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Do FOMC members believe in Okun's Law?

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Abstract

This paper uses data on forecasts for unemployment and GDP growth submitted by each individual FOMC member to uncover members' beliefs about Okuns's Law. The results suggest that the perceived relationship between unemployment and real growth weakened significantly since the mid-1990s.

1 Introduction

How large is the effect of higher real growth on the reduction of unemployment? When answering this question, economists, either implicitly or explicitly, apply Okun's Law, that is, a negative linear relationship between these two variables. The Law, see Okun (1962), is an important building block of macroeconomic models for policy advice and forecasting. Blinder (1997) argues that Okun's Law is one of the few relationships that constitute "the core of practical macroeconomics that we should all believe".

Instead of using aggregate data to estimate the relationship, we uncover the beliefs about this relationship from individual forecast by members of the Federal Reserve's Federal Open Market Committee (FOMC), which were recently collected by Romer (2010). By submitting these forecast twice a year, each FOMC member is forced to reveal her notion of Okun's Law. The data set covers the period 1992-1998, which is the period of accelerating growth in productivity and, hence, possible changes in strength of Okun's Law.

The results point to significant changes in the perceived link between unemployment and growth over time. During 1996-1998, the slope of the linear relationship is roughly one half of the slope before the productivity rise of the mis-1990s. Hence, we conclude that policymakers were aware of these changes in real-time.

2 Empirical evidence

A recent survey by Knotek (2007) documents time-variation in the strength of Okun's Law and a fall in the coefficient in the1990s derived from aggregate ex-post data. Here we aim at detecting policymakers' real-time *beliefs* about the Law throughout the 1990s. In a similar exercise, Pierdzioch, Rülke, and Stadtmann (2009) show that professional forecasters appear to believe in Okun's' Law. However, they do not analyse potential time-variation in Okun's Law and do not study the performance across subsamples. Thus far there is no evidence about policymakers', as opposed to financial market analysts', perception of Okun's Law. This study fills this gap.

2.1 FOMC forecasts

Twice a year the FOMC publishes the monetary policy report to congress (Humphrey-Hawkins report). It contains forecasts of, among other variables, unemployment and

GDP growth. Recently, Romer (2010) constructs a data set containing each individual FOMC forecast for the period 1992-1998.[1] By setting a forecast for unemployment and real growth, each FOMC member implicitly reveals her perception of Okun's Law. The unemployment forecast refers to the rate of unemployment in the last quarter of the year.

2.2 Estimating Okun's Law

Okun's Law posits a negative relation between the growth rate of real GDP, Δy_t, and the change in the unemployment rate, $u_t - u_{t-1} \equiv \Delta u_t$

$$\Delta u_t = \beta_0 + \beta_1 \Delta y_t \tag{1}$$

with $\beta_1 < 0$. The aim of this section is to uncover the perception of the Law implied by each member's forecast of growth and the unemployment rate. The difference between the unemployment forecast made at each July meeting for the fourth quarter of the calender year following the meeting, $E_t u_{t+18}$, and the forecast for fourth-quarter unemployment in the current year, $E_t u_{t+6}$, is regressed on the growth forecast $E_t \Delta y_{t+18}$

$$E_t u_{t+18} - E_t u_{t+6} = \beta_0 + \beta_1 E_t \Delta y_{t+18} + \varepsilon_t \tag{2}$$

where ε_t is a normally distributed error term. Note that all three forecasts entering this equation are formulated at the same FOMC meeting. Based on the parameter estimates we can derive a rough implied estimate of the growth rate that is consistent with stable unemployment, which is given by $-\hat{\beta}_0/\hat{\beta}_1$.

2.3 Results

The results from OLS estimation are presented in table (1). In all subperiods, there is a significantly negative relationship between Δu_t and Δy_t. The size of the link, however, changes over time. For the whole 1992-1998 sample, our estimated slope is $\beta_1 = -0.49$, which is in line with the studies mentioned before. The slope in the early years, i.e. 1992-1994 is $\beta_1 = -0.53$. In the second half of the 1990s, the slope declines to -0.25. It falls even further to -0.21 in the 1996-1998 subsample. Put differently, policymakers believed in a significantly weaker link between real growth

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[1] All data series are available at David Romer's website under http://elsa.berkeley.edu/~dromer/.

and the change in unemployment towards the end of the 1990s. The growth rate consistent with stable unemployment is 2.3% in 1992-1994, but increases to 2.8% in 1996-1998.

Do Federal Reserve governors and regional Federal Reserve Bank presidents disagree about Okun's Law? Table (2) reports results for each group of FOMC members separately. Both groups exhibit only small discrepancies in the estimated slope coefficient. In either case the slope falls drastically towards the last subsample.

3 Conclusions

This paper has shown that the strength of Okun's Law as perceived by FOMC members changed in the 1990s. Individual forecasts for output growth and unemployment submitted by FOMC members suggest that the link between these two variables weakened significantly. It appears plausible that policymakers were aware of a change in labor productivity in the 1990s, which then led to a revision of the perceived unemployment-output link.

This analysis adds to the literature about how monetary policy in the 1990s dealt with the structural change in productivity. Recently, Anderson and Kliesen (2010) trace the debate about the development of labor productivity in the transcripts of FOMC meetings. In particular, these authors show how policymakers learned about changes in trend productivity based on incoming data. Here we show that policymakers' beliefs about change in productivity are also reflected in their forecasts for real growth and unemployment.

References

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Table 1: Okun's Law implied by FOMC forecasts over different sample periods

sample	parameter estimates		Wald	R^2	# obs
	β_0	β_1	p		
1992 - 1998	1.17 $(0.10)^{***}$	-0.49 $(0.04)^{***}$		0.55	120
1992 - 1994	1.22 $(0.20)^{***}$	-0.53 $(0.07)^{***}$		0.44	53
1995 - 1998	0.66 $(0.11)^{***}$	-0.25 $(0.04)^{***}$	0.00	0.31	67
1996 - 1998	0.59 $(0.12)^{***}$	-0.21 $(0.05)^{***}$	0.00	0.25	50

Notes: Results from least-squares estimation. White heteroscedasticity consistent standard errors in parenthesis. A significance level of 1%, 5%, and 10% is indicated by ***, **, and *. The hypothesis of the Wald is $\beta_1 = \beta_{1,1992-1994}$. The column reports the p-value.

Table 2: Okun's Law implied by FOMC forecasts of different groups of FOMC members

members	sample	parameter estimates		Wald	R^2	# obs
		β_0	β_1	p		
Governors	1992 - 1998	1.36 $(0.22)^{***}$	-0.57 $(0.09)^{***}$		0.55	36
	1992 - 1994	1.05 $(0.46)^{***}$	-0.49 $(0.17)^{***}$		0.36	17
	1995 - 1998	0.63 $(0.27)^{***}$	-0.21 $(0.12)^{*}$	0.02	0.15	19
	1996 - 1998	0.59 (0.35)	-0.20 (0.16)	0.07	0.11	14
Presidents	1992 - 1998	1.10 $(0.11)^{***}$	-0.46 $(0.04)^{***}$		0.57	84
	1992 - 1994	1.39 $(0.27)^{***}$	-0.58 $(0.10)^{***}$		0.52	36
	1995 - 1998	0.64 $(0.11)^{***}$	-0.24 $(0.05)^{***}$	0.00	0.35	48
	1996 - 1998	0.56 $(0.13)^{***}$	-0.20 $(0.06)^{***}$	0.00	0.28	36

Notes: Results from least-squares estimation. White heteroscedasticity consistent standard errors in parenthesis. A significance level of 1%, 5%, and 10% is indicated by ***, **, and *. The hypothesis of the Wald is $\beta_1 = \beta_{1,1992-1994}$. The column reports the p-value.