

As good as the rest? Comparing IMF forecasts with those of others

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Views expressed are those of the presenters and should not be ascribed to the IMF.

Some critiques of IMF forecasts and our findings

Critique	Our Findings
A. IMF's ability to forecast recessions is poor	True. <i>Consensus Forecasts</i> also fails to predict recessions, suggesting failure is not rooted in IMF forecast processes or models.
B. Lack of consistency across forecasts of different variables	We look at one aspect of this—consistency of output & unemployment forecasts. We find broad consistency but there is some room for improvement.
C. Optimistic growth forecasts, particularly for low-income countries & program countries	We find forecasts are almost as likely to be pessimistic as optimistic.

A. Inability to Forecast Recessions

The inability to forecast recessions was flagged by ...

- a comprehensive 2014 [IEO Assessment](#) of IMF forecasts

... and has received media attention recently:

- [Financial Times](#) (Tim Harford, May 30, 2014):
“The record of failure remains impressive.”
- [The Economist](#) (Jan. 9, 2016): “In its April forecasts *the IMF never once foresaw the contraction looming in the next year*. Even in October of the year in question, the IMF predicted that a recession had begun only half the time.”

Explanations for failure to predict recessions: Lack of information



- Many turning points occur for reasons that are difficult to predict (e.g. geopolitical events or political turmoil)
- Macro models are “too linear” to capture outlier events

Explanations for failure to predict recessions: Lack of incentives



There are few incentives for producing an "outlier" GDP forecast. Reputational loss from incorrectly calling a recession may exceed benefits from correctly calling one.

Explanations for failure to predict recessions: Behavioral reasons (triumph of hope over experience)



"Our economic forecasts are based on a complicated mathematical formula."

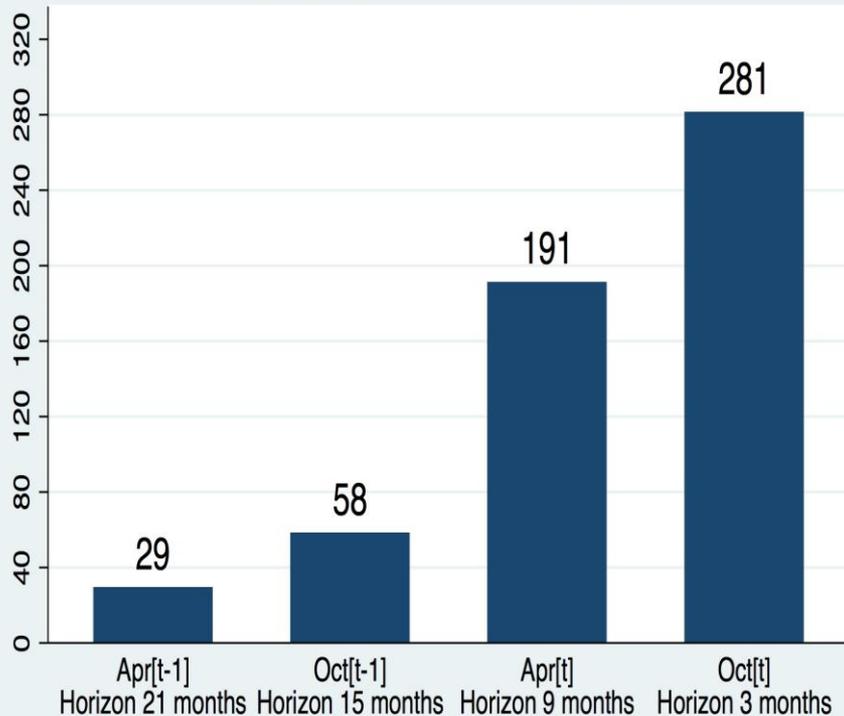
Emphasized by Nordhaus (1987): as forecasters, we tend to break the "bad news to ourselves slowly, taking too long to allow surprises to be incorporated into our forecasts."

Our Analysis

- Draws on:
 - [Loungani](#) (*International Journal of Forecasting*, 2001)
 - Ahir and Loungani ([VoxEU](#), April 2014)
 - An, Jalles and Loungani (in progress)
- Rich data set: WEO forecasts, 1990 to 2014, 188 countries (unbalanced sample)
- Two definitions of recessions
 - A year in which real GDP falls
 - A year in which real GDP falls, having risen the year before (used by *The Economist* article)
 - More precise definitions of recessions (e.g. based on NBER-type dating methodologies) not likely to affect conclusions—see evidence on this in [Loungani, Stekler and Tamirisa](#), *International Journal of Forecasting*, 2013.

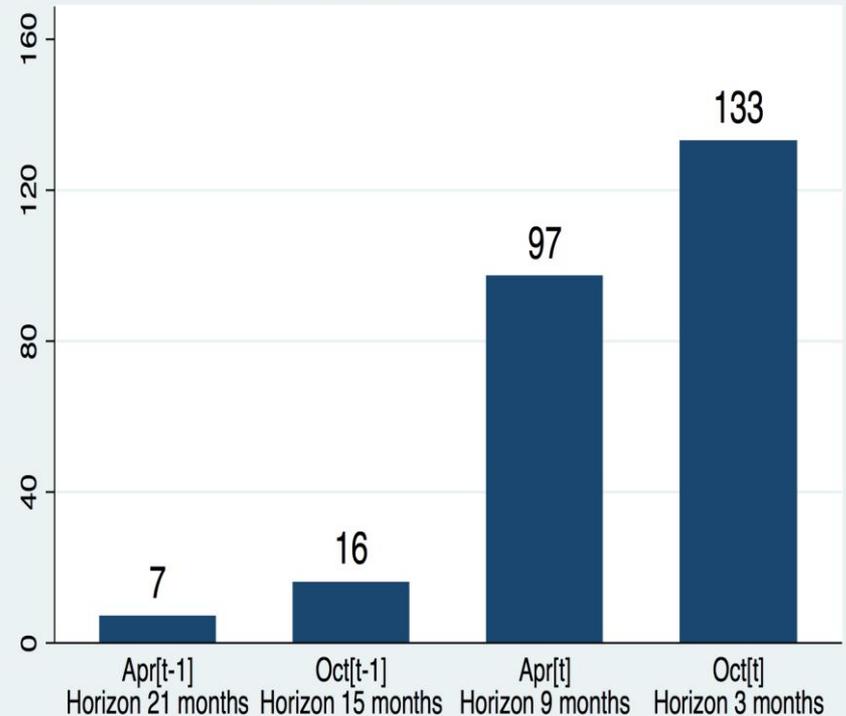
In good company: IMF's failure to predict recessions is shared by Consensus Forecasts (CF)

Number of Recessions Forecasted by IMF
of a total number of 565 recessions



1. Source: International Monetary Fund (based on 188 countries from 1990-2014).
2. Recession is defined as the instance in which an economy shrinks.

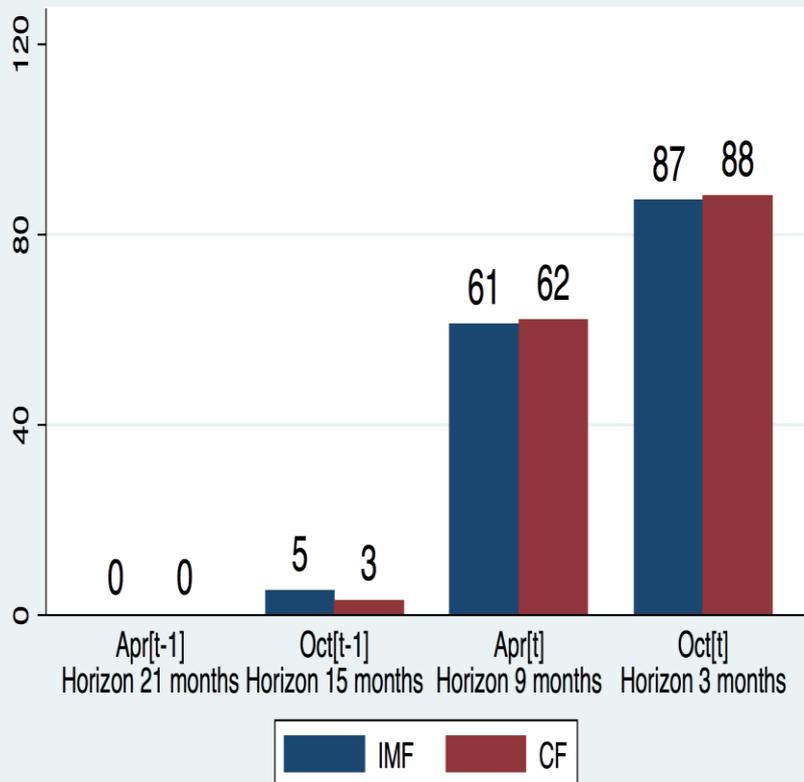
Number of Recessions Forecasted by Consensus Forecasts
of a total number of 170 recessions



1. Source: Consensus Forecasts (based on 85 countries from 1990-2014).
2. Recession is defined as the instance in which an economy shrinks.

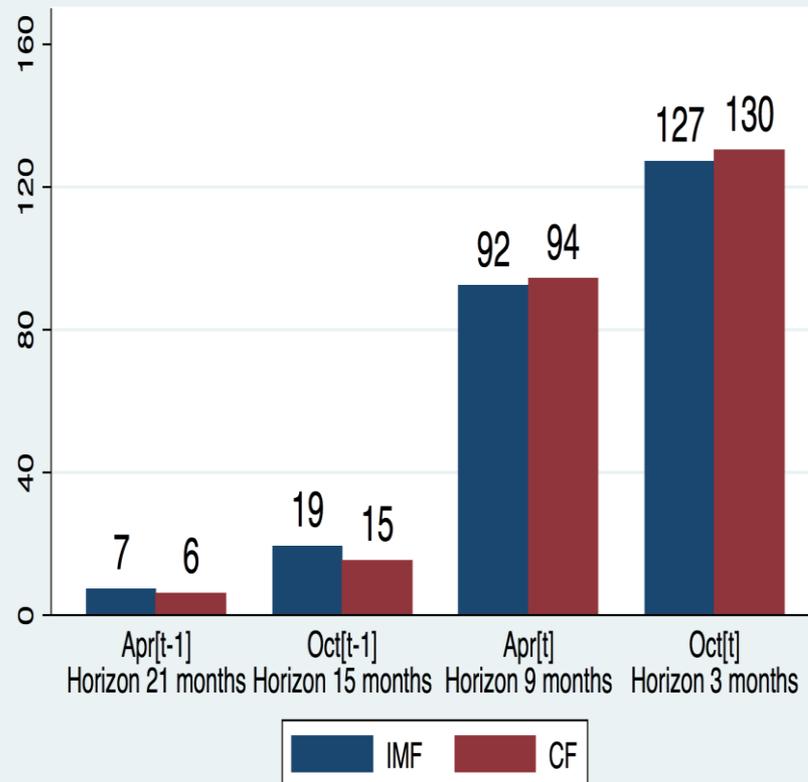
IMF and Consensus Forecasts (CF): A virtually identical record of failure

Number of Recessions Forecasted: IMF vs. CF
of a total number of 117 recessions



1. Source: International Monetary Fund and Consensus Forecasts (based on 85 common countries from 1990-2014).
2. Recession is defined as the instance in which an economy grew in one year before shrinking in the next.

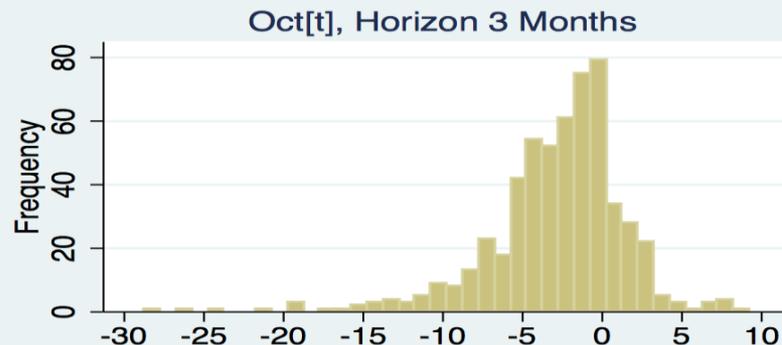
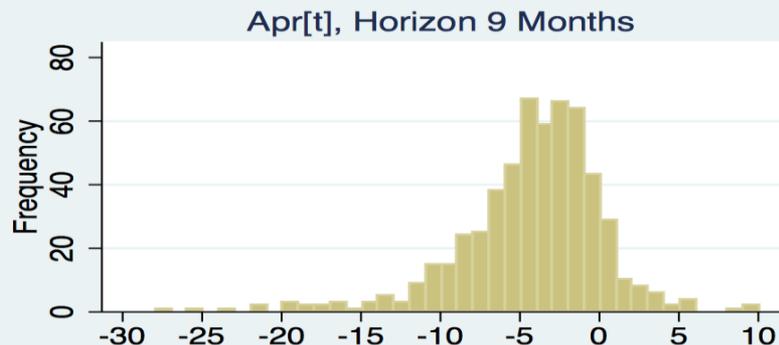
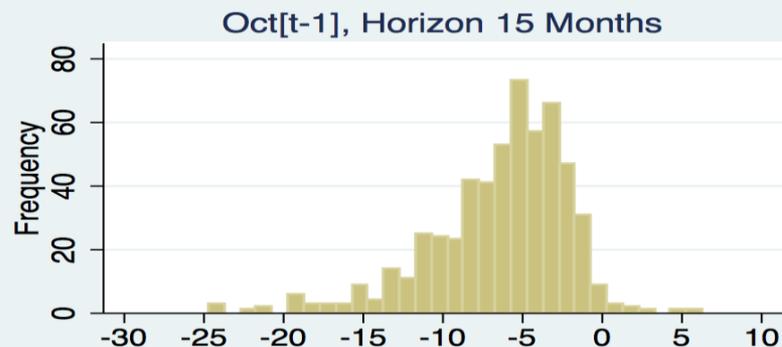
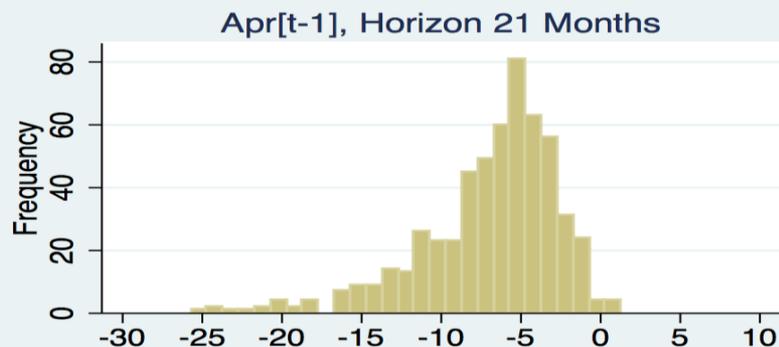
Number of Recessions Forecasted: IMF vs. CF
of a total number of 167 recessions



1. Source: International Monetary Fund and Consensus Forecasts (based on 85 common countries from 1990-2014).
2. Recession is defined as the instance in which an economy shrinks.

Forecast errors in recession years remain large, even as the year is ending ...

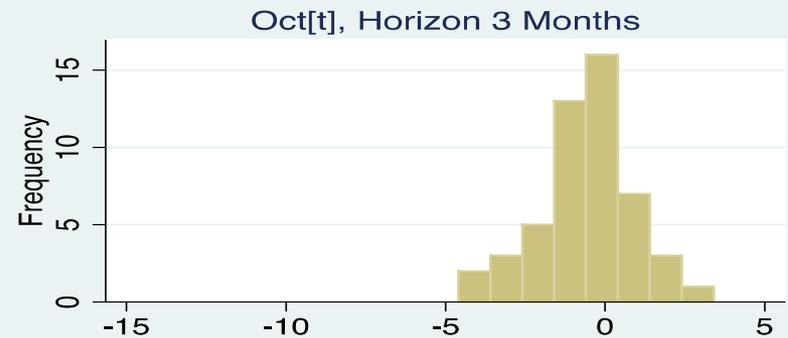
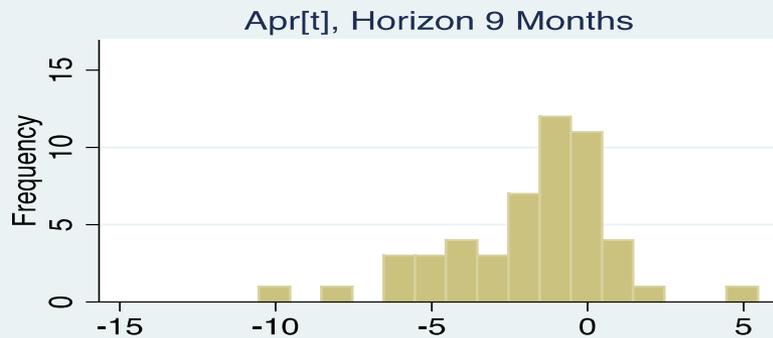
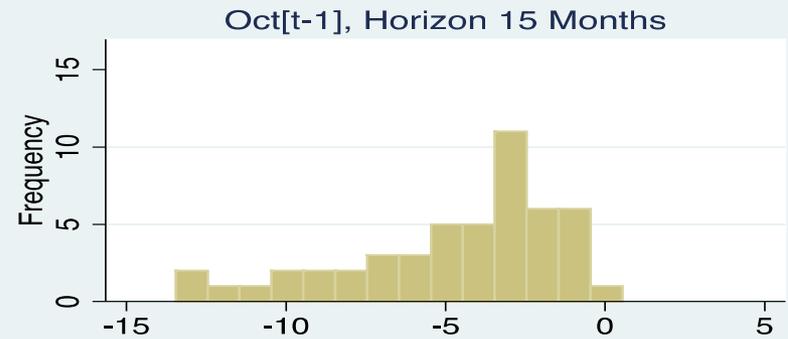
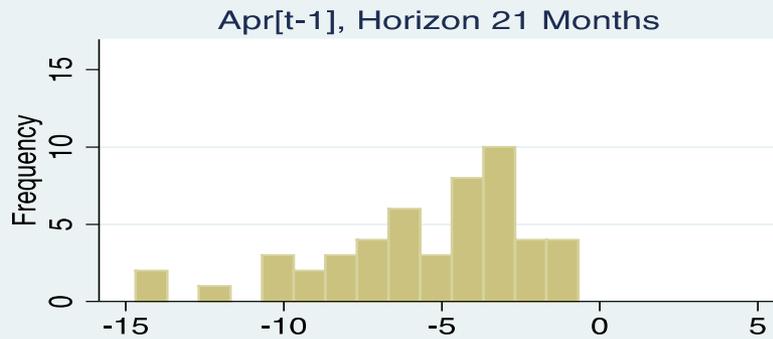
Distribution of IMF Real GDP Growth Forecast Error during Recession Periods



1. Source: International Monetary Fund (based on 188 countries from 1990-2014).
2. Recession is defined as the instance in which an economy shrinks.

... but the performance for G20 countries is better in this respect

Distribution of IMF Real GDP Growth Forecast Error during Recession Periods, G20

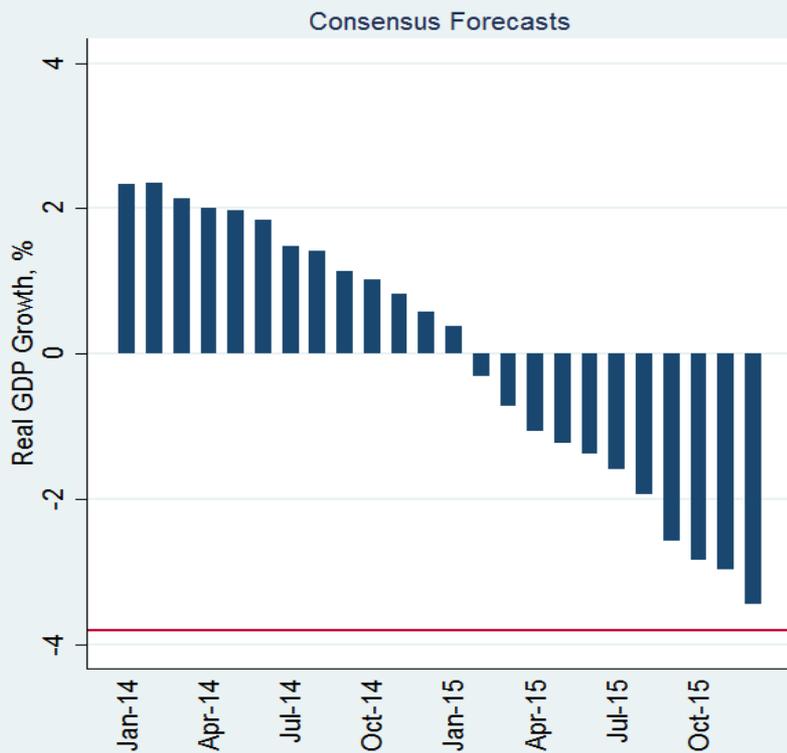


1. Source: International Monetary Fund (based on 19 countries from 1990-2014).
2. Recession is defined as the instance in which an economy shrinks.

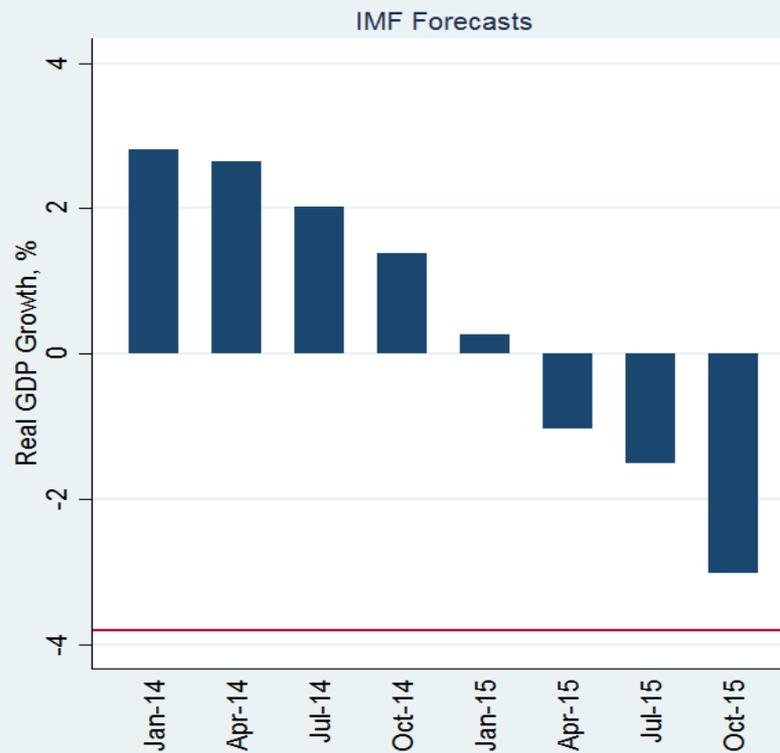
A recent case: Brazil 2015

Evolution of Consensus and IMF Forecasts

Evolution of Real GDP Growth Forecasts for Brazil-2015



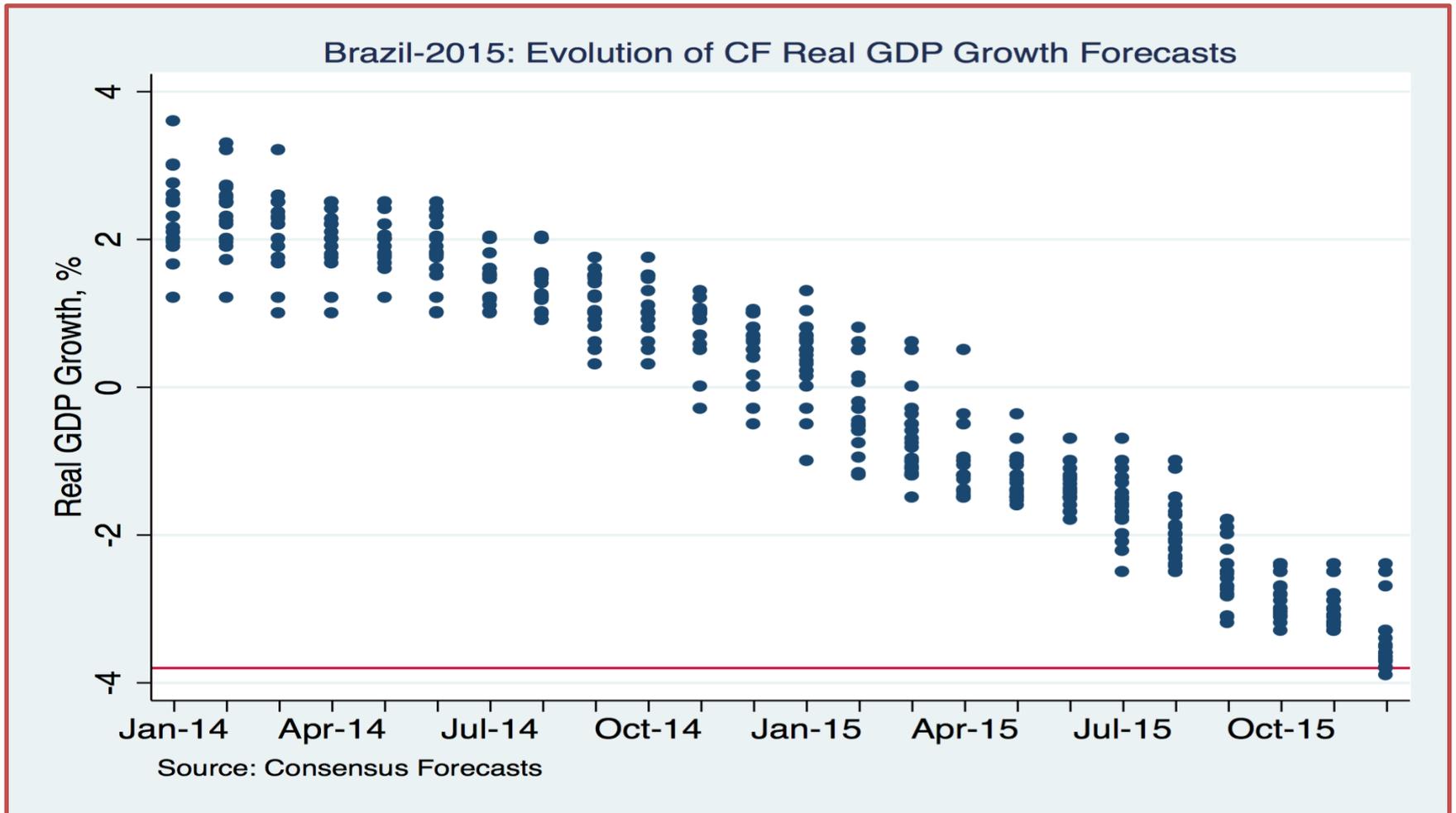
Source: Consensus Forecasts



Source: IMF World Economic Outlook

A recent case: Brazil 2015

The Consensus 'dot plot'

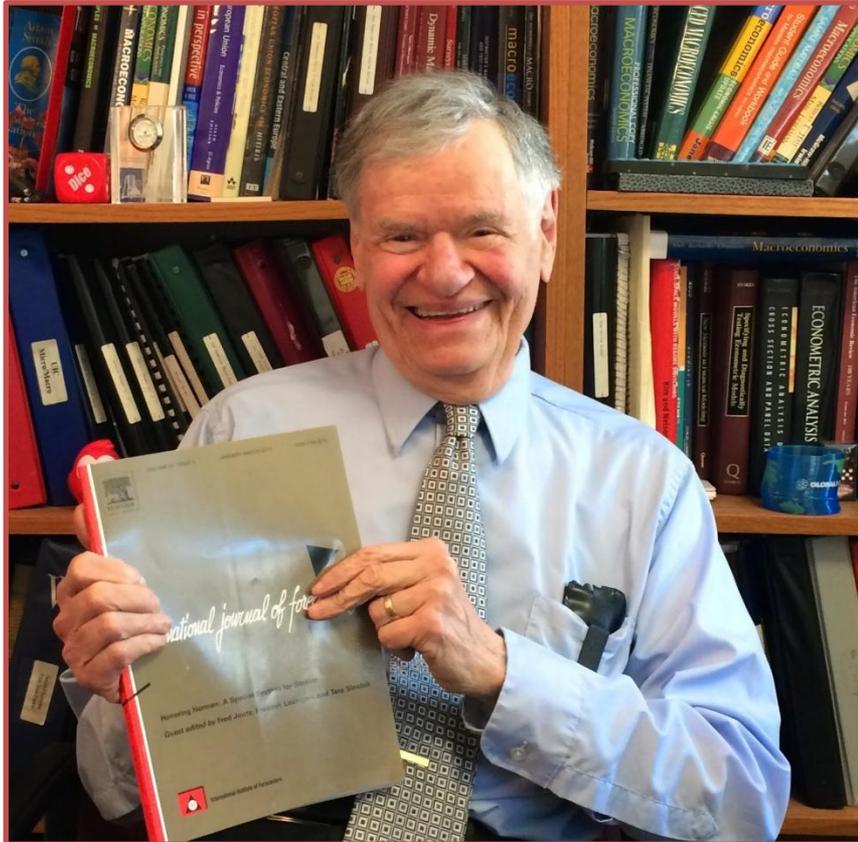


The “coin toss” criticism of these findings



- Wouldn't an ex post assessment of a “coin toss” experiment similarly make forecasters look bad?
- Sure, but if real GDP growth is a “coin toss”, why do we invest so much effort in forecasting it?

How to get forecasters to do better: Give a 'Stekler Award' for Courage in Forecasting



“I personally believe that the cost of a recession is so great that a forecaster should never miss one. Some people argue that turning points are unpredictable. I disagree.

I have never had trouble predicting recessions. In fact, I have predicted $n+x$ of the last n recessions.”

Stekler (2010 interview)

Winner of 2015 'Stekler Award': Lakshman Achuthan (Economic Cycle Research Institute)

- “On September 21, 2011, ECRI notified clients that the U.S. economy is indeed tipping into a new recession. And there's nothing that policy makers can do to head it off...”



- [“our September 2011 U.S. recession forecast did turn out to be a false alarm.”](#)
- “the 2012-13 cyclical downturn turned out to be the worst “non-recession” in half a century rather than a full-blown recession”
- “key to avoiding recession in 2012 was the fortuitous plunge in oil price volatility”

The 2016 'Stekler Award': Michael Shedlock ("Mish")

- "Canadian Recession Coming Up"
 - Mish, January 21, 2015
- "Canada in Recession, US will follow in 2015"
 - Mish, January 31, 2015



Candidates for 2017 Stekler Award?

STAY TUNED!

B. Multivariate Consistency of Forecasts

- Emphasized by Stekler and others (2015)
 - Do forecasts tell a consistent story?
 - Are forecasts consistent with known relationships in the data?
- Consistency of forecasts has been examined along several dimensions
 - Fiscal & output forecasts ([Blanchard and Leigh](#), 2013)
 - Output & inflation forecasts ([Fendel, Ris, Rulke](#), 2011)

Assessing Consistency of Output and Unemployment Forecasts

- Relationship in data (Okun's Law): $\Delta U_t = \alpha + \beta \Delta y_t$

- Relationship in forecasts:

$$E_h \Delta U_t = \alpha + \beta E_h \Delta Y_t$$

- Then compare β coefficients in the data with those in forecasts.

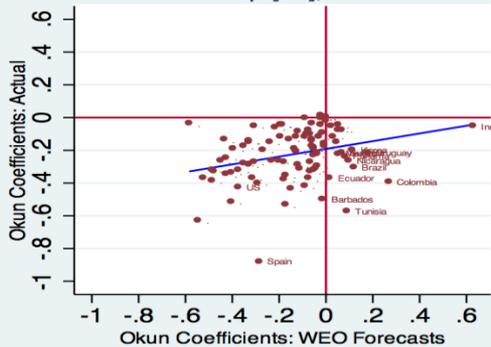
Our analysis draws on:

- [Ball, Jalles and Loungani](#), "Do Forecasters Believe in Okun's Law," *International Journal of Forecasting*, 2015
- An, Ball, Jalles and Loungani, "An Assessment of the IMF's Unemployment Forecasts," in progress, 2016

Consistency of IMF growth & unemployment forecasts with that in the data

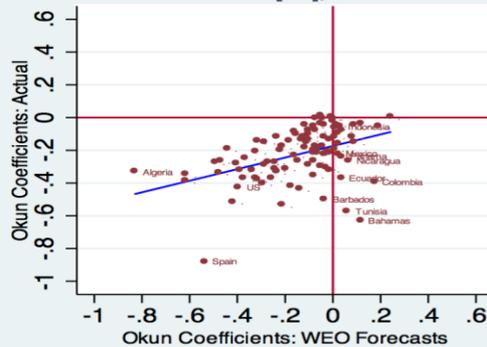
Okun Coefficients: Actual Data vs. IMF Forecasts

Forecasts: Apr[t-1], Horizon=21



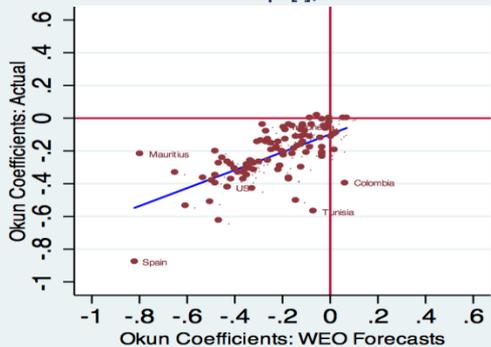
$$y = -0.18 + 0.23x, R^2 = 0.09$$

Forecasts: Oct[t-1], Horizon=15



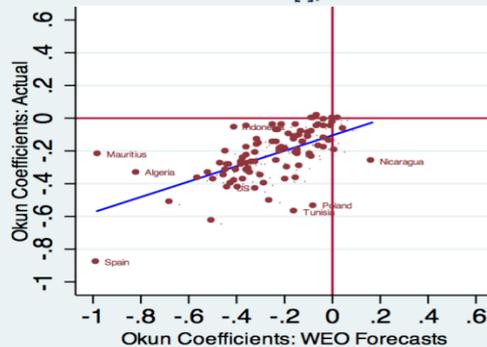
$$y = -0.17 + 0.34x, R^2 = 0.19$$

Forecasts: Apr[t], Horizon=9



$$y = -0.10 + 0.51x, R^2 = 0.38$$

Forecasts: Oct[t], Horizon=3



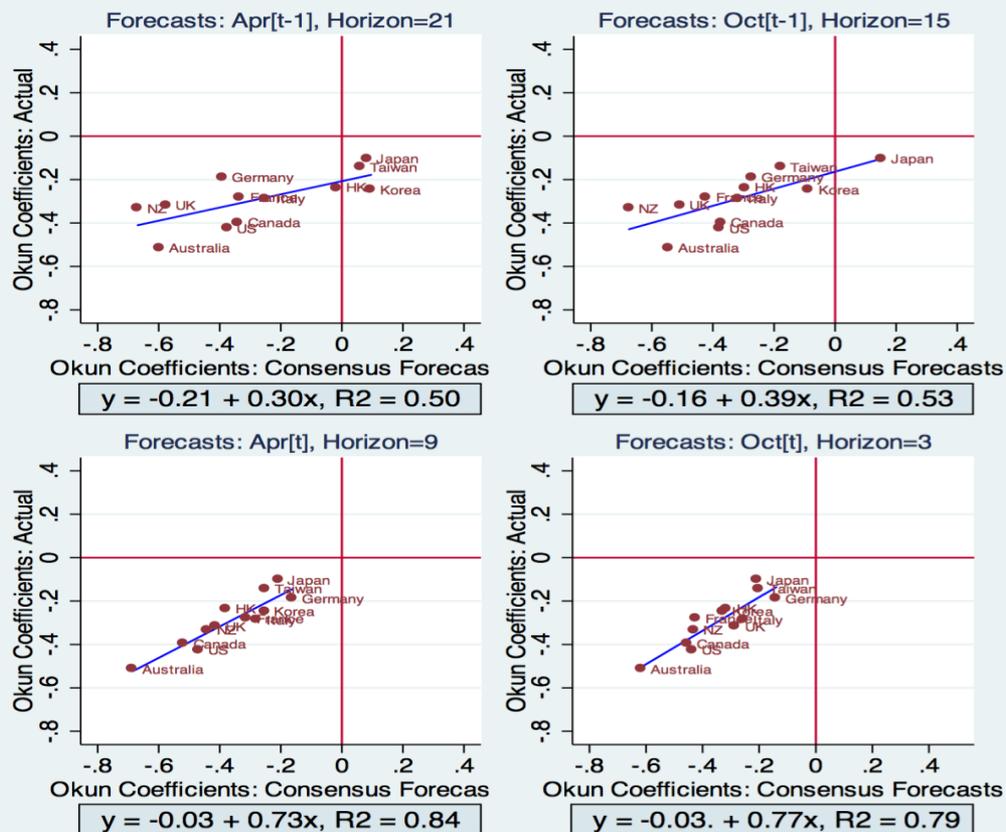
$$y = -0.10 + 0.46x, R^2 = 0.34$$

Estimated based on 97 countries

- Based on forecasts for 97 countries
- Results show consistency is low for year-ahead forecasts but steadily improves

Consistency of *Consensus* growth and unemployment forecasts

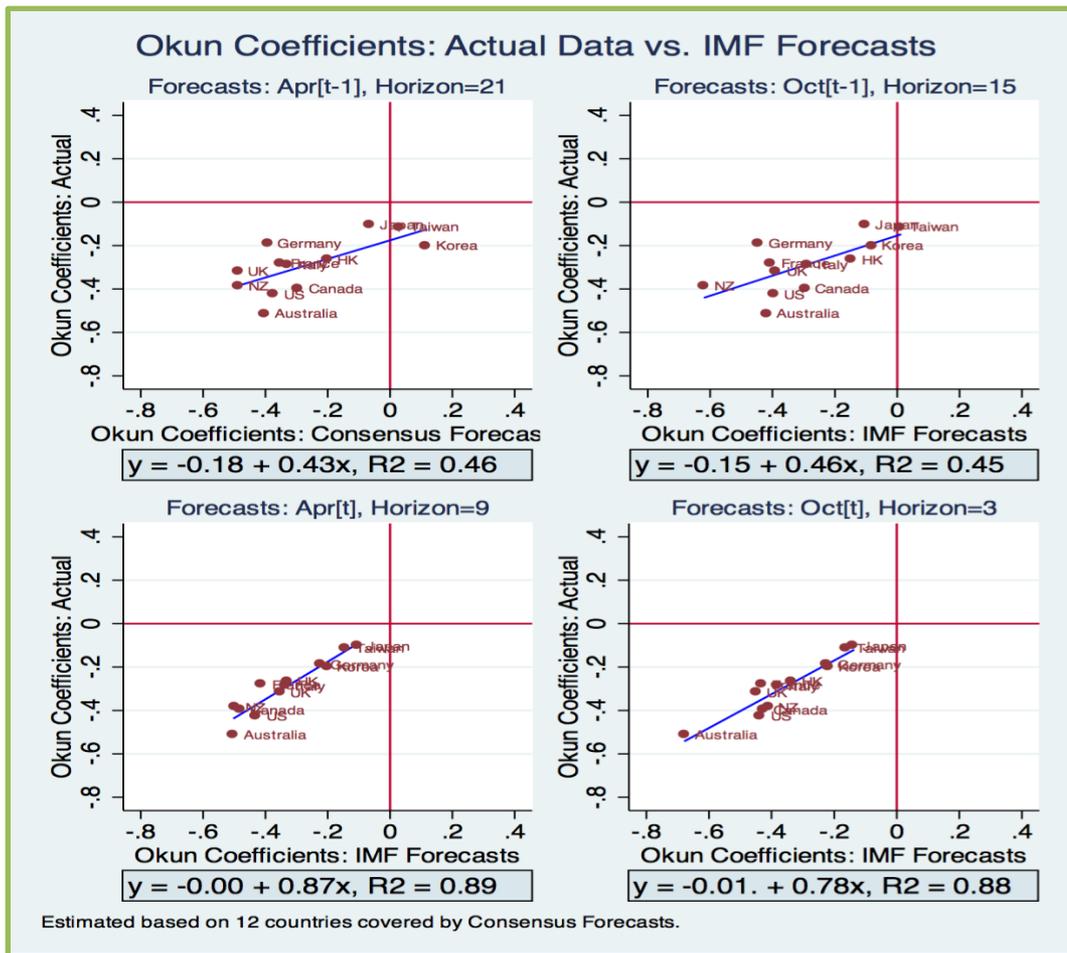
Okun Coefficients: Actual Data vs. Consensus Forecasts



Estimated based on 12 countries covered by CF.

- Consensus only provides unemployment forecasts for a limited set of countries.
- Results show broad consistency of relationship in forecasts with that in the data

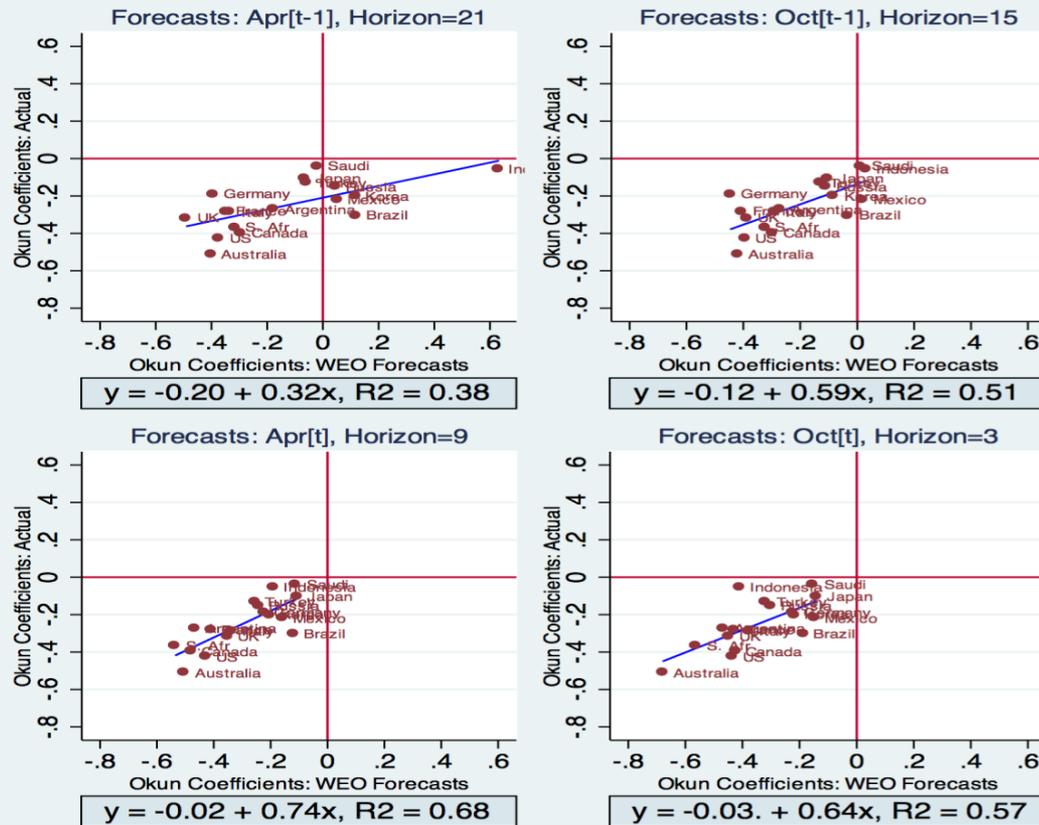
Consistency of IMF growth & unemployment forecasts (for countries also covered by *Consensus*)



- For the set of countries for which Consensus provides unemployment forecasts, the IMF and Consensus consistency is quite similar
- Hence, the weaker consistency shown in slide 11 is due to the larger group of countries

Consistency of IMF growth & unemployment forecasts: G20 economies

Okun Coefficients: G20, Actual Data vs. IMF Forecasts



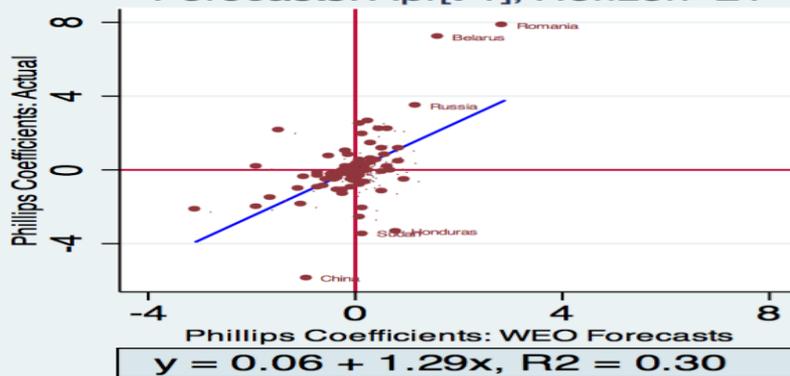
Estimated based on 18 countries

- For G20 economies, there is broad consistency of relationship in forecasts with that in the data

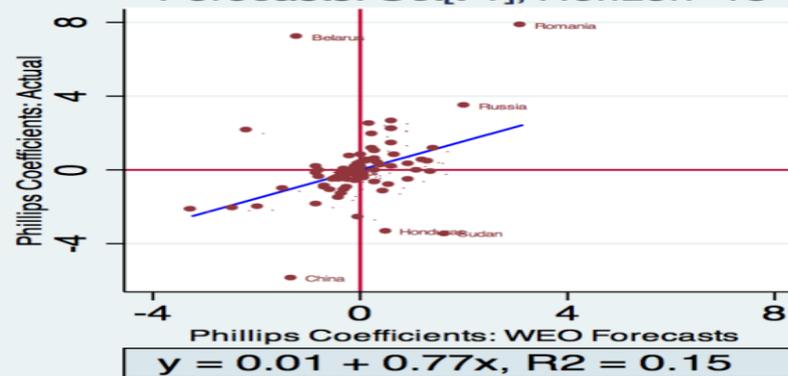
Consistency of IMF unemployment & inflation forecasts: very preliminary evidence

Phillips Coefficients: Actual Data vs. IMF Forecasts

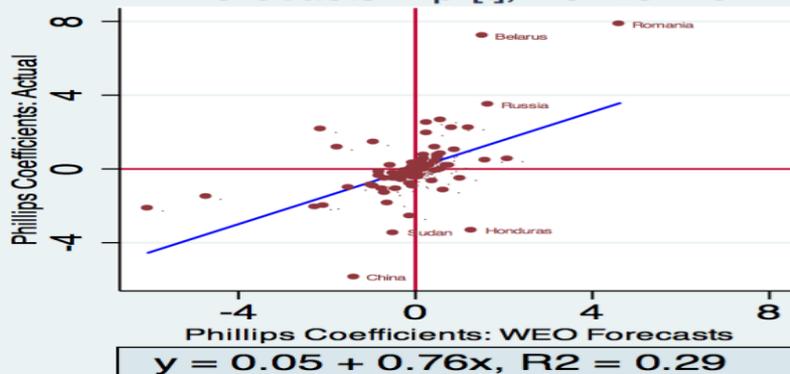
Forecasts: Apr[t-1], Horizon=21



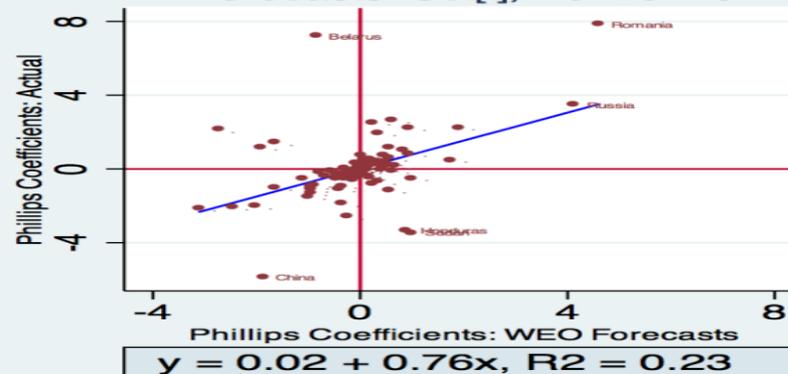
Forecasts: Oct[t-1], Horizon=15



Forecasts: Apr[t], Horizon=9



Forecasts: Oct[t], Horizon=3



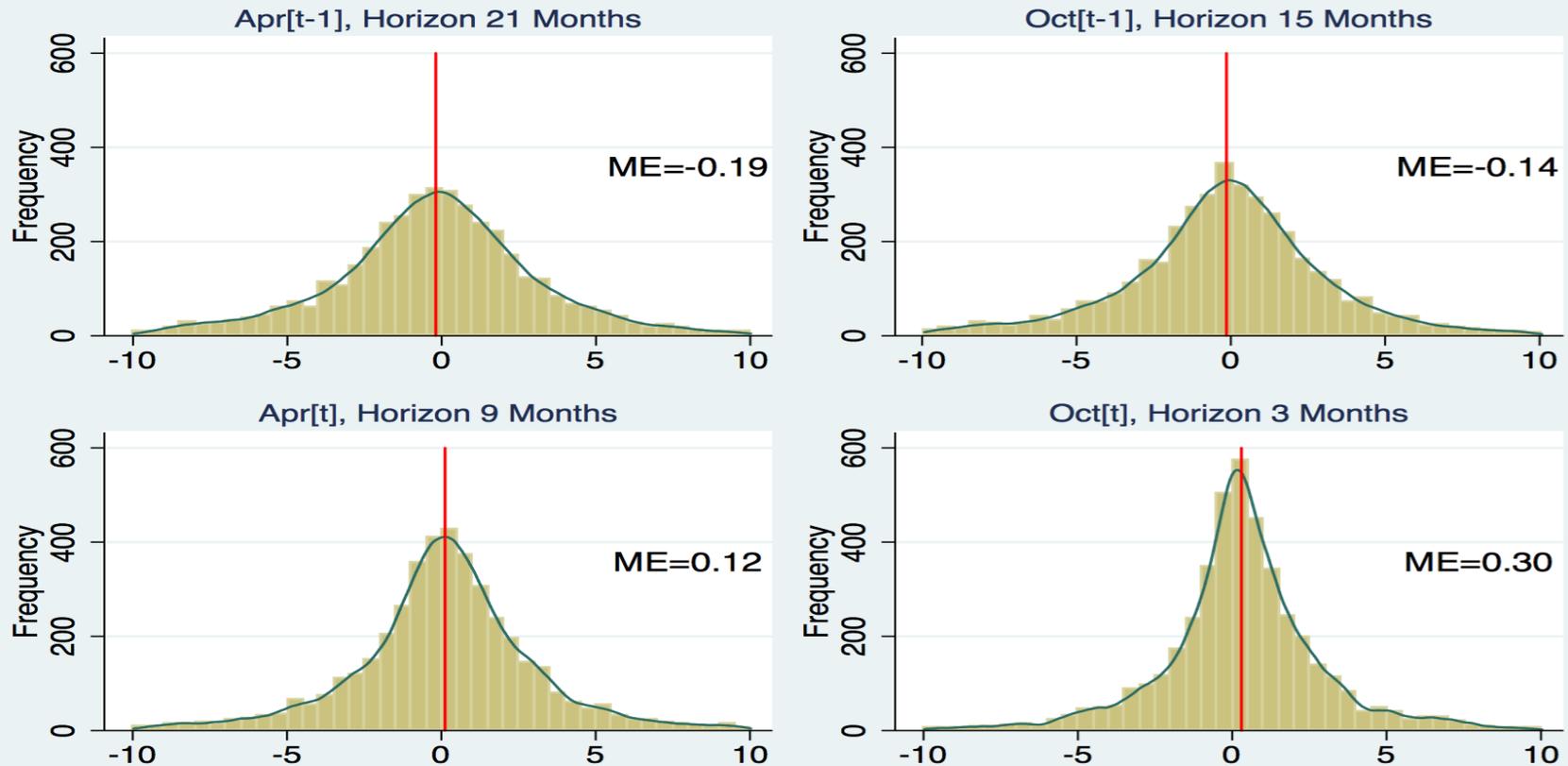
Estimated based on 97 countries
Phillips coefficient for each country estimated with restriction that inflation < 50.

C. Optimism in IMF's Growth Forecasts

- Optimism frequently claimed, not always borne out
 - [Beach, Schavey, Isidro](#) (1999)
 - GAO (2002)
- Some previous work by IMF staff
 - [Musso and Phillips](#) (2002)
 - [Baqir, Ramcharan and Sahay](#) (year)
- 2014 IEO assessment did not find strong evidence of optimism bias
- Our analysis is based on looking at the full distribution of forecast errors and also comparing the distribution with that from Consensus Forecasts
 - Note that the Forecast Error is defined as Actual – Forecast. Hence, a negative value of the error denotes 'optimism' and a positive value denotes 'pessimism'

Fairly Symmetric Distribution of Growth Forecast Errors

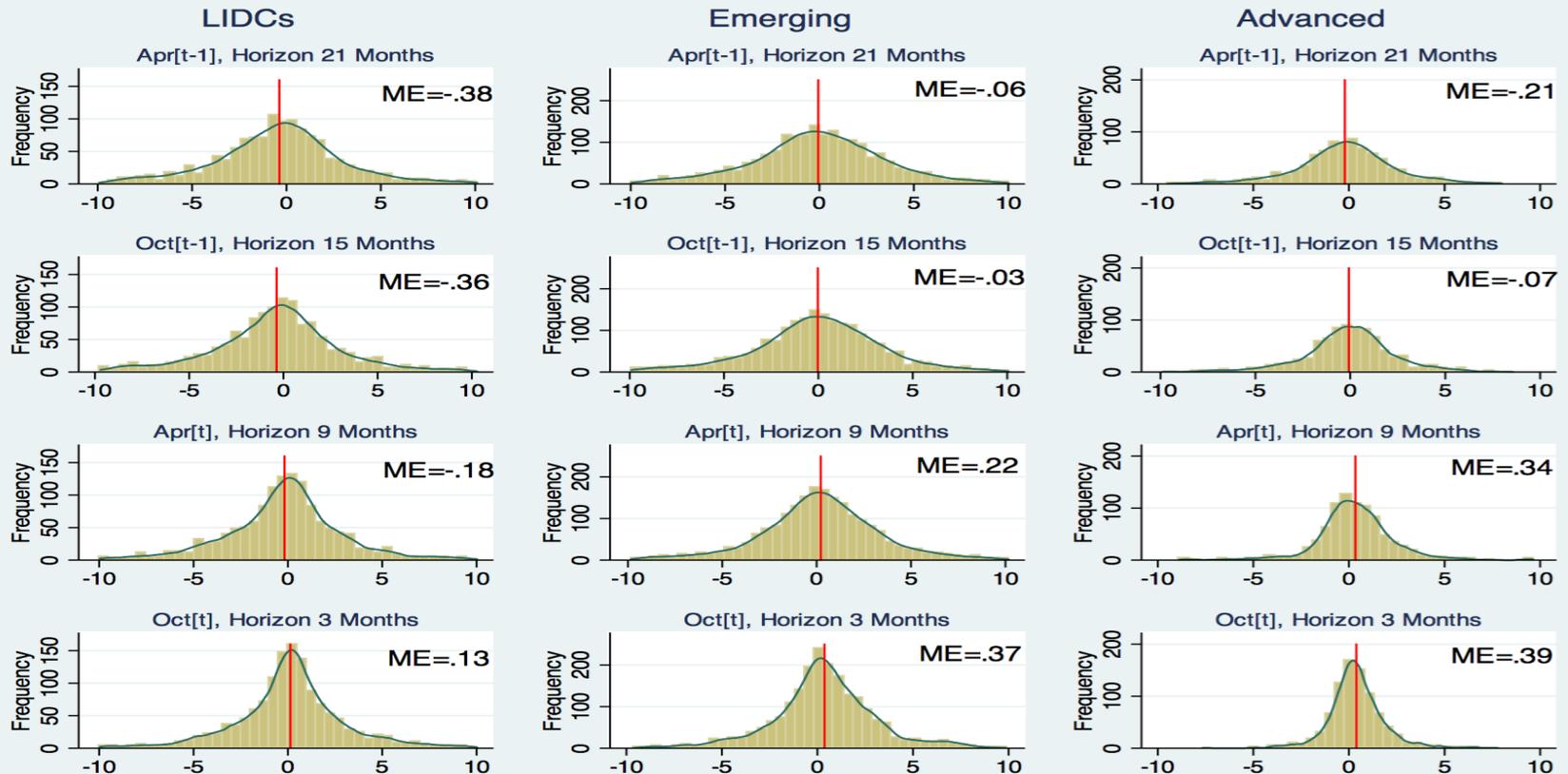
Distribution of IMF Real GDP Forecast Error



1. Source: International Monetary Fund (based on 188 countries from 1990-2014).
2. Forecast error is defined as actual minus forecast (-: optimism; +: pessimism).

Broad Symmetry for All Country Groups

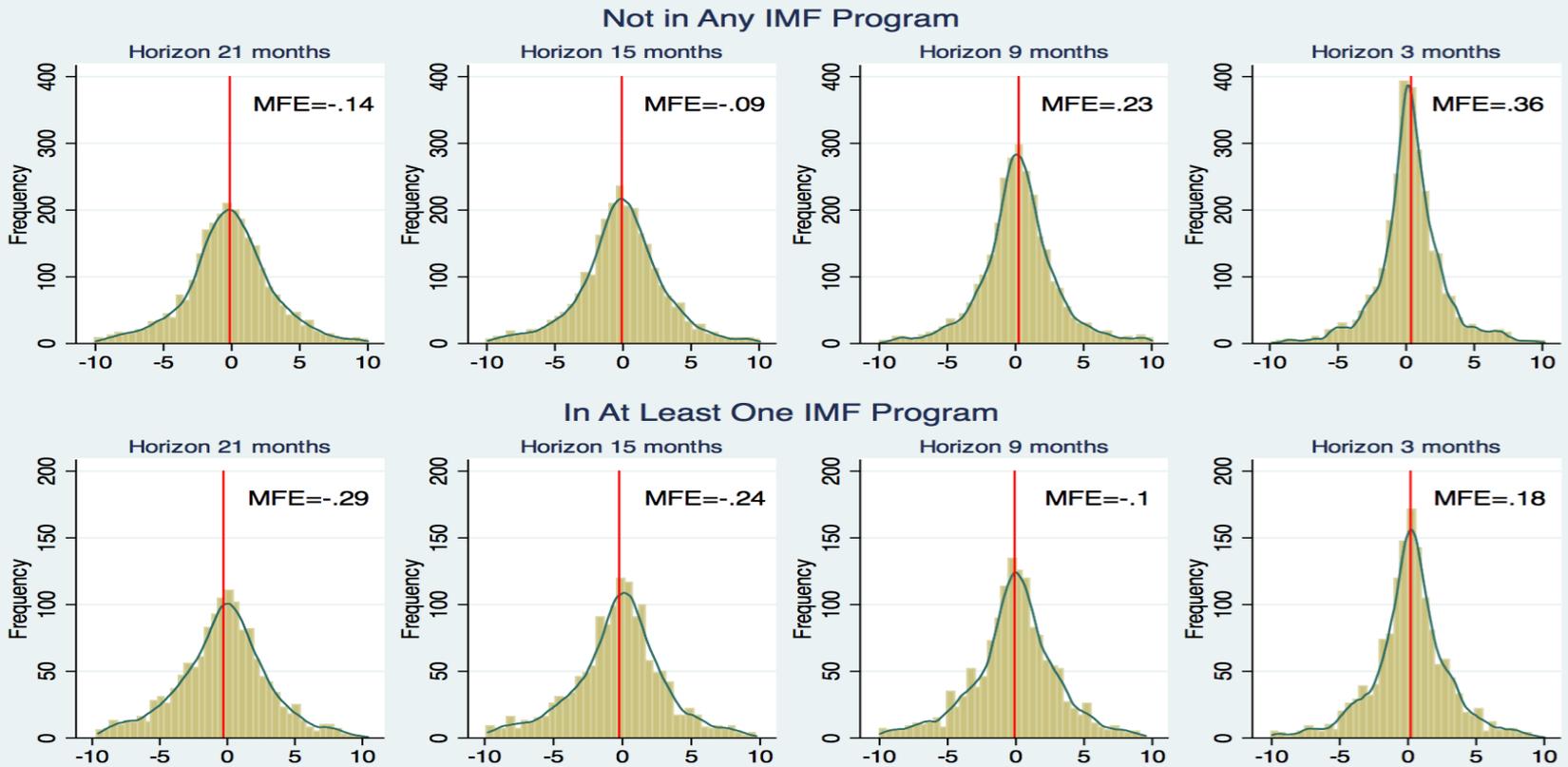
Distribution of IMF Real GDP Forecast Error by Country Group



1. Source: International Monetary Fund (based on 188 countries: 59 LIDCs, 92 Emergings, and 37 Advanced, from 1990-2014).
2. Forecast error is defined as actual minus forecast (-: optimism; +: pessimism).

Symmetry holds regardless of IMF program status

Distribution of IMF Real GDP Forecast Error: In Any IMF Program or Not

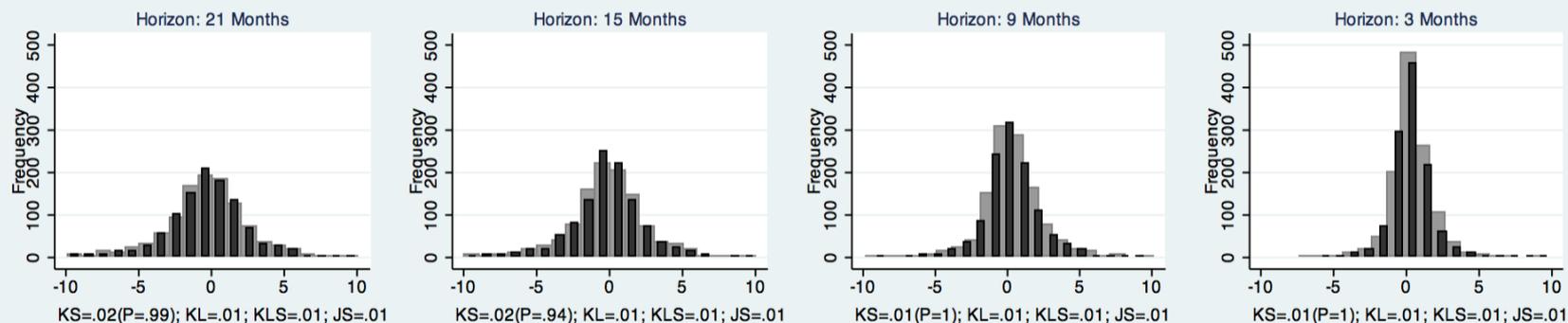


1. Source: International Monetary Fund (based on 188 countries from 1990-2014).
2. Forecast error is defined as actual minus forecast (-: optimism; +: pessimism).

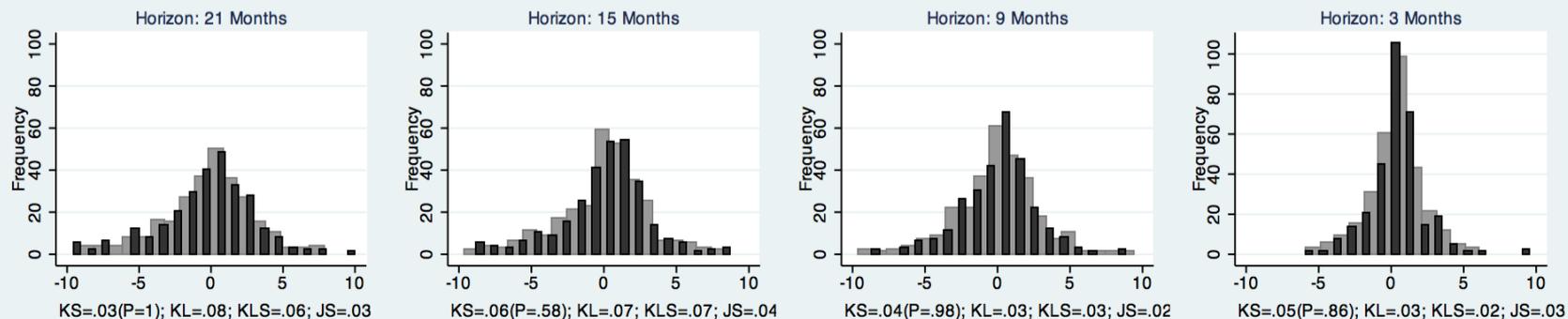
Consensus forecasts for IMF program countries indistinguishable from IMF's own forecasts

Distributions of Real GDP Growth Forecast Error: In Any IMF Program or Not
IMF (Gray) and CF Forecasted (Black)

Not In Any IMF Program



In At Least One IMF Program

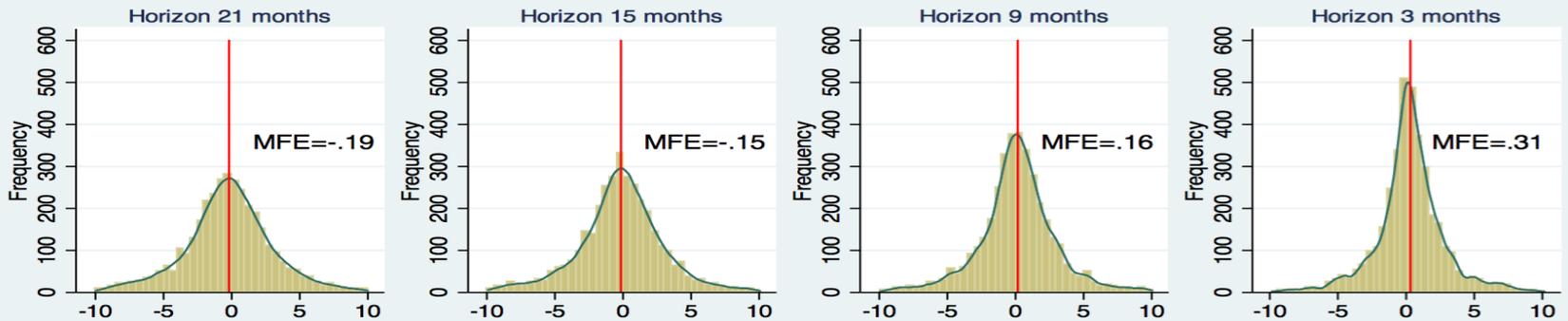


KS: Kolmogorov–Smirnov distance (with P-value); KL: Kullback-Leibler divergence; KLS: KL symmetric divergence; JS: Jensen-Shannon divergence.

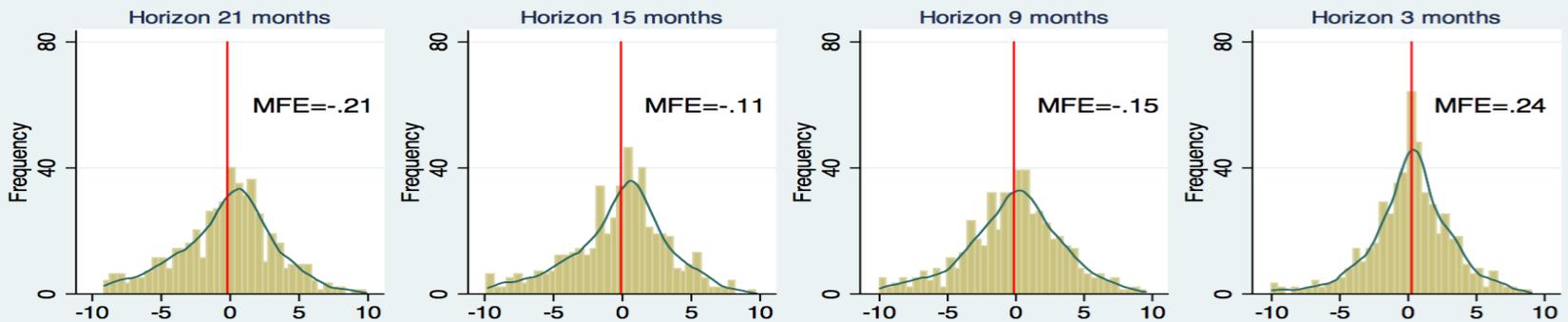
Symmetry holds for countries in SBA programs

Distribution of IMF Real GDP Forecast Error In Stand-By Arrangement (SBA) Program or Not

Not in SBA Program



In SBA Program

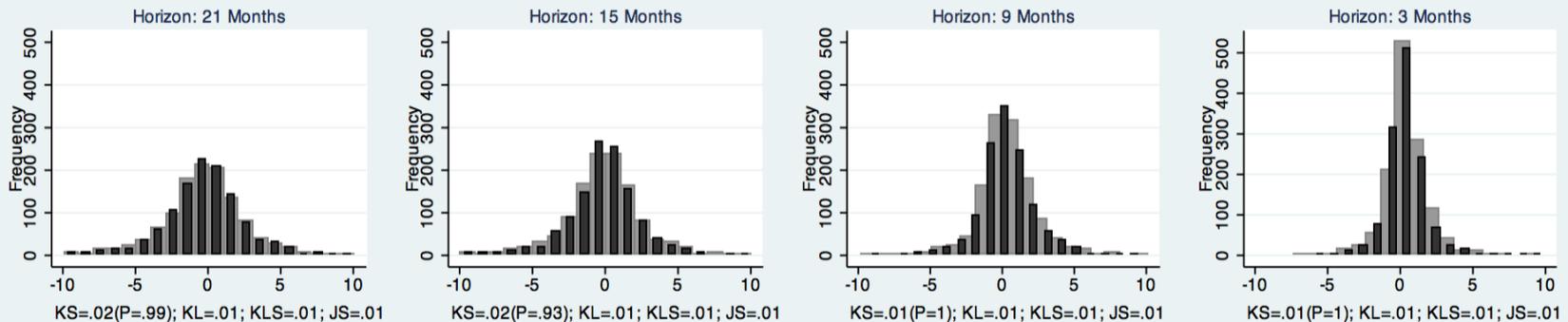


1. Source: International Monetary Fund (based on 188 countries from 1990-2014).
2. Forecast error is defined as actual minus forecast (-: optimism; +: pessimism).

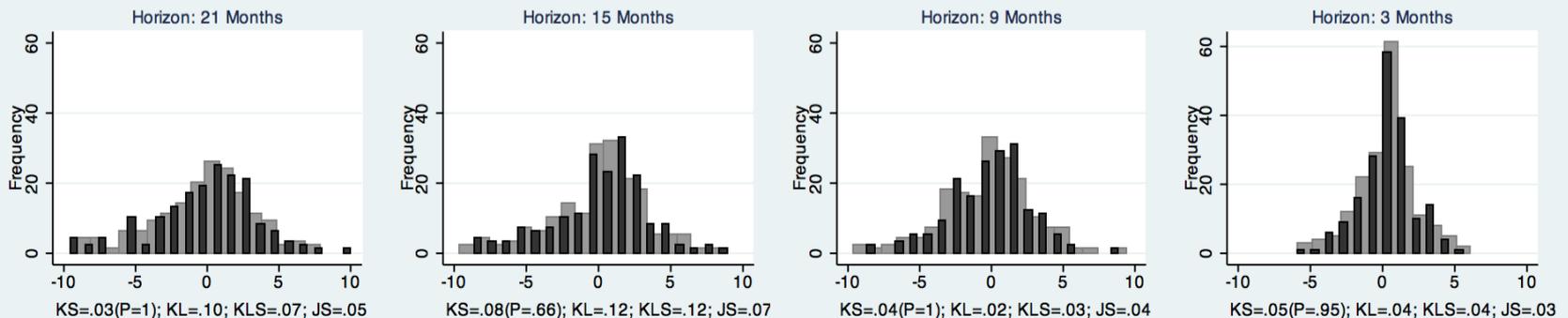
Consensus forecasts for SBA program countries indistinguishable from IMF's own forecasts

Distributions of Real GDP Growth Forecast Error: In Stand-By Arrangement (SBA) Program or Not
IMF (Gray) and CF Forecasted (Black)

Not In SBA Program



In SBA Program



KS: Kolmogorov–Smirnov distance (with P-value); KL: Kullback-Leibler divergence; KLS: KL symmetric divergence; JS: Jensen-Shannon divergence.

Takeaways

- Forecasting recessions is difficult, both for IMF and Consensus Forecasts.
 - Useful complementary role for early warning & vulnerability exercises; tail risks analysis; scenario analysis
 - Performance of forecasts made in October of recession year could perhaps be improved (reluctance to acknowledge extent of bad news may be playing a role)
- Forecast assessments should give greater focus to consistency of forecasts across variables. Previous assessments have tended to focus on assessing one variable in isolation
 - The analysis of the consistency of unemployment and output forecasts shows room for improvement in year-ahead forecasts.
- There is no evidence for a widespread bias towards optimism in IMF forecasts. Forecast errors are symmetric, including for LIDC and countries in IMF programs
 - There can be still be cases of optimism (e.g. persistent downward revisions of world growth forecast in last six years)
 - There can also be some bias in initial program documents