

A Revenue Contingent Loan Instrument for Agricultural Credit with Particular Reference to Drought Relief

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Abstract

Australia's National Drought Policy is in need of significant reform. The following analysis considers the potential role to be played by loans provided by the government to farm businesses in periods of adversity, to be repaid depending on future revenue streams. While the economic case for taxpayer subsidies for drought relief is contestable, our approach sits comfortably in the literature with the general promotion of income stabilisation instruments for agricultural credit. The paper develops earlier work on the introduction of an income (revenue) contingent loan for drought relief and promotes for consideration a specific linkage between this policy instrument and Farm Management Deposits in a single credit risk minimisation program for farmers. It is argued that policy reform along these lines would allow farm businesses the important opportunity for income smoothing and, because of the nature of the collection mechanism through the tax system, a scheme of this genre would curtail the prospects for moral hazard.

1. Introduction

Australian governments have intervened in the market for agricultural credit for decades, an explicit goal being that of income stabilisation.¹ In spite of the deregulatory trend which began in agricultural policy in the 1970s, such interventions have persisted well into the twenty-first century in the form of interest rate subsidies offered under industry adjustment programs and, most notably, as a part of drought policy. However, a number of reviews have suggested that such subsidies are an ineffective and inequitable

¹ An early example is the *Loan (Farmers' Debt Adjustment) Act 1935*.

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means for delivering support (for example, McColl *et al.*, 1997; Synapse Consulting (Aust) Pty Ltd, 1992; Freebairn, 1983). In this work it is argued that this form of intervention can result in substantial transfers of public money to individual farmers and (obviously) only provide relief to farmers with debt or those who are prepared to take on debt. Interest rate subsidies also have potential to be regressive as larger farms with higher incomes and more debt attract greater subsidies.

Arguably there is a highly useful instrument for achieving the income stabilisation aims of agricultural credit policy, and in this paper we build on our earlier work proposing the introduction of an income contingent loan (ICL) for drought relief. In previous work we suggest that ICL can be seen to be an equitable and efficient policy instrument for delivering relief to farm businesses experiencing drought, and perhaps for other adverse circumstances (Botterill and Chapman, 2004; Botterill and Chapman, 2006; Kelly *et al.*, 2004). In building on our previous contributions our analysis emphasises the role of contingent loans in agriculture in the broad context of income stabilisation policy, a context that has been insufficiently considered previously. The discussion stresses that, since collection of the debt is operated through the tax system, our approach has the potential to minimise moral hazard; this would not be the case with private sector arrangements aimed at achieving the same ends.

For the purposes of accuracy we use the term revenue contingent loan (RCL) as an ICL for agricultural credit since the proposal is for debt to be collected on the basis of gross farm revenue (i.e. from the farm's income stream before any deductions are made). It is argued that there is nothing particularly radical about such an approach given that it is consistent with a considerable period of government policy attempts at diminishing the fluctuations in farmers' incomes through smoothing mechanisms. It is also not the first time it has been suggested that farmers repay loans based on income. In 1958, Campbell argued that:

Institutional arrangements of various types to promote income stability in areas of variable rainfall should be encouraged. To some extent traditionally fixed-cost items, such as debt repayment, can be made more flexible by relating them to the size of the income flow. (Campbell, 1958, p.22)

Campbell's support of a contingent loan approach fits easily with the goals of stabilisation policy, but raises the critical policy question of how this might be achieved. As implied above a substantial issue relates to the minimisation of moral hazard in a policy context which needs to rely on the accurate reporting of actual incomes, a point analysed in some detail in Baker (1974). An important part of our contribution is to emphasize the potential for an RCL in agriculture to be a complementary income smoothing instrument with low moral hazard implications, and this has all to do with collection arrangements.

At the outset it should be noted that our analysis is concerned only with farm business incomes and not the welfare of farm families. Understanding household farm welfare in the context of this distinction is important (Botterill, 2007).

The article is set out as follows. It begins with a discussion of the role of

government in managing risk and the use of income smoothing schemes as part of that role, including a brief overview of the long history of Australian government programs aimed at income stabilisation. We then discuss how a RCL would address the shortcomings of and enhance existing income smoothing tools for drought risk management. The third section of the paper contains our proposal for the introduction of a RCL as an effective and equitable way to deliver drought relief. We outline the arguments for the use of this policy instrument and how it might be constructed to accommodate the features of farm financing, including in combination with an existing program, the Farm Management Deposit scheme (FMDs).

2. Government as a Risk Manager: Income Contingent Loans

Risk Management Policy

Over recent periods there has been a considerable expansion in the application of economic principles to the literature concerning the theory, policy and practice of public finance. Recent thinking about the role of government in market economies has recognised its particular capacity for the management and distribution of risks (see Moss, 2002). The concept of risk plays a central and unifying role in current analyses of a wide range of social and political issues, perhaps similar to that performed by the concept of globalisation in the 1990s.

The role of government, and particularly of the welfare state, has been reinterpreted with an increasing emphasis on risk and uncertainty, and across the social sciences there are different analytical approaches. When government is considered in its role as a risk manager, new aspects of both existing policies and future policy options are revealed. In *When All Else Fails* for example, David Moss (2002) provides a fine historical analysis of the role of the state as the ultimate risk manager, focusing on institutions such as bankruptcy, limited liability and workers' insurance. Through analysis of US government legislative reforms over the last two hundred years, Moss promotes an understanding of the risk management role of the public sector, which can take many diverse forms, such as laws associated with limited liability, the application of speed limits for automobiles, national health insurance, occupational health and safety legislation, disaster relief and social security.

Barr (2001) has written a similar treatment of the welfare state as that promoted by Moss, in which the potential role of government is analysed in the context of insurance failure, which is conventionally seen in the economics literature to be a consequence of asymmetric information. In the absence of markets providing accessible and affordable insurance Barr argues that government has a unique role to play as a 'piggy bank', an efficient institution to manage and decrease the costs to citizens of the unavoidable uncertainties associated with human events.

Income Contingent Loans as Risk Management: The Case of the Higher Education Contribution Scheme

Risk management policies have come to play a special part in consideration of the role of government in human capital investment processes involving the promotion of ICLs as a financing instrument. ICLs provide finance to students in the form of loans to be

repaid when and only if students, or former students, receive relatively high incomes, with this design aspect of the schemes being motivated in part to provide insurance against both default and repayment hardships. The point is analysed in theory in Grout (1983) and Quiggin (2003), and explained in Chapman (2006) in a practical application with respect to the Australian Higher Education Contribution Scheme (HECS).

HECS, instituted in 1989, is an income contingent charge for tuition for Australian higher education students. It operates through higher education students being given the option of paying tuition costs if and only when their future incomes exceed a certain annual level, which is currently about \$42,000. The debt is adjusted for inflation, although there is an implicit real rate of interest following from the fact that there is a discount offered to students of 20 per cent if tuition is paid up-front. In 2009, students in typical four year university courses incur debts of between about \$16,000 and \$36,000, depending on the courses taken, and for those working full-time after graduation the loans are generally repaid after about seven to nine years. Other countries have adopted similar higher education loan arrangements², with a detailed discussion of the history, conceptual basis and empirical consequences of these systems being available in Chapman (2006).

The critical point about ICLs with respect to risk management is that because repayments of the debt are based on personal capacity to pay, there are two benefits of an insurance kind: one, there is no prospect of a former student defaulting on the basis of poverty; and two, there is protection against repayment hardship. Both features of HECS are attributable to the income smoothing consequences of ICL, and there are important lessons from experience with HECS concerning potential applications of ICL to other areas of policy.

Some Issues in the Application of ICLs in Other Areas of Policy

There has by now been noteworthy consideration of the prospects for ICLs in a disparate range of economic and social policy areas, including for the financing or payment of: drought relief (Botterill and Chapman, 2004); low level criminal fines (Chapman *et al.*, 2004b); white collar crime (Chapman and Denniss, 2005); and housing assistance for low income households (Gans and King, 2004). In anticipation of the discussion concerning the potential for ICLs for agricultural credit it is apposite to highlight some of the lessons in prospective applications.

A first point is that ICL should be considered to be a government financing instrument which does not in itself constitute a subsidy (in the HECS example, for Australian higher education students). Indeed, given the implicit surcharge inherent in the up-front discount associated with HECS, for some graduates the present value of the charge will exceed the tuition costs implicitly imposed by the government, the critical point being that the form and size of ICL subsidies are conditional on the interest rate arrangements imposed as part of the policy.³ The issue here for a possible ICL for extensions of agricultural credit is that, if it so wishes, a government can organise such schemes to have zero, positive or negative subsidies.

² These include for New Zealand (1991), the UK (1997), Hungary (2003) and Thailand (2006). See Chapman (forthcoming, 2009).

³ Other applications of ICL considered in this special addition of the AJLE illustrate that policy design is the determinant of subsidies. For example, the paper by Chapman and Higgins (2009) shows that for the top-up ICL paid parental leave policy aggregate subsidies are likely to be negative.

A second and important aspect of the discussion concerning the application of an ICL approach to agriculture is the clear and implicit value placed on income (consumption) smoothing. Income smoothing is assumed to be welfare improving, which should seem unsurprising in a world in which many obligatory payments, such as for a mortgage, are fixed.

Finally, a critical issue for analysis of ICL for different areas of policy is to ask: why are such arrangements typically organised for higher education through the public sector, and could they instead be forthcoming from the private sector? For the discussion following there are two important reasons that HECS uses the ATO to collect the debt:

- (i) it is administratively inexpensive to do so given that the income tax system is close to comprehensive and in place. Chapman (2006) notes that the HECS collection costs are apparently less than four per cent of the annual revenue received); and
- (ii) there is a clear legal jurisdiction for the government to know what incomes are and this might not be true for the private sector.⁴

A major aspect of these final issues relates to the prospects of an ICL scheme being associated with so-called 'moral hazard', which concerns the potential for an ICL to encourage behaviour designed to avoid repayment.⁵ It is arguable that the Australian Tax Office being involved in the collection of an ICL is critical to the minimization of moral hazard. This point is very significant to an understanding of possible applications of different forms of an ICL to Australian agricultural credit policy and is considered further below.

Income Stabilisation as an Important Component of Australian Rural Policy Debate

The policy issue of income smoothing for the farm business is the focus of this paper, with particular reference to drought relief. On the basis of theory, Australian agricultural economists generally support the idea that there is no obvious, systemic and significant market failure in the provision of credit for the agricultural sector. In the academic literature the point is argued particularly by McKay (1965), Baker (1974) and Freebairn (1983), and supported in various public enquiries in IAC (1975), IAC (1978) and the PC (2008).

There is a consensus in the literature that the common mechanism for delivering subsidies in recent years through interest rate subsidies is likely to be regressive⁶ (see for example Freebairn, 1983; Botterill and Chapman, 2006). Related to this point, Baker states that, 'The efficiency effects of subsidized interest rates are most debatable' (1974, p.172), reflecting the view of Edwards (1973) and many others.

⁴ The company *MyRichUncle*, operating in the US in the area of human capital contracts, is attempting to collect equity on the basis of private future incomes for assisted college students. Critically, the legal jurisdictional issue is apparently a prospectively significant barrier to a successful institution of the plan (see Palacios, 2004).

⁵ For analysis of moral hazard and its importance to the policy design issues associated with ICL, see Chapman (forthcoming 2009).

⁶ As is the case, for example under the Rural Adjustment Schemes of 1988 and 1992 and under the National Drought Policy.

In spite of these arguments, much of the literature and public debate supports a role for policies involving the removal of '...barriers or impediments which inhibit producers from coping more effectively with uncertainty and instability' (Industries Assistance Commission, 1975, p.3). The point is implicitly reiterated in Baker (1974), in which it is implied that agricultural income smoothing has efficiency gains and that these are not realised in the long term through the provision of appropriate private capital market responses.

Baker (1974) analyses the use of contingent loans for income smoothing and considers the challenges in a context in which such an instrument is provided through commercial financial markets, with an approach known as a 'variable amortisation scheme' (VAS). Baker, Johnson (1947) and the IAC (1978) promote the use of contingent loan instruments in part because these approaches have the capacity to assist new entrants to farming, and farm businesses with relatively limited opportunities to rely on savings.

A most important issue for contingent loans interventions concerns the potential for moral hazard, in which farm businesses have incentives to arrange their financial affairs to minimise debt collection. In other words, such schemes could encourage cheating or inappropriate behavioural responses with respect to the identification and measurement of the basis of loan repayment, farm income. Baker identifies a possible solution to the problem, which entails the use of an *ex ante* index of farm production by commodity weights, which *ex post* could then be used in conjunction with commodity prices to calculate an indicator of individual farm incomes.

While the Baker (VAS) approach would significantly decrease the likelihood of moral hazard, there are myriad administrative complications which make compliance very difficult; the administrative costs of the Baker proposal are stressed by the IAC (1978), which nevertheless promotes intervention of this type. Below we note that an RCL intervention from the government is very likely to be able to resolve this administrative concern and thus allow a minimisation of moral hazard related to contingent loans.

Finally, as implied previously, the research literature also emphasises that there is a critical distinction to be made in the policy debate between government support programs for farm businesses and farm welfare support (Botterill, 2007), an issue that is easy to support in conceptual and policy terms. The essential point is that there are strong equity arguments for providing a *welfare* safety net that should be seen to be unrelated to the discussion of income stabilisation for the farm business.

3. Income Stabilisation Policy for Farmers in Australia in Practice

'Stabilisation' has been an important objective of realised Australian agricultural policy for decades. Initially, this encompassed two elements – stability of income for farmers and stability of prices for consumers. In 1946 Prime Minister Ben Chifley released a 'A Rural Policy for Post-War Australia' which set out the following objectives:

- (i) To raise and make more secure the levels of living enjoyed by those engaged in and dependent upon the primary industries.

- (ii) To secure a volume of production adequate to meet domestic food requirements, to provide the raw materials for our developing secondary industries, and to enable an expanding volume of exports to pay for necessary imports.
- (iii) To encourage efficient production at prices which are fair to the consumer and which provide an adequate return to the producer.
- (iv) To develop and use our own primary resources of water, soil, pastures and forests in a way which conserves them and avoids damaging exploitation (Chifley, 1946, p.2).

It is interesting to note the twin objective of stable incomes and stable prices has also been an important part of European agricultural policy. Article 39 of the Treaty of Rome, which established the Common Agricultural Policy, included fair prices and fair standards of living for farmers among its objectives (Ritson, 1997, p.2).

In Australia the stabilisation objective manifested in a wide range of rural policy interventions in the twentieth century. From wool and wheat stabilisation to pink margarine, governments intervened in the markets for agricultural products through what has been described as 'a bewildering array of policy instruments' (Throsby, 1972, p.13). As governments moved to deregulate agriculture from the 1980s, the objective of stable prices was lost, however concern with income fluctuations remained.

Farmers are clearly not the only group in the community that experiences income instability, but arguments are often presented that agriculture is a 'special' case. The rationales for treating farming differently from other forms of economic activity have been summarised as follows:

- 1) Adverse terms of trade for agriculture in high income societies mean that farm incomes do not keep up with general economic growth
- 2) farming is subject to climatic uncertainty and occasionally other natural calamities beyond the control of the farmer
- 3) farmers are generally price takers and, particularly those dependent on export markets, are subject to fluctuating prices
- 4) farming is an essential activity and it is only "fair" that farmers share in national wealth, and
- 5) the family home is often inseparable from the family business and therefore social considerations cannot be completely removed from agricultural policy (Botterill and Gage, 2003, pp.17-18).

While some of these justifications are values-based and reflect a form of 'agricultural exceptionalism' (Skogstad, 1998), others, such as the impact of climate, do distinguish farming from other activities. Australia experiences a particularly variable climate, giving further weight to arguments about the need for income smoothing for farmers.

Since 1969 governments have included some form of income smoothing program in the array of policy instruments that have been used to achieve the stabilisation objective. The first of these schemes was the Drought Bond, introduced by the Commonwealth Government following the severe drought of the 1960s. The

Drought Bond was specifically targeted at livestock producers as a mechanism for encouraging the accumulation of financial reserves during high income years. The Bonds paid interest and matured after 10 years. They were however redeemable before maturity in the case of drought (Glau, 1970).

The 1974 Green Paper on Rural Policy found that ‘comparatively few primary producers’ took advantage of the Drought Bond scheme (Harris *et al.*, 1974, p.78). The Green Paper supported the principle of government intervention to stabilise farm incomes, arguing that ‘Instability of farm incomes involves farmers and those in rural areas in substantial welfare costs and leads to a less than fully effective use of farm resources’ (Harris *et al.*, 1974, p.81). The paper suggests that ‘income equalisation arrangements are worthy of detailed and expert examination’ (Harris *et al.*, 1974, p.81).

The Drought Bond Scheme was replaced with an Income Equalisation Deposit (IED) Scheme with effect from 1975-76. While the Drought Bond had been specifically targeted at livestock producers the IED scheme had a broader reach, applying to all primary producers (Douglas and Davenport, 1993, p.7). The IED Scheme was reviewed in 1992 as part of the overall rural policy review which accompanied the development of Australia’s National Drought Policy. The review found that ‘Neither drought, fluctuating production, nor fluctuating prices represent sufficient grounds for government intervention’ (Douglas and Davenport, 1993, p.39). It concluded, however, that ‘The primary justification for the IED Scheme was found to be its potential role in realigning the focus of Government assistance policy to more effectively meet the Government’s objective of financial self-reliance’ (Douglas and Davenport, 1993, p.39).

Drought has been an important justification for income stabilisation measures. In 1992 the tone of the drought policy debate changed; and with it the rationale for income smoothing mechanisms shifted from an emphasis on income stabilisation to one of risk management. Until 1989 drought was part of Australia’s natural disaster relief arrangements (NDRA), a standing Commonwealth-State agreement which sets out the funding responsibilities of the Commonwealth, State and Territory governments in the event of a natural disaster. In 1989 the Commonwealth government decided that drought was no longer to be included in the events covered by these arrangements. Following the removal of drought from NDRA, the Commonwealth government set up a Drought Policy Review Task Force which reported in 1990 (DPRTF, 1990), recommending that a National Drought Policy be developed based on principles of farmer self-reliance and risk management. The report recognised that Australia’s climate is highly variable and that climate risk is one of a number of uncertainties to be managed by the farm business.

The 1992 National Drought Policy was negotiated through the relevant Commonwealth-State ministerial council, the Agriculture Council of Australia and New Zealand (ACANZ). Ministers agreed that the policy would be ‘based on principles of sustainable development, risk management, productivity growth and structural adjustment in the farm sector’ (ACANZ, 1992, p.13). The policy included an important caveat relating to ‘severe downturns’ during which support would be provided to ‘those with sound prospects who are temporarily in difficulty’ (ACANZ, 1992, p.13). This response to severe events was given effect in the exceptional circumstances (EC) provisions of the *Rural Adjustment Act 1992*. The Rural Adjustment Scheme

was wound up in 1997 but the exceptional circumstances provisions were retained in a new stand-alone program. Support to farm businesses experiencing exceptional circumstances is provided as subsidies on the interest paid on commercial finance.

The National Drought Policy listed 'Building Financial Reserves' as an important policy measure under the heading 'Increasing self-reliance'. Following the review mentioned above, IEDs were supplemented with a new Farm Management Bond which was more generous in its tax treatment but more restrictive in its withdrawal conditions; being accessible only during 'periods of financial stress caused by factors such as, drought, commodity price collapse, severe disease outbreak etc' (ACANZ, 1992, p.15). In introducing the legislation into the Parliament, the Minister argued that: '... an attractive IED scheme can go a long way towards assisting and encouraging farmers to build cash reserves for use during downturns. The improved IED scheme, including the new farm management bond, will play a key role in doing this by assisting farmers with their management of financial risk' (Crean, 1992, p.2417).

In April 1998, the Government announced the details of the new FMDs which replaced the IED and FMB schemes. An important feature of the FMDs is that it is held by commercial financial institutions whereas previous deposits in income smoothing schemes had been held by the government. Under the FMDs interest rates applying to the deposits were set commercially rather than paid at the three year government bond rate (Anderson, 1998). In introducing the FMDs, the government again referred to their use as a financial risk management tool, stating that 'the bill has been carefully designed to meet the coalition's longstanding desire to encourage increased financial self-reliance among farmers, while also taking account of the high variability of farm income streams and the vulnerability of farming businesses to natural events' (Scott, 1998, p.4066). FMDs were reviewed in 2002 and 2006, and the latter. The latter review identified the following advantages of FMDs as a risk management tool:

By providing a tax based instrument that increases farmers' commercial options through income smoothing and liquidity management, the FMD Scheme has been used for risk management purposes. Used in this way, FMDs promote better and timelier resource allocation decisions. [...] Better farm management decisions are entirely consistent with better risk management decisions. Timely investments make the farm more financially viable and sustainable to cope with downturns due to climate variations or market fluctuations when they occur. Simply put, there is less risk that a farm will fail financially if poorly timed expenditure can be avoided. Without FMDs, poorly timed expenditure may be forced on farmers as they hurriedly seek to obtain off-setting tax deductions before the end of a high-income financial year. Poorly timed expenditure leads to sub-optimal productivity and leaves farmers more financially vulnerable than they need be (Department of Agriculture Fisheries and Forestry, 2007, p.4).

On this basis, the review recommended that 'The FMD Scheme be retained with its primary objective as a tax-linked, financial risk management tool for primary producers' (Department of Agriculture Fisheries and Forestry, 2007, p.5).

Several points should be clear from the above excursion into the history of Australian agricultural stabilisation policy. One is that there has been a long standing goal for the government to provide mechanisms to promote rural credit designed to smooth incomes. Two, over time and with sensible policy reflection, FMDs have evolved to be an acceptable, apparently fair and efficacious policy instrument.

It should also be noted that FMDs are best able to promote income smoothing for established farm businesses, but are not particularly useful for new enterprises, or for farms which have run down their stocks of FMDs. As stressed, addressing the need for assistance for members of these groups has been emphasised in the policy debate by Baker (1974), Johnson (1947), and the IAC (1978), and can be seen to be a significant advantage of a contingent loan instrument. That is, an RCL approach would in an important sense allow borrowing from the future, in a mirror image of the role played by FMDs which entail borrowing from the past. It is now apposite to consider how such an approach could work in practice.

4. How an RCL Would Work in Australian Agriculture

In our submission to the 2008 Productivity Commission Inquiry into Government Drought Support (Botterill and Chapman, 2008) we analysed and promoted the introduction of a contingent loan for drought relief as a replacement for interest rate subsidies and as a complement to the existing FMD scheme. We now set out in some detail the basic features of such a scheme, addressing the most significant issues of implementation. Part of the motivation for this discussion is to highlight the prospects for a government based instrument of this type to minimise the prospects for moral hazard raised in Baker (1974) and the IAC (1978).

Conceptual Issues with an Agricultural RCL

It is worth emphasising that contingent loans as a policy instrument have two important features which make them particularly well suited to the needs of farmers faced with fluctuating incomes; namely they provide default protection for the farmer and they are an income smoothing mechanism. These benefits are considered in turn, in the context of the financing of rural business activity.

The Collection Basis of an RCL

We have discussed the possible features of an RCL elsewhere (Botterill *et al.*, 2004; Chapman *et al.*, 2004a; Botterill and Chapman, 2004; Botterill and Chapman, 2006) and the scheme has been modelled using ABARE data and testing different scenarios for collection of the loan as well as the impact on both government revenue and on the financial position of different groups of farmers (Kelly *et al.*, 2004).

One of the early issues we tackled in adapting this policy instrument was that of farm income. Like all business operations, farms have a number of allowable deductions associated with the operation of the farm which reduce the income on which tax is payable. Data collected on taxable farm incomes accordingly suggest that

Australian farmers are surviving on very low taxable incomes, in part because of the large number of deductions available (Vincent, 1976). The issue of tax deductions is an important difficulty associated with the delivery of assistance to farm businesses, a feature of which is the 'unity of business and household' (Mauldon and Schapper, 1974, p.65) that comprises the family farm. There is thus an important potential for effective tax minimisation in agriculture, meaning that farmers are capable of 'hiding' income that could be collected as repayment of an ICL. A contingent debt approach along the lines of HECS-HELP and FEE-HELP (previously known as HECS), which calculates repayment obligations on the basis of personal taxable income, would therefore not work, as taxable farm incomes are a poor measure of how well the farm is faring. In the context of an RCL, it would also not be clear at what point the farm was in a position to repay the loan.

We have therefore proposed using gross revenue as the basis on which repayments are calculated. This has the very important advantage of avoiding the complexities associated with expenses of a business rather than its income. It also means that there are no concerns about the offsetting of losses by members of a partnership against income (which would thereby reduce – or even eliminate – repayments of the loan).

However, while there are administrative advantages in using gross farm revenue as the collection basis of an RCL, it is acknowledged that this would be a fairly crude measure of farm business performance. Consequently, and in order to ensure that farm businesses are not unduly affected by repayment hardship, our modelling has been based on very low repayment levels of between two and five per cent of annual gross revenue. In Kelly *et al.* (2004) our simulations show that the associated revenue streams for the government appear to be satisfactory for these repayment parameters for the typical levels of debt implied by the scheme.⁷

From the important perspective of administrative simplicity, making a drought loan revenue contingent has the advantage that the requisite information for calculating repayment is already being collected on the Australian Tax Office's GST Activity Statement at G1 (Total Sales). This measure focuses on the operation of the business entity and its cash flow and does not confuse ownership of the farm business asset with its income stream. This distinction is significant as a response to other common criticisms of the application of this policy instrument to farm businesses.

A further important distinction between our proposal and existing ICL schemes such as HECS-HELP and FEE-HELP is that we suggest that a drought RCL not include a repayment-free threshold. This is because farm receipts reflect to an important extent farm size which means that if repayments were not required for revenue below a certain level the policy might excuse all repayments from small farm units (even in periods in which a significant proportion of small establishments are not experiencing economic hardship). Having a revenue threshold for repayment would also have an unfortunate behavioural characteristic of systematically encouraging the participation in the scheme of those farms expecting to have relatively low gross revenue in the longer term, thus undermining the prospect for the government of high

⁷ These debt levels can be considered to be modest in the context of the total financial needs of running a typical farm business. In essence interventions of these types are designed to assist farms in a crisis and not to rescue a crippled enterprise.

levels of collection. An RCL collected on the simple basis of a percentage of revenue would be the preferred arrangement.

A confusion that seems to arise in consideration of this proposal relates to the link between the loan and the business revenue stream as against more familiar loans which are held against the business asset. Tying the loan obligation to the revenues of the business addresses a number of concerns that have been raised with the authors relating to ownership of the farm asset. These are addressed below.

RCL Collection and Administrative Issues

An important aspect concerning the use of farm revenue as reported on the Business Activity Statement is the conjecture that this facilitates the minimisation of moral hazard. There are several issues.

One relates to the distinction between asset and revenue streams, and is the attachment of the RCL to an Australian Business Number (ABN) rather than a physical asset such as a particular piece of land. In order to avoid the potential for farmers to circumvent repayment by holding a RCL against one business or one ABN, and reporting income against another, farm businesses with an RCL would be required to group their ABNs and report their activities on a single Activity Statement; this is facilitated by the fact that many farm businesses are already grouping their ABNs on the advice of their accountants.

Attaching the loan to an ABN has the further advantage of ensuring repayment in the situation in which the ownership of the farm business is rearranged or changed entirely. This would be handled with the requirement that on the sale or other transfer of the farm the loan would be paid in full. The repayment liability would transfer either to the ongoing activity of the business to which the ABN attaches or would become an income tax liability of the farmer. In the case of partnerships, the various parties are jointly and severally liable for any debts of their partnership and this would include an RCL.

In the case of the death of the farmer, the loan would be a liability against the estate. If the farm continues in operation, the new owners could apply to have the RCL rolled over whether they operate under the existing or a new ABN. In this latter case, the loan would continue to be paid out of the revenue stream of the farm business. Further, to insure against a different form of avoidance, we propose that the reconstitution of a partnership would require a new ABN in which case the ABNs of the former partnership would be required and again a request could be made to roll the RCL over to the new ABN.

A further possible concern relates to bankruptcies and what this would mean for the design of an RCL. It is important to note that bankruptcies are a rare occurrence in the rural sector as banks monitor their clients' financial positions and tend to encourage sale before bankruptcy occurs. That monitoring process would take account of the existence of the loan as one of the obligations of the farm business. In this approach Farm businesses that failed to disclose the existence of the loan to their banks would be acting illegally.

In short, tying a contingent debt to the revenue of the farm business would be administratively straightforward and this would minimise the significant potential for moral hazard to undermine such schemes if they were operated outside the tax

system. The use of a complicated production index adjusted for commodity prices, as suggested and explained in Baker (1974), would be avoided.

Combining RCL and FMDs

It should be clear that RCLs are consistent with the principles of the National Drought Policy and offer a fairer alternative to interest rate subsidies. An important point is that RCLs can be seen to be a mirror of FMDs in that, with the former, farmers essentially borrow from future good years rather than from past good performance. As discussed below, this is an important area in which RCLs are an improvement over previous and existing income smoothing schemes.

The scheme by combining RCLs with FMDs in a single farm business financial risk management program through which farmers draw down their FMDs and then have access to an RCL once their reserves are exhausted, possibly leaving a small amount of cash in the FMD for working capital. This would also address a significant limitation of FMDs, which is that new entrants may not have time to accumulate reserves before encountering a downturn.

Any government support program is ultimately paid for with taxpayers' money, and under the current guidelines for interest rate subsidies, an individual farm business can receive a grant of \$100,000 or \$500,000 over five years. While it is acknowledged that few, if any, farmers receive assistance of this magnitude, the grants amount to substantial transfers between the taxpayer and the farmer. One of the characteristics of farming is that farm families are often income-poor and asset-rich, which means that, although farmers are in short term difficulty during drought, over their lifetimes they are likely to be wealthier than the average taxpayer who funds their drought relief: the existing EC provisions are regressive transfers within the community, but a properly designed RCL would not have this property.

5. Conclusion

FMDs are the latest in a series of government schemes designed to smooth farm incomes. As early as 1969, drought bonds were available to assist farmers to put aside financial reserves in the good years to be accessed in future bad years, and the principle of providing farmers with a mechanism for managing climate risk by providing tools for income smoothing is well accepted. Our proposal to introduce a RCL is not a radical departure from this policy approach. A critical contribution is that we are addressing an important limitation of FMDs and their predecessors, which is that they are only useful to farmers who have had time to accumulate reserves before a downturn occurs. The right way to look at is that a RCL removes the limitation of only being able to borrow from past good years, allowing the farmer also to borrow from future good years.

It is important to note that both RCLs and FMDs are income smoothing risk management tools. FMDs are accumulated during high income years and reserves are built up to be drawn down in low income years. Similarly, because an RCL is repaid on the basis of capacity to pay, repayments are sensitive to the farm's financial situation and avoid the problem of mortgage-type loans which involve constant repayments irrespective of the borrower's capacity to pay. Thus an RCL can be seen to protect borrowers against the financial hardships associated with normal borrowings.

It is suggested that the RCL and FMD be combined in a single farm risk management program which allows farm businesses to move in and out of the two components of the scheme. As noted above, the move from 'credit' in the FMD into 'debit' through an RCL could occur before the actual FMDs balance was zero to leave the farm business with available cash flow for operating purposes. The threshold amount of FMD below which an RCL would become available would be a matter for policy but could be based on a formula linking the threshold to the size of the farm business.

This paper has set out to situate a proposal for RCLs for agricultural support in both the economic literature on the role of government in risk management and in the political tradition of government intervention to stabilise farm incomes. In recent years the political debate has shifted from largely equity-based arguments for income stabilisation towards a focus on risk management by farmers faced with fluctuating incomes. RCLs provide an additional and complementary risk management tool to the successful FMDs. We have proposed an approach which overcomes the problems of earlier proposals, such as Baker's (1974), as well as addressing many of the equity problems associated with current interest rate subsidy schemes. It is an incremental improvement on current policy settings and consistent with more recent innovative economic thinking about the role of government as a manager of risk.

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