FORUM

THE INFLUENCE OF THE 1973 FEDERAL GOVERNMENT TAXATION CONCESSION REVISIONS ON AGRICULTURE

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1. INTRODUCTION

In recent years there has been considerable discussion of many aspects of taxation policy, this note attempts to add to this discussion by taking a broader outlook than considering merely those concessions or policies which have been changed. This is done by, firstly, considering some theoretical implications of taxation concessions, and particularly the concept of a "neutral tax" policy. Secondly, by outlining the possible situations when concessions may be justified. Thirdly, by giving a brief summary of the previous taxation concessions, their aims, whether these aims fit into the conditions under two above and their actual effects. Finally, in light of the theoretical considerations summarized in section 2, a brief assessment is given of the impact of those concessions which have been removed.

2. THE INFLUENCE OF TAXATION ON FIRM RESOURCE ALLOCATION

Glau[1] outlines in detail the possible influence taxation concessions will have on the resource allocation of a firm under two cases: (a) a firm using annual or non-capital inputs, (b) a firm using capital inputs which provide a flow of services over time. The implications of these two cases can be summarized as:

(a) ANNUAL INPUTS. The necessary conditions for maximization of post-tax profits under the three production function relationships are:

(i) *Factor-Product.* The necessary condition is that the marginal productivity of the *j*th input in producing the *i*th product must equal the ratio of the input price adjusted for tax over the product price adjusted for tax. That is,

$$\frac{dY_i}{dX_j} = \frac{r_j\,(1 - b_j t)}{P_i\,(1 - a_i t)} \qquad \ldots\ (1)$$

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[1] Glau, T. E., "The Impact of Tax Policy on Agricultural Investment in Australia", Mimeo, Report No. 5, Dept Ag.Ec., University of Sydney, 1971, chapter 5.

where: Y_i is the ith product

X_j is the jth input

r_j is the price of the jth input

p_i is the price of the ith product

t is the marginal tax rate

a_i is the proportion of "economic revenue" which must be included in taxable income

b_j is the proportion of "economic costs" which can be deducted from reported revenues in determining taxable income.

It can be seen from this that if all returns from Y_i are included in the taxable income, i.e. $a_i = 1$ and if all costs of X_j are deductible to only the actual amount, i.e. $b_j = 1$, then taxation will not influence either the level of output of Y_i or the level of input of X_j. (This would also be the case if $a_i = b_j$.) If this is not the case the usual alternative is that $a_i \leqslant 1$ and/or $b_j > 1$. Under these conditions there is an incentive to either produce more of Y_i or increase the use of X_j, both result in an increase in output. The level of this further increase is higher, the larger is the marginal tax rate, t.

(ii) *Factor-Factor.* This relationship is often used as an indicator of economic efficiency in the combination of inputs. The necessary conditions for the optimum combination of inputs adjusted for tax is:

$$-\frac{dX_k}{dX_j} = \frac{r_j\,(1 - b_j t)}{r_k\,(1 - b_k t)} \qquad \ldots\ldots (2)$$

that is, the rate of factor substitution must equal the inverse of the input price adjusted for tax. As with the above, the marginal tax rate is again important if $b_j \neq b_k$. Glau (p. 79 and p. 80) shows that the effect of $b_j \neq b_k$ is a shift in the input expansion path in favour of increased use of the input favoured by the tax policy. He also shows (pp. 80–83) that under a cost constrained situation and when provisional tax must be paid, tax incentives for the use of one (or more) inputs will result not only in the above substitution effect but also an income effect which will result in an increased output of the product concerned.

(iii) *Product-Product.* Similar conditions to the above can be developed, i.e.

$$-\frac{dY_k}{dY_i} = \frac{P_i\,(1 - a_i t)}{p_k\,(1 - a_k t)} \qquad \ldots\ldots (3)$$

thus the rate of product transformation for each pair of products must equal the inverse of the product prices adjusted for tax. Again if $a_i = a_k$ the tax policy will have no effect on the level of output of products. If this is not the case the output expansion path will shift in favour of that product for which incentive for production is given.

(b) CAPITAL INPUTS. Without a taxation scheme a firm will acquire an incremental unit of capital provided the present value of the net revenues is greater than the cost of acquisition. Glau (pp. 86–93) looks at the implications of both a proportional and progressive tax on this decision to invest. For a proportional tax he shows that a producer will purchase an extra unit of capital if

$$P\frac{\partial Q}{\partial K} \geqslant \frac{Q(i+\delta)(1-uZ)}{(1-u)} = c \qquad \ldots . \quad (4)$$

where: P is the price of the additional output

$\frac{\partial Q}{\partial K}$ is the marginal product of capital

q is the cost of capital

i is the discount rate

δ is the per period deterioration rate of capital

u is the constant marginal tax rate

Z is the present value of depreciation resulting from a dollar investment. This is given by $Z = \sum_{s=1}^{\infty} d_s(1+i)^{-s}$ where $d_s(s = 1, 2, \ldots . \infty)$ is the depreciation schedule as defined by tax policy. It is noted that Z corresponds to b_t for annual inputs.

c is the right-hand term which is called the user cost of capital.

Derivation of equivalent conditions for a progressive tax scheme is more difficult. Under two important assumptions Glau suggests the below is appropriate:

$$P\frac{\partial Q}{\partial K} \geqslant \frac{q(1+\delta)(1-\bar{u}Z)(1+i)}{(1-\bar{u})} - \frac{\hat{u}_1 q d_1 i}{(1-\bar{u})} = \hat{c} \qquad \ldots . \quad (5)$$

These assumptions are:

(i) Since farmers tend to purchase capital at the end of a "good" season, the taxable income at that time consists of a permanent component which is expected to persist in the future and a transitory component which is associated with the current year. Therefore there is similarly a permanent and transitionary marginal tax rate, that is:

$$u_t = \begin{cases} \bar{u} + \hat{u}_t & t = 1 \\ \bar{u} & t = 2, 3, \ldots \infty \end{cases}$$

This assumption does however ignore the possibility of further transitionary rates in the future (either positive or negative).

(ii) The marginal product of the asset is zero in the year of purchase. This is due to either a gestation period or that it is purchased near the end of the year.

The first term in equation (5) is the user cost of capital under "average" conditions adjusted for a one-year delay in returns. The second is the value of tax saving realized on depreciation allowed in the year of purchase due to fluctuations in the expected marginal tax rate. Since this is negative the larger this term the larger will be the increase in capital.

The above analysis can be used to look at the necessary conditions for a "neutral income tax" policy. Glau defines a neutral income tax as "one which does not distort the relative costs of alternative investments or the economically efficient combination of the factors of production which existed before the imposition of the tax" (p. 93).

For annual inputs the necessary conditions are clear. All costs must be included in taxable income as they accrue. If this is the case it is seen that equations (1) to (3) reduce to the usual efficiency conditions.

With capital inputs these conditions are less clear. The important factors to consider are the timing of depreciation for tax purposes and the present value of tax savings resulting from depreciation allowances.

In the case of a proportional tax it is seen that equation (4) reverts to the usual factor-product situation when $Z = 1$, i.e. the present value of depreciation allowance per dollar expenditure. Glau (p. 94) suggests that two methods of depreciation allowance which give this are, the immediate write-off of capital expenditures and annuity method.

Since both private and public companies are taxed on a proportional tax basis it is relevant to look at some of the more important implications of this. If the depreciation policy is such that Z is less than one the fraction $(1 - uZ)/(1 - u)$ in equation (4) will be greater than one. Therefore the user cost of capital (c) will be higher than without tax. The optimum level of capital expenditure will therefore be lower. The opposite applies for $Z > 1$.

Although both suggested depreciation schedules solve the neutral tax problem, a critical factor in their use becomes the determination of the discount rate. The annuity method requires this directly. Although the immediate write-off method does not initially rely on determination of this discount rate, it will be required if an asset is sold prior to the end of its "productive" life. That is, a refund of some tax saving would be necessary. If it is assumed that the market interest rate is appropriate, then which is the market rate? If producer personal discount rates are appropriate these will vary between producers. All will vary over time. Perhaps however, the immediate write-off would present the least problems.

For a progressive tax scheme Glau concludes that "the problem of defining a neutral depreciation policy for a progressive tax rate structure has not been solved" (p. 95). This can readily be seen under Glau's assumptions by inspecting equation (5).

The concept of tax credits has been suggested as a means for overcoming the inequities of tax concessions with a progressive tax system. The implications of these can be looked at in this context. Tax credits in fact represent a tax deduction on the basis of a proportional tax. The

discussion above can therefore be applied and the problem reverts to deciding whether the credits should be on an immediate lump sum basis or as an annuity over the expected life of the asset. The same problems exist regarding choice of discount rate.

3. ACCEPTABLE CONDITIONS FOR A NON-NEUTRAL TAX POLICY AND TAX CONCESSIONS

From the point of view of efficiency there are two circumstances when a non-neutral tax policy may be acceptable.

(i) In the case of some inputs (or the output of some products) the socially optimum level may not coincide with that of the individual. That is, there may be some external benefits (or costs) which do not accrue to the individual producer. Therefore there is reason for the Government to encourage him to reach this alternative level of input (or output) such that these benefits (costs) are realised (avoided). In the case of tax policy it must then be decided whether the use of taxes is the most appropriate means of achieving this social optimum.

(ii) The administrative problems involved in implementing a neutral tax policy may provide a second-best argument for a non-neutral tax policy. An example may be the depreciation policy for capital inputs. Problems associated with determination of discount rates or a neutral tax policy with progressive taxation may justify a simpler system despite the likelihood of an accompanying disincentive to invest.

While not necessarily related to resource allocation the distributional aspect of a progressive taxation system may give rise to some conditions when tax concessions are justified.

For example when incomes vary considerably with seasons the average tax liability may be greater than under a more even pattern. The type of concession associated with this situation should influence the marginal tax rate. Therefore, if a tax policy is neutral this should not influence the resource allocation. If the concession is however associated with a particular input or output or the current tax policy is not neutral, the additional resource effects should be taken account of when deciding whether the concession should be implemented.

4. A SUMMARY OF PRE-1972 TAX POLICIES RELATING TO AGRICULTURE

Table 1 briefly summarizes all tax policies relating to agriculture. The information is taken from Glau's work and the "Coombs Report".[2]

The "usual" depreciation policies adopted for taxation purposes for all sectors are some form of straight line depreciation. Discussion in section 1 indicates that even under a proportional tax this does not

[2] "Review of the Continuing Expenditure Policies of the Previous Government", Report of the Task Force headed by Dr H. C. Coombs, Australian Government Publishing Service, June, 1973.

TABLE 1

Summary of Tax Policies

Legislation section	Description of tax policy	Type of input or output influenced	Aim of policy when introduced	Does the aim fall into categories of section 3	The actual effect of the policy
32 to 34 GROUP 1	Determination of livestock trading profits: inventories may be valued at (1) market prices; (2) average cost price.	All livestock ..	When introduced in 1936 it was to "harmonize and simplify the methods of accounting for livestock".	Yes (ii)	While it initially satisfied the aim, the low minimum value of natural increase allowed (not changed since 1936) now provides an incentive to invest through home breeding.
57AA GROUP 2	Special depreciation allowance: new plant and structural improvements depreciated at the rate of 20 per cent for 5 years.	Capital inputs ..	Introduced in 1952 for 5 years as a phasing out period for previous concession (since extended for 5 years twice and then indefinitely since 1967).	No (unless some inputs increase technology the benefits of which go to consumers).	From the analysis in section 1 this provides an incentive to invest in new plant etc. However, as Glau has shown unless combined with investment deduction (below) the increased investment does not outweigh the tax revenue foregone.
62A and 62B GROUP 3	Investment allowance in addition to above, 20 per cent of purchase price is deductible in first year.	Capital inputs ..	Introduced in 1963 after similar concession for manufacturing in 1962. Objective was to increase investment.	No (unless as in group 2)	Glau has shown that combined with special depreciation this has induced investment. However, concession to manufacturing was abolished in 1971.
75, 76, 82 GROUP 4	Immediate deductibility of certain capital expenditure. Include mainly items which bring land into agricultural production, e.g. land clearing; soil conservation; fences only for subdivision; and annual pest control etc. These expenditures are not taxable when property is sold.	Capital inputs ..	The aim was to encourage the development of agriculture through opening new land and "fostering of efficiency and farm self-sufficiency".	Yes (i), however some positive and some negative externalities.	This policy has resulted in more land being developed particularly by Pitt Street farmers—avoiding tax. This has resulted in some external costs to existing farmers through increased demand for resources associated with development (*see also* discussion below).
159 GROUP 5	Drought bonds. These are tax deductible in year of purchase and taxable in year of redemption usually drought year.	Limited to graziers with 90 per cent of income from sheep and/or cattle.	To encourage graziers in arid and semi-arid areas to provide for drought years.	Yes (distributional) ..	There has reportedly been poor response to this and benefits are regressive.

Table 1—*continued*

Legislation section	Description of policy	Type of input or output influenced	Aim of policy when introduced	Does the aim fall into categories of section 2	The actual effect of the policy
26, 36, 80 GROUP 6	All sections of these relate to spreading unusually large incomes due to disasters etc. over more than one year. Also indefinite carry forward of *tax* losses.	All (but mainly livestock).	To compensate for insurance claims due to flood etc. losses, stock disposal due to drought etc. and compulsory destruction of stock.	Yes	Achieve stated aims. However, with indefinite loss carry forward it is not only commercial loss but tax concessions which are carried forward.
149, 158 GROUP 7	Averaging of income over 5 years to give average tax rate: to average limit of $16,000.	All	To "even" out the influence of market and weather variability on tax liability.	Yes (distributional) ..	Achieves aim, however with inflation if income is fluctuating about an upward trend there is also a tax saving. This is particularly likely since non-farm income is included in the "average".
31A GROUP 8	End of year valuation of trading stock manufactured from grapes. Allow stocks to be valued at low levels.	Wine-grapes only	To overcome a difficulty in accounting in 1950 and to allow also for adverse economic conditions facing the industry then.	Yes (partly ii)	This represents a tax deferment which is not extended to other sectors, as such it represents an incentive to invest in wine production.
GROUP 9	Sales tax exemptions on soft drinks which use certain percentages of fruit and/or vegetable juices.	Fruit and vegetables.	An indirect subsidy to fruit and vegetable growers.	No	Has maintained a demand for these products however it is doubtful that the full benefit is passed back to producers. It is likely that direct assistance would be more effective, e.g. minimum income.
GROUP 10	Concessional rates of tax on private companies 37 per cent for companies up to $10,000, 42½ per cent over this.	All	In part to compensate for undistributed profit allowed for public companies and in line with progressive tax concept.	No	In many cases company splitting has taken advantage of the first concession.

represent a neutral tax policy. This non-neutral policy would presumably be justified on the basis of its administrative simplicity. Nevertheless this method does represent a disincentive to invest, relative to activities which use mainly annual inputs. The concessional policies summarized in table 1 do, therefore, provide incentives to invest in agriculture (if similar concessions are not offered to other industries).

Also unlimited tax concessions will be inequitable because of the progressive nature of the income tax structure. That is, the higher the income the greater the benefit derived. Therefore in most of the tax policies where incentives are provided these will be greater for high income farmers. The use of tax credits would replace this with equal incentives to all farmers.

In summary, there are several of the pre-Labor Government tax policies which do not meet any of the conditions outlined in section 3. Further, of those which initially aimed to meet one or more of these conditions, many warrant reconsideration because of the actual effects and the distribution benefits.

5. LABOR GOVERNMENT TAXATION REVISIONS

It is possible to discuss the recent taxation revisions in the above context. The concessions which were eliminated were groups 2, 3, and 4 dealing with capital inputs and groups 8, 9, and 10 dealing with more specific areas.

The abolition of sales tax exemption on certain soft drinks (group 9) seems appropriate. It is contradictory to use an indirect subsidy of this sort to maintain producers in industries which, in many cases, are being provided assistance to adjust. This is particularly relevant when part of the exemption may not be reaching the farmers.

The conditions facing the wine industry at present do not appear to warrant the continuation of the indirect assistance provided by group 8. This is particularly so with the recent rapid entry of large companies into the industry, associated improved accounting procedures and shorter storage times for wines. However, as with any revision to Government policy, assessment of the required adjustment process is necessary. If temporary hardship is created adjustment assistance may be warranted.[3]

The analysis in equation (4) has shown that if the tax policy regarding depreciation is neutral, i.e. $Z = 1$, then there will be no change in resource allocation or the incentive to invest with the abolition of concessional rates of tax on private companies (group 10). However, if $Z > 1$ an increase in u from 37 per cent to 47 per cent will result in a further reduction in the user cost of capital, c, and thus an increased incentive to invest. Alternatively if $Z < 1$ the same increase will cause a

[3] A case for this assistance to the wine industry has been outlined by Forsythe, G. A., "Possible Consequences of the Repeal of section 31A of the Income Tax Assessment Act", *Commodity Bulletin*, Division of Marketing and Economics, N.S.W. Department of Agriculture, vol. 2, No. 10, April 1974, pp. 8–19.

further disincentive to invest, that is, in addition to that created by Z being less than 1. The former situation may have been the case before groups 2 and 3, in table 1, were abolished.[4] However, with their abolition Z will most certainly be less than 1. The combination of this with the abolition of group 10 will result in a larger disincentive to invest.

There is reason to believe that the abolition of investment incentives provided by concessions in groups 2 and 3 may be warranted under present conditions. Glau has shown that combined these concessions have provided an incentive to invest, thus implying a discount rate such that $Z > 1$. If these concessions were retained under present high rural incomes those farmers faced with progressive tax scales would have increased $\hat{u}$ and perhaps even $\bar{u}$ in equation (5). Therefore $\hat{c}$ would decrease providing even greater incentive for investment. This would further aggravate already excessive demand for these resources and could therefore increase inflationary pressures. There appears to be little justification for encouraging investment in agriculture rather than other industries at present.

It has been argued that the immediate deductibility of certain capital expenditure (i.e. group 4) has created negative externalities for many farmers. These concessions have encouraged "Pitt Street" farmers to clear, develop and sell unimproved land for non-taxable capital gains. Externalities have resulted from the increased demand for scarce local resources, thus attracting them from other activities. The abolition of these concessions should correct any misallocation of resources that has occurred.

In abolishing all of these concessions, however, it has been forgotten that there are likely to be positive externalities associated with such things as soil conservation and animal pest control. That is, other neighbouring farmers reap some of the benefit from these expenditures. Therefore from the point of view of socially optimum resource allocation it appears that reconsideration of the abolition of these concessions is warranted.

In concluding it must also be emphasized, as indicated in table 1, that there are still other aspects of present taxation policy relating to agriculture which also require reconsideration. Important examples of these are the livestock account and the averaging concessions.

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[4] The level of Z will depend on two factors:

(a) Whether the 40 per cent allowance is considered to be received at the end of the first year, and therefore discounted or since usually capital goods are purchased at the end of a tax year the allowance is included at the full 40 per cent.

(b) What discount rate is used.

If both possibilities in (a) are considered, it is possible to estimate, from the equation for Z in section 2, the discount rate which results in a neutral tax policy. These are:

(i) when the 40 per cent allowance is not discounted, a discount rate of 12 per cent;

(ii) when the 40 per cent allowance is received at the end of the first year, a discount rate of 7·5 per cent.