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**Tara M. Sinclair
George Washington University**

**Amy Y. Guisinger
George Washington University**

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Institute for International Economic Policy
1957 E St. NW, Suite 502
Voice: (202) 994-5320
Fax: (202) 994-5477
Email: iiep@gwu.edu
Web: www.gwu.edu/~iiep

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Amy Y. Guisinger and Tara M. Sinclair¹

Department of Economics

and

Institute for International Economic Policy, Elliott School of International Affairs

The George Washington University

2115 G Street NW

Monroe Hall #340

Washington, DC 20052

USA

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Abstract:

This comment on Ball et al (2014) 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 Corresponding author: Guisinger: amyley@gwmail.gwu.edu, Phone: 1-702-445-4485; Sinclair: tsinc@gwu.edu.

I. Introduction

In “Do Forecasters Believe in Okun’s Law? An Assessment of Unemployment and Output Forecasts,” Ball, Jalles, and Loungani (2014) 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 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 (U.S. Bureau of Economic Analysis, 2013).

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

Since initial data releases differ substantially from later revised data, it has become customary to evaluate forecasts with “real-time data,” rather than fully revised data (Stekler, 1968). This methodology allows for 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 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 real GDP is substantially revised (Croushore & Stark, 2001). Therefore, the Okun's coefficient may be quite different based on initial releases than on fully revised data. 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 Ball et al (2014) by extending their analysis to include real-time data as 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 the initial release data. This suggests that the Okun's Law 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 dominated by fully revised data and using that relationship to construct their forecasts.

This comment is organized as follows: Section II describes the model the data used for the analysis. Section III discusses the results. Finally, the last section concludes.

II. Model and Data

A. 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 (2014), 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 , the Okun's coefficient. There is a vast literature comparing the coefficient across countries and time, with a significant negative relationship being found for most advanced countries (Ball et al, 2013).

B. Data

We begin with the same dataset as Ball et al (2014) with the actual data for the unemployment rate and real GDP growth rates coming from the IMF's International Financial Statistics, and forecasts from Consensus Economics for 9 countries: the G7 countries plus Australia and New Zealand. We use the annual forecasts made in July of the current year (horizon = 6 in the Ball et al terminology), which follows the methodology of Ball et al (2014). We then add real-time data for real GDP for these 9 countries constructed from historical data vintages from the OECD real-time database

augmented with historical data available from the Federal Reserve Bank of Dallas.² We use the data available in May of the following year as our initial release data.³

III. Results

The first two columns of Table 1 recreates parts of Table 1 from Ball et al (2014). The first column reports the estimates of Okun's coefficient using fully revised data. In this column, it is evident that most countries (7 out of 9) have a negative and statistically significant coefficient, although the magnitudes of the estimates vary, consistent with previous research (Ball, et al, 2013; Owyang and Sekhposyan, 2012). The second column reports the estimates of Okun's coefficient using the Consensus forecasts of the unemployment rate and GDP growth. Here 8 out of 9 countries (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 5 of 9 countries have statistically significant coefficients. This weaker Okun's Law relationship is consistent with 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 is much more similar to that from the fully revised data than 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 correlated with the one from the actual data (0.95) than from the initial releases series

² For more information about the historical data vintages, see Fernandez et al (2011) and Fernandez et al (2012). The data was 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>.

³ For a few cases the data were not yet available in May, so we used the first available data after May.

(0.60). This result suggests that forecasters are better matching the Okun's law relationship in the final data releases than in the initial data releases.

IV. Conclusion

This paper builds on the results of Ball et al (2014) by considering the role of initial data releases. The Okun's coefficient constructed using forecasts is more correlated with the actual data than the initial release data. This suggests that forecasters are relying on the Okun's coefficient in revised data to construct their forecasts, even if their targets are the initial data. In fact, due to the data revisions in real GDP, if 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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References

- Ball, L. M., Leigh, D. & Loungani, P. (2013). Okun's law: Fit at fifty. NBER Working Paper Series No. 18668, <http://www.nber.org/papers/w18668>.
- Ball, L. M., Jalles, J. T., Loungani, P. (2014). Do forecasters believe in Okun's Law? An assessment of unemployment and output forecasts. *International Journal of Forecasting*, this issue.
- Barnes, M. L., Gumbau-Brisa, F. & Olivei, G. P. (2012). Do real-time Okun's Law Errors predict GDP data revisions?. Federal Reserve Bank of Boston Working Paper No.13-3.

Croushore, D. & Stark, T. (2001). A real-time data set for macroeconomists. *Journal of Econometrics*, 105, 111 – 130.

Fernandez, A. Z., Koenig, E. F. & Nikolsko-Rzhevskyy, A. (2011). The real-time historical database for the OECD. Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute Working Paper No. 96.

Fernandez, A. Z., Koenig, E. F. & Nikolsko-Rzhevskyy, A. (2012). Real-time historical dataset enhances accuracy of economic analyses. Federal Reserve Bank of Dallas *Economic Letter*, 7, 1- 4.

Joutz, F. L. & Stekler, H. O. (1998). Data revisions and forecasting. *Applied Economics*, 30, 1011-1016.

Owyang, M. T. & Sekhposyan, T. (2012). Okun's law over the business cycle: Was the Great Recession all that different. Federal Reserve Bank of St. Louis *Review*, 95, 399 – 418.

U.S. Bureau of Economic Analysis, FAQ: "How did the recent GDP revisions change the picture of the 2007–2009 recession and the recovery?" (Dec. 15, 2013), http://www.bea.gov/faq/index.cfm?faq_id=1004.

Stekler, H. O. (1967). Data revisions and economic forecasting. *Journal of the American Statistical Association*, 62, 470- 483.

Stekler, H.O. (1968). An evaluation of quarterly judgmental economic forecasts. *Journal of Business*, 41, 329 – 339.

Zarnowitz, V. (1967). *An appraisal of short-term economic forecasts*. New York: Columbia University Press for the National Bureau of Economic Research.

Zellner, A. (1958). A statistical analysis of provisional estimates of gross national product and its components, of selected national income components, and of personal saving. *Journal of the American Statistical Association*, 53, 54- 65.

Table 1: Okun's Coefficient Estimate Comparisons

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

Note: Revised data and forecasts are the same data used in Ball et al (2013). Revised data are from the IMF's International Finance Statistics. 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 in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2: Correlations between the Okun's Coefficients

	β_{revised}	β_{forecast}	β_{initial}
β_{revised}	1.00	0.95	0.71
β_{forecast}	0.95	1.00	0.60
β_{initial}	0.71	0.60	1.00