Available online at www.sciencedirect.com

SCIENCE DIRECT®

ELSEVIER Journal of Economic Dynamics & Control 29 (2005) 1951–1983

JOURNAL OF Economic Dynamics & Control

www.elsevier.com/locate/jedc

Endogenous monetary policy with unobserved potential output ☆

Alex Cukierman[a,b,*], Francesco Lippi[b,c]

[a] Eitan Berglas School of Economics, Tel-Aviv University, Israel
[b] CEPR, London, UK
[c] Research Department, Bank of Italy

Received 1 December 2003; received in revised form 1 February 2005; accepted 26 April 2005
Available online 30 August 2005

Abstract

This paper characterizes monetary policy when policymakers are uncertain about the extent to which fluctuations in output and inflation are due to changes in potential output or to cyclical demand and cost shocks. Our results suggest an explanation for the inflation of the 1970s and the price stability of the 1990s. It is shown that: (1) policy is likely to be excessively loose for some time when there is a large decrease in potential output in comparison to a full information benchmark. (2) Retrospective policy errors and errors in forecasting potential output and the output gap are generally serially correlated. (3) The increase in the Fed's conservativeness between the 1970s and the 1990s implies that the information problem had greater consequences in the former period.

JEL classification: E5

Keywords: Monetary policy; Potential output; Filtering; Inflation; Output gap

☆ Earlier versions of the paper were presented at the 2001 NBER conference on 'Macroeconomic policy in a dynamic, uncertain economy', at the Bank of Italy, the Board of Governors of the Fed, the Bank for International Settlements, the Central European University, the European Central Bank, the Free University of Brussels, the University of Cologne and the UCSC. We benefitted from extremely useful discussions with Athanasios Orphanides, from the comments of Simon Gilchrist, David Small and Philippe Weil and from the suggestions of two anonymous referees and the editor.

*Corresponding author. Eitan Berglas School of Economics, Tel-Aviv University, P.O. Box 39040, Ramat Aviv 69978, Israel. Tel.: +972 3 6409 909; fax: +972 3 6409 908.

E-mail address: alexcuk@post.tau.ac.il (A. Cukierman).

0165-1889/$ - see front matter
doi:10.1016/j.jedc.2005.06.010

1. Introduction

A stabilizing role for monetary policy hinges on some notion of 'potential output', a non-observable economic variable that is central for the determination of the target level of output. The conduct of monetary policy therefore requires that the central bank estimates and continually updates, its measure of potential output. Kuttner (1992, 1994) was among the first to raise the issue of the quantitative importance of uncertainty about potential output for real-time policymaking. He examined the difficulties inherent in real-time estimation of potential output and suggested that situations requiring policy actions might not be immediately recognizable because of signal extraction errors arising under imperfect information.

This policy implication is central for Orphanides (2001,2003a, b), who reports evidence of a significant (real time) overestimation of potential output during the oil shocks of the 1970s. Enlightening documentation on the ex-post downward revisions of potential output appears in the Economic Report of the President (1979, Chart 7, pp. 72–76), reported below, which vividly illustrates the magnitude and persistence of the revisions (Fig. 1).

Orphanides argues that by leading to a monetary policy stance which turned out to be, with the benefit of hindsight, excessively loose, the real-time overestimation of potential output aggravated inflation at the time. Somewhat symmetrically, the strong productivity gains recorded in the United States during the second half of the 1990s raise the possibility that the greater-than-expected increases in potential output could have allowed a less restrictive monetary policy stance than the one implied initially by real time estimates of the output gap and inflation.

The hypothesized relevance of imperfect information may shed new light on monetary policy 'errors' during the 1970s and raises an important question about the

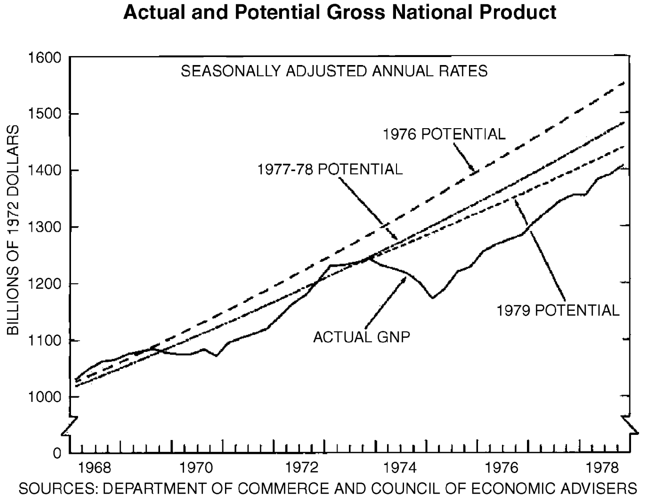

Fig. 1. Reprint from 'Economic Report of the President (1979)'.