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DISAGGREGATION, DISEQUILIBRIUM

AND THE NEW CLASSICAL MODEL*

by

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SUMMARY

This paper estimates a disaggregated disequilibrium goods market model with rational expectations for the U.S.A. Both the new classical equilibrium model and the alternative Keynesian model with sluggish price adjustment are nested within this approach. Therefore likelihood ratio tests are used to evaluate them. Estimates for 1946-1989 show that the U.S. goods market is a disequilibrium market and the parameter measuring the variability of excess demand across the markets is well determined.

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CONTENTS

1. INTRODUCTION

This paper estimates a disaggregated disequilibrium version of the new classical model for the U.S. economy, for the period 1946–1989, to test the validity of its underlying equilibrium methodology. Our approach has some novel features and combines and extends some recent developments in the estimation of disequilibrium models. So far disequilibrium methods of estimation with endogenous price adjustment have been used to estimate mainly labour market models and price determination is exogenous in the existing empirical disequilibrium goods market models.[1] Not only price adjustment is endogenous in our goods market model, but price expectations are also assumed to be rational. Another feature of our model is that both the new classical equilibrium and the Keynesian sluggish price adjustment models are nested within this framework. Therefore, these rival models can be evaluated with the standard likelihood ratio tests instead of the non-nested hypothesis tests. Finally, following Muellbauer (1978) and Andrews and Nickell (1986), it is assumed that both excess demand and excess supply can coexist in different sectors of the market. This is of some interest to other investigators because Andrews and Nickell (1986, pp.395-6 and n. 14), experienced computational difficulties in their disaggregated labour market model for the U.K. and the variance of excess demand across the markets could not be estimated. Therefore, they have constrained this parameter to achieve convergence. Our model, however, could be estimated without any major computational difficulties.

The outline of this paper is as follows. Sections 2 and 3 discusses the aggregation and specification of our model respectively. Empirical results are given in Section 4. Finally the conclusions and limitations of this paper are stated in Section 5.

[1] For a review of disequilibrium models see Srivastava and Rao (1990). A limited number of interesting works have used the disequilibrium formulation to estimate the goods and labour markets simultaneously. Artus, Laroque and Michel (1984), Kooiman and Kloek (1985) and Sneessens (1983) have used this approach to estimate models for the French, Dutch and Belgian economies respectively. However, these models abstract from wage and price expectations and are based on the fixprice assumptions and exogenous information for the regime classification.

2. AGGREGATION

Suppose that there are J micro markets such that the same price prevails in all the J micro markets at any given time period. The same assumption applies to the other explanatory variables. Let the demand and supply functions be as follows:

$$\begin{aligned} D_{tj} &= a_1 P_t + a_2 X_{1t} + u_{1t} + u_{1tj} = D_t^* + u_{1tj} \\ S_{tj} &= b_1 P_t + b_2 X_{2t} + u_{2t} + u_{2tj} = S_t^* + u_{2tj}. \end{aligned} \tag{1}$$

$$(t = 1, 2, \ldots, T; \; j = 1, 2, \ldots, J)$$

where P_t is the price at time t, X_{1t} and X_{2t} denote the values of the other explanatory variables, determining the demand and supply respectively at time t, u_{1t}, u_{2t} are white nose error terms and u_{1tj} and u_{2tj} are the disturbance terms assumed to be independently and identically distributed with respect to the subscripts t and j, with the distribution as bivariate normal having 0 means, σ_1^2 and σ_2^2 as variances and ρ as the correlation coefficient.

If it is assumed now that some micro markets show excess demand while the remaining ones are in excess supply, the *Min.* condition should be first applied to each micro market separately and then aggregation should be carried out. Thus if Q_{tj} denotes the quantity transacted at time t in the j^{th} market, we have

$$Q_{tj} = Min.(D_{tj}, \; S_{tj}). \tag{2}$$

Aggregation of (2) gives

$$Q_t = \sum_1 D_{tj} + \sum_2 S_{tj} \tag{3}$$

where $\sum_1$ depicts the aggregation over all those micro markets where $Q_{tj} = D_{tj}$, and $\sum_2$ denotes the aggregation over all markets in which $Q_{tj} = S_{tj}$. It is obvious from (3) that Q_t will always be smaller than both $\sum_{j=1}^{J} D_{tj}$ and $\sum_{j=1}^{J} S_{tj}$.

If it is assumed that there are a large number of micro markets so as to form a continuum, the aggregation obtained by summations in (3) can be obtained through integration for the purpose of smoothing. Therefore, the total quantity transacted at time t can be obtained *from the following expression.*

$$Q_t = \int\int_{D_t^* < S_t^*} D_t^* f(D_t^*, S_t^*) dD_t^* dS_t^* + \int\int_{D_t^* > S_t^*} S_t^* f(D_t^*, S_t^*) dD_t^* dS_t^*$$

or

$$\begin{aligned} Q_t = & (a_1 P_t + a_2 X_{1t} + u_{1t})[1 - \Phi(m_t)] \\ & + (b_1 P_t + b_2 X_{2t} + u_{2t})\Phi(m_t) - \sigma\phi(m_t). \qquad (4) \\ = & D_t^* - (D_t^* - S_t^*)\Phi(m_t) - \sigma\phi(m_t) \qquad (4.a) \\ = & S_t^* + (D_t^* - S_t^*)[1 - \Phi(m_t)] - \sigma\phi(m_t). \qquad (4.b) \end{aligned}$$

where

$$\sigma = J\left(\sigma_1^2 + \sigma_2^2 - \rho\sigma_1\sigma_2\right)^{1/2}$$

$$m_t = \frac{1}{\sigma}(D_t^* - S_t^*)$$

$$\phi(m_t) = \frac{1}{\sqrt{2\pi}} exp.\{-\frac{1}{2}m_t^2\}$$

$$\Phi(m_t) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{m_t} exp.\{-\frac{1}{2}v^2\}.$$

Note that the variance of $(u_{1tj} - u_{2tj})$ is given by (σ^2/J^2) and therefore σ measures the variability of disequilibrium across the markets. It can be also seen that, at any given moment, the level of output will be less the larger is σ.

In an interesting extension Andrews and Nickell (1986) have introduced a non-stochastic price adjustment equation into the above model and a brief outline of their method is as follows. Let the price adjustment equation be

$$P_t = g_0 + g_1 P_{t-1} + (1 - g_1)P_t^* + g_2 Z_t \qquad (5)$$

where P_t^* is the equilibrium price and Z_t is an additional explanatory variable of the price level. Extensions to the case where the price level depends on more than one such variable is straightforward.

For convenience we shall ignore the superscript $*$ for demand and supply. Note that the equilibrium price is determined by

$$a_1 P_t^* + a_2 X_{1t} + u_{1t} = b_1 P_t^* + b_2 X_{2t} + u_{2t}$$

so that

$$P_t^* = \left(\frac{1}{b_1 - a_1}\right)[a_2 X_{1t} - b_2 X_{2t} + u_{1t} - u_{2t}] \qquad (6)$$

or

$$P_t^* = P_t + \frac{D_t - S_t}{b_1 - a_1} \qquad (7)$$

Substitution of (6) in (5) gives

$$P_t = g_0 + g_1 P_{t-1} + \left(\frac{1 - g_1}{b_1 - a_1}\right)(a_2 X_{1t} - b_2 X_{2t}) + g_2 Z_t + \left(\frac{1 - g_1}{b_1 - a_1}\right)(u_{1t} - u_{2t}). \qquad (8)$$

Substitution of (7) in (5) gives the following expression for excess demand

$$(D_t - S_t) = \left(\frac{b_1 - a_1}{1 - g_1}\right)[-g_0 + g_1(P_t - P_{t-1}) - g_2 Z_t] \qquad (9)$$

The above expression for excess demand can be now substituted into any equation in (4). The estimable form of the model, with endogenous price level, now consists of the price equation (8) and any one of the output equations in (4). The parameters of the model can be estimated by estimating (8) and (4) or (4.a) or (4.b) with an appropriate non-linear method of estimation.

3. THE MODEL

Our goods market model is formulated in the rates of changes instead of in the levels of the variables for three reasons. Firstly, in the model with the levels of the variables there have been severe convergence problems.[2] Secondly, in the levels model the residuals of the price and output equations are found to be serially correlated with both first order serial correlation coefficients close to but less than unity. The model in rates of changes amounts to estimation of the levels model by constraining the first order serial correlations to unity.[3] Thirdly, in the new classical empirical literature, e.g. Barro (1981a), the output equation is also estimated in the first differences of the variables.

The structure of our goods market model is new classical in spirit. Consider the following demand and supply model for the j^{th} micro market

$$\Delta Y_{tj}^d = \alpha_0 + \alpha_1(\Delta M_t - \Delta P_t) + \alpha_2^{'}\Delta X_t + \epsilon_{1t} + \epsilon_{1tj} \tag{10}$$

[2] This might be partly due to the fact that in this model with the partial adjustment price equation, the change in the price level is a poor proxy for the state of the market. In the industrial countries the price level has a tendency to increase, irrespective of the state of the market, due to continual product innovation. Therefore the change in the rate of inflation appears to be a better indicator of the state of market; see for example Rao and Srivastava (1991). To achieve convergence in the levels model we used a proxy for excess demand, using the indicator variable approach in Rudebusch (1986). Our experience thus indicates that perhaps some of the computational difficulties in Andrews and Nickell (1986) could have been due to their partial adjustment wage equation in the level of the wage rate. In any further experimentation with the Andrews and Nickell model it might be also useful to modify their wage equation for productivity changes.

[3] We have used a method suggested by Fair (1984, pp.208–21) to estimate the serial correlation coefficients. Our formulation is also consistent with the findings of Nelson and Plosser (1982) that a number of U.S. macro-time series are random walks with drift. To minimise spurious correlations between such variables, Nelson and Kang (1984) and Dickey, Bell and Miller (1986) have recommended that, such variables should be at least differenced. According to these authors the consequences of unnecessary differencing are far less serious than doing nothing or removal of a linear trend. Estimates of parameters, based on differencing although inefficient, are unbiased and consistent.

$$\Delta Y_{tj}^s = \Delta Y_{tj}^* + \beta(\Delta P_{tj} - \Delta P_t^e) + \epsilon_{2t} + \epsilon_{2tj} \tag{11}$$

where

Y_j^d = demand,
M = nominal money supply,
P_j = price level in market j,
P = aggregate price level,
P^e = expected value of aggregate price level,
X = vector of other variable in the demand function,
Y_j^s = supply,
Y_j^* = natural level of output in the j^{th} market,

and α_2 is a vector of coefficients, $\epsilon_{1t}, \epsilon_{2t}$ are white noise terms and $\epsilon_{1tj}, \epsilon_{2tj}$ are sector specific disturbances assumed to be independently and identically distributed with respect to the subscripts t and j, with the distribution as bivariate normal having 0 means and σ_1^2 and σ_2^2 as variances and ρ as the correlation coefficient and t is time subscript. All variables, with the exception of the disturbances, are logarithms of the variables. Further details of these variables are given in the appendix. The only sector specific variables are ΔY_j^* and ΔP_j in the supply function. Aggregation over j markets gives the familiar new classical aggregate demand and supply model.

$$\Delta Y_t^d = \alpha_0 + \alpha_1(\Delta M_t - \Delta P_t) + \alpha_2^{'}\Delta X_t + \epsilon_{1t} \tag{12}$$

$$\Delta Y_t^s = \Delta Y_t^* + \beta(\Delta P_t - \Delta P_t^e) + \epsilon_{2t}. \tag{13}$$

In the above model the rate of growth of aggregate demand depends on the rate of growth of real money balances and a set of unspecified other variables. Further discussion on the variables in ΔX is differed to the next section. The aggregate supply function is the Lucas price surprise function and β can be readily interpreted as the short-run elasticity of the aggregate supply curve. Our price adjustment equation is based on the partial adjustment in the rate of inflation and it is

$$\Delta P_t = \theta\Delta P_t^* + (1-\theta)\Delta P_{t-1} + \lambda Z_t \tag{15}$$

where ΔP_t^e is the equilibrium rate of inflation and Z_t is some other exogenous variable (s) affecting the rate of inflation.

The aggregate demand supply model in (12) and (13) implies that the equilibrium rate of inflation P_t^e is

$$\Delta P_t^e = \alpha_1^{-1}[\alpha_0 - \Delta Y_t^* + \alpha_2 \Delta X_t + \alpha_1 \Delta M_t + (\epsilon_{1t} - \epsilon_{2t})]. \qquad (16)$$

The price adjustment equation (15) can be now expressed as

$$\Delta P_t = \frac{\theta}{\alpha_1}[\alpha_0 - \Delta Y_t^* + \alpha_2 \Delta X_t + \alpha_1 \Delta M_t + (\epsilon_{1t} - \epsilon_{2t})] + (1-\theta)\Delta P_{t-1} + \lambda Z_t. \qquad (17)$$

Muth's (1961) definition of rationality would require that agents should take into account all the available information while forming an expectation of the rate of inflation. Therefore, ΔP_t^e should be obtained from the expected value of equation (17). When this substituted for ΔP_t^e in the supply equation excess demand can be expressed as

$$(\Delta Y_t^d - \Delta Y_t^s) = \theta^{-1}\Big\{[\alpha_1 - \theta(\alpha_1 - \beta)]\Delta P_t - (1-\theta)(\alpha_1 - \theta\beta)\Delta P_{t-1}$$
$$- \lambda(\alpha_1 - \theta\beta)Z_t + \beta\theta^2\alpha_1^{-1}(\alpha_0 - \Delta Y^* + \alpha_1 \Delta M_t^e + \alpha_2 \Delta X_t^e)\Big\}. \qquad (18)$$

The output equation can be obtained by substituting the above expression for excess demand into any of the equations in (4).

4. EMPIRICAL RESULTS

The specification of our aggregate demand function which is new classical in spirit is determined as follows. In the closed economy version, X could consist of the real rate of interest and the temporary component of government expenditure; see Barro (1981b). In the open economy version, net autonomous exports and the real exchange rate, to explain the induced component of net exports, can be also included into X. We shall abstract from the open economy variables for two reasons. Firstly, net exports of the U.S. economy are relatively a small proportion of the G.N.P.[4] Secondly, in the existing new classical empirical work on the U.S.A., open economy considerations have been ignored.

A money supply forecasting equation needs to be developed before the model can be estimated to examine the usefulness of alternative specifications of the aggregate demand function. We have used the money supply forecasting equation of Barro (1977, 1978, 1981a) as a starting point and found that it can be used with only a minor change for our sample period. Our estimates showed that the following specification is satisfactory.[5]

$$\Delta M_t = \gamma_0 + \gamma_1 \Delta M_{t-1} + \gamma_2 UN_{t-1} + \gamma_3 FEDV_t + u_{3t} \qquad (19)$$

where UN is the logarithm of the unemployment rate, $FEDV$ is the deviation of the real federal expenditure from its trend value and u_{3t} is the disturbance term with the classical properties. Further details of these variables are given in the appendix.

We have estimated several alternative versions of our model with different specifications of the aggregate demand function. In the first instance additional lagged values of real money balances, current and lagged values of real rate of interest and real government expenditure have been included in X. However, except the coefficient of current real money balances, the coefficients of these additional variables are found to be always insignificant. In another round of experiments, instead of real government expenditure, we have used Barro's $FEDV$ variable, which is the deviation of real federal expenditure from its trend value, as a proxy for the temporary component of government expenditure. But its coefficient was never significant. These results are somewhat disappointing and imply that the specification of the aggregate demand function needs a careful examination in any further work.

[4] For example for the years 1960, 1970, 1980 and 1988, the (absolute) proportion of net exports to G.N.P. for U.S.A. are 2%, 0.1%, 0.5%, 3.0% and 2% respectively.

[5] Barro's (1981a) equation has DM_{t-2} as an additional variable. However, this was found to be insignificant for our sample period.

Even though we did not succeed in capturing the direct effects of real government expenditure on demand, it should be noted that the indirect effects of this variable are included through the *FEDV* variable in the money forecasting equation.[6] With these caveats we shall proceed, in the rest of this paper, with the assumption that aggregate demand depends on real money balances only.

Estimates of the parameters of the model, with U.S. data for the period 1946–1989 and without the Z_t variable in the price adjustment equation (15), are given in row 1 of Table 1. The three equation model is estimated with the maximum likelihood method in the T.S.P. package. It can be seen from these estimates that all the coefficients are well determined and are significant at the 5% level.[7] The estimates of the parameters are plausible and it is particularly interesting that σ, θ and β are well determined. The estimates of these parameters imply that variability of excess demand across the markets is significant, the short-run supply function is elastic and adjustment of the rate of inflation towards its equilibrium rate is sluggish.

We experimented with a variety variables for Z_t in the price equation. Two sets of factors that have been considered are a wage price guide-lines and controls dummy for the periods 1951–1953 (Korean war price controls), 1962–1966 (Kennedy-Johnson guide lines) and 1972–1974 (Nixon controls) and an energy shock dummy variable for 1973 and 1979. These dummy variables produced insignificant coefficients. However, when the energy shock

[6] Exclusion of *FEDV* from the money forecasting equation did not make it significant in the demand equation. When *FEDV* was included in both money forecasting and demand equations, it was always significant in the former and insignificant in the latter equations.

[7] The *D.W.* statistics are also insignificant at the 5% level. However, note that the *D.W.* statistic is biased towards accepting the null hypothesis of no serial correlation when lagged dependent variables are present. Consequently a low value for *D.W.* statistic is indicative of specification problems; see Fair (1984, pp.209–10).

dummy variable was modified to allow for both favourable and unfavourable supply shocks its coefficient was found to be significant; see appendix and Gordon (1990, pp.294–300). Estimates of our model with the modified supply shock dummy variable are given in row 2 of Table 1. The estimates in row 2 are close to those in the first row but the likelihood function showed a significant improvement. The computed log likelihood test statistic is 6.56 which has a χ^2 distribution with one degree of freedom and exceeds the 5% theoretical value of 3.841. Therefore this model is our preferred disaggregated disequilibrium model.

It is interesting to note that our estimates of the variability parameter σ is well determined and significant at the 5% in this model also. Our preferred model implies that unfavourable (favourable) energy shocks added (decreased) the rate of inflation by about 1.5% per cent points, the short-run supply elasticity is 1.3 and it takes about three and half years for the rate of inflation to adjust by 95% towards its equilibrium rate.

Estimates of the equilibrium version of the model with the constraints that $\sigma = 0$ and $\theta = 1$ are given in row 3. Not only the likelihood function decreased now significantly but a negative slope for the short-run supply function is somewhat implausible.[8] The log likelihood ratio test statistic for the models in rows 2 and 3 is 26.7 which exceeds the 5% theoretical χ^2 value of 5.991 for 2

[8] Note that while the Andrews and Nickell assumptions that $\theta = 1$ in the equilibrium version is plausible, the assumption that $\sigma = 0$ implies that all the J micro markets are always in a state of equilibrium. If this latter assumption is relaxed, we have a model in which the rate of inflation always adjusts to its equilibrium value but there could be some excess demand or excess supply in the micro markets and the *Min.* condition determines the transacted quantity in each market. Even though this is against the true spirit of the equilibrium approach, it can be interpreted as a situation where the aggregate excess demand is zero but with some markets with excess demand and the remaining markets with excess supply. Estimates of the model with the constraint that only $\theta = 1$ yielded an estimate of 2 for the elasticity of output and 0.197 for σ. Both coefficients are significant.

degrees of freedom. Therefore the equilibrium model should be rejected.

Finally, in row 4, estimates of the standard aggregate model with $\sigma = 0$ are given. Once again all the coefficients are well determined and significant at the 5% level. The only major differences between the disaggregated and aggregated disequilibrium models are that the elasticity of aggregate supply and the speed of adjustment of the rate of inflation are smaller in the latter model. However, the likelihood ratio test easily rejects the underlying assumption that the variability of excess demand across the micro markets is insignificant. Therefore, it can be concluded that the disaggregated disequilibrium model is the best model.[9] Since the equilibrium model is rejected by both the disaggregated and aggregated disequilibrium models, it can be also concluded that the equilibrium methodology underlying the new classical approach is rejected by the data and therefore the new classical policy ineffectiveness proposition is not applicable to the U.S. economy.

5. CONCLUSIONS

In this paper we have estimated a disaggregated disequilibrium goods market model for the U.S.A. It can be said that our estimates of the parameters are persuasive and plausible. In particular the parameter capturing the variability of excess demand across the micro markets is well determined and significant. This latter results is encouraging because this parameter could not be estimated in the interesting study of the U.K. labour market by Andrews and Nickell (1986).

Our goods market model implies that two of the new classical ingrediants viz. the Lucas price surprise function and the rational expectations hypothesis are very useful. However, the new classical equilibrium methodology does not seem to be applicable to the

[9] It is of some interest to note that there is no significant difference between the likelihood functions of the dsaggregated and aggregated labour market models in Andrews and Nickell (1986). Quandt (1988) has also reached similar conclusions in a simulation study with small samples.

U.S. goods market because adjustment in the rate of inflation is found to be sluggish. Our estimate of this adjustment coefficient implies that it takes about 3.5 years for U.S. rate of inflation to adjust towards its equilibrium rate by 95%. Therefore, contrary to the implications of the new classical policy ineffectiveness proposition, fully anticipated changes in monetary policy could affect the real variables in the U.S. economy up to 3.5 years. Our estimates of the elasticity of the short-run aggregate supply function implies that this function is elastic. Therefore, the criticisms of the real business cycle theory that small expecational errors may not be adequate to explain large fluctuations in output does not seem to be tenable.

Our model has also successfully captured the effects of the supply shocks on the rate of inflation. Adverse supply shocks in 1973–74 and 1979 seem to have added about 1.5% points to the rate of inflation. Similarly, favourable supply shocks in 1976 and 1981-86 seem to have decreased the rate of inflation by a similar magnitude.

However, we could not capture the effects of incomes policies and the specification of our aggegate demand function, although satisfactory for the purpose in hand, is in need of further analysis. It is hoped that our attempt, as well as the somewhat path breaking work by Andrews and Nickell (1986), would inspire other investigators to utlise a disaggregated disequilibrium approach to estimate both the goods and labour market models for other countries.

Table 1

ESTIMATES OF DISAGGREGATED U.S. GOODS MARKET, 1946–1989.

	γ_0	γ_1	γ_2	γ_3	α_0	α_1	β	σ	λ	θ	LH	DW_M	DW_P	DW_Y
1.	0.076	0.569	0.022	0.056	0.027	0.771	1.298	0.111	...	0.441	290.97	2.044	1.760	1.796
	(3.26)	(7.02)	(3.04)	(2.34)	(3.22)	(6.23)	(5.39)	(3.15)		(5.66)				
2.	0.084	0.513	0.023	0.046	0.029	0.816	1.338	0.124	0.015	0.566	294.25	1.883	1.946	1.793
	(3.82)	(6.71)	(3.41)	(2.02)	(4.26)	(7.40)	(5.65)	(3.93)	(2.75)	(7.55)				
3.	0.059	0.571	0.016	0.060	0.020	0.698	-0.313	0	0.023	1	280.90	2.013	2.024	1.710
	(3.03)	(8.78)	(2.61)	(2.82)	(5.79)	(9.65)	(1.68)		(3.25)					
4	0.083	0.595	0.025	0.055	0.030	0.746	1.050	0	0.011	0.341	289.15	2.090	1.606	1.641
	(3.48)	(7.19)	(3.30)	(2.84)	(0.55)	(5.57)	(4.17)		(1.88)	(4.51)				

Notes

Asymptotic t ratios are in the parenthesis below the coefficients.

DW_M DW_P and DW_Y are the DW statistics for the money, price and output equations respectively.

Data Appendix

Y = Real G.N.P. (1982 prices).

P = G.N.P. deflator (1982=100).

M = Annual average of M_1 definition of money.

$FEDV$ = Deviation of the log of the real federal government expenditure (1982 prices) from the log of its trend value; see Barro (1981, p.158).

UN = $log(U/(1-U))$ where U is unemployment rate in the total labour force, including military personnel.

Y^* = Natural level of output, computed from a linear trend equation.

P^* = Equilibrium price level, computed from a non-linear trend equation of inflation.

The wage price guide-lines and controls dummy variable is assumed to be one during 1952-53, 1962 66 and 1971–74 and zero at all other times.

The modified supply shock dummy variable is assumed to be +1 during 1972–1975 , 1978 80, when the supply shocks were adverse and −1 during 1976–77 and 1981 89 when the supply shocks were favourable. It is zero at all other times. The nature of these supply shocks is determined on the basis of the sign of the food and energy effect in the last column of Table 10 1 in Gordon (1990, p.297).

The definitions and sources of data are the same as in Barro (1981). Most of these series can be obtained from the *U.S. Survey of Current Business, National Income and Product Accounts of the United States* and the *Federal Reserve Bulletin*.

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