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Conclusion

This book began by arguing for the Cowles Commission approach in dealing with macro data, and the approach was used to construct the US and MC models. Computer technology is now such that much testing and analysis of models can be done that was not practical even a few years ago, and a number of examples of testing and analysis have been presented in this book. The techniques that were used in the book will not be reviewed in this conclusion. Instead, I will review what I think are some of the main theoretical points, what are some of the main macro results that emerge from this work, and where future research seems important.

1. The theoretical model provides an explanation for the existence of disequilibrium within a maximizing context. Households maximize utility and firms maximize profits, but firms do not have enough information to form rational expectations in the Muth sense. In other words, their expectations are not necessarily equal to the model's solution values. Prices and wages may not be set in such a way as always to have the amount of labor that households want to supply at these prices equal to the amount that firms want to employ. If the amount of labor that households want to supply is more than the amount that firms want to employ, a multiplier reaction can take place in the model. Unemployment in the model can be considered to be the difference between the amount of labor that households want to supply at current prices and the amount that firms actually employ. Again, these two amounts can differ in the model because firms may not set prices right because they do not have rational expectations.

2. The Lucas critique is simply handled by arguing that it may be quantitatively of small importance and that if it is not it should be picked up in the various tests. In other words, if the critique is quantitatively important, models that ignore it will be seriously misspecified and should not do well in the tests.

3. Tables 5.10 and 6.5b show that the change form of the price equation is strongly rejected by the data, whereas the level form is generally accepted. This result has very important implications for the long run properties of models and calls into question the widespread use of the inflation rate over the price level as the variable to be explained by price equations.

4. The results in Tables 5.10 and 6.5a provide strong support for the hypothesis that import prices affect prices of domestically produced goods. For almost every country this is so. On the other hand, the data are weak at choosing the functional form of the demand pressure variable. One cannot pin down at what point prices begin to rise very rapidly as output increases. There are too few observations at these points for precise estimates to be made.

5. The results in Tables 5.13, 5.14, and 6.13a support the use of the excess labor variable in explaining employment demand. This is thus support for the theory that firms at times hoard labor, and it provides an explanation for the observed procyclical movements of productivity. The theory is further supported by the survey results of Fay and Medoff (1985) and by the industry results in Fair (1969). The excess capital variable, on the other hand, is not significant in Table 5.12 and did not play a role in the investment equations in the ROW model.

6. The results in Tables 5.11 and 6.4a are consistent with the theory that firms smooth production relative to sales. The theory is further supported by the industry results in Fair (1989).

7. The age distribution variables are significant in Tables 5.1, 5.2, and 5.3. It appears possible to pick up effects of the changing age distribution of the population in at least some macroeconomic equations.

8. The rational expectations hypothesis has a scattering of support in Chapter 5, but very little in Chapter 6. The results in Section 11.6 suggest that the use of the rational expectations assumption has only a minor

effect on the properties of the US model. In this sense it is of minor economic importance. In future work when more data are available, it will be useful to try leads longer than one quarter or one year for the ROW equations in order to provide a stronger test of the rational expectations hypothesis.

9. The results in Section 11.7 suggest that U.S. monetary policy is becoming somewhat less effective over time as the size of the government debt rises.

10. Interest rate and price links are important in the MC model as well as the usual trade links. The U.S. interest rate is estimated as affecting the decisions of the monetary authorities of a number of countries. The result that import prices affect domestic prices provides the main link for prices across countries.

11. The MC model suggests that there are few simple stories that can be told about the effects of one country on another and about the size of the own effects across countries. A few of the robust conclusions than can be drawn from the results are listed in Section 12.4.

In future work with more data and faster computers it should be possible to perform many of the tests and experiments for the MC model that were done in this book for the US model. Faster computers will also ease the computational burden of dealing with the rational expectations assumption, and in the future more work can be done using this assumption. As noted above, there is some scattering of support for the hypothesis, and probably further work is warranted even though in the end the economic importance of the assumption may remain small.

To conclude, I hope that this book will stimulate more work using the Cowles Commission approach. What I have tried to show is that testing can be an important aspect of the approach.