



OESTERREICHISCHE NATIONALBANK

EUROSYSTEM

# WORKSHOPS

Proceedings of OeNB Workshops

*Macroeconomic Models  
and  
Forecasts for Austria*

November 11 to 12, 2004

No. 5

## Comment on “A Long-run Macroeconomic Model of the Austrian Economy (A-LMM)”

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A-LMM seems to be remarkable for at least two reasons. First, to my knowledge, it is the first joint modelling effort by the Austrian Institute of Economic Research (WIFO) and the Institute for Advanced Studies (IHS), and, second, its long-term character integrates it closely into the present discussions in modelling theory. The necessity to overlook very long periods emanates not only from the problems of social security systems which are dealt with in this paper, but the inclusion of long-term components into short-term forecasting models has proven essential to warrant their stability and consistency. Macromodels as currently in use are not able to solve the conflict between theoretical and empirical coherence in a satisfactory way, as they do not succeed in coordinating the interaction of stable long-term and cointegrated relations with the demands of short-term forecasting.

Recently, to overcome these problems, “hybrid-models” have been proposed which – following a two-step approach – define a theoretically consistent and long-run stable core and then arrange a system of short-term equations around it. Discrepancies between these two blocs of equations will be corrected for by equation correction mechanisms. In some central banks models of this kind are currently intensively investigated.

By these remarks, I want to draw attention to the fact that modelling theory is currently assigning new importance to long-term aspects after having forgotten the endeavours of Kondratieff, Schumpeter and others over the last decades. Thus, A-LMM is a valuable contribution. It is, of course, designed predominantly to deal with problems of the Austrian social security system. This task is fulfilled very well; some questions and comments regarding the current version and possible further developments seem appropriate, however.

I feel that the adjustment processes to exogenous shocks should be modelled in more detail. Currently, these aspects of the model seem to be driven mainly by the desire to achieve convergence and stability as quickly as possible. This is understandable, but there is a danger of simplifying the structure too much. Thus, in the present version, adjustment is brought about seemingly exclusively by the currently favoured approach of using the current account as the main channel.

Deficits/ surpluses are fed via the net foreign assets directly into the wealth variable which in turn influences consumption. It would be interesting to know whether adjustment is brought about then by a strong propensity to consume out of wealth (which should have corresponding effects on GDP) or whether it will need extreme oscillations of the net foreign assets.

Also the fiscal policy rule – although very rigorous in securing a permanently balanced budget – does not contribute to adjustment. It achieves its goal by corresponding changes of „other government expenditures“, which by assumption, however, have no influence on output. This may not seem very plausible, as „other government expenditures“ include variables like purchases from the private sector und public investment. The more obvious adjustment via price relations is excluded (see below), though this would be more consistent with the neoclassical paradigm.

To determine investment, Tobin's Q is used; without doubt, this is an interesting concept. However, there is wide agreement that its empirical performance is weak, because, for instance, valuations by managers meeting the investment decision may differ from valuations by markets, or these valuations may be distorted by speculative bubbles and may diverge from fundamentals over long periods.

Capital and money markets are not modelled in the current version. For further developments this would be of great interest, because, among other reasons, this sector can cause severe disturbances especially with regard to old age pensions, as is well known.

Over the very long-run, it is certainly difficult to decide which variables are to be regarded as exogenous or endogenous. Over the course of decades, for instance, also demographic developments will finally become endogenous. It may be regarded as problematic, however, to assume prices as exogenous but wages as endogenous. It probably cannot be excluded that an implausible divergence between these two variables might develop which is especially against the traditional Austrian feeling and experience that wages and prices have to be regarded as closely interlinked.

For future developments, another important step would be to provide for some aspects of endogenous growth.

Lacking expertise in this field, I am not in a position to comment in detail on the scenarios concerning the social security problems. In any case, an impressive amount of institutional and other detail is taken into account; thus, we can rely on a very competent and broad insight into these issues from the side of the modellers. Results seem to be plausible and, given the circumstances described above, a high degree of stability of the model is warranted. It is remarkable and reassuring that in practically all scenarios – in whatever direction the assumptions are changed and despite of a shrinking active population and an increasing number of pensions – real per capita income will be more than tripled until 2070. High employment will prevail, except in the case of rising social security contributions. In public

discussion, however, it is often argued that social security systems may turn out to be unsustainable. Thus, it would be interesting to know where the critical values for A-LMM lie in this respect.

Summing up, I would like to point out that A-LMM provides a solid base for further research on long-term models which may be helpful to deal with issues beyond the usual forecast horizons.