AUSTRALIAN AGRICULTURAL ECONOMICS SOCIETY AWARDS 1982

MASTERS THESIS PRIZE

The prize was awarded to Robert James Myers for a thesis entitled 'An Econometric Evaluation of Australian Wheat Pricing Policies' submitted to the Faculty of Economic Studies, University of New England for the degree of Master of Economics.*

Thesis Abstract

Government intervention in the Australian wheat industry has come under scrutiny on several occasions since the first wheat stabilisation plan began in 1948. Yet in the 30 crop years that followed 1948-49, only minor modifications were made to the form of government intervention in the industry. During that time, pricing arrangements consisted of an Australian Wheat Board (AWB) monopoly over wheat marketing, a two-price scheme operating between domestic and export markets and a government-guaranteed buffer fund on export sales. This set of policies is here referred to collectively as the 'historical scheme'.

In 1979 a significant departure was made from the historical scheme. The 'current scheme', which began operating in the 1979-80 crop year and continues through 1983-84, maintains the AWB monopoly over marketing but features a new method of setting domestic prices. Furthermore, the buffer fund on export sales was replaced by a government-guaranteed minimum price. Debate on the effects of the current scheme continues and a decision to extend or change the scheme will be made some time in 1984.

In view of the importance of wheat in the Australian rural economy and the prominent role of government intervention in the industry, there were two broad objectives in this study. The first was to provide an econometric model of the wheat industry which could be used for forecasting and policy evaluation of key industry-level variables. The second was to use the model to evaluate some effects of government intervention in the industry.

The estimated model differs from previous aggregate econometric models of the wheat industry in three main ways. First, the area response equation takes account of the effect of changing price risk on production decisions. Second, the model reflects the simultaneity between the domestic demand for stock-feed wheat and other stock-feeds. The resulting estimate of the price elasticity of demand for stock-feed wheat (-2.37) is more elastic than has been estimated by previous researchers. Third, the model includes decision rules explaining AWB export allocations and prices rather than simply assuming that Australia faces a

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perfectly elastic export demand. The complete model is dynamically stable, and a number of validation tests were used to evaluate its ability to predict the historical data.

In evaluating the effects of government intervention in the wheat industry, no attempt was made to find an 'optimal' policy. Instead, a number of alternative policies were compared in a partial equilibrium framework using simulations with the econometric model. In all, seven policies were simulated but much of the focus is on just three: the historical scheme, the current scheme and a policy of setting domestic prices equal to f.o.b. export prices (equal pricing). Domestic and export prices should be approximately equal under competitive conditions and so equal pricing was used as the base against which other policies were compared.

All policies were simulated over the historical period (1953-54 through 1978-79) and the effects of the current scheme and equal pricing were also forecast over the period in which the current scheme will operate (1979-80 through 1983-84). The criteria used to compare policies were their effects on the level and stability of prices, quantities and revenues on the domestic and export markets for Australian wheat. Impacts on aggregate variables such as grower prices, total production, aggregate industry revenue and government expenditures were also evaluated. Results for prices and revenues were given in both nominal and real terms. While these effects certainly do not exhaust the list of criteria that policy makers and others might use to evaluate different policies, they do include most of the industry-level market variables likely to be of interest.

Effects on the level of each variable were measured by the percentage difference between simulated values under the policy in question and simulated values under equal pricing. Tables were presented showing these effects in each year and the percentage difference between means from the entire simulation period was used as a summary statistic. Because of the difficulties in defining a suitable measure of stability, the coefficient of variation and the standard deviation of the percentage change were both used to evaluate the stability effects of different policies.

The simulation results indicated that the policies studied have important effects on Australian wheat growers and consumers, and on government expenditures. For example, the historical and current schemes were both shown to generally increase production, grower prices and industry revenue compared to a policy of equal pricing. Both schemes also tended to stabilise these variables, although the current scheme was less stabilising than the historical scheme. Domestic consumers of milled wheat were shown to be disadvantaged under the current scheme since they generally paid substantially higher prices than under either equal pricing or the historical scheme, and there was little reduction in price variability. Domestic users of stock-feed wheat were assumed to face similar prices under the current scheme as they would face under equal pricing. But the historical scheme was shown to generally increase stock-feed wheat price levels and reduce variability. The historical and current schemes both required government expenditures but the indication was that these were much reduced under the current scheme.

Policy evaluations using simulations of an econometric model are sub-

ject to several limitations. The main limitations of the study were discussed and the results of a sensitivity analysis presented. The sensitivity analysis indicated that the general conclusions about the effects of different policies were not very sensitive to a plausible range of errors in the parameter estimates of the model.

Throughout the study, an attempt was made to identify trade-offs amongst attainment of wheat pricing policy objectives. The effects of each policy were classed as 'desirable' or 'undesirable' based on a set of perceived objectives of the wheat marketing legislation. The study was concluded with some observations and suggestions relating to the future form of government intervention in the wheat industry.

JOURNAL ARTICLE PRIZE

The award for the best article published in the *Australian Journal of Agricultural Economics* in 1982 was awarded to Brenda Jackson and Murray Spinks for their article entitled 'Price effects of wool marketing innovations: some empirical evidence' published in Volume 26(1), pp. 13-22.