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The Rural Adjustment Scheme: An Economic Analysis[†]

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January 15, 1997

Abstract

The Rural Adjustment Scheme (RAS) is assessed in relation to its stated goals, and suggestions made for how it should be changed so as to better achieve these goals. Important parts of the program are still poorly motivated and should be removed or restructured. It is argued that one of the main efficiency goals of the RAS—improved risk management—would be facilitated by better integrating existing risk management strategies into the eligibility criteria of the scheme. This would help prevent farm failure and thus reduce the need for RAS. Unfortunately, however, there is a large gap in our understanding of the potential value of instruments such as futures contracts.

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The Rural Adjustment Scheme (RAS) is assessed in relation to its stated goals, and suggestions made for how it should be changed so as to better achieve these goals. Important parts of the program are still poorly motivated and should be removed or restructured. It is argued that one of the main efficiency goals of the RAS—improved risk management—would be facilitated by better integrating existing risk management strategies into the eligibility criteria of the scheme. This would help prevent farm failure and thus reduce the need for RAS. Unfortunately, however, there is a large gap in our understanding of the potential value of instruments such as futures contracts.

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1 Introduction

A fundamental problem with the Rural Adjustment Scheme (RAS) is that the specific goals, mechanisms, and criteria guiding the implementation of the scheme are not clearly stated. This presents problems for assessing the scheme on both efficiency and welfare grounds, as it is not only difficult to know what the RAS has achieved in objective terms, but it is also difficult to know what criteria by which to measure these achievements.

While there is widespread agreement on the current emphasis on efficiency considerations, there are a number of areas in which the RAS could be improved so as to achieve efficiency goals even more effectively. Implicit in any defence of the RAS on efficiency grounds must be the belief that there exist market imperfections that impede efficient functioning and restructuring of the agricultural sector. While there may indeed exist market imperfections, more effort should be made to clearly identify these perceived failures. This would have the benefit of focusing attention on the source of problems causing farm failure, rather than on their consequences. That is, such an approach is more conducive to development of policy to prevent farm failure, rather than correct it ex post as RAS seeks to do. Moreover, there is generally wide scope for disagreement on the extent of market failures, and a clearer statement of the perceived failures would facilitate debate about the validity of the basic premises of the scheme.

There has been an increasing recognition of the importance of separating out the welfare and efficiency goals of the scheme, although it is argued that this separation has not yet gone far enough. For instance, interest subsidies appear to be motivated by both goals, but are inappropriate for achieving either. Further disentanglement will improve the effectiveness with which problems are targetted, and also result in less confusion about the purpose of the scheme. Although the question of how best to design a welfare scheme for small business (in particular, non-wage earners) is highly relevant to the RAS, this is not discussed here.

The main changes advocated here are that interest subsidies on commercial finance should be eliminated—they cannot be supported on welfare or efficiency grounds. Simple but important

changes should also be made to the eligibility criteria for skills and re-establishment grants. While RAS funding to assist the adjustment of regions, rather than individual farms, may be justified in order to ensure adequate levels of public infrastructure, the greater susceptibility of such projects to political lobbying means that clear objectives and performance measures are even more crucial for such projects.

In addition to offering a critique of the main specifics of the RAS, the paper also focuses on one the implicit efficiency goals of the scheme: funding long term viable farmers to improve their risk management skills. It is desirable that the RAS be integrated with other policies and mechanisms that are designed to improve risk management and reduce the likelihood of ever having to rely on RAS support. For example, farmer incentives to adopt new and improved risk management techniques could be increased by making eligibility to RAS funding conditional on previous adoption of some level of risk management. The current low level of knowledge of the benefits of a number of market based management tools such as futures may also indicate a role for government involvement in research and extension in this area.

The objectives of the scheme are examined in section 2, then the individual components of the scheme are discussed in section 3. Drawing on experience from the U.S. and Canada, in section 4 alternative measures are discussed that may improve the ability of farmers to manage risk. In particular, the potential role for multi-peril crop yield insurance, income averaging and carry-back of losses for tax purposes, and futures markets are examined. The paper is summarised in section 5.

2 Objectives of the Rural Adjustment Scheme

The stated goals and implementation of the RAS are examined briefly here. The objective of the scheme is to ensure 'more effective adjustment measures for farmers and a more productive, efficient and competitive rural sector'. Eligibility for assistance is based on 'sustainable, long term profitability, the merit of the proposed development project, and need' (Commonwealth Government of Australia, 1992). The paradox in the eligibility definition is well understood—

farmers who are financially sound in the long term should not have trouble obtaining commercial credit unless there are inefficiencies in the market for rural credit. In order to clearly rationalise the existence of the scheme, it is incumbent on the government to identify where these market failures lie. Furthermore, correcting these failures should be the emphasis of any government initiative, not make-shift funding to deal with the resulting problems as they occur. Clear and explicit statements of the objectives, rationale, and mechanisms to be used to implement the RAS are crucial in order to make the scheme transparent, accountable, and to help focus on the source of existing problems rather than their symptoms.

The interest subsidy program is perhaps the best example of problems discussed above. There is no literature on the RAS which clearly explains why interest subsidies, as opposed to other mechanisms, are offered. If these subsidies are designed to increase the efficiency of agriculture, the underlying market failure is not evident. A more likely explanation is that the subsidies are motivated by a desire to make transfers to some farmers. The procedure for determining eligibility for assistance, 'long term viability', has also not been clearly articulated. While determining short term need is not difficult, assessing long term viability raises more difficult questions. How long is long? How will the farmer's on-farm business and the general economic environment change in the long term? While there are certainly benefits to having flexibility in rules, there appears not to have been any attempt to formulate transparent eligibility rules or even guidelines for determining eligibility.

There is also a potential problem with using long term viability as the criterion for eligibility for assistance. A 'moral hazard' problem arises if there is a positive correlation between risk and profitability over the relevant range of profitability, as is often conjectured. This implies that risk management comes at a cost in terms of long term expected profitability. A farmer who adopts a strategy that is both more profitable and risky may require periodic assistance due to low levels of liquidity when the downside of the risk is realised. However, under reasonable definitions of long term viability, such a farmer could qualify for assistance because his operation has a high expected

return over the long term. Access to RAS assistance effectively truncates the downside risk for this farmer. Thus, paradoxically, the RAS may actually provide incentives for (risk-averse) farmers to increase the level of risk they bear. This suggests that the definition of long term viability should include consideration of a farmer's likelihood of having to require assistance in the future, as this may not necessarily decrease as long term profitability increases.

3 Components of the RAS

The four main components of the RAS are discussed here: interest subsidies; grants for skills enhancement; grants for re-establishment; and regional adjustment. In most cases eligibility for assistance requires that a farmer can display short term need while also being long term viable.

3.1 Interest Rate Subsidies

The trend in government policy has been a shift away from transaction-based subsidies (on fodder, transport etc.) to concessional finance in times of drought. Moreover, there is an expectation that the RAS interest subsidy scheme (an example of concessional finance) will be eliminated by the year 2000. This reflects the growing belief that the agricultural sector should be wholly reliant on the commercial financial sector for its financial needs. This view is justified and it is not possible to rationalise interest subsidies, regardless of whether they are designed to achieve welfare or efficiency objectives. Interest rate subsidies distort the price of credit, resulting in excessive investment in agriculture relative to other sectors. The eligibility criteria also mean that it results in overinvestment in financially distressed farms relative to healthy farms.

In principle, there are several possible justifications on efficiency grounds for interest subsidies. Projects which generate significant positive externalities, such as environmental reclamation and disease and resistant species containment, will be underinvested in without government intervention. Lump sum grants for positive externality generating activities, rather than interest subsidies, are

a better way for the government to increase investment in such activities, since they are less distortionary. Moreover, such distortions should be redressed independently of the degree of financial distress of the farmers involved. Both theory and practice indicate that underinvestment in these projects will occur independently of the profitability of the farmers. One might even argue that since financially sound farmers typically operate larger farms, it may in fact be even more important to make funding available to financially sound farmers than to those that are not. However, the externality argument is of limited relevance to interest subsidies. First, it does not apply to interest subsidies obtained for projects for which the benefits are wholly internalised by the farmer. Secondly, there are a range of other government initiatives (e.g. Landcare) designed to deal with environmental externality problems.

For investments that do not involve an externality, the only compelling reason for offering interest subsidies is that the private financial market charges farmers interest rates that are inefficiently high. That is, either the market is not competitive, or lenders over-estimate the risk of agricultural loans. The latter seems unlikely, as the major private and public banks have a long history of direct involvement in the agricultural sector, with rural branches specialising almost entirely in farm loans. Moreover, financial deregulation has increased competition and has forced banks to improve their assessment of the quality of loans, since lower profit margins mean that bad debt is more difficult to carry. The U.S. experience has shown that one of the effects of financial deregulation is that it increases the preparedness of banks to bear risk as competition increases (Blank, Siebert and Wyatt, 1993). Thus, for a number of different reasons, financial deregulation should have decreased the need for interest subsidies. Even if the private rural credit market does charge inefficiently high interest rates, it is unlikely that government officials are better informed as to the efficient level—for likely reasons see Buffier and Metternick-Jones (1995).

There is an optimal level of learning about quality of loans by lenders, beyond which the additional expected savings from lower default rates is smaller than the additional learning cost. Thus, incomplete information about the quality of loans is not inconsistent with efficiency. If it is

deemed that lenders are investing too little in learning about farm loan quality, not only should the underlying logic of the argument be clarified, but interest subsidies are not the correct response. If there is a market failure here that is specific to the market for farm loans, then government should seek to lower the cost to private lenders of learning more about the agricultural sector so that they can more efficiently set the cost of agricultural credit. It is well known that information collection and research activities have a public good aspect - both theory and practice suggest that firms have an incentive to free-ride on their rivals' efforts on these activities. If this, or some other factor¹, is the source of market failure in the market for farm loans, then government should seek to redress the source of the problem. One approach would be to lower the cost of information collection and research to private lenders so that the price of credit is set more efficiently.⁴

In summary, the efficiency arguments for interest subsidies are weak. The subsidies are better viewed as an instrument to achieve unstated welfare goals. However, since lump sum grants of the type used for the other components of the scheme would better achieve these welfare goals (as they don't introduce price distortions), the welfare arguments for interest subsidies are also weak.

Some additional potentially adverse effects of interest subsidies due to moral hazard problems are now briefly discussed. First, it is well understood that limited liability can induce borrowers to bear an inefficiently high level of risk when near bankruptcy. Downside risk is of little consequence to such a borrower as they expect bankruptcy anyway, while they may require a very high payoff in order to remain solvent. Thus risky projects (where the payoff may be either very high or very low) are attractive to these borrowers. If risk and expected payoff are positively correlated, near-bankrupt borrowers can be expected to undertake investments with an inefficiently low expected payoff (from society's viewpoint). To the extent that interest subsidies are offered only to farmers under financial stress, this incentive effect is of obvious relevance. That is, interest subsidies can be expected to increase the incentives for farmers under financial stress to implement excessively

¹ Alternatively, the withdrawal of bank branches from rural communities may result in a decline in the expertise of loans officers.

⁴ Strengthening property rights to reduce the public good nature of information does not seem realistic.

risky projects.

The subsidisation of interest rates on existing loans is a particularly undesirable feature of the RAS, as this can distort the investment incentives of farmers not even currently under stress. Such subsidies encourage the formation of expectations that future assistance will be available if needed on the servicing of current debt. A larger range of projects will appear profitable under such an expectation, resulting in distortions in both the quantity and quality of farm investment undertaken. The extent to which these incentive problems affect actual investment clearly depends on the ability of RAS officers to accurately discern the quality of farm investments. It is unclear whether the public servants responsible for implementing the RAS can be expected to have the expertise to assess the quality of on-farm investments. If not, interest subsidies may increase the average level of risk assumed by farmers, thus working against one of the basic principles expounded by the RAS.

Another possibly undesirable effect of interest subsidies is that they artificially increase farm values. If some non-viable farms are able to access these subsidies (through error in implementation of RAS), then they will have the effect of impeding rationalisation of the industry. That is, viable farmers are required to pay more for non-viable farms than they would in the absence of the subsidy. The rationale and desirability of the RAS provision for 'exceptional circumstances' to be declared, in which case more generous interest subsidies are available, is now discussed.

The 'exceptional circumstances' provision in the RAS is now discussed. This provision allows for subsidies on interest payments of up to 100% of the commercial cost, and the declaration of exceptional circumstances is at the discretion of the Minister for Primary Industries and Energy. A central tension in the RAS is that between maintaining flexibility in eligibility criteria and stating clear, explicit rules. While the former is important for ensuring that program funds can be most efficiently used *ex post*, it also encourages *ad hoc* implementation, which can result in inefficient and inequitable use of funds. The exceptional circumstances provision seeks to make RAS funding flexible. However, this flexibility can make the scheme more susceptible to political lobbying, as

if farmers believe aid will be forthcoming in times of distress, then this diminishes their incentives to insure against risk. The significance of this moral hazard problem will of course depend on the degree of certainty that farmers feel they can rely on such 'bail-outs' and their risk aversion. The importance of this problem has been seen in the U.S., where it is widely accepted that the political inevitability of disaster assistance is a major factor explaining the low participation rate in the Federal Crop Insurance Corporation program. The U.S. government has recently recognised this problem and now condition eligibility for disaster assistance on previous purchase of crop insurance. Thus, it must be recognised that flexibility in RAS funding is not conducive to giving farmers incentives to adopt more effective risk management strategies.

In fact, it could be said that the government's assertion that drought 'is part of the farmer's normal operating environment' (Commonwealth Government of Australia, 1992) is inconsistent with the need for an 'exceptional circumstances' clause. Recent history has shown that drought is the most likely source of 'exceptional circumstances'. To make any sense of this seeming contradiction, it must be inferred that there are varying intensities of drought. But what then is a normal, as opposed to exceptional, drought? The inherent ambiguity in this question is the source of potential inefficiencies due to the incentives that it gives farmers to lobby for assistance. The clause has also been invoked for woolgrowers following the collapse of the reserve price scheme. Given that the current circumstances in the wool industry are largely self-imposed, being the result of an ill-conceived attempt to exercise market power, one might question the wisdom of allowing the industry to qualify for special circumstances. It only serves as a subsidy to poor management in this case.

Lastly, the fact that larger interest subsidies are obtainable under exceptional circumstances simply exacerbates the moral hazard problems discussed in the previous section. Both the logic and the implementation of the 'exceptional circumstances' clause is difficult to rationalise with the basic principles of increased efficiency and risk management. As is the case with standard interest subsidies, the additional subsidy under exceptional circumstances can only be reasonably

interpreted as a welfare transfer to farmers who suffer loss of wealth due to adverse conditions. This may well be consistent with a broad desire by the community for income equity. However, the government should not to rationalise this transfer on efficiency grounds.

3.2 Re-establishment Grants

These are lump sum grants designed to assist farmers who are exiting farming and seeking to establish themselves in new areas of employment. Eligibility for the grant is obviously conditional on exiting the industry and is subject to an assets test.

If purely a welfare measure, one might ask why other small businesses, which also have high failure rates, do not have access to such grants. Typically, there is little published literature explaining the motivation for the grants, making it difficult to know against which criteria to assess the grants. The grants may solve inefficiencies due to labour market frictions by facilitating the movement of labour to new geographic markets. Farmers leaving the industry, unlike urban dwellers, typically must relocate to cities or larger towns some distance away to find employment. This presupposes, not unreasonably, that such farmers are unable to obtain commercial credit to fund re-establishment. Incomplete information on the part of lenders may result in credit for re-establishment being unobtainable. If farm skills are under-valued by the non-farm sector, due to the informational problems created by farmers having no formally recognised and specific training, then the skills of farmers leaving the sector will be under-utilised by the economy. This inefficiency could be partially redressed by re-establishment grants since they increase the incentive to invest effort in finding alternative employment by defraying some of this cost.

There is scope for revision of the rules of eligibility for grants. Setting a threshold level of assets above which grants cannot be obtained, results in perverse incentives. Under current rules, a farmer with \$80,000 worth of net farm assets is ineligible for a grant and has an incentive to run the value of farm assets down to \$45,000, since a grant of up to \$45,000 is then possible. Thus, the current rules may result in inefficiencies for two related reasons: they encourage inefficient farmers

to remain in farming longer than necessary; and they encourage farmers to run down the value of their assets. Comparing the threshold to the average of the value of assets held over a number of years (and possibly other farm financial decisions) prior to departure may mitigate this problem, as this will decrease the incentives for short-term manipulation of asset value.

It is also unclear why personal assets are excluded from the assets test, as these constitute part of a farmer's wealth. The current rules effectively imply that farmers should not be expected to draw upon personal wealth when leaving the industry. Given the arbitrary nature of the distinction between farm and personal wealth, the motivation for this distinction appears unwarranted. It provides incentives for farmers to convert farm assets into personal assets in anticipation of leaving the industry. An assets test based on total assets seems more appropriate than the current test. While there is a case for retention of the re-establishment grants, there is room for modification.

3.3 Skills Enhancement Grants

These grants are not tied to the usual RAS eligibility criteria and are available for training and professional financial advice. They might be argued for on efficiency grounds, being consistent with the widely held view that human capital is an important driver of increased economic productivity (Mankiw, Romer and Weil, 1992). However, it should be clarified why it is believed that farmers who are long term viable—particularly those who are not under short term financial stress—need assistance to fund training or advice. One widely accepted view is that the credit market for investment in human capital (e.g. training) is imperfect due to the difficulty that lenders face in obtaining collateral (since slavery isn't an option) from potential lenders with low wealth. However, since a defining characteristic of farming is its asset-rich nature, which means physical collateral is abundant, it seems unlikely that this argument is unlikely to be valid for viable farmers. For whom commercial credit can be assumed to be available. If these farmers perceive the cost to be too high, then, assuming efficient capital markets, it must be concluded that investment in the training or financial advice is socially inefficient. As argued previously, if capital markets are

inefficient, then priority should go to identifying the source of the inefficiency and remedying it. Regardless, it seems difficult to justify grants for training or financial advice for viable farmers.

Farmers who are not long term viable should have highest priority to grants to fund professional financial advice. The reason is simply that efficient utilisation of assets involves rapid identification of farms that are not long term viable and facilitation of their exit from the industry. With regard to grants for the enhancement of farm skills, requiring that farmers be under short term stress but able to demonstrate long term viability, is desirable, as clearly investment in enhancing farming skills is inefficient for those who will soon be leaving the industry. Farmers suffering short term financial distress may not have sufficient collateral to qualify for credit, due to a high level of pre-existing debt. Thus the market failure argument discussed above may indeed more applicable to such farmers. Note that the arguments here are not specific to farmers—they could equally be applied to any profession.

3.4 RAS and Regional Adjustment

Regional, rather than farmer-by-farmer, strategies to assist rural adjustment may be necessary to assist adjusting communities with respect to provision of public capital such as health and education services. The decline in the population of a community inevitably results in loss of infrastructure and a consequent increase in cost of providing services. For example, declining student numbers results in loss of teachers and thus possibly a decline in the quality and scope of the education provided. Similarly, the per capita cost of providing doctor services increases, since doctors require to be compensated their opportunity cost, which is the income they could earn in a city, where demand is usually higher. While loss of public services might be rationalised as an efficient economic outcome, the welfare of these communities undoubtedly suffer as a result. The basic point here is that the government should be aware of the changing needs of adjusting communities in respect to provision of public infrastructure. If the government is typically unable to keep abreast of the changing demands of adjusting regions, then there may indeed be a need for

a regional adjustment component to the RAS.

Efficiency considerations may also underlie RAS funding of public capital provision in adjusting communities. The productivity of the farming industry relies, like any other, upon a healthy and well-educated workforce—farmers need to keep abreast of increasingly rapidly emerging technologies in order to remain efficient. Although shortfalls in rural educational services can be bridged by accessing schools in cities, this is expensive and may require obtaining credit. As argued previously, the credit market for investment in human capital is likely imperfect and may ration against efficient loans. It has been argued that there may well be scope for RAS funding of regional initiatives involving provision of public capital and infrastructure. However, the argument has focussed only on its role in the provision of typically public goods such as health and education.

Regional programs that intervene in traditionally private markets, such as distorting factor input prices in order to save otherwise non-viable local industries, are more difficult to justify. It is incumbent on the government and the region to clearly explain why normal market forces cannot adequately address the restructuring process in these cases. Also, all RAS funded regional initiatives need to be clearly motivated and defined, since regional projects are more vulnerable to political lobbying than the individual farmer measures of the RAS. In summary, while there exist plausible reasons for regional initiatives, in order to aid assessment of their value they should be clearly defined and motivated.

4 Risk Management Strategies

As already indicated, there is scope for integrating into the RAS greater incentives for farmers to use improved risk management strategies. In this section, a range of risk management tools which do not directly relate to the RAS—they are available to all farmers—are discussed. Specifically, Income Equalisation Deposits (IED's), futures markets, and crop yield insurance are discussed. To the extent that these tools have been developed to improve risk management, there is room for better integrating them into the RAS since both have the common goal of improving risk management by

farmers. For example, eligibility for interest subsidies and grants could be conditional on farmers previously having used IED's or equivalent income smoothing mechanisms.

4.1 Income Equalisation Deposits

Income Equalisation Deposits (IED's) and the newer Farm Management Bonds, both referred to hereafter generically as IED's, offer similar benefits as the income averaging provisions of the tax code, but are superior in an important respect. The 'tax inequity' suffered by people with highly variable incomes under a progressive tax system can be reduced by both IED's and income averaging. However, IED's have the important additional advantage that they allow income to be intertemporally transferred and hence do not destabilise cash income in the way that income averaging does. Thus, IED's facilitate risk management while income averaging tends to actually increase risk.³ The government regards IED's as an important risk management tool since they promote 'income smoothing and creation of reserves' (Commonwealth Government of Australia, 1992).

Perhaps the most puzzling thing about IED's is why so few farmers use them and why income averaging is so popular, given the discussion above. This may suggest that tax inequity is a more important determinant of farm viability than risk management. In December 1994, less than 1% of the annual cash costs of the rural sector were invested in IED's, being in fewer than 7,000 accounts (Buffier and Metternick-Jones, 1995). A number of different factors appear to be responsible. Frequent past changes in the structure of IED's may have created an expectation by farmers of future changes, thus causing them to discount their value due to uncertainty. A lack of understanding of the actual benefits of IED's by farmers and their advisors may be another reason for the low utilisation of them. However, if they are properly understood, then farmers' revealed preference for income averaging suggests that they attach little value to IED's as an

³Income averaging affects only the tax liability, smoothing it over time. Thus, more tax is paid in years of low income than would be paid in the absence of income averaging.

income smoothing mechanism, and thus that the government has a flawed understanding of the risk requirements of farmers. Increased effort to obtain a better understanding of IED's may shed valuable new light on the actual risk management needs of farmers. Not only will this have spillover benefits for the design of the RAS, it will also allow the government to better integrate IED's and other risk management tools into the RAS.

While there is some evidence indicating that the benefits from using IED's are smaller than widely thought (Moon, Peterson, Kokie and Douglas, 1995), the fact that banks operating in the rural sector believe the potential benefits to be large leads one to question the robustness of this conclusion (Buffier and Metternick-Jones, 1995). It appears that the low demand for IED's can be attributed to the details of their design: for example, personal discussions with an accountant indicate that the interest rate paid on deposits is not very attractive. Also, it is unlikely that IED's will ever be widely used until they are better integrated into the tax code. Since IED's can be used to reduce tax inequity, there is little reason to retain income averaging. The income averaging provision was eliminated from the U.S. tax code in 1986 and more recently in Canada with no apparent adverse effects.

Previous suggestions to incorporate carry-back of losses should also be examined carefully (Buffier and Metternick-Jones, 1995; Douglas and Davenport, 1993). Farmers (and other businesses) can carry back losses for three years or forward for fifteen years in the U.S., where this is a widely used provision. Carry back of losses is more conducive to income smoothing, since it is retrospective and does not require the same degree of anticipation of future conditions as carry forward of profits does. Thus, introducing this provision is likely to improve the risk management options for farmers (and possibly reduce even further the demand for IED's). To the extent that these and any other measures can break the historical (but undesirable) link between taxation considerations and the timing of farm capital investment decisions, they will be valuable.

4.2 Crop Insurance

Multi-peril crop insurance is a means of insuring against drought. While such insurance is still offered in Canada and the U.S. there is much evidence that this is not an appropriate risk management tool for the main grain crops in Australia. First, the climatic conditions, characterised by highly correlated weather across regions, appear unsuited to support a commercial multi-peril crop insurance industry (Bardsley, Abbey and Davenport, 1984; Quiggin, 1986). Moreover, the U.S. experience with government subsidised multi-peril crop insurance program has not been positive. Over the period 1988 to 1994, the loss ratio (indemnities/premiums) ranged from 1.2-2.4 for the U.S. program. Indemnities exceeded premiums by one billion dollars in 1988. Despite an average subsidy rate of over 50%, the program has not attracted more than a 40% participation rate (Harwood, J. and C. Jagger, 1994). Moreover, there is evidence that insurance has been purchased as a means of making money (by manipulation of the scheme) rather than as a risk management tool (Sumner, 1993). In summary, there appear to be important problems of moral hazard, adverse selection, poor actuarial design, and a tendency by the government to offer disaster assistance on an ad hoc basis (Chambers, 1989; U.S. General Accounting Office, 1987; Hyde and Verammen, 1994).¹ Secondly, surveys suggest that demand for such insurance by Australian grain growers may not be very high (Fraser, 1992). It must be concluded that there is little evidence that multi-peril crop insurance is a feasible risk management strategy for Australian farmers, and thus it has no obvious link with the RAS.

4.3 Futures Markets

Hedging on futures markets can also be used to smooth income within years. Wool futures have been traded on the Sydney Futures Exchange since the 1960's and wheat futures and options have been introduced more recently. However, few farmers trade on these markets and trading is generally thin. Low levels of farmer trading have also been observed in U.S. and Canadian futures

¹Ad hoc disaster assistance has averaged in excess of one billion dollars per year since 1988 (A. and Skees, 1994).

markets (less than 10% of farmers), suggesting that these instruments are no inherent value to most farmers, the costs of using them (learning and transaction costs) are too high, or that farmers are ignorant of the benefits that futures markets offer for risk management (Shapiro and Brorsen, 1988). However, historical marketing arrangements, both in Australia and abroad, have given farmers little incentive to hedge on these markets: the purpose of the buffer price scheme for wool and the guaranteed minimum payments and compulsory marketing and pooling of wheat and other grain sales is to reduce price variability.

It is conceivable that farmers will become more willing to hedge on futures markets as they become more familiar with less regulated marketing environment—farmers are already increasingly using forward contracts to market grain. Although it is difficult to see why a private broker market would not emerge to provide farmers with information about hedging on futures markets if the demand exists, there may be a limited extension role for government here in alerting farmers to the possible benefits of using these markets. The recent development of yield futures and options on the Chicago Board of Trade may prove to be a useful risk management tool, and similar futures could be offered on the Sydney Futures Exchange in the case.⁵ Yield, rather than price, risk is the more important cause of grain income volatility in Australia, and thus interest by farmers in yield futures should be greater than for price futures.⁶

An insight into the possible future importance of futures market hedging for Australia's grain farmers can be obtained by examining the local cotton industry, which hedges on the U.S. futures markets. While important differences in the production technology of wheat and cotton may partially explain the higher level of hedging by cotton farmers, industry structure may also be an important factor. Cotton is dominated by large corporate farms, which tend to adopt more sophisticated risk management strategies than smaller family farms.⁷ Also, the cotton industry has

⁵ Five different corn yield futures are now offered, each based on the average yield for a different midwestern state.

⁶ The value of yield futures contracts depends in part on the covariance between a farmer's yield and the contract yield. If the risk minimising hedge is a short (long) hedge, then an increase in the covariance between an individual farmer's yield and the contract underlying yield increases (decreases) the benefit from hedging using both price and yield futures rather than just price futures (Vukina, 1996).

⁷ The tendency of larger farms to hedge using futures and options more than small farms has been observed in the

not been subject to government interventions to stabilise price as the wheat industry has. The dual trends of increased farm size and increasingly deregulated markets indicate that risk management techniques by wheat, wool and other farmers may soon look more similar to those of cotton farmers in their usage of future markets.

4.4 Overview

Whether Australian farmers in general, and in particular farms under financial distress, lack risk management skills is unclear. A study of farmers in California has indicated that they engage in too little risk management, but only because the tools offered are not appropriate to their needs (Blank et al., 1993). This may well be the case in Australia, where, although off-farm income is of increasing importance, on-farm production strategies are still probably the dominant approach to risk management. The potential risk management benefits from using IED's and hedging with yield futures is currently little understood. If valuable, the risk management goals of the RAS could be better realised by including use of these instruments in the RAS eligibility criteria. The use of market based instruments to manage risk is clearly preferred to government provided (and subsidised) instruments, as it satisfies the call for farmers to be self-reliant. Hence, the developments in the market for yield futures should be watched closely.

5 Summary

The move to transfer and integrate the welfare component of RAS into existing social security structures is appropriate. Since it is difficult to argue that agriculture should in general receive special treatment relative to other industries, the remaining (efficiency-based) aspects of the RAS which do not serve a clear efficiency objective need to be carefully assessed and discarded if not justifiable. There remains considerable scope for further clarification of the purpose of the

U.S. (Blank et al., 1993).

components of the scheme, and for further refining it so that it better achieves stated goals. The interest subsidy provision is perhaps the least defensible part of the scheme, as it has weak efficiency justifications, it is an inappropriate means of implementing welfare transfers. The general objective of improving risk management would benefit from making eligibility for RAS funding conditional on previous risk management practices. That is, ideally preventative and corrective risk management policy should be linked. The potential risk management benefits from using instruments such as IED's and futures contracts are still largely unknown and the rural sector is likely to benefit from further research in this area.

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