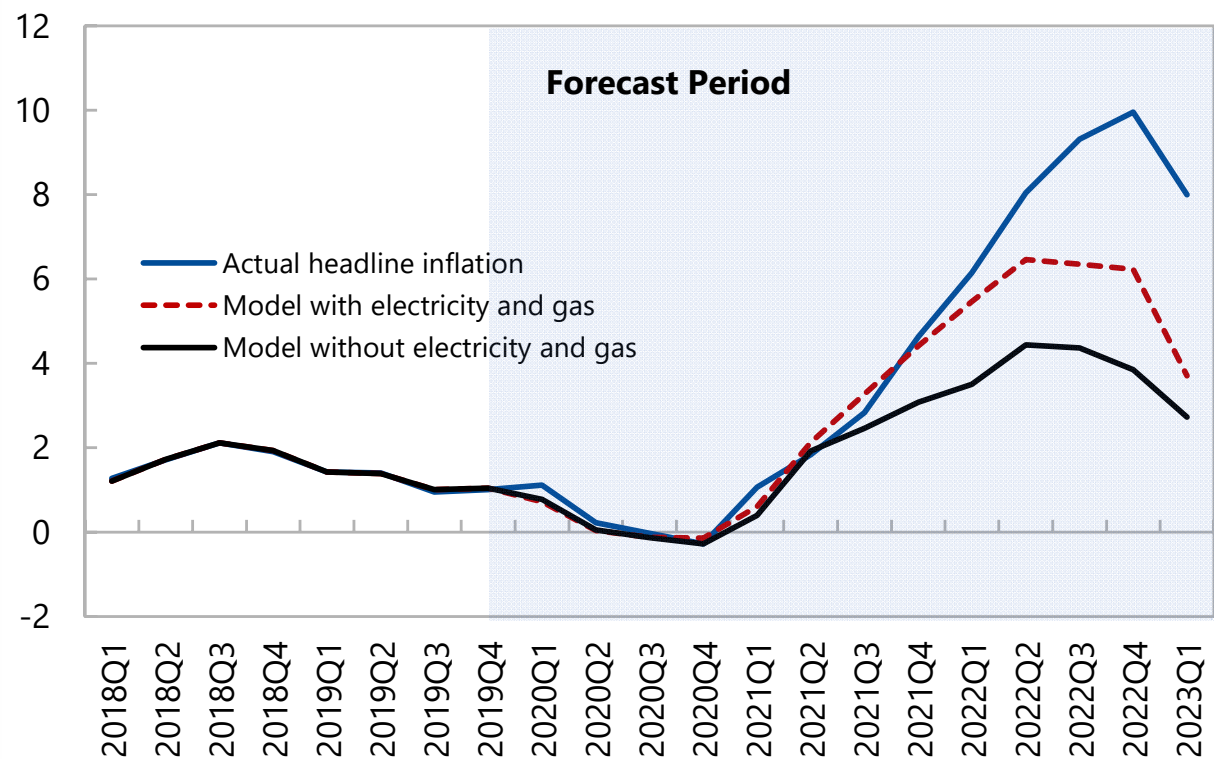
Stark (but not totally surprising) forecast errors for inflation amidst a sequence of shocks



Source: IMF World Economic Outlook Database.

Note: Forecast errors are here defined simply as the annual inflation forecast made in autumn of year t-1 for year t, minus the actual inflation outturn in year t.

Our inflation models lacked some granularity (e.g. for energy) but also did not capture certain non-linearities



Source: IMF Staff calculations.

Note: The red dashed line shows the pseudo out of sample projection over 2020Q1-2023Q1 of the model in McGregor and Toscani (2022) estimated on data until 2019Q4. The black line shows pseudo out of sample projections over the same horizon, removing wholesale electricity and gas from the inflation model (such that energy prices enter projections purely through Brent crude oil prices).

What lessons can we take forward?

- 1) **Balanced** – need to get the balance between top down and bottom up right. An increased role for central guidance will likely stay with us at the IMF.
- 2) **Nimble** - continuously monitor and enhance tools, exploit underused data sources including big data, and have a constant awareness of what information the models do and do not observe and be ready to apply well-grounded judgement.
- 3) **Modest** – forecasting is a humbling task, point estimates are necessary but cannot be the only focus, scenario and risk analysis is important, the objective should be to avoid forecasts that would yield gross policy mistakes.

Thank you