

Revisiting revenue contingent loans for drought relief: government as risk manager*

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It is clear that Australian governments will provide assistance to farmers in drought, which is a rational political judgement supported by recent survey work suggesting strongly the pervasive existence among voters of agrarian sentiment. In this context, a reasonable question relates to what forms of assistance are most equitable for taxpayers and also have desirable properties for farm businesses. In this study it is argued that traditional and current approaches to drought assistance are not equitable and do not provide sufficient protection to farmers from default and thus insolvency risk. But there is an instrument available to government which can be designed to minimise taxpayer subsidies while at the same time delivering insurance for farmers against default: a Revenue Contingent Loan (RCL). Following the principles inherent in the Higher Education Contribution Scheme, a RCL is financial assistance repaid contingent on a farm's capacity to pay, meaning that loan defaults can be avoided. We model the revenue streams associated with a hypothetical loan of this type and illustrate the advantages for a farm business of these kinds of debt.

Key words: revenue contingent loans, drought, equity.

1. Introduction

In a predictable response, the government announced in 2015 that up to \$2.75 billion over 10 years from 2016–17 will be made available to assist farms and farmers affected by recent drought, in what is known as the *Drought Concessional Loans and Drought Recovery Concessional Loans* schemes. The policy involves loans at subsidised rates of interest being accessed by farmers across Australia, contingent on the location of the farm being established as being affected by drought. Repayment period of the loan is set at a maximum of 10 years, after which those assisted are required to seek refinancing from nongovernment sources.

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If the last 70 years of policy experience is a guide, it seems inevitable that Australian governments will continue to offer financial assistance to farmers in periods of drought. While it is a curiosity to the economics profession that a specific sector of production is singled out for assistance and subsidy, political scientists generally do not find this confusing. The reasons for and data pertinent to preferential agricultural policy treatment, labelled 'agrarian sentiment', are set out in Section 2.

If drought assistance is a political and policy predestination, a useful question is, what are the most equitable and effective public policy responses in this space? To start to address this issue, it is useful to describe the types of drought policy assistance that have been or are currently being used in Australia, and these take two broad forms for farms located in areas defined as being in drought: interest rate subsidies (which are essentially grants) to help alleviate the burden of farm commercial debt; and so-called concessional loans, involving subsidised loans of a traditional type. Section 3 describes and critically appraises these approaches.

There are two significant problems with Australian government drought policy approaches. The first is that direct grants and interest rate subsidies for farm properties are budgetary expenses without desirable redistributive characteristics; such outlays are financed by taxpayers who in general will have poorer lifetime financial experiences than the farmers usually assisted. Second, even though the concessional loans scheme now in place is less of an impost than normal commercial loans, financial assistance of this type does little to mitigate borrowing risk and can even exacerbate concerns with solvency because loans eventually need to be repaid in full; this is highly likely to require the debts being converted into commercial loans.

A main part of the study examines a drought policy approach which addresses both of the above concerns and involves an explanation of an application of the general policy instrument known as income contingent loans (ICL). An ICL is a debt that is repaid depending on a borrower's future income and has its international policy genesis in Australia in 1989 with the implementation of the Higher Education Contribution Scheme (HECS), an ICL for higher education tuition charges. Section 4 examines the conceptual basis of these types of policy assistance beyond higher education financing, with a focus on issues of risk management and the critical insurance aspects of ICL policy; the goal is to explain how his type of policy approach addresses and mitigates the major financial issue facing farmers, that of foreclosure risk.

In Section 5 new estimates of the revenue streams of a contingent loan applied to farm properties in Australia are presented for particular parameters of the policy. This is a replication and updating of the first exercise of this type, available in Kelly *et al.* (2004), and illustrates fairly clearly that an arrangement of the form suggested would be viable from the perspective of budgetary outlays. It is noted in the Conclusion that the institution of a policy reform of this genre would fit easily with, and provide a useful complement to, the Farm Management Deposit Scheme, an income

smoothing agricultural policy approach which is also consistent with government engagement motivated by the need for risk management.

2. Social and political context for drought policy

In order to understand the fraught and at times *ad hoc* nature of drought policy development in Australia, it is important to understand the social and political context in which these policy debates occur. Policy making is an interdisciplinary activity so realistic policy recommendations and modelling need to take account of political and societal factors that impact on the decision making process. One of the reasons agricultural policy has failed in the past has been due to policy makers' ignoring these important societal considerations (see e.g., Botterill 2001).

Of relevance to drought policy making is the pervasiveness of a set of values that are generally described as agrarian. In summary, agrarian sentiment attributes to farmers and agricultural activity a particular set of positive characteristics that can be traced back to Aristotle (and his contemporaries) and can be seen in the writings of Thomas Jefferson, JS Mill and others (Montmarquet 1989). In Australia, these sentiments have become known as 'country-mindedness'.

Country-mindedness and other forms of agrarianism, especially that of the US (see e.g., Johnstone 1940), share several key beliefs:

1. agriculture is a fundamental activity from which all other economic activity is derived;
2. the shift from hunter gatherer societies to settled agrarian communities allowed for the development of art and culture, and by implication civilisation; consequently, civilised societies owe a debt to farmers;
3. agricultural activity has a nobility of purpose and is morally uplifting and virtuous. This perspective is linked most strongly with the family farm and explains much of the rhetoric around the preservation of family farming as the 'backbone' of Australian agriculture; and
4. importantly in terms of the types of policy instruments that are culturally acceptable for delivering support to agriculture, agrarian values include a strong emphasis on economic independence and, in Australia, rugged individuality. This tends to preclude any suggestion that assistance to farmers is a form of welfare.

These sentiments are not only held by farmers. They are also shared across the broader community, and perhaps surprisingly, have persisted into the 21st century. Some 30 years ago, Don Aitkin (1985, p. 40) argued that country-mindedness was 'finished as an ideology'. While the decline in the importance of agriculture as both a contributor to GDP and as an export industry might suggest that this was a reasonable conclusion, it does not appear to be the case. There is both qualitative evidence of the ongoing cultural significance of

‘the bush’ (Waterhouse 2005; Botterill 2006, 2009) and quantitative evidence from surveys undertaken in 2009 (McAllister 2009; Cockfield and Botterill 2012), and 2015 (Berry *et al.* 2016), showing clearly that agrarian sentiment exists in contemporary Australia. The results also provide evidence of high levels of support for government assistance to the agriculture sector. The 2015 survey of rural and regional Australians (Berry *et al.* 2016) found:

...that agrarianism exists as a scientifically quantifiable concept identifiable through responses to four key propositions: that Australians should support policies aimed at improving the position of the agricultural industries; that working in agriculture and associated industries brings out the best in people; that agricultural producers make a major contribution to environmental protection and biodiversity conservation; and that the development of agriculture in Australia contributed to the development of the national character.

Data from a larger, follow-up survey currently under analysis show that this holds across the community – across locations, demographics and voting intentions.

These findings of the strength and persistence of agrarian sentiment are relevant to drought policy debate because they mean that providing drought relief to farmers is not just a concern of the Coalition, specifically the National Party, but is also of interest to those who vote for other parties. In spite of the fact that, at least rhetorically, climate variability has been treated by policy makers since the early 1990s as a risk to be managed by farmers rather than a natural disaster, the latter construction is still dominant in the media and the broader community.

In this context, drought provides powerful and effective television footage that brings the plight of farmers into the living rooms of all Australians. In describing media coverage of the drought of the early 2000s, Ward (2005, p. 85–86) wrote that reporters ‘used pictures of dusty paddocks, told heart-breaking tales of battlers in the bush, of mateship and hardship, and of farmers held hostage to an inexorable natural force’. These images tap into agrarian sentiment and evoke considerable community support. Against this backdrop, governments of all political persuasions would pursue hard-line first-best economic approaches at their electoral peril.

The impact of these sentiments can be seen in the failure of governments to sustain their commitment to a consistent National Drought Policy. The most comprehensive attempt at producing an economically rational and cohesive drought policy approach was announced by Commonwealth and State Ministers for agriculture in 1992; however, key features of the scheme were quickly amended in the face of severe drought and pressure from the community for greater government generosity to affected farmers (for a comprehensive coverage of Australia’s National Drought Policy, see Botterill 2003a,b, 2005; Botterill and Wilhite 2005; Drought Policy Review Expert

Social Panel 2008; Productivity Commission 2009; Intergovernmental Agreement on National Drought Program Reform 2013).

Against this political background, there is a clear need to develop sensible and effective drought relief. A number of measures have been attempted in the past from interest rate subsidies to concessional loans. But can the types of support usually provided be considered to be sound economic policy? For important reasons, now considered the answer to this question is no.

3. A brief critical appraisal of Australian Government approaches to drought relief

A comprehensive review of Australian drought policy is available in Botterill and Chapman (2009), and there is no need for this to be revisited here in any detail. But some summary points are in order.

First, it is useful to characterise drought policy as taking two broad forms:

1. Devices to facilitate income smoothing, such as drought bonds and other instruments which have evolved into the current Farm Management Deposits Scheme; and
2. Interest rate subsidies designed to reduce the burden of the repayment of commercial loans. A recently discontinued grant system of this form was the drought relief provisions of the Exceptional Circumstances (EC) legislation, which was replaced in 2015 with the Drought Concessional Loans Program.

It is reasonable to conclude from the literature that income smoothing facilitation is a desirable form of government intervention in agricultural production, although it is of interest to understand why farmers should be singled out, since farms are clearly not the only business group in the community that experiences income instability. In this context, 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 (Botterill and Chapman 2009):

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.

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. Importantly, policies designed to help smooth farm incomes are consistent with governments acting as risk managers, an issue explored more fully below.

The other major form of drought assistance has involved grants and interest rate subsidised loans. Until recently, the most important of these in terms of cost was the provisions available in the EC interest rate subsidy (grant) program. Under these guidelines, an individual farm business could receive a grant of \$100,000 per year or \$500,000 over 5 years (although there were very few grants of this order of magnitude). The principle flaw in this system, an issue now addressed, is that it is inequitable.

The most significant economic policy issue related to the provisions of EC is that the grants amounted to substantial transfers from the taxpayer to the farmers assisted. One of the characteristics of farming is that farm families are often income-poor and asset-rich, which means that although farmers are likely to be in short-term difficulty during drought, over their lifetimes they are very likely to be wealthier than the average taxpayer who funds their drought relief: the EC provisions were a clear example of a regressive transfer.

The EC grant arrangements have been discontinued and were replaced by the Drought Concessional Loans Program in 2014, which currently offers 5-year interest payment only loans for eligible farms, with subsidised rates of interest. The amounts range from \$50,000 up to a million dollars per farm, with an important characteristic being that after the 5-year period the debts must be repaid, implying a high likelihood that they then need to be converted into commercial loan arrangements.

It is clear that concessional loans will involve far lower subsidies to farmers than the program they have replaced, so the criticism that the new arrangements are regressive, while still true, is far less important. However, while the policy is more equitable, it has a different undesirable characteristic. This is that the policy does little to minimise foreclosure risk, and in some cases could even exacerbate concerns with nonrepayment and potential bankruptcy.

In the above context, it is critical to understand two things: just how important it is for farm owners to avoid the major costs associated with defaulting on a loan, and that any loan scheme based on fixed obligations associated with repayment on the basis of time rather than capacity to pay must exacerbate risk concerning default (and thus of foreclosure). In these circumstances, the loss of a property that may have been in the family for several generations becomes the major cost. And if this is the case, it matters that drought policy is motivated and designed to mitigate the risks of such an eventuality.

The concessional loans scheme might mitigate the short-term prospects of commercial loan default for a farm, although at some regressive cost to the budget. Once the 5-year period ends the borrowing property needs to

renegotiate the loan terms in the private market. It is thus possible that the system does not have any major advantages in the longer-term for risk diminution, and this will be true for any type of loan assistance that is not characterised by contingent repayment. This is the area we now turn to.

4. A contingent loan approach to drought policy: conceptual issues

4.1 Background

It is clear that Australian drought policy taking the forms of grants and interest rate subsidies with conventional loan arrangements are regressive and/or provide less than adequate default insurance to farmers. This then raises the issue of whether or not there might be an instrument that simultaneously reduces inequities and provides high levels of default insurance. The answer is forthcoming through an examination of contingent loan theory and policy, and this now follows. It is apposite to situate this discussion into the broad context of government as a risk manager.

4.2 Government as a risk manager¹

Over recent periods, there has been a considerable development in the application of economic principles to the literature concerning the theory, policy and practice of public finance. 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.

For example, in *When All Else Fails*, 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 U.S. 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 insurer of last

¹ The discussion in this section follows Chapman (2006) and Botterill and Chapman (2009).

resort), an efficient institution to manage and decrease the costs to citizens of the unavoidable uncertainties associated with human events.

4.3 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 HECS.

HECS, instituted in 1989, is an income contingent charge for tuition for Australian higher education students. It operates through students being given the option of paying tuition costs if and only when their future incomes exceed a certain annual level, which is about \$56,000 per annum currently. 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 if tuition is paid up-front. In 2016, students in typical 4 year university courses incur debts of between about \$24,000 and \$36,000 (depending on the courses taken) and for those working full-time after graduation, the median time of repayment is around 8–10 years. Other countries have adopted similar higher education loan arrangements, including New Zealand (1991), the UK (1997), Hungary (2003), Thailand (2006), South Korea (2011) and the Netherlands (2016). A detailed discussion of the history, conceptual basis and empirical consequences of these systems is available in Chapman (2014).

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 an adverse financial situation since if incomes are low no repayments are required; and two, for the same reason, there is protection against repayment hardship. Both features of HECS are attributable to the income smoothing and thus default insurance consequences of ICL, and there are important lessons to be understood from this policy experience with respect to potential applications of ICL-type policies to other areas of policy.

Since the introduction of HECS, there has been an intriguing development in economic research in Australia which has been motivated by the broad success of the policy. The basis to this analysis is the notion that if an ICL works in practice for the financing of student loans, it might be that the instrument has the potential to be used in other areas of social and economic policy reform. To date, there have now been as many as around 20 quite

different ICL research applications, including for the financing or payment of: R & D investments; extensions of paid parental leave; brain drain reparations for the governments of poor countries; rent relief for public sector housing; low level criminal fines; and the purchase of alternative energy devices. These examples and more are documented and explained in several publications (Chapman *et al.* 2004; Chapman 2006; AJLE, 2009).

4.4 The relevance of income contingent loans to drought policy

The critical issues associated with ICL policy are that a properly designed ICL has the substantial potential to deliver income smoothing and default insurance to farm borrowers, and to do so at minimal budgetary and collection costs for the government. The issue of default protection is extremely important for the farm sector, because this removes all concerns that the farm property can be repossessed in the event of a period of non- (or low) repayment of a loan due to adverse financial circumstances. Similarly, student debtors with an ICL do not face the prospect of ‘defaulting’ on their loans due to nonpayment and are thus protected from the loss of credit reputation that happens in all non-ICL student loan systems around the world; this can be seen to be one of the major costs of such policy approaches to debt.

Thus, a RCL can be argued to be a powerful government instrument that is able to provide both equitable and effective outcomes, policy consequences which as explained are not available from either grants or concessional loans. We now ask whether such an instrument could be devised as a policy response to the problem of drought in Australia and what the implications might be for revenue streams and government subsidies.

5. The policy approach and revenue estimates

5.1 Policy design

In the design of contingent loan instruments, it is essential that considerable attention is paid to both adverse selection and moral hazard to ensure that the repayment of debts is extensive. To achieve such an outcome for a farm-based contingent loan, two of the authors spent substantial time with an astute rural accountant, Michael Egan, to consider all the different ways that such a system could be exploited, and to devise ways to make a contingent debt operational. In the final analysis, the way for this to be achieved simply is to use the revenue stream of a farm business rather than farmer’s incomes, with one of the major reasons being that this information is accurately available in a farm’s Business Activity Statement. The reasons for the choice of this instrument and for an explanation and justification of the broad parameters and rules chosen, see Botterill, Chapman and Egan (2004).

In what now follows we update the approach adopted and reported in Kelly *et al.* (2004), and report modelling of a RCL for farm businesses, collected at fixed proportions of revenue of either 2 or 5 per cent, and for a debt of \$50,000 with a zero rate of interest. These parameters are examples only of course, and many other illustrations could have been used. The scheme has been analysed using very recent ABARES data and we have tested different scenarios for collection of the loan, as well as the impact on both government outlays and the financial position of different groups of farmers.

5.2 The data and scenarios

The exercise undertaken in 2004 (Kelly *et al.* 2004) simulated RCL for farm businesses starting in 1994 (year 0) under assumptions that farms repaid the loans from Year 1 onwards at the rate of either 2 or 5 per cent of gross farm revenue. The parameters selected for our 2016 scenarios are the same as those selected for the original 2004 simulations which allow us the opportunity to assess the relative stability over time of RCL revenue estimates. Apart from updating the original exercise, an important improvement of the modelling is that the simulation is now able to access more actual historical financial data than could the 2004 calculations.

ABARES provided the original historical data for this simulation and for our revisit. The revised data updated the original data by extending the time series from 1989 to 2015 (originally 2002). The annual gross farm receipts data used in the modelling are an aggregation of information from two annual surveys: the Australian Agricultural and Grazing Industries Survey and the Australian Dairy Industry Survey. The surveys cover farming establishments with annual revenues above a given threshold; over the period of the surveys, this threshold rose from \$20,000 in 1989, to \$22,500 in 1991 and from 2004 the threshold has been \$40,000 or more.

The updated data provide time-series coverage of six farming industries – wheat and other crops, mixed livestock-crops, sheep, beef, sheep-beef and dairy – from 1989 to 2015.² While it is possible to illustrate the differences in repayments between these industries and by State, we present only national aggregate results; thus, the annual revenue figures used are weighted averages of Australian farms in the above six industry areas. The data have been arranged in quintiles, and nominal receipts have been adjusted to 2016 dollars with the use of the Consumer Price Index.

To replicate the original modelling and approximate actual drought conditions, the revised simulation continues to use 1994 as the hypothetical loan year (Year 0) of a simulated period to 2015. Thus, revenue data from years 1995 through 2015 were used for Years 1–21.

² The farm industries included are ANZSIC06 Classes 0146 & 0149, 0145, 0141, 0142, 0144 and 0160.

5.3 Revenue quintiles

The revenue simulations involve the outcomes for farms with revenue in the lowest 20 per cent or quintile 1 (Q1), the top 20 per cent (Q5) and the middle 20 per cent (Q3, or median). However, the outcomes for these quintiles assume that farms that begin in the lowest, middle or top revenue quintile remain there for the entire period of the loan receipt and its repayment. This is unlikely to be true for all farms since a proportion of farms will experience economic gains and losses resulting in their relative well-being changing over time. To illustrate the significance or otherwise of this dynamic, we have simulated the loan repayment experience for a hypothetical category of farms which traverse the relative revenue positions of the distribution.

In the above context specifically, we assume that the so-called up-down category is one in which a farm starts in the bottom half of the lowest quintile and each year its revenue position improves until it ends up at the top of the distribution. After this, it is assumed that the farm's revenue goes in the reverse direction. To cover another possible dynamic, we have designed the 'down-up' category which moves farm revenues in the opposite direction to 'up-down'. That is, farms in this category start in the top half of Q5 and progressively move down the revenue distribution a step each year until they reach the bottom after which revenue improves again.

Figure 1 shows the annual revenue of the hypothetical up-down and down-up farms simulated over the time period modelled, illustrating the potentially important role played with respect to the dynamics of income change. For comparison, the figure also includes the revenue levels for a median farm in which it is assumed that our hypothetical farm begins in the middle of the revenue distribution and does not change category over the entire period.

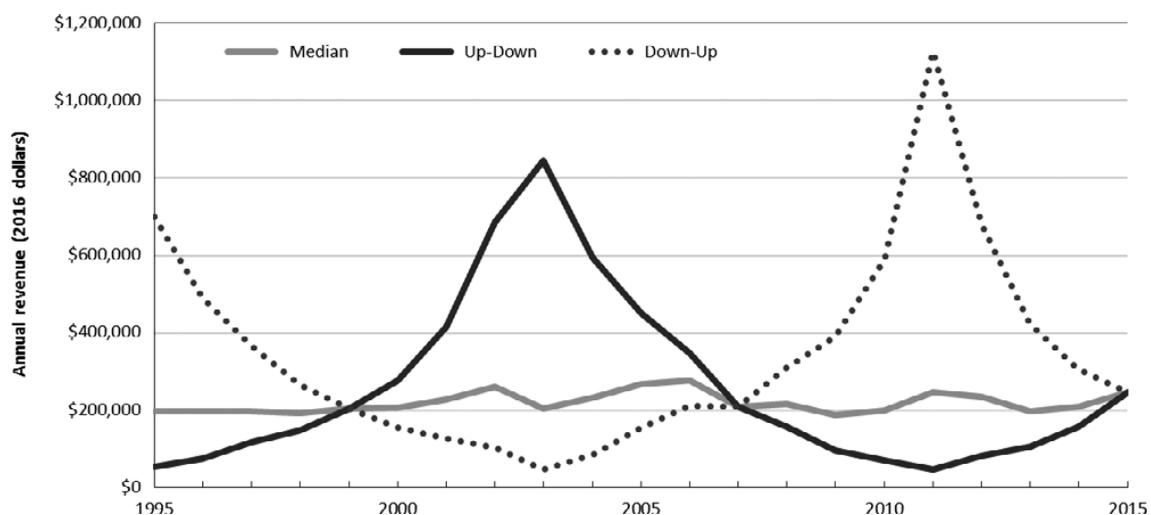


Figure 1 Gross revenue for 'up-down', 'down-up' and 'median' revenue categories, per annum (2016 dollars). Note: Up-Down refers to farms on the 10th revenue percentile in 1995 moving up 10 points per year until the 90th percentile is reached and then moving down 10 points per year. Down-up is the opposite trajectory. Source: Calculations based on ABARES data.

Our dynamic approach allows a significant amount of change in hypothetical revenues, it being quite clear that the up-down and down-up categories capture an extremely large potential variance of farm revenues, with the highest revenues being around 18–29 times higher than the lowest. These simulations of the hypothetical dynamic can thus be seen to represent very large hypothetical changes in a farm's position, which we consider to be an important advantage of our method.

The gross revenue of farms in the lowest and median quintiles has been relatively stable in real terms over the two decades from 1995 to 2015 (Figure 2). Q1 farms have averaged gross revenue of around \$51,000 in 2016 dollars while median farms have averaged just under \$220,000 in 2016 dollars. For those in the highest revenue quintile, the picture is somewhat different – there has been greater variability combined with an overall upward trend. The estimated average annual revenues of farms in Q5 moved from around \$700,000 in 1995 to approximately \$1.2 million after adjusting for inflation. This trend will impact on farms in the down-up and up-down categories, which we find to be extremely similar, as well as those in the highest revenue quintile.

5.4 The results for government

The data illustrated and the scenarios described were then used to examine the time streams of revenue that the government should expect from the hypothetical RCL schemes. In the original exercise, it was simulated that loans were given to farms during a drought. The repayment of these loans was then analysed from both a government and individual farm perspective. In the revised simulations, the scenarios have been repeated to update the original findings.

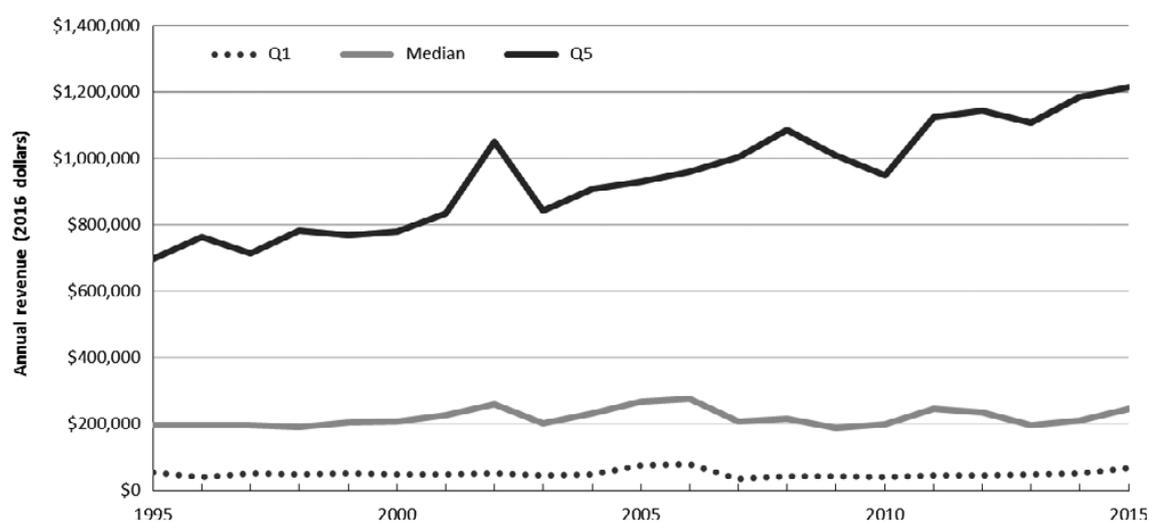


Figure 2 Gross revenue for farms businesses in the lowest, median and highest quintile' revenue categories, per annum (2016 dollars). Source: ABARES data.

In the original exercise, loans of \$50,000 were given to all farms in 1994 (Year 0). From a government perspective, the simulations suggested 10 years after the loans were made a significant proportion (nearly 60 per cent) of the amount lent will have been repaid based on a repayment rate of only 2 per cent of gross revenue. This increased to four-fifths (80 per cent) repaid if a 5 per cent rate is used.

However, only 8 years of farm financial data were available after 1994 for these original estimates and 'best-guess' estimates were required for future years. In the revised simulations, financial data are available until 2015. The revised estimates of the proportion repaid on one-off \$50,000 RCLs to all farms in 1994 are shown in Figure 3.

The revised simulation estimates that two-thirds (68 per cent) of the amount loaned would have been repaid after 10 years under a 2 per cent of total farm revenue scheme and 83 per cent would have been repaid under a higher repayment rate of 5 per cent. The updated estimates suggest that the original modelling of Kelly *et al.* (2004) derived lower repayment streams than the current exercise has, although the results are quite similar. This suggests a strong stability in estimates over more than a 20-year time horizon and should instil confidence that the RCL described will be able to deliver robust revenue streams well into the future.

The bottom line is that these findings suggest that from a government perspective, with a RCL policy the vast majority of \$50,000 loans provided during a drought would be repaid within a 10-year period if 5 per cent of revenue is used as the collection rate from farm revenues. These findings also suggest that financial farm data in real terms are both stable and predictable and that the simulation results are relatively robust.

Some analysts might be concerned with the result for government outlays that even with the relatively high rate of repayment out of farm revenues of 5

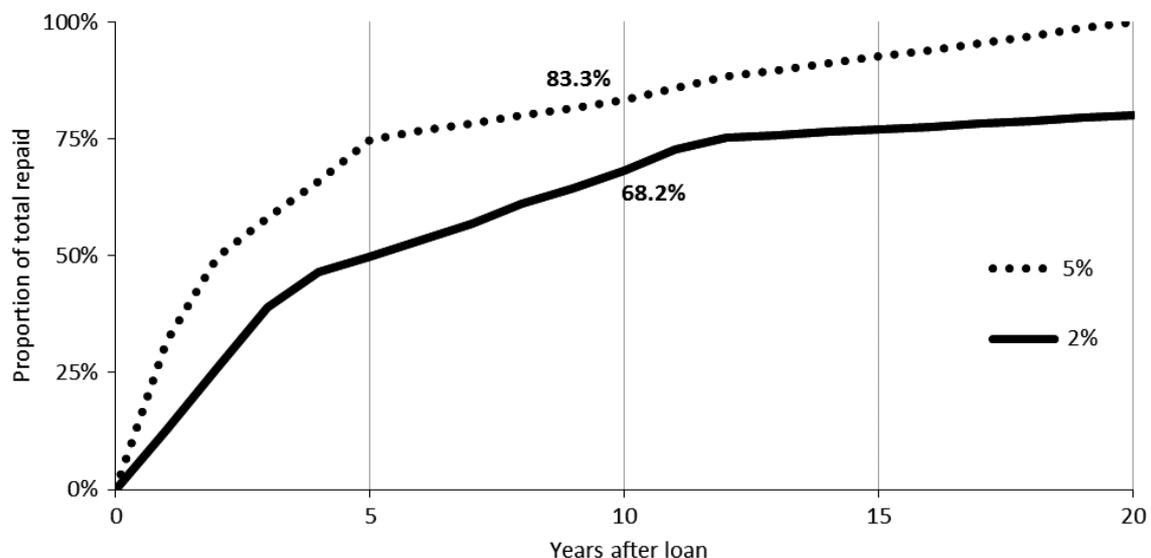


Figure 3 Proportion of one-off \$50,000 loans repaid over time, 2 and 5 per cent repayment rates. Source: Authors' calculations using ABARES data.

per cent, there are still subsidies from the suggested RCL. There are several points to be made in response to this result.

The first is that we have also explored a range of interest rate or loan surcharge regimes as a beginning of an analysis of the likely overall subsidies arising from the RCL. Our analysis reveals that an RCL can be designed to eliminate all subsidies, such as the use of an interest rate close to the government costs of borrowing and/or with the addition of a 10 per cent surcharge on the loan (meaning that with a borrowings of \$50,000, the farm business is required to repay an extra 10 per cent, implying a real repayment of \$55,000).

Second, drought relief policy has always entailed subsidies either in the form of interest rates being lower than the government's cost of borrowing or because assistance has been in the form of grants. With respect to the current concessional loans scheme, for example, under the assumption that the government cost of borrowing is of the order of two per cent per annum higher than the interest rate paid by borrowers, if the maximum amount is borrowed, the (undiscounted) cost to the budget would be around \$55 million over 10 years; in contrast, as noted, we are confident that an RCL can be designed in a way that results in much lower and even zero subsidies.

5.5 The results for farms

A different way of exploring the results is with respect to the time taken to repay an RCL for farms in different parts of the revenue distribution with these results being shown in Figure 4. The data reveal that for a 2 per cent RCL that, on average:

1. The highest revenue category farms (Q5) would have repaid a \$50,000 loan in 4 years; and

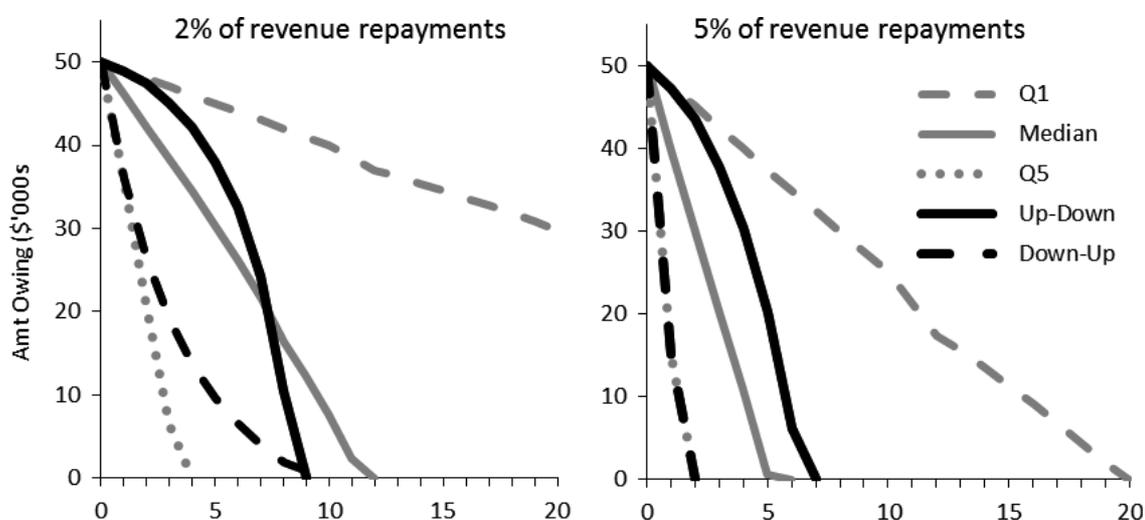


Figure 4 Amount of \$50,000 loan repaid over time by farm revenue distribution, 2 and 5 per cent repayment rates. Source: Authors' calculations using ABARES data.

2. The median revenue category farms would repay the loan in 12 years.

The updated estimates reveal that compared to the original calculations using less historical data, the time taken to repay is about two-thirds. It is important to note that with a 2 per cent RCL, farms with the lowest annual revenues (Q1) would have repaid less than half their debts after 20 years, implying that this rate is probably too low as they would likely require long-term government subsidies.

From Figure 4, and with respect to a 5 per cent RCL, the main results are that, on average:

1. The highest revenue category farms (Q5) would have repaid a \$50,000 loan in just 2 years;
2. The median revenue category farms would repay the loan in 5 years; and
3. Even the lowest revenue category farm (Q1) will repay the loan in 20 years.

The up-down case can be used to illustrate a benefit of RCL in revenue smoothing terms compared to the situation of the use of a standard bank loan in which repayments are determined only with respect to time, a so-called mortgage-type loan. That is, unlike RCL loans, those from banks require repayment irrespective of a debtor's capacity to pay. The fixed repayment amounts must be associated with variations in repayments as a proportion of a farm's gross revenue.

For this comparative exercise, we imposed the following assumptions on the bank loan: a principal of \$50,000; a 10-year time horizon for repayment; and an annual interest rate of 4.5 per cent per annum (which is real Reserve Bank of Australia 10-year average). This principal and interest rate then require an annual repayment obligation for a farm borrower of \$6,319. For comparability, we have included the same rate of interest on the two RCL scenarios. Figure 5 shows the repayment schedule as a proportion of revenue for a bank loan and the two RCLs.

The main result illustrated in Figure 5 is that the repayments of the bank loan for the up-down case are associated with large differences in the proportion of a farm's revenue required to meet the obligations of the debt. That is, as a proportion of revenue, the bank loan annual obligation varies from as much as just over 11 per cent to a low of around 1 per cent. Obviously, the RCLs have constant obligations as a proportion of farm revenues of 2 and 5 per cent. Interestingly, the 2 per cent RCL takes the same amount of time to repay as the bank loan of 10 years, while the 5 per cent RCL results in the debt being cleared within 7 years.

The critical point from Figure 5 is that income smoothing with important dimensions can be delivered with an RCL compared to a bank loan. This is the major benefit of an RCL, and it should be emphasised that if designed

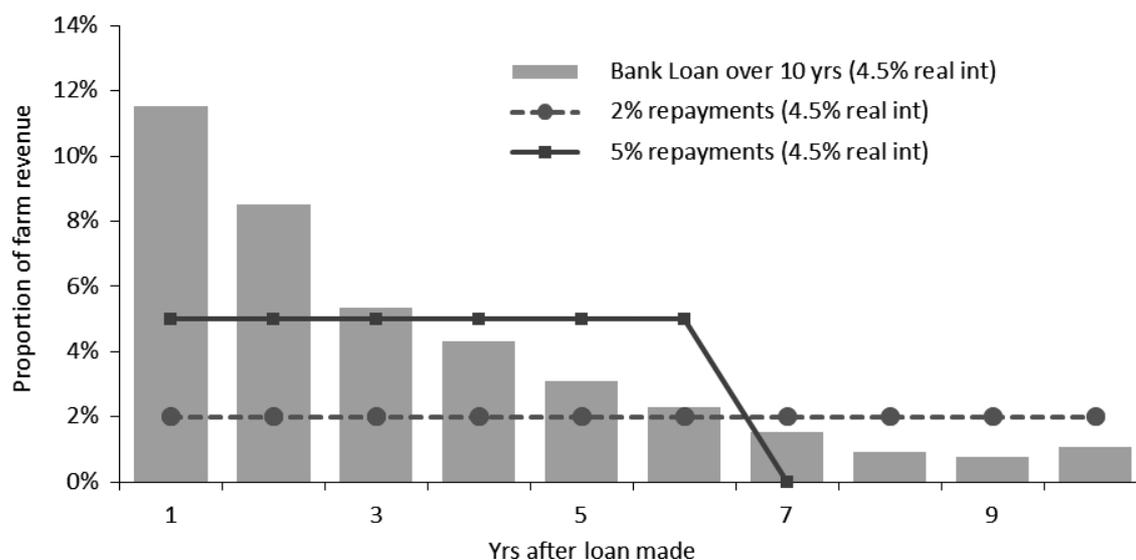


Figure 5 Proportion of annual gross farm revenue required to repay revenue contingent loan compared to bank loans for 'up-down' category. Source: Authors' calculations using ABARES data.

properly, there are also no prospects for default and thus foreclosure, loan characteristics which are never the province on noncontingent loans.

6. Conclusion

It is inevitable that Australian governments will provide financial assistance to farmers in times of drought, and this can be understood to be the result of widespread voter agrarian sentiment. If this is the case, a critical question for public policy concerns the nature and implications of particular forms of drought assistance. Specifically, governments need to examine what past and current approaches to drought relief mean in both equity and risk management terms.

It is clear that the grants made available through the previous EC program were likely to have been a regressive use of taxpayer resources. And while it is an improvement that this has now stopped, the replacement policy of concessional loans is still associated with some inequities. But what is more important than the residual inequities is that concessional loan arrangements will not significantly dissipate farm risk with respect to foreclosure prospects.

The only measure which has the potential to be both equitable and provide insurance against default is a contingent loan, in which repayments depend on a farm's capacity to meet obligations. Income contingent loans have this feature and have over the last 15 years or so been analysed in a research and policy space with great potential for social and economic policy reform. A RCL for farms in drought, or other adverse circumstances, is likely to be welfare enhancing for the agricultural sector and at the same time can be designed to cost very little for taxpayers.

We have presented modelling of contemporary RCL revenue stream estimates, in a replication and update of research from 2004. The results suggest a strong stability in terms of time taken to repay and the likely low subsidies from the government. Moreover, the income smoothing aspects of an RCL can be shown and these are clear.

A final point is the role of government as a risk manager, and in the context of the existing and generally efficacious arrangements of the Farm Management Deposit Scheme (FMD). An important issue is that RCLs can be seen to be a mirror of FMDs which allow farms to save from past good years to be used as insurance against future adverse periods. An RCL does the reverse, in that farmers are being allowed essentially to borrow from future good years to assist with a current drought. This could operate 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; it would also provide assistance for those with insufficient FMDs in a drought.

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