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Discussion

Okun's Law in real time

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A B S T R A C T

This comment on the study by Ball, Jalles, and Loungani (2015) compares their findings on the role of Okun's Law in forecasts and fully revised data with real-time data for the G7 countries plus Australia and New Zealand. Ball et al. find that the Okun's Law relationship in Consensus forecasts is consistent with that in fully revised data. We show that the same relationship is weaker in the initial releases, as recorded in the OECD real-time database.

1. Introduction

In "Do forecasters believe in Okun's law? An assessment of unemployment and output forecasts", Ball, Jalles, and Loungani (2015) analyze whether forecasters believe in Okun's Law, based on professional forecasts from Consensus Economics. They describe Okun's Law as "a negative short-run correlation between unemployment and output", and find that forecasters do believe in Okun's Law, because both the forecasts and forecast revisions are consistent with Okun's Law. However, they compare their forecasts to currently available data, which may mask some of the interesting data revisions that were especially prevalent during the Great Recession (US Bureau of Economic Analysis, 2013).

Research examining data revisions started with Zellner (1958), who showed that revisions to major macroeconomic data in the US are frequent and large, especially near turning points. Building on this work, Joutz and Stekler (1998) and Stekler (1967) found that initial data releases may contain important information that is useful for forecasting. Focusing specifically on the connection between data revisions and Okun's Law, Barnes, Gumbau-Brisa, and Olivei (2012) find that real-time errors in Okun's coefficient contain information that can be used to help in forecasting future revisions of GDP, as well as future values of GDP in the near term.

Since the initial data releases can differ substantially from later revised data, it has become customary to evaluate forecasts using "real-time data", rather than fully revised data (Stekler, 1968). This methodology allows one to separate the forecast error from the data revisions error. Professional forecasters are often judged on how their forecasts compare to the first publicly released numbers. It may also be unfair to expect them to incorporate the major definitional changes that come with eventual benchmark revisions in the fully revised data available today (Zarnowitz, 1967). The unemployment rate is subject to minimal revisions, due to changes in seasonal adjustments (Barnes et al., 2012), but the real GDP is revised substantially (Croushore & Stark, 2001). Therefore, Okun's coefficient may be quite different depending on whether initial releases or fully revised data are considered. This difference can be attributed to GDP revisions, since the initial releases of the unemployment rate differ little from the fully revised data.

This comment builds on the work of Ball et al. (2015) by extending their analysis to include real-time data, inspired by Barnes et al.'s (2012) study of the connection between Okun's Law and data revisions. We show that the Okun's coefficients obtained from Consensus forecasts are much more similar to those in the fully revised data than to

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Table 1
Okun's coefficient estimate comparisons.

Country	Revised data $\beta_{revised}$	Forecasts $\beta_{forecast}$	Initial data $\beta_{initial}$
US	−0.50***	−0.49***	−0.38**
	(0.07)	(0.10)	(0.14)
Japan	−0.11***	−0.14***	−0.07**
	(0.03)	(0.02)	(0.03)
Germany	−0.08	−0.09	−0.12
	(0.06)	(0.10)	(0.14)
France	−0.27***	−0.34***	−0.06
	(0.08)	(0.07)	(0.17)
Italy	−0.16	−0.17**	−0.2
	(0.10)	(0.06)	(0.12)
U.K.	−0.35***	−0.50***	−0.36***
	(0.07)	(0.09)	(0.10)
Canada	−0.43***	−0.48***	−0.32***
	(0.05)	(0.05)	(0.11)
Australia	−0.50***	−0.64***	−0.31*
	(0.05)	(0.14)	(0.15)
New Zealand	−0.24*	−0.37***	0.06
	(0.13)	(0.07)	(0.12)

Note: The revised data and forecasts are the data used by Ball et al. (2013). The revised data are from the IMF's International Finance Statistics. The forecasts are from Consensus Economics, Inc., and are current-year forecasts made in July of each year (horizon = 6). Initial data are from the OECD real-time database. Robust standard errors are given in parentheses.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

those in the initial release data. This suggests that the Okun's Law which the forecasters believe in is the "true" Okun's Law reflected in the fully revised data, rather than the initial relationship, which is affected by data revisions to GDP. This finding is consistent with the forecasters estimating the relationship based on an information set which is dominated by fully revised data, and using that relationship to construct their forecasts.

This comment is organized as follows: Section 2 describes the model and the data used for the analysis. Section 3 discusses the results. Finally, Section 4 concludes.

2. Model and data

2.1. Okun's law

One version of Okun's Law is based on a regression using the changes in the unemployment rate and output. Following Ball et al. (2015), we estimated the following regression:

$$\Delta U_t = \alpha + \beta \Delta Y_t + \omega_t, \quad (1)$$

where ΔU_t is the change in the annual unemployment rate and ΔY_t is the annual growth rate of real GDP. Our focus is on β, Okun's coefficient. There is a vast body of literature comparing the coefficient across countries and time, with a significant negative relationship being found for most advanced countries (Ball, Leigh, & Loungani, 2013).

2.2. Data

We begin with the same dataset as Ball et al. (2015): the actual data for the unemployment rate and real GDP growth rates from the IMF's International Financial Statistics, and forecasts from Consensus Economics for nine countries: the G7 countries plus Australia and New Zealand. We use the annual forecasts made in July of the current year (horizon = 6 in Ball et al.'s terminology), following Ball et al. (2015). We then add real-time data for real GDP for these nine countries, constructed from historical data vintages from the OECD real-time database, augmented with historical data available from the Federal Reserve Bank of Dallas.[1] We use the data available in May of the following year as our initial release data.[2]

3. Results

The first two columns of Table 1 recreate parts of Table 1 from Ball et al. (2015). The first column reports the estimates of Okun's coefficient using fully revised data. In this column, it is evident that most countries (seven out of nine) have a negative and statistically significant coefficient, although the magnitudes of the estimates vary, consistent with previous research (Ball et al., 2013; Owyang & Sekhposyan, 2012). The second column reports the estimates of Okun's coefficient using the Consensus forecasts of the unemployment rate and GDP growth. Here, eight countries out of nine (with Germany being the exception) have negative and statistically significant coefficients. The estimates of Okun's Law based on the initial releases of real GDP are found in the third column. The relationship is weaker in the real-time data than in the currently available data or forecasts, with only five of nine countries having statistically significant coefficients. This weaker Okun's Law relationship is consistent with the results of Barnes et al. (2012) who found that the real-time deviations from Okun's Law could help predict future revisions to GDP.

While it is clear from Table 1 that the estimates of Okun's coefficient based on the forecasts are much more similar to that from the fully revised data than to that from the initial data, Table 2 quantifies this difference by presenting the correlations between these coefficient estimates. The Okun's coefficient calculated using the forecasts is much more closely correlated with the one from the actual data (0.95) than with that from the initial releases series (0.60). This result suggests that forecasters are better to match the Okun's law relationship in the final data releases than in the initial data releases.

4. Conclusion

This paper builds on the results of Ball et al. (2015) by considering the role of initial data releases. Okun's coefficient constructed using forecasts is more closely correlated with the actual data than with the initial release data. This suggests that forecasters are relying on Okun's coefficient in revised data for constructing their forecasts,

[1] For more information about the historical data vintages, see Fernandez, Koenig, and Nikolsko-Rzhevskyy (2011, 2012). The data were constructed by merging data from these two sources: http://stats.oecd.org/mei/default.asp?rev=1 and http://www.dallasfed.org/institute/oecd/index.cfm.

[2] In a few cases, the data were not yet available in May, so we used the first available data after May.

Table 2
Correlations between Okun's coefficients.

	$\beta_{revised}$	$\beta_{forecast}$	$\beta_{initial}$
$\beta_{revised}$	1.00	0.95	0.71
$\beta_{forecast}$	0.95	1.00	0.60
$\beta_{initial}$	0.71	0.60	1.00

even if their targets are the initial data. In fact, due to the data revisions in real GDP, if the forecasters are targeting initial release data, then Okun's law may be of less use to them. Therefore, perhaps forecasters believe in Okun's law, even if they shouldn't.

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