The Gains and Losses to Predicting Nominal Income by Disaggregating via the New Classical Aggregate Supply and Rational Expectations Hypotheses

By M.J. Driscoll, J.L. Ford, and A.W. Mullineux, Birmingham

Abstract: In this paper we compare the predictive power of two types of model of nominal income: one based on a simple single equation aggregate framework; the second disaggregated into price level and output components. The source of the decomposition of nominal income of the type of model that is considered here are the twin hypotheses of rational expectations and structural neutrality. The model chosen as being representative of this approach to macroeconomic model building and against which some single equation models are compared is Barro's (1978) model of the price level and output in the U.S.

1. Introduction

An essential pillar in the New Classical macroeconomic edifice is the aggregate 'surprise' supply hypothesis. This theory of aggregate supply states that real output will deviate from its natural long run trend growth path because of two things only: random shocks to the economy; and unanticipated, or surprise, changes in economic policy. Given a structurally neutral economy the only way in which policy can influence real variables is by being unexpected. But if, as it is argued in the New Classical macroeconomics, economic agents have the correct model of the economy, including government behaviour, and form true mathematical expectations of policy variables, if their expectations are rational, then there will be no scope for the authorities to influence real output systematically through changes in policy variables. Policy will be neutral.

These imaginative and novel theoretical underpinnings to classical propositions regarding the ineffectiveness of policy have brought forth an enormous volume of articles and books in which the new macroeconomics is, variously, developed, questioned and tested empirically. It is the empirical content of the New Classical macroeconomics to which this paper is addressed. Unlike the earlier empirical work

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2) M.J. Driscoll, Prof. J.L. Ford, and A.W. Mullineux, Department of Economics, University of Birmingham, GB—Birmingham B15 2TT.
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in this area, however, we do not seek to acquire direct empirical evidence on the
validity of rational expectations, structural neutrality or policy effectiveness in
general. Instead we propose to undertake an indirect test of the empirical relevance
of these New Classical propositions. We do so by examining the predictive power of
a simple macroeconomic model which incorporates the over-identifying restrictions
implied by the rational expectations and structural neutrality hypothesis.

One possible way of viewing the assumptions of rational expectations and struc-
tural neutrality is as devices for achieving a particular form of disaggregated model of
nominal income. The surprise supply hypothesis enables the New Classical model
builders to disaggregate nominal income into its price and output components and to
explain these components with separate equations. In so far as the product of the
predictions from the separate equations for price and output gives rise to a better
(worse) prediction of nominal income than would be achieved by a simple aggregate
single equation model of nominal income, it could be said that this form of disaggre-
gation gives rise to gains (losses) in predicting nominal income.

The main problem to be faced in attempting to carry out a test of the comparative
predictive power is in the selection of the models to be compared. There is no single
definitive specification of a model of price and output that would receive the unani-
mous support of all New Classical economists. Nor, indeed, is there only one defini-
tive alternative single equation model of nominal income. No consensus exists on the
set of variables that should be included in such models or on what the dynamic struc-
ture of the models should be. Notwithstanding this fundamental problem we have
decided to proceed in the following way. Barro's [1978] model of the price level and
output in the United States is selected as being representative of models of price and
output based on the assumptions of rational expectations and structural neutrality.
This model is chosen because it appears to support empirically the joint hypothesis of
rational expectations and structural neutrality and it is widely referred to in the lite-
rature in support of the New Classical macroeconomics. In selecting a specification
for the alternative single equation model of nominal income we restricted the choice
of variables to be included in such a specification to those contained in Barro's model.
By imposing this restriction on the specification of the nominal income equation it is
felt that any comparison that leads to the rejection of the disaggregated model would
have more force. The extent of the loss to disaggregation might be increased if the data
set available for modelling the nominal income equation were to be widened; however,
arguments for including other variables could be seen as arguments for re-specifying
the price-output model as well.

Should a single equation model of nominal income prove to be an inferior ex post
(i.e. within sample period) predictor of nominal income to Barro's model then this
would give support to the use of the surprise supply hypothesis as a means of gaining
information about the movements of the price and output components of nominal
income and increasing our understanding of the causes of the variation in nominal income
itself. On the other hand the superiority of the single equation approach could be

3) We have reported the results of such direct tests elsewhere [see Driscoll, et al.].