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## **ON THE HIDDEN REVENUE EFFECTS OF WOOL PRICE STABILISATION IN AUSTRALIA: INITIAL RESULTS – A REPLY**

HENRY HASZLER and BILL CURRAN\*

*Bureau of Agricultural Economics, Canberra, A.C.T. 2601.*

Richardson (1982) makes three direct criticisms of the paper dealing with hidden revenue effects of wool price stabilisation (Campbell et al. 1980). These criticisms relate, first, to a difference between the definition of hidden revenue and that advanced by Gruen (1964); second, to the basis of the choice of preferred functional form; and third, to a failure to consider the implications of the potential throughput destabilising impacts of price stabilisation. In discussing these points, Richardson's arguments that the conclusions were overstated and that there is a need to reinterpret the results are considered, along with his suggestions that the results do not provide a sound basis for policy decisions and that there is a need to focus on the state of knowledge concerning risk effects. Arising from these specific points, Richardson seems to be concerned that the results should not be misinterpreted as measuring hidden revenue impacts incurred directly by growers.

### *Measure of Revenue*

It is true that hidden effects were measured on gross sales revenues and, therefore, that the revenue definition differs from that used by Gruen. Consequently, we share Richardson's concern that the results *should not* be used as a direct measure of hidden transfers incurred directly by growers. This point was communicated to Watson and he refers to 'sales revenue' and not growers' revenues (Watson 1980, p. 90). Given the differences between definitions, some care was taken to define the measure (see Campbell et al. 1980, p. 1 (Abstract), p. 2, p. 10 (Table 5), pp. 12-13). However, due to the apparent interest in the paper (Asimus 1980, 1981; National Farmer 1980; Watson 1980; Hughes 1981; Richardson 1982), and the fact that the sales revenue measure may continue to be confused with growers' revenues, there is merit in explicitly delineating the two measures.

This can be done using a slightly modified version of the Gruen (1964) diagram (Figure 1). The  $P_1G$  line has been extended to intersect with  $FA$  at  $Z$  and the intersection of  $P_1G$  and  $HB$  is labelled as  $X$ . Subtracting *ex ante* from *ex post* revenues from wool sales, the hidden impacts would, as indicated by Richardson, be measured as follows:

\* This reply was prepared by Henry Haszler and Bill Curran as Messrs Campbell and Gardiner have moved to macroeconomics and farming, respectively. With the usual *caveat*, the comments of referees are gratefully acknowledged.

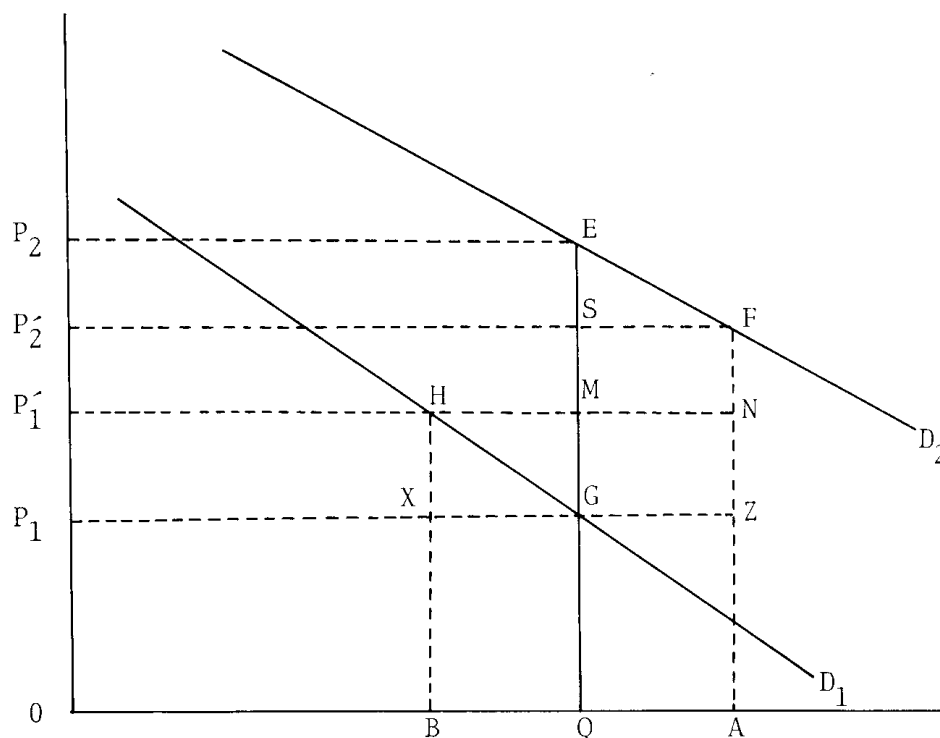


FIGURE 1—Revenue effects of wool price stabilisation.  
(Source: Based on Figure 1 in Gruen 1964).

(a) *buying by authority*

$$\begin{aligned} \text{net impact} &= P'_1 H B O - P_1 G Q O, \\ &= P'_1 M G P_1 - H M G X - X G Q B, \text{ since } P_1 X B O \text{ is common to} \\ &\text{both situations;} \end{aligned}$$

(b) *selling by authority*

$$\begin{aligned} \text{net impact} &= P_2 F A O - P_2 E Q O, \\ &= S F N M + M N Z G + G Z A Q - P_2 E S P'_2, \text{ since } P_2 S Q O \text{ is com-} \\ &\text{mon to both situations;} \end{aligned}$$

(c) *summing*

$$\text{net impact} = P'_1 M G P_1 + S F N M - P_2 E S P'_2, \text{ since } H M G X = M N Z G \text{ and } X G Q B = G Z A Q, \text{ both by definition.}$$

Given the assumptions, therefore, the net hidden sales revenue measure is exactly equivalent to the difference between Gruen's hidden losses ( $P_2 E S P'_2$ ) and gains ( $P'_1 M G P_1$ ) plus the visible gross profit ( $S F N M$ ) realised by the 'Reserve Authority'. Consequently, the hidden revenue impacts are not quite so concealed as those defined by Gruen. Even though *net* trading profits need not necessarily be positive, by the nature of their operations, trading authorities would tend to make *gross* trading profits. Consequently, the Campbell et al. measure of net transfers will tend to be more positive than the Gruen measure. As a broad guide to the relevant magnitudes, the Australian Wool Corporation (AWC) ac-

accumulated a gross trading surplus of \$78m over the 1974-75 through 1977-78 period and \$197m from 1974-75 through 1980-81 (Australian Wool Corporation 1981). By contrast, its operating costs amounted to some \$169m and \$255m, respectively, over the two periods.

However, even with adjustments for the AWC's gross trading profits, the estimates could still be used only as an approximation of the potential aggregate industry insurance premium due to stabilisation. The reason is that a model of mill-level demand in overseas countries was used. As a result, the transfer estimates relate not just to growers and the AWC, as Richardson states, but to the Australian industry in total (growers, AWC, brokers, buyers etc.) and also to all market intermediaries up to overseas mill-door level, without any indication of the distribution of the transfers within this broad group. Moreover, the revenue estimates were based upon mill, and not auction, level quantities and were not discounted to allow for the fact that hidden gains (*ex post* revenue minus *ex ante* revenue) have tended to be realised prior to losses.

#### *Functional Form*

We agree with Richardson that any aggregate function is merely a statistical approximation of the available data. However, in the simulations, the models were used *outside* their data range (see Figure 1, p. 11). Given this, and the inability to discriminate between functional forms on statistical grounds (p. 5), an alternative is to rely on theory. It is true that this does not necessarily provide unequivocal guidance, especially when aggregating. Nevertheless, it is desirable to make a choice, if at all possible, and even if it must be couched in probabilistic terms. The disinclination to accept the linear function as the preferred choice on theoretical grounds was strengthened by the fact that it was the only model which generated a negative *ex ante* price (p. 12). Of the functional forms estimated, we retain a preference for the semi-log version, even though the reasons may not be as 'compelling' as stated previously.

It is also important to note that some valuation has to be placed on stocks remaining at the end of the data period to be sure that the direction of the transfers indicated would remain unchanged over a full stock cycle. The AWC still held 0.9m bales at the end of 1977-78. We see no reasons to modify the earlier judgment (p. 12) that extension of the linear analysis over a full stock cycle would very likely result in a substantial reduction of the gain estimated to the end of 1977-78.

It is likely that choices between functional forms will always remain a contentious issue. In these circumstances, one alternative to expressing a choice is to regard all functional forms as equally probable, provided they meet minimal theoretical and statistical criteria. Following this route, given the assumptions underlying the analysis and the evidence available, a judgment was made on the probable direction of transfers. The conclusion would still be that the distribution of the direction of possible hidden sales revenue transfers associated with wool price stabilisation is probably skewed toward net losses and away from net gains, with the size of the transfers uncertain.

#### *Throughput Variability*

Turning to one of the major assumptions underlying the analysis,

there is certainly no *a priori* reason to expect processors to prefer stable prices and unstable throughput to the reverse. The question of throughput variability was considered by Campbell et al. (1982, p. 9), albeit very briefly. However, along with Richardson (1982) and Quiggin (1981), the authors were guilty of blurring the distinction between risk and variability. Quiggin demonstrated that price stabilisation would reduce the variability of processors' profits only if it led to quantity stabilisation. The Campbell et al. results (p. 12) and those of Ward (1978) suggest that price stabilisation has destabilised throughput and, therefore, could have destabilised profits.

If the variability and riskiness of profits are related, quantity destabilisation could reduce demand, so tending to magnify any net hidden losses or to offset any net hidden gains. The relationship between the variability and riskiness of profits has not been established for the wool industry and does warrant further research. It was assumed that price stabilisation had not resulted in any demand shifts, simply because there was insufficient information on which to base alternative hypotheses. Given Quiggin's results and Richardson's comments, this assumption now appears more reasonable than before.

#### *Further Interpretational Issues*

Perhaps a more questionable aspect of the analysis is the assumption that stabilisation had exerted no impact on private stockholding. More recently, Richardson and Beynon (1980) indicated there had been some decline in mill stocks in the EEC since 1970-71, with this drop linked to the introduction of a reserve price scheme. Reserve price stocks may have substituted directly for private stocks (Campbell et al. p. 9). In that instance, relaxation of the stocks assumption would result in a reduction in the magnitude of the estimates presented, but without altering the basic nature of the probable trade-off between the revenue and stability effects of price stabilisation. However, it is also possible that reserve price stock changes have differed from the previous patterns of change in private stocks. This would result in varying biases in the estimates of *ex ante* prices and, therefore, even greater uncertainty than claimed by Richardson in the estimates of *both* the possible price stabilising and hidden sales revenue impacts of the scheme.

Notwithstanding the foregoing comments in support of the Campbell et al. conclusions, some reinterpretation of the specific numerical results is desirable. The reason is that the essentially short-run orientation of the analysis was overlooked. A series of short-run transfers were simply summed to derive estimates of the transfers in the long run. This seems to be a perfectly legitimate procedure *per se*, but it has interpretational consequences depending on the extent to which any hidden transfers away from the broadly defined supply side of the market are appropriated by intermediate processors. As processors operate in a competitive environment, at least some part of any hidden short-run gains to processors will flow back to the supply side of the market. In such circumstances, any unfavourable transfers in the short run would be offset by some rise in wool consumption over the longer term. Other things constant, the implication of taking such a longer-term view is that the Campbell et al. figures probably represent upper bound estimates of the magnitude of

any transfers. Consequently, the ‘. . . insurance premiums *potentially* (emphasis added) paid for price stabilisation’ (Campbell et al. 1980, p. 13) may be more attractive than might be inferred directly from the previously reported results. Similar arguments would hold in the case of transfers to the supply side of the market.

### *Conclusion*

Overall, we believe that Campbell et al. established the working hypothesis that wool price stabilisation is not necessarily costless and, therefore, there are probably choices to be made. Nevertheless, we agree with Richardson that the definition of hidden revenue effects differs from that outlined by Gruen, with the result that the estimates cannot be used as a measure of the hidden effects incurred directly by wool growers. Rather, the transfer estimates refer to the potential aggregate industry effects. Regardless of the particular transfer definition employed, we believe the potential existence of an insurance premium for price stabilisation is likely to be of interest to wool growers and policy makers.

However, we also agree that the results do not provide any completely satisfactory and/or unique basis for practical policy decisions. The reserve price scheme has the potential for a wider range of effects than those considered in detail in the original paper, especially given Australia’s dominant position in the world wool market. Consequently, the decisions required in managing the scheme must be made against the assessed overall benefits and costs of stabilisation. The results provide only a limited and ‘initial’ input to the many judgments that need to be exercised in this area, as indicated in the paper. Indeed, a great deal of additional research is required to identify and quantify adequately the impacts of the scheme to facilitate a more comprehensive and accurate evaluation of the potential trade-offs. Within the BAE, the work to date has centred on stockholding by the AWC (Carland 1981), variability effects (Quiggin 1981) and supply-demand dynamics (P. Simmons, personal communication). Further research is under way into commercial stockholding, exchange rate effects on prices, exogenously determined demand shifts and movements in prices among wool types.

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