Government Farm Financial Risk Management Measures

Contents

Executive summary

Government policies aimed at addressing risk in Australian agriculture have a long and chequered history. While a range of government programs and schemes intended to improve management of financial risks is available to Australian farmers, there is little evidence to indicate that the majority of past policies can be considered successful in smoothing the volatility inherent in the sector.

The continuance of ad hoc policy responses to periods of adverse climatic conditions (particularly drought) is an indication that policy settings are still not delivering a predictable, stable operating environment for agriculture, in which Government intervention delivers the most efficient and fair distribution of taxpayer funds. In many cases, these ad hoc and often politically-motivated responses cause perverse and distortionary results within the sector.

This research has identified and described Australian Government farm financial risk management measures and those maintained by governments in other major developed countries in order to make recommendations on how Australian policy measures could be improved.

While investigating the agricultural risk policy frameworks of other countries can provide insight about alternative policy response options, it is important to recognise that every major agricultural nation has significantly different economic, cultural and environmental factors that form the context for their risk management approach. The research presented here has been analysed under the principle that Australian agriculture operates within the socioeconomic context of a democratic, open-market economy. This implies that the role of a government working to maintain such an economy is to:

- promote and maintain social equity,
- allow competitive markets to be the primary driver of the distribution of land, labour and capital for the production of goods and services,
- maintain regulations that deliver efficient markets for goods and services, and
- push against forces that contribute to social and economic instability.

This principle has been applied to both international and Australian learnings to understand how the current suite of policies addressing risk may be improved, resulting in the delivery of four major themes:

1. **Focus on families:** The preferred government policy regime addressing risk in Australian agriculture should focus on assisting individuals and families who are engaged in farm businesses.
2. **Incentivise preparation:** Policies directed towards farm businesses need to focus on incentives for preparation, innovation in risk mitigation, and an ability to smooth variability in income generation.
3. **Remove distortionary outcomes:** Increased investment in Government programs which assist individuals and families and incentivise preparedness can be achieved through the removal of measures that create perverse and distortionary outcomes.
4. **Improve data collection:** A rational analysis of the success or otherwise of existing measures would be aided by a commitment from State and Commonwealth Governments to collect appropriate data for the purpose of evaluating the impact of risk management and drought support programs.

1. Introduction

1.1 Background

Farming in Australia is often not easy even at the best of times. At the worst of times, government assistance is sometimes necessary. As highlighted by the fluctuations in farm income subsequent to recent drought conditions and natural disaster events, even the most financially resilient farm businesses can be put under severe pressure - and this occasionally requires government intervention.

Government farm financial risk management measures are *the range of programs and schemes implemented by governments which aim to improve farmers' management of financial risks.* Many government measures currently available to Australian farmers involve drought and natural disaster recovery, some of which include incentives for ongoing financial resilience. For example, the farm household allowance includes a financial assessment of the farm businesses and funding for training and the development of skills. Other government schemes, tools and incentives which aim to improve financial resilience are also available, such as farm management deposits (FMDs), tax averaging, tax concessions and tax deductions (Department of Agriculture, 2020a).

As climate change causes an increase in the frequency and strength of natural disasters, farmers will be under heightened pressure to cope with a wide range of financial risks - but with less time to recover before the next event occurs (McRobert et al., 2019). Government measures will likely play a crucial role in the continued strength of the agricultural industry; however, taxpayer funds are a limited resource. To ensure an efficient spend of the public dollar and maximum impact for farm businesses, this project has undertaken an investigation of options to improve and/or expand on current government measures.

Globally, farmers and agricultural supply chains have access to a large range of risk management tools ranging from simple, informal production measures to more sophisticated financial and index-based products to manage risk as well as government support. Policy addressing agricultural risk in most jurisdictions is generally structured around three key layers of risk which require different policy responses:

1. *normal risk* – i.e. frequent risk that should be absorbed and managed by farmers and /or informal tools
2. *marketable intermediate risk* – that which can be transferred or /pooled through market tools, and
3. *catastrophic risk* – which usually requires government assistance for recovery.

Mature and efficient commercial markets for risk management products are generally made possible through government support mechanisms. There are very few examples globally of viable agricultural income insurance markets that have established without government support. Many of Australia's major agricultural competitors have access to generous and heavily subsidised agriculture insurance schemes.

Examining the details of how other countries have developed policies, procedures and risk products for managing and ameliorating on-farm risk should provide valuable guidance for Australia in developing more robust and effective on-farm risk management. Several dimensions of the experience in other countries provides valuable guidance to Australia, including:

- how and with what tools various production sectors have addressed the challenge of risk management in other countries;

- the extent to which various countries and sectors have been supported through government risk management programs or left to rely on private commercial risk management products and services or a combination of both;
- types of risk that have been addressed;
- the extent to which policies have been aimed at directly ameliorating risks compared to facilitating transfer of on-farm risk to other parties; and
- identifying barriers to uptake and what steps have been taken to overcome them.

The observations from other countries need to be taken in context with the relative levels of various risks faced by producers and a consideration of the effectiveness which the various measures have achieved in shifting the risk profile of farm businesses in each country. It is also important to understand the cost, both to farmers and to governments, of the various risk management strategies that have been adopted.

Government-provided programs in Australia remain important in helping at an individual enterprise level, for example, the Managing Farm Risk Program and Farming Together Program. Farm Management Deposits (FMDs), a government program aimed at enhancing farm business viability and resilience, are very effective at mitigating against a range of risks. The FMD scheme improves management of financial risks by providing a tax-effective mechanism to build up cash reserves to cope with cash flow fluctuations.

However, the role of government in provision of risk management options is fraught. Questions consistently arose throughout previous Australian Farm Institute (AFI) research around the role for government in stimulating the risk management product market where there is now market failure or immaturity (Laurie et al., 2019).

Australian governments are now spending billions of dollars on ad-hoc risk mitigation for agriculture through drought payments and other emergency measures. If government is to consistently address risk in the broadest sense across the greatest number of subsectors, a better approach would be to investigate and support measures which enable and extend best-practice farm business management as widely as possible. Investing in RD&E to improve productivity and profitability in a changing climate, negotiating and maintaining beneficial trade arrangements and creating efficient infrastructure for supply chains, results in a profitable, resilient farm sector – thus enhancing the ability of the businesses that make up that sector to use profit/equity to mitigate risk (e.g. via FMD-type arrangements).

Yet even with best-practice risk mitigation widely adopted, Australia is likely to face severe occasional climatic events which will place even the most resilient businesses under pressure. A more mature and affordable market for income insurance products would provide another tool for farm business to consider in anticipation of these scenarios; noting that international precedent indicates it is unlikely that commercial insurance markets aimed at typical scale farm businesses will mature quickly without some level of government support.

Australian governments are already investing significantly in alleviating the consequences of production, market and institutional shocks in Australian agriculture. A thorough examination of the cost-benefit of that investment, compared to a more proactive approach which prioritises the stimulation of financially resilient and prepared farm businesses (which have access to mature insurance markets as one of their risk management levers) will enable a more efficient spend of the public dollar.

If some form of public support is required to establish mature insurance markets, it is critically important that this support be provided in a manner which is;

a) temporary,
b) does not lead to perverse outcomes such as sustaining unsustainable businesses,
c) continues to provide price signals for risk so that the relative viability and riskiness of agricultural businesses in different subsectors and regions is reflected in the market.

To increase the likelihood that these requirements are met it is important that the supply side of the equation is investigated as thoroughly as the demand side. Supply side factors (such as increase in re-insurance capital, leading to competition to develop and place innovative new products in the market) are equally important to the successful development of mature markets - and indeed may require less, if any, government intervention.

While the Australian agricultural sector has retained its resilience thus far, the continuing drought placed enormous pressure on farm businesses across Australia in recent years. In 2019, the sector recorded its third consecutive decline in the volume of farm production since 2016–17, reaching its lowest level since 2009–10. ABARES has forecast the volume of farm production for 2019–20 at similar levels to those recorded during the Millennium Drought; however, strong global demand and increased prices for Australian livestock products are providing an economic buffer. Meanwhile, water storage levels continued to fall across the Murray–Darling Basin, and the widespread severe bushfires of 2019's 'Black Summer' caused massive damage to farms and infrastructure.

The extremity of climate-driven challenges in 2019 presents a serious and present threat to the Australian agricultural sector's continued viability. Agriculture is more vulnerable to climate impacts than other economic sectors, and projected productivity declines are likely to impact all subsectors.

To enable effective policy responses for improved risk management, recognition of the sector-specific triple bottom line impacts of population growth and climate change on Australian agricultural subsectors is imperative. However, the role for Government in helping farmers manage the present and emerging risks should not be assumed and must be considered in context of what is best not for individuals in farming, but for the farming sector as a whole.

1.2 Principles

There is general acceptance that Australia should operate as a democratic, open market economy. This implies that the role of government in delivering an economy of this type is to:

- promote and maintain *social equity*,
- allow *competitive markets* to be the primary driver of the distribution of land, labour and capital for the production of goods and services,
- *maintain regulations* that deliver (so far as possible) efficient markets for goods and services, and
- push against forces that contribute to social and economic instability.

These precepts of open democratic government do not produce a simple prescription for how government should act to guide the social and commercial settings for a nation. Indeed, those objectives may be - and often are - in conflict with each other, requiring government on behalf of society to exercise judgement and find a balance in how it acts in particular circumstances.

In addition, at least two other realities bear on how government acts on behalf of society:

- it is not within the power of government to fix all social or economic problems - sometimes government intervention makes things worse, and
- every intervention by government causes a reaction and second-round effects, the costs of which must be weighed against the benefits of the initial action.

Across the world, and even among so-called western, capitalist democracies, countries have chosen different positions on this multi-dimensional spectrum of social and economic rules. These differences reflect a range of social, historical, political and geographic factors. Each country incurs costs and benefits as a consequence of the position it chooses to occupy on the socio-political spectrum and the rules by which it chooses to operate. The decisions they take also impose costs and benefits on their neighbours and trading partners. Thus, what is right for one country is not necessarily right for another and each country must chart its own course in the world according to the skills and abilities of its people, the resources with which it is endowed and the other conditions it faces.

It is evident that the management of financial risk by farm businesses in Australia - and the role that government might play in that process - cannot simply mirror the approach of other countries. Australia's climate and its geography are unique. Australia is a small, open, trading economy, remote from many of its markets, which sells two-thirds of its agricultural produce to other countries. In addition, the social contract between Australian consumers and food producers is different to that in other countries. As a result, the costs and benefits of government programs that affect farm business risk and their financial consequences in Australia will also be unique.

In Australia there is a general acceptance that businesses of all types need to manage their risks, big and small, as well as the financial consequences of those risks. The freedom and the incentive to find the right balance between risk and reward, the 'sweet spot' between driving business growth and being able to satisfy suppliers, lenders and owners has contributed to Australia's overall economic prosperity - and in agriculture, to its efficiency and trading success. Of course, agriculture is not the only industry that faces potentially crippling weather or market price risks. Businesses in tourism, construction and down to local ice-cream vendors (many of whom are more highly geared and operate on slimmer margins) may prosper or fail as a result of whether or not it rains or how hot the last summer was. The commodity price risks faced by mining industries and the input price risks faced by airlines or aluminium smelters are no less critical than those facing agricultural producers. Proposals that government programs intervene to address the financial consequences of weather events or price volatility in agriculture, especially if those programs involve expenditure of tax revenue, have to also resolve the equity considerations between agriculture and other risky businesses, and the taxpayers who forfeited the revenue to fund the programs.

The other reality is that risk is inherent in agricultural production. Government programs cannot eliminate that risk; at best, they can ameliorate its financial impact by facilitating better management within the farm business or facilitating the transfer of risk to a second party at some agreed cost. Ultimately the financial and economic cost of risky events must be realised by Australia and Australian citizens. We can only choose how that cost is distributed across the community.

In this research project, government farm financial risk management programs (whether existing or proposed) have been assessed and considered in the context of the economic realities and trading conditions Australia faces, along with the Australian Government's responsibilities to promote and maintain equity and address market failure (only) if it has the power to do so, to promote efficiency and maintain stability. As noted, these are often competing objectives and intervention by government has costs and second-round effects which must be considered.

1.3 Scope and methodology

Project objective:

To identify and describe Australian Government farm financial risk management measures and those maintained by governments in other major developed countries, and to recommend how Australian government measures could be improved and/or expanded.

The project has been executed in the following stages:

Stage 1: Engagement with Farmer Reference Group

A group of farmers were selected to act as the farmer reference group (see Appendix for list of participants). These individuals have extensive experience and knowledge in the subject matter and represent a diverse range of commodity groups and geographical areas of Australia. The research team met with the reference group multiple times throughout the project. They have acted as a source of information, sounding board for ideas and ground-truthing findings and recommendations.

Stage 2: Desk review

An extensive desk review was undertaken guided by feedback from the farmer reference panel and project collaborators.

Stage 3: Survey

A comprehensive survey was conducted by the project coordinators which included questions on policy interactions with agricultural risk management. The findings of this survey were considered in report analysis.

Stage 4: Interviews

Ten interviews were conducted with key informants and stakeholders using a semi-structured questionnaire.

Stage 5: Synthesis and Analysis

Findings from the desk review, interviews and engagement with the farmer reference panel and other subproject teams were synthesised into a set of conclusions and recommendations.

2. Risk profiles

A risk profile is effective as a planning and management tool when it identifies and quantifies specific risks faced by a business. Corporations and public companies devote considerable time and resources identifying, quantifying and managing the various risks to the stability and profitability of their business. A financial risk profile is a more complex matrix of pure financial risk (associated with the availability and price of debt finance) and the effects of other categories of risk on the financing of a business.

A risk profile for farm business will include weather risks (rain, hail, frost, flood, temperature, wind) which are very location-specific and may vary across a farm. Yield risks for crops and pasture which interact with the weather risks are also affected by the varieties chosen, pest and disease risks, and soil type which also vary across a farm, often within a paddock. Market price risks vary according the markets targeted, the product types that the farm chooses to produce and the timing of the production cycle. Other risks such as availability and price of inputs, labour availability and skills, insurable risks such as fire and theft, succession and key person risks are also highly specific to each business.

Attempts to characterise agricultural risks at an industry or national level overlook many of the specific risks facing individual businesses in order to focus on variation in national production of major commodities or on the exogenous risk factors associated with weather and market prices. A description of the exogenous risks facing an industry can characterise the environment in which businesses operate but will not provide information about the impact of the risks or how businesses act to mitigate those risks. Even so, there is very little recent published work of this type profiling the agricultural risks in Australia or other developed countries. A selection of recent published assessments is presented in the following sections. Some of these discuss aggregate commodity price and production volatility while others consider volatility in farm incomes. The latter are of more interest when considering farm financial risk.

2.1 Volatility of prices and farm production

Keogh, (2012) presented indices of the volume and value of crops, livestock and total agriculture across 15 mostly developed economies based on published FAO[1] data (Table 1). This data showed that Australia's output of crops was more volatile both in volume and value than all the other countries considered. However, the volatility of Australia's output of livestock ranked among the middle of the countries considered, less volatile than Uruguay, Chile and Argentina, as well as the Netherlands and Poland.

Table 1: Index of volatility of national agricultural output by value and volume 1961 -2009 (average volatility for 15 nations = 100)

Country	Value of output			Indexed volume of output		
	Agriculture	Crops	Livestock	Agriculture	Crops	Livestock
Argentina	135	123	151	115	107	138
Australia	186	204	91	143	173	119
Brazil	73	69	67	87	86	63
Canada	86	122	124	103	125	80
Chile	82	60	103	127	81	178
Denmark	43	90	124	63	98	57

[1] Food and Agriculture Organization of the United Nations

France	74	77	32	73	76	51
India	89	66	38	69	56	45
Mexico	72	55	35	82	61	131
Netherlands	123	91	154	102	81	131
New Zealand	76	80	93	74	114	75
Poland	102	110	146	113	104	123
South Africa	98	111	100	110	132	94
USA	65	67	128	77	90	43
Uruguay	201	152	57	162	116	172

Source: (Keogh, 2012)

Keogh also calculated an index of volatility of the aggregate value of output of various agricultural commodities in Australia's national accounts (Table 2) over five decades from 1961 to 2009. This showed that the value of output of grains and oilseeds was generally more variable than the output of other agricultural commodities, but the volatility of each commodity varied significantly from one period to another. Generally, the output of extensively produced commodities (grains, beef, sheepmeat, wool) were more volatile than intensively produced commodities (such as fruit and nuts, vegetables, pork and poultry). The extensively produced commodities are also those from which the biggest proportion is exported.

Table 2: Index of relative volatility of annual value of production of major Australian agricultural commodities

Commodity sub-sector	**Whole period**	**1961-70**	**1971-80**	**1981-90**	**1991-00**	**2001-09**
Fruit and nuts	57	61	66	32	40	79
Vegetables	62	91	64	67	41	56
Grains and oilseeds	195	190	149	303	255	286
Dairy	103	107	90	40	113	130
Beef	128	119	164	94	58	51
Sheepmeats	108	68	181	87	56	101
Pork	78	69	123	43	29	73
Poultry	60	111	31	32	50	27
Wool	101	82	87	216	131	84
Sugar	109	103	45	86	227	112
All commodity average	*100*	*100*	*100*	*100*	*100*	*100*

Source: (Keogh, 2012)

Keogh also presented a comparison of the volatility of prices of beef, wheat and wool in Australia over the period 1980 to 2011 (Table 3). This showed wool to be the most volatile prices over that period, contributing to the volatility seen in the National Accounts value of output of wool. Wheat prices were also highly variable over the three-decade period in a pattern different from other commodities.

Table 3: Index of relative volatility of price for major Australian agricultural commodities

Commodity	Price series	Source	Between commodities	Within commodities over time			
			1980-2011	1980-89	1990-99	2000-11	Average
Beef (export)	Average monthly export price $A, (1983-2011)	Westpac and MLA	82	86	132	82	100
Beef (domestic)	Eastern Young Cattle Indicator (EYCI) monthly, (1996-2011)	MLA	74		119	81	100
Wheat	US No.1 Hard Red Wheat FOB USA. Monthly, (1980-2011)	IMF	117	57	110	133	100
Wool	Eastern Market Indicator. Monthly average (1992-2011)	AWEX	126		103	97	100
Average			100				

Source: (Keogh, 2012)

It is important to note that these indices of volatility are calculated at an aggregated national level and do not reflect the volatility of value of output or prices that an individual farm business would experience. Differences in farm size, mix of products delivered to market and the markets targeted (especially domestic versus export) are some of the factors that differentiate the volatility in returns of an individual farm from an aggregated measure of volatility. In addition, volatility in components of farm returns may offset each other such as prices of inputs and outputs, or production volume and commodity price.

The relative importance of some of the factors that mitigate volatility in farm returns and financial risk was investigated by Anton & Kimura, (2012), who found that diversification of production was a major component of the strategy used by farm businesses to reduce risk in the four countries studied (Figure 1).

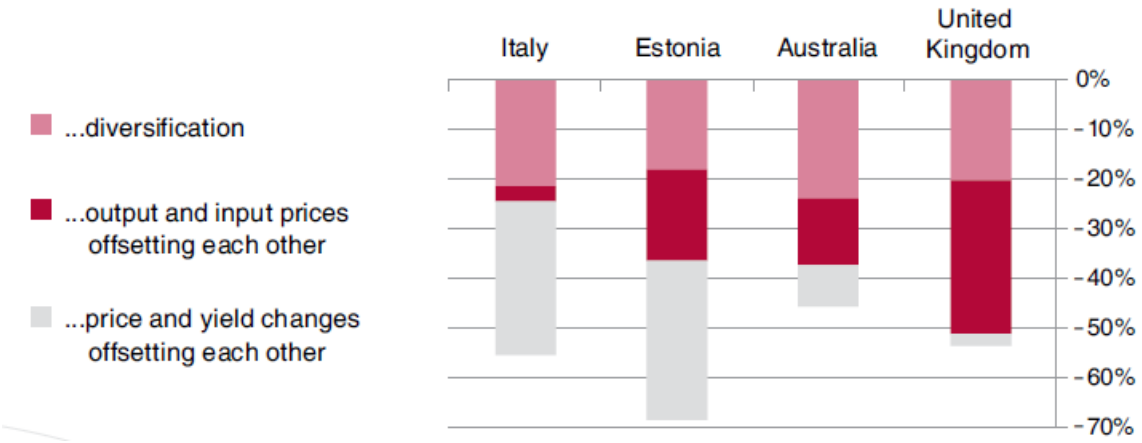

Figure 1: Links between different source of risk.

Source: (Anton & Kimura, 2012)

Among those countries considered in the analysis, in Australia, diversification of farm output was the strategy that made the biggest contribution to mitigating volatility in farm business returns.

A more recent analysis of volatility of Australian agricultural production is presented by Laurie et al., (2019) for the period 2001 to 2016. The authors estimate volatility by calculating the standard deviation of prices and of volume of production for various commodities in Australia and also for the all-commodity aggregates of price and volume. This is a similar approach to that used by Keogh, (2012) although volatility is estimated separately for aggregate volume of production and for prices. Table 4 shows the author's estimates of the relative volatility of agricultural production over the period studied. Production of wheat and sheepmeat were about five times more volatile than the more intensively produced commodities dairy and pork. As was observed by Keogh, (2012), this study also found significant differences in volatility between commodities in the various periods, with some rising over time and others falling.

Table 4: Index of relative volatility of Australian farm production (based on historical time series data 2001 to 2016)

Sector	Whole period (2001-2016)	2001-2009	2010-2016
Beef cattle	97	104	85
Sheepmeat	215	202	248
Wool	43	46	39
Grains (wheat)	296	323	224
Cotton	115	78	173
Sugar	62	57	72
Dairy	34	27	46
Pork	39	46	30
Poultry - eggs	55	81	35
All commodity average	100	100	100

Source: (Laurie et al., 2019)

Table 5 shows estimates by Laurie et al., (2019) of the volatility of prices for agricultural commodities. Prices of eggs, cotton and wheat appeared to be the most volatile over the period studied while pork and dairy prices were less volatile. Again, there were rises and falls in the volatility of prices for different commodities in various periods, but without any clear trend.

Table 5: Index of relative volatility of market prices for Australian agricultural commodities (based on historical time series data (2001-16)

Sector	Whole period (2000-2016)	2000-2009	2010-2016
Beef cattle	79	58	112
Sheepmeat	93	98	96
Wool	88	94	89
Grains (wheat)	127	163	65
Cotton	138	73	210

Sugar	87	109	59
Dairy	77	94	58
Pork	56	71	26
Poultry - eggs	154	141	187
All commodity average	100	100	100

Source: (Laurie et al., 2019)

2.2 Volatility of farm income

There is a wider literature addressing farm income volatility, although most articles discuss farm incomes in specific countries, the EU as a group, or the USA. None provide a robust international comparison between countries. The following reviewed here provide some recent information or analysis of the volatility of farm income in the UK, EU, USA and Australia.

2.2.1 UK farm income

The UK Department for Environment, Food and Rural Affairs (DEFRA) publishes details of farm income annually. Table 6 shows farm incomes at current prices and in real terms at 2018-19 prices for a range of farm types from 2013-14 to 2018-19. The table provides an indication of the amount by which farm business incomes vary from year to year. From this data we calculated the coefficient of variation for the current price series as a measure of the volatility of farm income. The coefficient of variation of farm business income aggregated across all types of farms over the six years was 19%. For cereals and general cropping the coefficient of variation of farm business income was 22.5% and 27.9% respectively. For grazing livestock in lowland and less favoured areas (LFA), the coefficient of variation of farm business income was 21.3% and 29.0% respectively.

Table 6: Average farm business income per year (£/farm)

Farm Type	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2017/18**	**2018/19**	**% Change 2017/18 to 2018/19**
At Current prices								
Cereals	49,600	45,000	35,500	43,100	64,200	62,100	67,300	8%
General Cropping	67,600	52,000	62,600	70,100	93,300	87,200	106,400	22%
Dairy	87,800	83,800	43,900	50,000	119,700	118,500	79,700	-33%
Grazing Livestock (Lowland)	15,100	18,500	12,000	16,100	21,900	20,500	12,500	-39%
Grazing Livestock (LFA)	14,500	14,600	19,000	27,000	28,300	27,000	15,500	-42%
Specialist pigs	65,200	49,400	21,600	57,800	31,300	29,800	29,600	-1%
Specialist poultry	157,200	126,800	106,700	54,200	96,000	94,800	74,700	-21%
Mixed	29,600	21,600	18,400	28,800	41,800	43,400	45,500	5%
Horticulture	33,900	31,500	34,400	43,800	47,700	46,700	52,100	12%
All types	**43,100**	**39,600**	**31,600**	**38,000**	**56,500**	**54,100**	**50,400**	**-7%**

In real terms at 2018/19 prices								
Cereals	53,800	48,200	37,600	44,700	65,500	63,300	67,300	6%
General Cropping	73,400	55,600	66,400	72,700	95,100	88,900	106,400	20%
Dairy	95,300	89,600	46,600	51,800	122,000	120,800	79,700	-34%
Grazing Livestock (Lowland)	16,300	19,800	12,800	16,700	22,300	20,900	12,500	-40%
Grazing Livestock (LFA)	15,700	15,700	20,100	27,900	28,900	27,500	15,500	-44%
Specialist pigs	70,700	52,900	23,000	59,900	31,900	30,400	29,600	-3%
Specialist poultry	170,500	135,700	113,100	56,100	97,900	96,700	74,700	-23%
Mixed	32,100	23,100	19,500	29,800	42,600	44,200	45,500	3%
Horticulture	36,800	33,700	36,400	45,300	48,600	47,600	52,100	9%
All types	**46,700**	**42,400**	**33,500**	**39,400**	**57,600**	**55,100**	**50,400**	**-9%**

Source: (DEFRA, 2019)

The amount of variability in the income from the agricultural production on various types of farm is masked by the magnitude of government payments received by farmers.

Figure 2, also from DEFRA, (2019) shows the components of farm business income. On average, more than 60% of farm business income is derived from the Basic Payment Scheme (the principal EU farm income support scheme) and agri-environment payments by the UK government. In the cases of grazing livestock (lowland and LFA) the government payments turned losses from agricultural activities into positive farm business incomes.

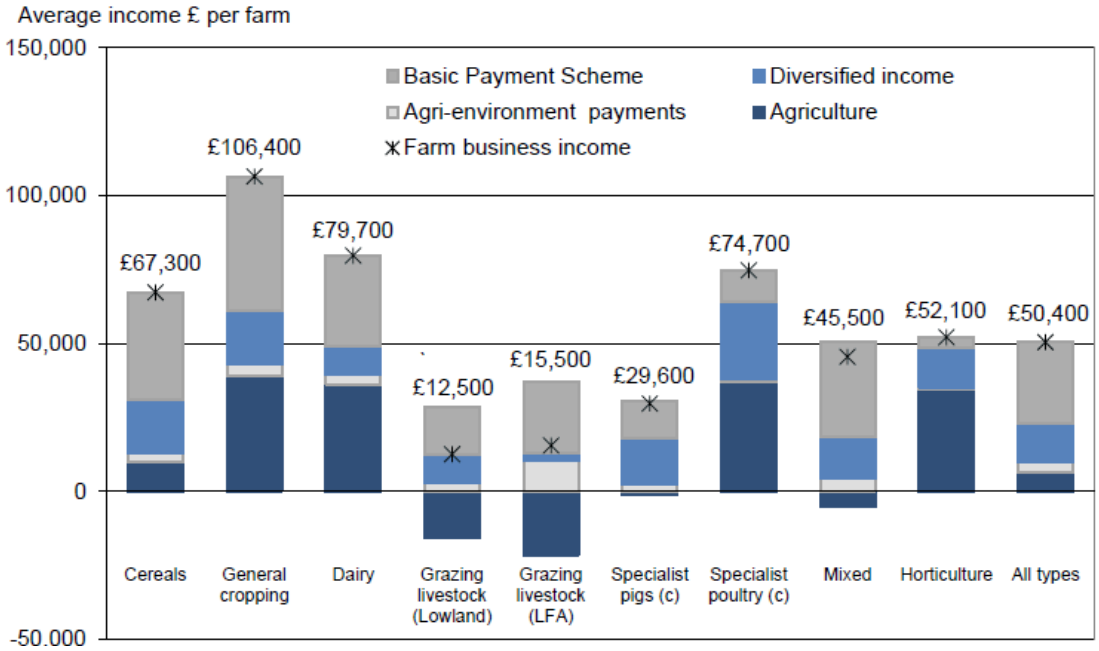

Figure 2: Farm business income by cost centre 2018/19

Source: (DEFRA, 2019)

These government programs that provide substantial financial support to farmers are not specifically aimed at addressing farm business risk. The EU Basic Payment Scheme is an income support measure for farmers, the payments from which are based on the farm area and not related to the volatility of production or income. The UK agri-environment payments are aimed at limiting the impact of agricultural production activities on sensitive environmental areas and are also not related to agricultural business risk. However, because these government payments are more stable than the income from production activities, they inevitably reduce the volatility of total farm business income and have potentially far reaching effects on the financial structure of the farm business and the strategy adopted by producers for addressing risk arising from agricultural activities.

2.2.3 US farm income

Key et al., (2017) analysed farm household income volatility in the USA over an 18-year period from 1996 to 2013 using survey data from a sample of 27,515 farm businesses. The study assessed income volatility by measuring the absolute shift in income from year to year (whether positive or negative). Results were reported for all farms and separately for livestock and cropping farms and analysed income from agricultural production activities (farm income), off-farm income and total farm household income. Table 7 summarises the results of this analysis. The authors found the median absolute year to year change in farm income was $260,850, more than 180% of the mean farm income of $140,591. The volatility of income from livestock farms relative to farm income over the period from 1996 to 2013 was slightly greater than for all farms with a mean absolute change of $216,800 compared to the mean income of $110,749, representing an average 196% change in income from year to year. For crop farms the mean absolute change in farm income from year to year was 179%.

By comparison, mean absolute year to year change in farm household income (which includes off-farm income) for all farms was 142% (compared to 180% for farm income). For all farms, the mean absolute change in off-farm income was 87% of the mean off-farm income. In most (though not all) instances, off-farm income acted to stabilise the farm household income against the variability of the farm income. However, it should be noted that in some years (and on some farms) the variation of off-farm income was synchronised with the variation in farm income, effectively augmenting the volatility of farm household income.

It should also be noted that for all farm types, all the income categories and all the absolute changes in incomes, the means substantially exceed the medians, indicating that the distribution of farms by income is skewed by some very high incomes. A feature of the survey upon which the analysis is based is that it includes so-called 'residence farms' where the gross income is less than $350,000 per annum and the operator indicated a primary occupation other than farming. The authors do report that income is more volatile for smaller farms.

Table 7: Measures of volatility of income of US livestock, crop and all farms (1996-2013)

All farms	**All Farms**	**Livestock farms**	**Crop farms**
Farm income			
Median ($)	48,057	35,598	71,223
Median absolute change between years ($)	86,462	63,765	123,903
Mean ($)	140,591	110,749	172,163
Mean absolute change between years ($)	260,850	216,800	308,406

Mean standard deviation between years ($)	184,449	153,301	218,076
Share negative in at least 1 years	0.46	0.49	0.44
Share negative in both years	0.14	0.15	0.11
Mean absolute arc percent change	125.2	124.2	126.9
SD of arc percent change	143.5	143	144.2
Mean absolute CV	1.35	1.37	1.35
Off-farm income			
Median ($)	33,037	31,261	34,647
Median absolute change between years ($)	16,793	15,149	18,056
Mean ($)	57,027	55,333	57,650
Mean absolute change between years ($)	50,438	47,943	52,538
Mean SD between years ($)	35,665	33,901	37,150
Share negative in at least 1 year	0	0	0
Share negative in both years	0	0	0
Mean absolute arc percent change	94.1	94.3	95
SD of arc percent change	118.4	118.6	119.1
Mean absolute CV	0.67	0.67	0.67
Total household income			
Median ($)	98,893	83,742	125,176
Median absolute change between years ($)	100,925	77,470	135,954
Mean ($)	197,617	166,082	229,813
Mean absolute change between years ($)	281,811	239,455	327,068
Mean SD between years ($)	199,270	169,320	231,272
Share negative in at least 1 years	0.26	0.25	0.28
Share negative in both years	0.04	0.03	0.04
Mean absolute arc percent change	105.2	102.8	108.6
SD of arc percent change	126.3	124.4	128.7
Mean absolute CV	1.06	1.03	1.1

Observations	27,515	13,151	14,009

Source: (Key et al., 2017)

In the Key et.al. analysis, as with other studies of income volatility, it is important to appreciate the difference between aggregate measures of variation in income and individual income volatility. In the above study the authors presented a graphical comparison of the variation of median farm income of all commercial farms and of a typical commercial farm. Figure 3 shows the median US national farm income for a commercial farm household (with at least $350,000 in gross cash farm income, adjusted for inflation) between 1999 and 2014 and the annual farm income of a hypothetical, typical commercial farm. The effect of aggregation across the range of environments, classes of output and sizes of business is to mask the extent of the year to year income variation experienced by an individual within the population.

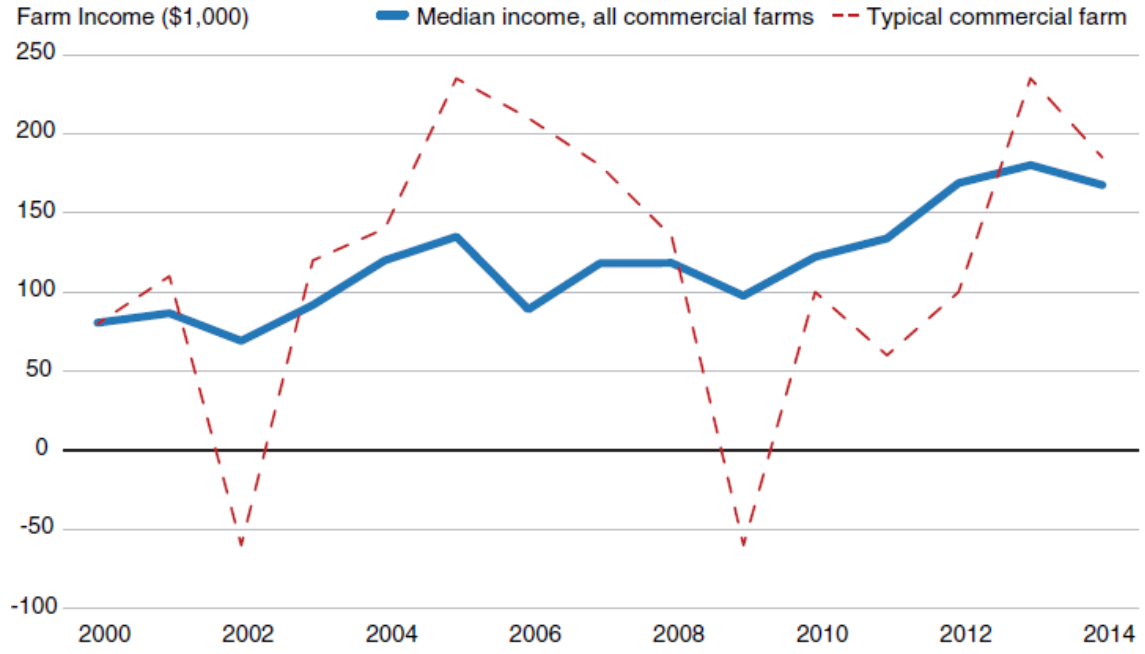

Figure 3: US farm income variation over time

Source: (Key et al., 2017)

2.2.4 EU farm income

Ecorys and Wageningen Economic Research, (2017) presented a detailed study of agricultural risk management in the EU which examined various classes of risk and income volatility over the period 2007 to 2013. The results are derived from data from the Farm Accountancy Data Network (FADN) established by the EU Commission. The FADN gathers accounting data from a sample of approximately 80,000 farms from Europe's 5 million farm holdings.

The authors calculated the coefficient of variation (CV) of Family Farm Income as the measure income volatility. Family Farm Income includes the net return from farming activities as well as income from subsidies and farm support measures provided by the EU and member country governments. The measure of volatility is calculated separately for each country and for a range of farm types is shown Appendix 8.3 Coefficients of variation of family farm income for different farm types and EU Member States over the period 2007-2013. The results show a CV for income across all EU countries for the period from 2007 to 2013 of 91%. The degree of volatility is similar among most of the various farm types, with field crops having a CV of around 85-90% and most livestock

industries being around 90-100%. The two industries that are most notable are 'grainivores' (feedlots) with a CV of 122% and specialist dairying with a CV of 67%.

The authors found marked differences in the volatility of farm income between EU countries. The Family Farm Income of Belgian farms (BE) had a CV of 51% over the period of the study, less than one third of the CV of Family Farm Income of Slovakian farms (SK) at 186%. The authors note that across Europe and within countries there is a lot of variation in the relative importance of the various sources of income volatility but noted a trend for greater climatic variability in the south, affecting France, Italy, Spain, and Greece among other.

Further analysis by the authors found that in the 2007-13 period, 34% of farms in the EU experienced an event in which Family Farm Income fell by 30% or more below the farm's average. The proportion of farms experiencing a Family Farm Income 30% or more below the farm's average were remarkably similar across the various farm types ranging from 28% of specialist dairy farms to 37% of grainivore farms.

The level of volatility in Family Farm Income is significantly affected by the subsidies paid to EU farmers. The table presented in Appendix 8.4 Share of direct payments in farm revenues by sector and member state (2007-13 averages)shows the share of direct payments in farm revenues, ranging from 7% to 15%. Direct payments are part of the so-called first Pillar of the Common Agricultural Policy (CAP) of the EU. These programs do not involve co-financing from member countries and comprise around 70% of the share of CAP budget expenditures in farm income. The direct payments do not include income derived through the EU risk management programs which include a wide range of subsidised insurance arrangements.

It should be noted that the table expresses the direct payments as a share of farm revenue, not of family farm income. In 2013, FADN recorded that Family Farm Income represented 21% of revenues so that the direct payments are a much higher share of Family Farm Income. At this level, if direct payments comprised 10% of Family Farm Revenues, they would comprise 48% of Family Farm Income. The median share of direct payments in farm revenues over the period 2007 to 2013 was about 12%, but the median share in family farm income per sector is much higher, ranging from 16% to 88%.

The study discusses the range of insurance products that are available to EU farmers but does not provide direct evidence of the extent to which these products are subsidised by the EU, or their impact on farm incomes.

Insurance is available for:

- Crops – climate risks
- Crops – disease risks
- Crops – price, revenue, margin, income risks
- Livestock – disease risks
- Livestock – price, income risks

The data presented shows that the uptake of crop insurance products varies across countries, crops and types of risk insured but overall around 60-80% of farms are covered. The authors indicate that subsidy rate in the EU is generally around 65% of the premium. The uptake of livestock insurance is less clear but appears to be overall around 20-50% with the subsidy rate ranging for 20% to 65% on different insurance products.

2.2.5 Australian farm income

Comparable in-depth studies of farm income volatility in Australia are not available. A perspective on income volatility can be obtained by reference to the ABARES broadacre farm survey results. Figure 4 shows the movement in Total Family Income for 'All industries', 'Wheat and other crops', 'Sheep' and 'Mixed Livestock' farms as measured by the ABARES Broadacre Farm Survey for the years 1990 to 2019.

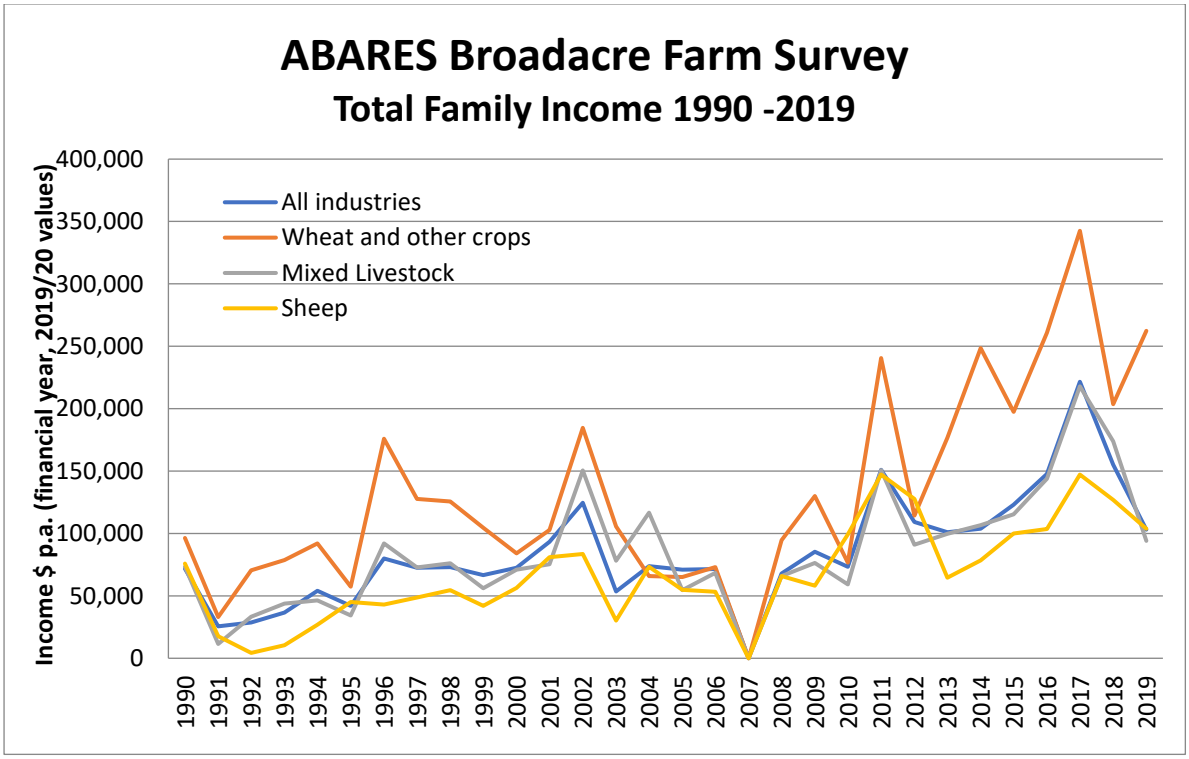

Figure 4: Total Family Income by farm type 1990-2019

Source: Compiled by the author from data at ABARES (2020)

Total Family Income is defined as the family share of farm cash income less family share of depreciation, plus all off-farm income of the owner/manager and spouse. A calculation of the coefficient of variation of Total Family Income for 'Wheat and other crops' farms is 57% compared to 52% for 'Mixed livestock', 57% for 'Sheep' and 49% for 'All industries'. However, like the survey data for other countries, these results aggregate observations across regions, environments, farm size and product mix, which masks the actual volatility of income of individual farms. Individual State or regional results from the farm survey would remove some of this aggregation effect and should, for example, show the impact of the recent drought in the eastern States and the Millennium Drought more clearly. Like the comparison depicted in Figure 3 for the USA, the volatility of income on individual farms in Australia would be expected to be dramatically greater than that shown by a national aggregate such as the ABARES Farm Survey.

2.3 Discussion

It is evident that the analysis of farm financial risk in Australia and in other developed countries has been intermittent, and - where it has occurred - has followed differing methodologies. Presented here are a few examples of the most relevant information and analysis to demonstrate the range of methodologies that have been pursued by authors who have sought to address farm financial risk and income volatility.

Most publications analyse aggregated results of surveys of farm income or analyse the volatility of commodity prices or aggregated national volume or value of output of selected agricultural commodities. These analyses cannot be taken as good indicators of financial risks facing individual farm businesses. The process of aggregating income or output or analysing market indicator prices smooths over the volatility experienced by individual farm businesses, overlooks the impact of other categories of risk and ignores the effects of strategies adopted by farm business operators to mitigate production and price risks.

We conclude that analysis of volatility of commodity prices or aggregate output of individual commodities (or international comparisons of these parameters) **should not be used** as a guide to formulating government policy on intervention in farm financial risk management or advising farm businesses about risk mitigation strategies.

Determining a role for government should be based on a fundamental consideration of whether there are specific impediments to farm enterprises responding efficiently to the competitive business environment in which they operate, and whether government has the power to remove any such impediments. Broad aggregates of volatility of income or output, or international comparisons of these parameters, cannot accurately describe the risk profile of individual businesses nor provide a basis upon which a business should act to mitigate farm financial risks.

3. Government risk management measures in other countries

In this section, we discuss some of the agricultural policy measures adopted in other countries to determine whether they might be applied in Australia or offer guidance for government programs in Australia. We then examine existing government programs in Australia to determine whether they are appropriate or could be improved or replaced with other programs.

3.1 European Union

The majority of support for farmers in the EU is delivered as income support, which is not directly related to farm production or the risks faced by farmers. While not targeted at managing risk, the payments influence the volatility of total income from the farm and a farmer's risk management behaviour. The cost of farm income support in 2018 was €41.74 billion (AU$68.04B). If spread across the approximately 10 million farms in the EU-28[2] this basic support provides an average €4,174 (AU$6,803) per farm per year. However, it should be noted that the payment amounts are heavily skewed because of the large number of very small farms. It is estimated that two-thirds of farms in the EU are less than 5 hectares.

Reforms to the EU Common Agricultural Policy (CAP) have progressively endeavoured to increase the share of assistance delivered through schemes aimed at farm risk management. The 2014-20 CAP reforms provided a 'Risk Management Toolkit' which includes:

- animal and plant insurance,
- mutual funds for animal and plant diseases and environmental incidents, and
- income stabilisation insurance through mutual funds.

The government support under the risk management toolkit is predominantly implemented through substantial subsidies on insurance premiums in order to reduce the premiums to less than the expected indemnities. The clear, positive expected value of the policy is the incentive to producers to sign-up to these insurance policies. It is acknowledged that the available insurance products do

[2] Until February 2020, the European Union consisted of 28 countries and was known as the EU-28. The EU currently counts 27 EU countries as the United Kingdom withdrew from the Union on 31 January 2020.

not cover disaster or catastrophic risks which are considered to be not well understood by reinsurers or farmers and are mostly addressed by ad hoc responses. The risk management toolkit is funded jointly by the EU Government and member states, and is only activated if member states agree to participate.

Notwithstanding the pressure for reform by the EU Government, only 12 of the (formerly) 28 member states of the EU have adopted all or part of the Risk Management Toolkit into their rural development policies and made provision for the cost in their budgets. The budgeted expenditure on the Risk Management Toolkit for the period 2014-20 was only €2.7 billion (AUD$4.4 billion) (Ecorys and Wageningen Economic Research, 2017, p199) and covered only approximately 637,000 farms in the 12 member states. This is equivalent to about AU$6,900 per farm over the 6-year term of the current CAP. Of the total budget outlay for the Risk Management Toolkit, 84% is delivered through the subsidies to insurance premiums. The subsidy on insurance premiums can be up to 70% of the premium cost.

Outside of (and predating) the Risk Management Toolkit is a wide range of insurance arrangements for crop and livestock producers which are supported by the member states or the EU Government. Premiums vary widely between states but are all heavily subsidised. Ecorys and Wageningen Economic Research, (op.cit) estimate the subsidy rate on premiums to commonly be around 65%. Notwithstanding the level of support, the uptake of insurance products is not high and estimated to be less than 50% in 20 of the 28 member states (op.cit p.234).

In addition to the Risk Management Toolkit, the CAP provides other supports which may be used to address farm risks. These include payments for:

- Restoring agricultural production potential damaged by natural disasters and catastrophic events and introduction of appropriate preventive actions,
- Investment in physical assets, and
- Setting up of producer groups and organisations to promote collective bargaining and marketing.

However, the largest component of support for EU farmers under the CAP is delivered under the Basic Payment Scheme (BPS) which provides an income support payment to EU farmers based on the area farmed. The European Court of Auditors (2018) recorded the budgetary ceilings of each EU country for each year from 2015 to 2020 for the BPS. In total, the BPS is approved to cost EU taxpayers up to €15.8 billion (AU$25.8 billion) in 2020 budget year. The BPS is applied in 18 of the member states of the EU, covering an estimated 4 million farms.

The farm risk management programs operated under the CAP are nominally designed to assist farmers to manage risk while minimising the worst of the distortionary impacts of earlier CAP policies. However, the value of the support measures, the extent to which they are divorced from commercial rates for insurance and other services combined with the low hurdle at which insurance payouts are made, renders these programs little different from income support payments. They result in EU agricultural production being very substantially disconnected from many agricultural production risks and discourage farmers from decisions that might mitigate the risks.

3.2 United States of America

The major agricultural risk management programs provided by government in the US are a range of insurance products provided by or supported by the Risk Management Agency (RMA) of the US Department of Agriculture (USDA). These programs include:

Federal crop insurance – includes both crop yield insurance and crop revenue insurance (yield times price) when yield or revenue falls below a specified level. More than 117 million hectares are insured under the Federal crop insurance program, including more than 80% of the area of major field crops planted in the US.

The Supplemental Coverage Option (SCO) – an insurance product that offers producers additional insurance coverage for losses that fall below the levels generally covered by standard crop insurance policies. The program allows producers to cover a portion of the excess in their underlying crop insurance policy, and subsidises up to of 65% of producer's premiums.

The Stacked Income Protection Plan (STAX) – provides county-based revenue insurance policies for upland cotton producers. STAX policies can be purchased on their own or be used to supplement insurance coverage available through the Federal crop insurance program, protecting against losses that fall within the range not generally covered by standard crop insurance policies. Federal subsidies cover 80% of producers' premiums.

The Price Loss Coverage (PLC) program – provides income support payments to producers with historical base areas of wheat, feed grains, rice, oilseeds, peanuts, pulses and cotton on a commodity-by-commodity basis when market prices fall below a reference price. The payment *rate* is the difference between the reference price and the annual national average market price (or marketing loan rate, if higher). The payment *amount* is the payment rate multiplied by the historical area of covered commodity, up to 85% of the farm's base crop area for that commodity, multiplied by the payment yield.

The Agricultural Risk Coverage (ARC) program – provides income support payments to producers with historical base areas of wheat, feed grains, rice, oilseeds, peanuts, pulses and cotton on a commodity-by-commodity basis when county crop revenue (actual average county yield times national farm price or effective reference price, if higher) drops below 86% of benchmark revenue (5-year average yield times 5-year average national price). Producers may also choose to participate in ARC based on individual farm revenue instead of county revenue. Payments are limited to 60% of the farm's historical crop area. Producers must make a one-time decision for the farm's crop area on whether to elect PLC or county-based ARC coverage.

Non-insured Crop Disaster Assistance Program (NAP) – provides payments to producers of crops for which crop insurance is otherwise unavailable in their county. Producers pay a service fee for basic coverage of 50% of the crop at 55% of the price and a premium fee of 5.25% of the liability for up to 65% of the crop at 100% of the price. Payments under NAP cannot exceed $125,000 per individual or entity for a single crop year.

Marketing assistance loans – allow farmers to obtain a short-term (usually up to 9 months) low-interest loan for their harvested commodity at the posted county loan rate with the option of repaying at a lower rate with interest waived if the posted county market price falls below the loan rate. Producers also have the option to forfeit their commodities under loan as full payment of their loan. Producers who choose not to take out a loan may receive the same benefit by collecting a direct loan deficiency payment (LDP) on their harvested commodity equal to the difference between the loan rate and the market price.

In addition to the RMA programs outlined above, US farmers also have access to a range of other programs that address price support, income support, conservation programs and disaster response

programs. McFadden & Hoppe, (2017) provided information of the cost of these programs and the variation in cost from year to year. The federal crop insurance program subsidies varied from US$6.1 to 7.9 billion per annum over the years from 2011 to 2015, averaging US$7 billion. Over the same period the total premiums paid averaged US$11.2 billion, putting the average rate of subsidy across all insurance products at 62.5% of the total premiums. In addition, the other programs listed above provided a further US$10.8 billion a year, on average, to the farm sector from 2011 to 2015.

If averaged across the estimated 2 million farms in the US, the combined US$17.8 billion (AU$25.4 billion) of support is equivalent to US$8,900 (AU$12,700) per farm.

3.3 Canada

Agricultural risk management in Canada is addressed principally through four Canadian Government programs:

- **Agrinsurance** – to protect Canadian producers against large declines in farming income from production losses due to severe natural hazards including drought, flood, wind, frost, excessive rain, heat, snow, uncontrolled disease, insect infestations and wildlife. 60% of the premium is paid by provincial governments and the remaining premium share and administrative costs are met by the Federal Government.
- **Agrinvest** – is a designated savings account designed to assist farmers to manage small income declines and make investments to manage risk and improve market income. Farmer deposits by augmented by a 1% additional contribution by the Federal Government. Deposits are tax deductible in the year of deposit and taxed in the year of withdrawal.
- **Agrirecovery** – provides farmers with assistance with the costs resulting from a natural disaster so that farming operations can resume as quickly as possible. The assistance is provided as grants, the cost of which are shared between the provincial and Federal Governments.
- **Agristability** – protects Canadian producers against large declines in farming income for reasons such as production loss, increased costs and market conditions. Payments are calculated by reference to a farmer's historical margin between sales and operating costs. Farmers enrol each year in the program and pay a fee related to their farming operation and receive a payment if the production margin falls below your historical reference margin by more than 30%.

Canadian farmers are also supported by other government assistance programs:

- **AgriMarketing**, which provides promotional assistance for farm products
- **AgriCompetitiveness**, which supports farmer-oriented programs that encourage innovation and productivity
- **AgriInnovat**, which assists in accelerating the commercialisation and adoption of new products and technologies that improve competitiveness
- **AgriScience**, which provides government support for research and development.

Van Kooten, (2018) reviewed the government assistance to agriculture in Canada and the cost of government contributions to these programs. Table 8 shows the cost of these programs from 2011 to 2017. The four risk management programs together comprise a C$1,140 million budget cost equivalent to AU $1,197 million at current exchange rates. The last Canadian census (2011) put the

number of farms in Canada at 205,000. On average, not allowing for any decrease in the number of farms since 2011, the Canadian government risk management programs are equivalent to a transfer of C$5,560 (AU$ 5,840) per farm in 2017. If provincial stabilisation payments are added, the average amount of assistance per farm rises to C$6,600 (AU$ 6,903).

Table 8: Agricultural Programs Providing Direct Net Payments to Canadian Farmers, 2011-2017 and Average Annual Payments, Canadian million dollars

Program	2011	2012	2013	2014	2015	2016	2017	Average
Crop insurance	660.2	496.7	251.2	112.6	455.5	328.5	493.3	399.7
AgriInvest	424.9	452.3	418.6	321	268.9	297.3	281.4	352
AgriStability	740.8	726.1	517.4	432.9	295.7	311	356.5	482.9
AgriRecovery	292.9	49.7	0.6	1.3	4.1	2.7	9	51.5
Provincial stabilization programs	259.3	331.6	169.2	115.5	75.8	254.4	213.2	202.7
All other programs	133.92	231.36	193.34	156.26	190.57	207.26	249.43	194.6
Total government funded programs	2,512.10	2,287.80	1,550.40	1,139.50	1,290.50	1,401.20	1,602.70	1,683.40

Source: (van Kooten, 2018)

3.4 New Zealand

At the other end of the spectrum to the countries discussed above, the NZ Government does not provide specific programs to assist farmers to manage agricultural risks. The NZ Government defines its role as maintaining broad macroeconomic stability and preserving strong biosecurity controls to minimise the risk of imported pests and diseases. The absence of programs providing direct benefit to farmers is complemented only by the availability of welfare benefits in the event of hardship as a result of severe adverse weather events, such as drought and flood or other natural hazards.

New Zealand agriculture has access to an income equalisation scheme which operates in a similar way to the FMD scheme in Australia. The principal features of the NZ scheme are:

- Deposits to the scheme by businesses conducting farming, fishing and forestry operations are tax deductible in the year of deposit
- Deposits earn an interest of 3% per annum, which forms part of the deposits for tax purposes
- Deposits can remain in the scheme for a maximum of 5 years
- A deposit cannot exceed the net income of the farming, fishing or forestry operation for the year in which the deposit was made

In 2016-17 the total amount of deposits in the scheme was NZ$155 million.

Farmers facing hardship as a result of a natural hazard, or a weather event such as flood or drought are able to apply for a Rural Assistance Payment which is equivalent to the NZ JobSeeker (unemployment benefit) allowance. The payment is subject to income and non-farm assets tests and is only available when the Ministry of Primary Industry classifies an event as either localised or a medium- to large-scale adverse event.

3.5 Discussion

The plethora of heavily subsidised programs outlined above in the EU, US and Canada are considered to have little relevance to the context of Australian agriculture and the Australian economy. The assistance programs, which have been in place in those jurisdictions in various forms for many decades, have severely altered the structure of the agricultural sectors in those countries and changed the structure of their international competitiveness; i.e., while those countries are able to strongly compete on price in the agricultural market, their sectors are considered less robust.

In the US and the EU, where the majority of agricultural production is consumed domestically, farm subsidies are predominantly a transfer between taxpayers, who fund the government programs and the farmers in each jurisdiction (taking the EU as a single entity). A share of the benefit of the subsidies is realised by foreign consumers when surplus agricultural products are exported at prices depressed by the extra volume forced into the market. This is a more significant problem for Canada, which exports around 50% of its agricultural production and is therefore exporting a larger share of the value of the total subsidy payments. In Canada's case, the loss is ameliorated because approximately half of Canada's total agricultural exports is with the US and Canada also has an agricultural trade deficit with the US. In effect, the two countries are exchanging the benefits of each other's subsidy programs.

It would be prohibitively expensive for Australia to operate assistance regimes of anything like the generosity of the programs in the EU, US or Canada. The extent to which such programs would actually reduce the risk to farmers is also questionable. The most pervasive effect of masking the real level of agricultural risk and thereby subsidising farm output is to increase land prices and slow the rate at which farm size can adjust to take advantage of new technology. In addition, the more stable income stream permits higher gearing. Thus, in the longer term the government assistance in those countries leads to farms that are of higher value, more heavily indebted but of smaller than an efficient size. To a significant extent, fall in production risk achieved through subsidies has been exchanged for greater financial risk through high gearing and high land prices.

A further consideration in relation to the capability of the EU and North America to sustain a low efficiency in their agriculture is the availability of off-farm income. As some of the results in the previous section showed, off-farm income provides a substantial supplement to the less efficient farming operations. In regional Australia, the smaller regional population and narrower industry base of most regional communities means the opportunities for off-farm income are fewer and less accessible. In the absence of available sources of off-farm income, an inefficient agricultural industry in Australia would likely result in critical, widespread hardship and poverty in regional areas.

The capacity of NZ agriculture to survive and prosper with effectively no risk management support from government provides evidence that an alternative policy scenario for Australia may not have dramatic consequences. New Zealand's climate may be more benign compared to some other countries (including Australia) and some of the agricultural risks less severe; however, the NZ experience is an indicator that agriculture can adjust to and find a way to address the risks associated with climatic events without direct government assistance.

The effect of agricultural subsidies on agricultural land values

The extent to which farm subsidies are capitalised into land values has been examined extensively in the literature. Feichtinger and Salhofer (2013) investigated the influence of different measures of government support on land prices in a meta-regression analysis based on 242 observations from 26 separate studies. The results indicated that a 10% decrease of agricultural support would decrease land prices by 3.3% to 5% and the authors concluded that a considerable part of farm subsidies is realised by initial owners of land. Helming and Tabeau (2017) used computer modelling to estimate the effects of a cut in the budget of the EU Common Agricultural Policy. One model found that a 20% cut in the CAP's Pillar 1 Budget would reduce land prices by 3.2%, while a different model calculated a reduction of 9.7% in land prices.

While these results are based substantially on computer modelling, the removal of agricultural subsidies in New Zealand in the 1980s provided the opportunity to observe actual land price movements in the wake of a reduction in subsidies. Rae et al. (2003), reviewed the effects on NZ agriculture of a widespread deregulation of the country's economy, which included 20% devaluation of the NZ dollar, removal of financial and exchange market controls and the floating of the dollar. Export assistance was removed, tariffs were progressively lowered and import controls were dismantled, all with the objective of promoting international competitiveness. In relation to agriculture, the NZ Government removed agricultural subsidies estimated by the OECD to be valued at 35% of the value of agricultural output. Although the impact on agriculture of removing the subsidies was substantial, some of the other policy changes (especially the devaluation of the dollar) would have benefited agriculture, partially offsetting the effects of removing the subsidies. Rae et al. reported that during the adjustment period after the removal of subsidies, agricultural land prices (measured relative to urban land prices in NZ) fell around 20% in the predominantly dairying region of Taranaki, where agricultural subsidies had been relatively light. In regions where sheep production was more important, like Canterbury and Marlborough, land prices fell by around 50%. These adjustments took place over a period of between three and seven years, before prices started to move upward again.

The few examples cited here demonstrate that government subsidies to agriculture lead to an increase in the price of agricultural land. Thus, a benefit accrues to the land owner when subsidies are introduced, in the form of a rise in the value of their land. However, when the land is sold to subsequent owners the price paid for the land includes that windfall gain or premium, which represents the current value of the subsidies that could be received in the future. In effect, a substantial share of the value of the subsidies into perpetuity are captured by the original land owner while those who subsequently acquire the land are in part purchasing the right to the income stream generated by the subsidies.

The examples also suggest there is debate about the extent to which agricultural subsidies are capitalised into the value land. Indeed, the form of the subsidy, how it is delivered and the amounts paid would be expected to influence the how the current value of future subsidy payments is calculated and converted into premium on the value of the land. While there is no formula for how land values respond to introduction (or removal) of a subsidy, it is clear that the capitalisation of such subsidies does occur. Whether the subsidies are generous and are paid regularly (such as in the EU) or less generous and paid irregularly (such as in the event of a drought in Australia) will affect the size of the impact on the value of the land - but not diminish the reality that land values reflect a large measure of the value of the subsidies.

4. Australian government farm risk programs

In this section we discuss the context in which agriculture exists in the Australian society and the economy and the industry's goals and aspirations. Against this background we discuss the role of government policy and programs in facilitating the achievement of those goals and aspirations. We also examine current government programs relating to farm financial risk management and consider their consistency with agriculture's goals within the Australian economy.

4.1 Agriculture in the Australian economy

In order to determine whether or how government should intervene in the management of farm financial risks, it is essential for society and the agricultural industry to first find a common view on the role which the industry is to play within both the Australian economy and society.

The National Farmers' Federation's (NFF) *2030 Roadmap: Australian Agriculture's Plan for a $100 Billion Industry* (NFF, 2018) expresses a central vision of increasing industry output by building on competitive advantage, innovation, adoption of new technology and capitalising on new opportunities. This vision is consistent with Australian agriculture's historical status as an innovative, economically efficient and internationally competitive industry which has demonstrated continued strong productivity growth over successive decades.

Defining society's collective view and expectation of Australian agriculture is more difficult, but would likely combine elements of the industry's heritage of family farms, owned and operated by hard-working, resourceful and self-sufficient farmers, working within an extremely variable environment. The industry is trusted to produce clean, safe food and fibre in abundance for the population - and to export to the rest of the world. Australian agriculture also has a growing reputation for being strongly competitive in international markets, able to adapt to changing conditions and willing to take up new technology.

Government policy has contributed to the industry's success by allowing market forces to shape its progress, supporting innovation, and avoiding some of the unnecessary regulation that hinders growth and adjustment in agriculture in many other countries. This largely supportive policy environment has allowed innovative and efficient producers the flexibility to increase productivity and grow their businesses. There is little disagreement between industry and government that the policy environment should continue to foster an efficient, responsive and internationally competitive industry that can realise the vision which agriculture has outlined for itself.

In agriculture, no less than in any other industry, risk management is integrally entwined with all other aspects of day-to-day management of a farm business. Decisions on where to buy land, what crops or livestock species to produce, what varieties to grow, how much fertiliser to apply or when to respond to a pest or disease; these are all decisions in which a farmer weighs up risk and reward. It follows that government policy should not deal with risk in isolation or as if it were separate from every other aspect of managing a farm business. Government must recognise that any policy intervention which seeks to address agricultural risk will inevitably have effects on every other aspect of management of a farm business. By extension, government intervention in how a farm is managed must also affect asset prices in agriculture, especially the price of land.

4.2 The principal agricultural risks

In this sub-section we identify the key classes of agricultural risk in Australia and consider whether there are grounds for Government to intervene to assist farmers in addressing these risks.

A fundamental principle of an open market economy is the reliance on competitive markets to guide the allocation of productive resources within the economy - except where markets can be shown to not be operating efficiently and producing adverse outcomes. So-called market failures can be traced to a number of root causes, the main ones being:

- The existence of public goods (that is, consumption by one person does not diminish the availability of the good to others, or it is impossible to exclude individuals from consumption of the good), e.g. new knowledge
- Negative externalities that effect the wellbeing or productive capacity of resources, e.g. pollution
- Imperfect availability of information (that is, insufficient information about particular good or services or information that is available to some consumers and not others), e.g. insider trading
- Imbalances in negotiating power arising from differences in size of market participants
- Immobility of factors of production (that is, land, labour or capital that is locked into particular activities and cannot be redirected to alternative uses).

While markets are rarely free of all of these deficiencies, the critical question is whether any market failure is sufficiently serious that it results in an allocation of productive resources that materially reduces economic wellbeing. It follows from this that government should only intervene in the markets for goods and services where both of the following conditions are met:

1. there is a *demonstrated market failure* that would likely lead to a significant misallocation of land, labour or capital, and

2. government has a capability (by regulation or manipulation of prices) to achieve a *more productive allocation of resources* than would otherwise be the case.

In considering the risks identified below, we will apply these conditions as indicators of whether there are reasonable grounds for government to intervene in how agricultural businesses respond to and manage those risks.

Price risks

Historically, poor availability of information about commodity markets and prices put farmers at a disadvantage when selling their produce. Foreign exchange rates were also subject to change by governments, usually without notice to those affected by the change. A range of statutory and collective marketing arrangements were permitted as a means of overcoming the asymmetry in availability of price information and to spread the cost of exchange rate movements across all the exports of a commodity.

As market information and prices for agricultural commodities became widely available, market failure became less evident and markets became more competitive. Markets also became disaggregated and specialised, and fixed exchange rates gave way to floating currencies. In this environment private marketers were more nimble and efficient than the statutory marketing organisations. Progressively, the various centralised, government-sponsored marketing arrangements either failed financially, or were shown to be no longer delivering a benefit to producers and were dismantled. Price risks are now widely regarded as best managed commercially

between producers and marketers with the help of an array of physical and derivative contracts to suit different circumstances and appetites for risk[3].

Yield / weather risks

While an array of factors affect agricultural yield, the most significant is weather. Weather risks include the amount and timing of rainfall, untimely frost, hail, high winds or extreme temperature stress on plants or animals. Among these, drought is generally considered the greatest threat to agriculture in Australia. There is obvious uncertainty related to drought and weather generally, and weather information has limited reliability at a specific location. Some weather events such as frost may also be very localised. These events are predictable with a reasonably clearly known frequency, although the timing and severity of each occurrence is uncertain.

The impact of weather on yield is complex and difficult to estimate. Some risks are more widespread than others, such as drought, and emerging knowledge suggests they may be more systemic in nature, e.g. rainfall related to the Southern Oscillation Index (SOI) or Indian Ocean Dipole. Technology is altering the impact of some weather risks on production, providing producers with opportunities to mitigate some of the risks.

Imperfect knowledge about weather is universal, affecting farmers and those in potential risk transfer businesses and thus does not of itself cause a market failure. Imperfect information is a factor that limits the development of secondary risk transfer markets as well as problems of adverse selection and moral hazard. In Australia, a market for some weather risks has evolved without government intervention. While in other countries a wider array of weather insurance products is available, these are often subsidised (often heavily) by government.

It is hard to conclude that there is any market failure related directly to management of weather risks. While there is no asymmetry around weather information that would cause a market failure, clearly imperfect information about weather does affect the development of risk transfer markets. However, government has little or no capacity to overcome the deficiencies in weather information or to circumvent the effects of adverse selection and moral hazard that affect the market for insurance products[4].

Yield / disease risks

Pest and disease risks affect yield significantly in many years and may be influenced by weather. Like weather itself, the relationship between the presences of a pest or disease and yield loss is complex and influenced by a number of factors and by farm management. Technology and breeding also affect the incidence and severity of pests and diseases and there are a variety of management strategies available to control pests and diseases.

Management of these risks is not subject to substantial market failure, but governments have intervened to provide some long-term assistance to farmers in managing pests and diseases that affect production. These interventions include mandating control of some pests and diseases (e.g. noxious weeds), developing preparedness strategies for highly infectious diseases (e.g. foot and mouth disease), maintaining biosecurity measures against exotic pests and diseases, and testing and regulating use of synthetic pesticides and veterinary medicines.

[3] Sub-project 2 found a range of price risk management options exist but are underutilised.

[4] Other sub-projects in this series have examined issues related to insurance in more detail and whether government policy related to the insurance industry might be hindering the development of risk transfer markets.

Yield / disaster risks

Some weather risks, such as floods, cyclones and fires, are commonly treated as natural disasters. These events effect production yields and often also damage farm infrastructure, increasing financial impact and risk. Like other weather risks, the fact that floods and cyclones will occur is somewhat predictable; however, the timing and severity of these events are uncertain.

Some of the risks to infrastructure and to yield are insurable, but - like other weather risks - information deficiencies do limit the development of transfer markets for some of these risks.

While uncertainty exists about these risks and risk transfer markets do not offer comprehensive coverage, there is little indication of a substantive market failure which could be readily corrected by government intervention. Typically, governments respond to disaster events on an as-needs basis scaled according to the severity of the event, with assistance often being available to households, small businesses and farmers alike. This assistance can raise issues relating to economic efficiency and equitable use of tax revenue, particularly in cyclone and flood prone areas. To the extent that the assistance is made widely available within communities, the negative effects on productivity in agriculture are unlikely to be substantial.

Interest rate risks

Agriculture is characterised by high capital requirements relative to value of output, which can give rise to interest rate risks when debt finance is used to fund a business. Australia's finance market is highly competitive and supported by readily available information and advice for borrowers. There is no evidence of any significant market failure affecting the allocation of productive resources. In addition, for the time being, interest rates are historically low and appear likely to remain low for the foreseeable future, suggesting that for most farmers interest rate risks are relatively low at present.

Summary

Examination of the principal farm business risks for Australia does not suggest that there is systematic market failure that would lead to productive resources being under-utilised or employed in ways that would diminish agriculture's productive potential. While weather risks can be extreme, the impact on yields and production are complex and influenced by a great many management options and decisions. Further, the relationship between weather and production is dynamic. Better knowledge of the drivers of weather systems, technology which improves utilisation of available soil moisture, and breeding of better-adapted plant varieties is changing the ability of farmers to operate in a variable climate. Under these circumstances there can be no certainty that direct intervention by government in this complex risk management matrix is likely to contribute to a more efficient, productive agricultural industry in Australia.

4.3 Farm risk management strategies

In this section we briefly examine the range of risk management strategies currently used by farmers to manage farm financial risk. Understanding the strategies used will enable assessment of the potential for - and impact of - government programs aimed at assisting farmers to manage farm financial risks.

Balance sheet management

Overwhelmingly, the most potent tool in a farmer's kit for mitigating financial risks is the maintenance of high equity on the farm business balance sheet. The fact that the Australian agricultural sector maintains high levels of equity compared to other industries is a reflection of the level of risk in agriculture and the capital intensity of agricultural production. A low debt-to-equity ratio provides capacity to borrow in the face of adverse events that lead to losses and might

otherwise cause a business to fail. The impact of maintaining a low debt-to-equity ratio is to limit the capacity to use debt to expand the business.

Diversification

Farmers can diversify in several dimensions as a means of reducing risks. Compared to a monoculture production system, growing a range of crop species and varieties provides some protection against weather events (such as frost) as well as disease and pest risks, acknowledging that some of the cropping options may be of lower overall return in certain circumstances. A mix of crops and livestock diversifies the sources of income and the markets to which the business is exposed. Farmers may also farm in several different locations as a means of avoiding the weather, pest and disease risks associated with a single location, while acknowledging that operation across multiple sites introduces other management risks.

A further form of diversification is to earn off-farm income and/or hold non-farm assets. Off-farm income is most effective in offsetting agricultural risks if it is earned from activities that are unconnected with agriculture. Some common sources of off-farm income include rental property and listed shares. For many younger farmers, contracting agricultural activities such as harvesting or transporting grain and livestock are also popular choices, although these occupations may suffer from similar risks to the farming business.

Insurance

Where available, farmers may take insurance against specific risks to trade off the risk of an acute loss by taking lower returns after paying the insurance premium. Where insurance is available, the farmer must assess the actual risk of loss in their circumstances against the premium payable and the payment that will occur if the event occurs. For predictable, recurring events (such as weather events) the expected long-term payout will be less than the total premium paid, in order for the insurer to cover their costs of operation. The farmer is then weighing up the benefits of a lower but more stable income stream with insurance, compared to a higher less stable income stream if they choose to absorb or self-insure the risk.

Management decisions

A range of management decisions, in addition to those mentioned above, have an impact on risk and require the farmer to balance risk and profitability in the short, medium and long term. Examples include investments in machinery and equipment, or use of contractors, to improve the timeliness of critical farm operations but at an additional cost in either capital invested or operating costs. The types of contracts for sale of produce may also be used to reduce price risks or increase the range of marketing alternatives. For some products, storage of product may be an effective strategy for spreading marketing risks by allowing product to be sold at different times.

A further dimension of management decisions making to reduce risk lies in the farmers own human capital and their skills in managing the farming operations, assessing, and mitigating risks and controlling the business finance. Investments in improving the farmer skills in these areas is likely to have a significant effect on the businesses risk profile and long-term security.

4.4 Current policies and programs addressing farm financial risk

Australia's agricultural industries have, for the most part, operated with little or no assistance compared to the industries in most competing agricultural producing countries. By necessity, Australian farm businesses have found the means to balance business growth with investment in

productivity improvement while also protecting against the uncertainties that threaten the continued financial viability of their farm business.

The management of risks across industries and risk types in Australia is mixed. In some agricultural sectors price risk management is highly sophisticated, employing a range of types of physical contracts and derivative instruments. In others, management of production costs utilises an array of imaging technologies, big data and long-range weather predictions as inputs to computer-aided farming operations. By contrast, in other industries and on some farms the principal tools for managing financial risk are conservative gearing, diversification of outputs and off-farm income.

While there is cause to be proud of the industry's overall success in risk management, continued improvement will be required in order to address a future formed by pressures which include:

- Scientific advice suggesting weather-related risks are becoming more intense and less predictable
- Pest and disease risks exacerbated by increased mobility of the world's population
- Market access and price outlooks that are threatened by a fracturing of rules-based global trading arrangements
- Rising costs of investment in technology required to achieve productivity improvement
- Difficulties in finding and retaining labour and skills

In the remainder of this section we evaluate the current suite of policies and programs offered by Australian governments that intersect with management of farm financial risk. We consider the impact of each program and the extent to which they contribute to improved outcomes for Australian agriculture and Australia as a whole.

We address separately those programs that have more general application and those directed specifically at drought assistance and preparedness.

4.4.1 Farm Management Deposits (FMD)

The FMD scheme was established by the Federal Government in 1999 and has undergone several reviews and changes throughout the past 20 years. The aim of the scheme is to allow farmers to allocate pre-tax income into a reserve that can be used smooth fluctuations in taxable income caused by climatic conditions and/or market fluctuations. Eligible farmers can deposit income into the scheme in good years and either fully or partially withdraw the funds in bad years.

The current criteria for participating in the FMD scheme includes:

- Operates as an individual (which may include a partner in a partnership or beneficiary of a trust)
- Be classed as operating a primary production business in Australia at the time of making the deposit
- Hold no more than $800,000 in FMDs
- In the year of making the deposit have less than $100,000 in taxable income derived from non-primary production activities, i.e. off-farm income (ATO, 2020)

ABARES reports monthly on the number of accounts held and the value of deposits for each commodity type and State/Territory. This information is publicly available on their website. Figure 5 indicates the average number of deposits and the value for each commodity at a national level from 2015-19.

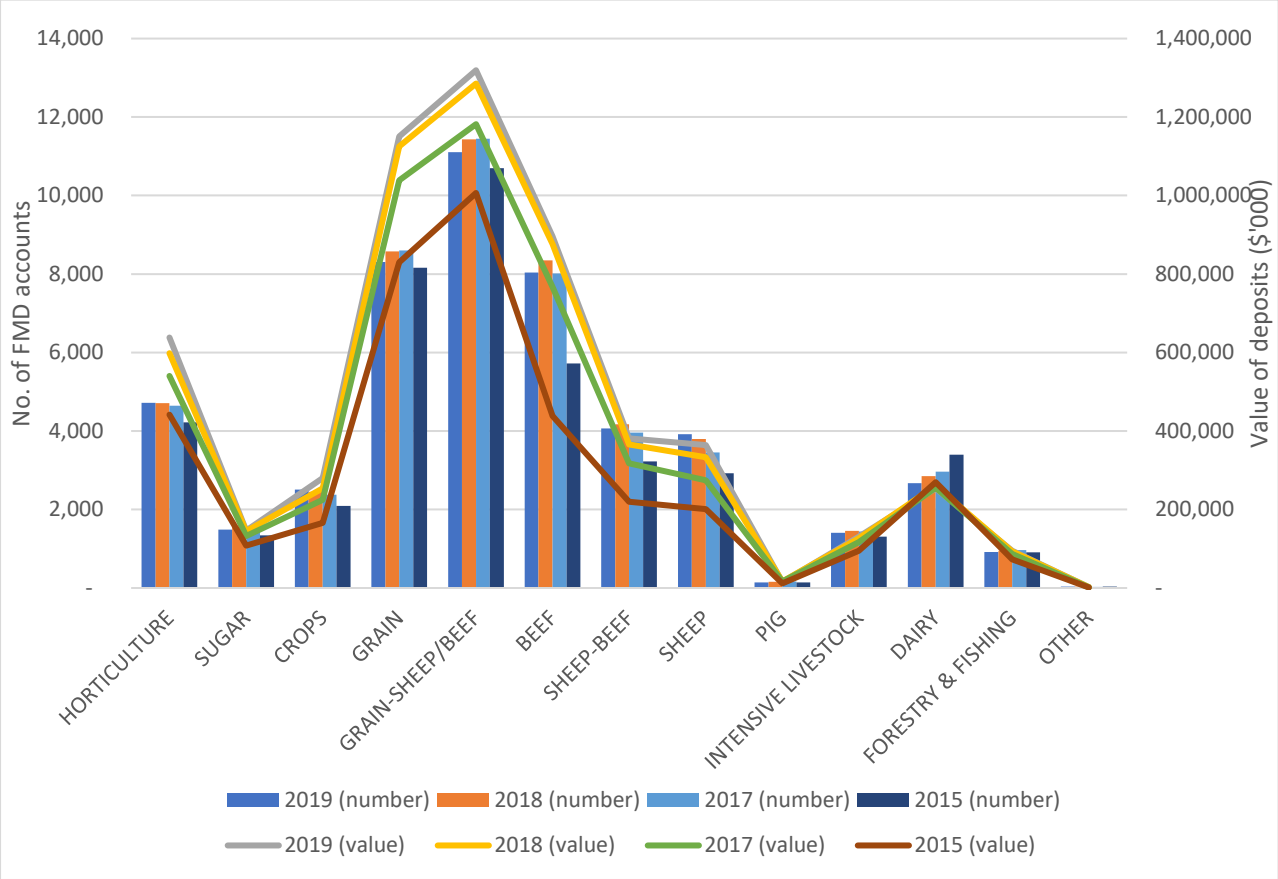

Figure 5: The number and value of FMDs held by commodity type from 2015-19

Source: (Department of Agriculture, 2020c)

It is notable that grain production, mixed farming, and extensive livestock - which are most exposed to variable weather and markets - account for the largest share of both the number of accounts and the value of deposits, although it is not clear that this is disproportionate to the numbers of farms in these sectors. The value of deposits in the mixed farming, grain and extensive livestock sectors appears to be relatively unresponsive to the recent drought which has affected much of the production area for these industries in eastern Australia. The reasons for the unexpected stability in deposits are unclear and warrant further, more detailed investigation.

The progressive reduction in the number of accounts in the dairy industry likely reflects the pressure on dairy processing over recent years which has put downward pressure on incomes and led to some farmers leaving the industry.

4.4.2 Income tax averaging

Primary producers and some other taxpayers who typically have fluctuating incomes have an option within the tax system in Australia to pay tax on their average income, calculated over a five-year period. Known as income tax averaging, this provision reduces the inequality between the majority of taxpayers, who have relatively stable year-to-year income streams, and those with fluctuating incomes. The inequity arises when taxable incomes fluctuate across the income tax rate thresholds, which results in those with fluctuating incomes paying more tax compared to a taxpayer with the same total income earned in equal annual amounts. The inequity increases as the volatility of income increases, so that those facing the highest production risks would likely suffer the greatest penalty in the absence of income tax averaging.

Income tax averaging is an important policy measure for primary producers who are managing agricultural production and financial risks. From an industry and national perspective, the averaging provisions minimise the prospect that investment in agriculture would be disadvantaged and the value of output diminished because of the requirement to pay higher income tax compared to activities that produce stable incomes.

4.4.3 Accelerated depreciation of fodder and water infrastructure

Primary producers are permitted to apply higher rates depreciation for taxation purposes to certain items of fodder, fencing, and water infrastructure on the farm. Primary producers are permitted to:

- immediately deduct the cost of fencing and water facilities such as dams, tanks, bores, irrigation channels, pumps, water towers and windmills
- depreciate over three years the cost of fodder storage assets such as silos and tanks used to store grain and other animal feed.

In the absence of these provisions, investment in these assets would be subject to the same taxation rules as other capital items and be depreciated over their effective life. The accelerated depreciation provides an incentive for primary producers to invest in assets that are important in coping with variable weather conditions. The provisions benefit most sectors of agriculture, and - while they are of high importance in relation to drought - the assets likely deliver ongoing value across all seasons.

However, it cannot be concluded that there is any significant market failure related to these investments; indeed, there is potential for the provisions to cause some inefficient misallocation of productive resources. There is also a prospect that incentives for investment in water infrastructure will encourage livestock to be held on farm for longer in dry periods, which may in turn cause land degradation and soil loss, hindering pasture recovery after normal seasonal conditions resume. Accelerated depreciation of these assets may also bias decisions against investment in other productive assets. It is concerning that there appears to be no routine collection of data on the circumstances in which these provisions are utilised or the productivity and environmental consequences of their uptake by farm businesses.

We recommend that steps be taken to evaluate the impact of these provisions. However, acknowledging that the level of assistance is relatively modest and the prospect of serious misallocation of productive resources is low, we consider these provisions should be permitted to continue pending the outcome of an assessment of their impact.

4.4.4 Regional Investment Corporation loans

Due to the similarity of the Regional Investment Corporation (RIC) Farm Investment loan and the RIC Drought loan, we have considered them together here rather than reiterate much of the discussion separately in relation to drought later in this report.

The RIC was established to provide a nationally consistent source of finance for:

- Australian farm businesses and regional communities
- growth of regional economies across Australia
- construction of major water infrastructure by state and territory governments
- infrastructure investments that provide long-term regional economic growth and development by providing secure and affordable water through investments in economically viable water infrastructure

Lending to agricultural businesses is only a part of the RIC's function, which is divided between support for States and regional communities as well as seeking to service individual farm businesses.

The stated purpose of the RIC Farm Investment loan is to **strengthen farm businesses** by lending to enhance productivity, pay for capital or operating expenses, fund drought-related activities or refinance debt. Eligible farmers can access a 10-year loan of up to $2 million with a 2.11% variable interest rate. Interest-only payments can be made for the first five years of the loan term, with principal and interest payments required for the remainder of the loan term.

Eligibility criteria includes but is not limited to:

- an Australian citizen or permanent resident who owns or leases land and are using it for agricultural purposes, who
- under normal circumstances, contributes 75% of labour to farm business and earns at least 50% of income from the farm business.
- The farming business must operate as a trust, partnership, sole trader or private company, and
- the operation must have existing commercial debt and be long-term financially viable (RIC, 2020b)

RIC Farm Investment loans are a concessional lending facility aimed at addressing the effects of factors such as climate change and volatile markets on agriculture. Loans may be to refinance existing lending, drought preparedness or diversifying production, and eligible businesses must be in financial need but also be viable in the long-term. Loans are expected to complement other commercial lending.

The purpose of the RIC Drought loan is to allow eligible farmers to prepare for, manage or recover from the impacts of drought and could include paying for operating expenses or refinancing debt. Farmers wishing to apply for the loan must have a drought management plan in place.

The RIC Drought loan has similar terms and eligibility to the RIC Farm Investment loan but with a notably different repayment structure. The first two years of the loan term are interest free, the following three years are interest-only payments with the remainder of the 10-year term requiring principal and interest payments (RIC, 2020a).

Whether there may be justification for RIC to provide loans to State and regional authorities to accelerate regional development, it is more problematic to justify concessional lending to commercial farm businesses. Concessional lending and interest rate subsidies for agriculture have been reviewed on numerous occasions, with findings consistently advising against such forms of assistance. The findings have been:

- that there is no evidence to support the theory that commercial finance sources do not provide adequate financial accommodation to viable farm businesses,
- recipients of the assistance often have broader structural problems, and
- that there are adverse impacts in providing concessional finance to farm businesses.

The 2004 Drought Review Panel stated:

> *'… there is no strong case for the provision of such assistance [long-term low interest loans] by Government. The Panel considers that any involvement of the Australian and State/Territory Governments in providing long-term low interest loans would require consideration of whether there is a problem in the commercial finance sector, of*

> *possible effects on the future operation of commercial finance sources, and the possible distortion of markets by such measures.'* (Drought Review Panel 2004, p.69)

One of the more detailed reviews of assistance measures provided to agriculture in the context of risk management is the Productivity Commission's inquiry into Government drought support (Productivity Commission 2009). In reviewing the Exceptional Circumstances Interest Rate Subsidies (ECIRS), the Commission stated:

> *'Interest rate subsidies are inappropriate, ineffective and inefficient. They focus support onto those farms and businesses in EC areas that, on average, have high levels of debt, low levels of liquid assets and low off-farm income'* (p. 154) and *'The Commission does not support offering concessional finance to a group of borrowers to induce them to borrow at a higher level than their own risk preferences would allow. A greater sensitivity to a loss of the farm due to the high nonmonetary value placed on farming is rational and does not provide an efficiency case for measures to encourage farmers to take on more debt'* (p. 204).

The Commission also considered the adverse consequences of government assistance and found:

> *'Having farmers dependent on government support for their businesses not only has implications for the way in which they operate, but also results in a less productive agricultural sector in the longer term'* (p. 153); that *'Overall, the incentives inadvertently created by ECIRS may mean farm businesses adopt less self-reliant strategies prior to droughts in the belief that governments will help to maintain the business during droughts'* (p. 153) and *'…current [drought assistance programs] such as the ECIRS can impede the development of private arrangements for risk sharing … Removing these measures would increase the incentive for the development of private arrangements to allocate risk to those best able to bear it'* (p. 283).

Australia has a sophisticated commercial banking industry which is strongly competitive and has extensive experience in lending to farm businesses across all sectors of agriculture. There is no evidence that the availability of loans, the terms or the interest rates applied to agriculture are inconsistent with lending available to other sectors of the economy. Nor is there evidence that commercial banking sources are not competent in assessing the viability of farm businesses or are withdrawing finance to businesses that would otherwise have sound prospects of long-term profitability.

Given the long history of findings against successive incarnations of concessional financing arrangements aimed at drought and risk management for Australian farm businesses, and the likelihood of adverse incentives and perverse outcomes for the agricultural industry, we are unable to support continuation of this facility. The capacity to overturn the findings against the provision of concessional finance facilities, or demonstrate whether there may be instances where a clear public benefit can be demonstrated, is constrained by ongoing failure to gather comprehensive data on how these facilities have been deployed in the past. There is a compelling case for all government assistance programs to rigorously gather quantitative data on delivery of the programs to facilitate careful, ex-post impact assessment.

4.4.5 Farm Household Allowance (FHA)

An important counterpoint to a policy environment in which minimal assistance is provided by government to mitigate farm business risks is to ensure the provision of timely and accessible social security measures, should a farm business be unable to provide household necessities for the farmer and their family. It is complex to separate issues confronting the farm business from the necessity of providing social security support to individuals. FHA was developed by the Federal Government in

2014 to provide income support and assistance to primary producers facing financial hardship in relation to drought.

The FHA is available to farmers who are an Australian citizen or permanent resident over the age of 16 who have a legal interest or right in land which is used for the purpose of a farming enterprise. A large amount of the farmer's labour and capital must be contributed to the farming business which is in Australia and has a significant commercial character or purpose

The allowance provides numerous forms of assistance, including:

- fortnightly income payments;
- ancillary allowances for expenses such as telephone and pharmaceutical;
- access to financial business assessments; and
- grants for upgrading skills.

(Department of Agriculture, 2020a)

The FHA has been widely criticized for being overly bureaucratic, complex and difficult for farmers to access. Many applicants have experienced difficulties in understanding questions and interpreting them in the context of complex business structures. Assembling the required supplementary evidence required in the application process was also a challenge for many applicants, as well as needing to deliver this information via the Centrelink electronic platform. Frequently this information required input from lawyers and accountants, involving additional expense at a time when the business faced acute cash flow difficulties. Long processing times were also common, an added burden when the family's cash needs were urgent.

In response to these criticisms the FHA was reviewed in 2018, resulting in several changes implemented from January 2020, including:

- improve the communication around the FHA
- disassociate the FHA from drought
- simplify the assets test and remove the requirement for income reconciliation
- simplify the application process
- make the time limits for payments more flexible

These changes appear to be sensible and pragmatic - although they fall short of fully implementing all the recommendations of the review panel. There has not been sufficient experience of the changed administration to determine their effectiveness in addressing the previous operational deficiencies of the FHA. However, it is notable that a large percentage of eligible farmers are still not applying for the assistance. As of 30 September 2020, data from ABARES indicates that more than 19,000 farmers appear to be eligible for the allowance but have not applied. Since the scheme began in 2014, more than 16,000 farmers have received the FHA with most recipients residing in NSW, Queensland and Victoria (Figure 6). The operation of the FHA needs to be kept under careful scrutiny to ensure that it fulfills the requirement to provide an effective social security support for farm families facing financial hardship.

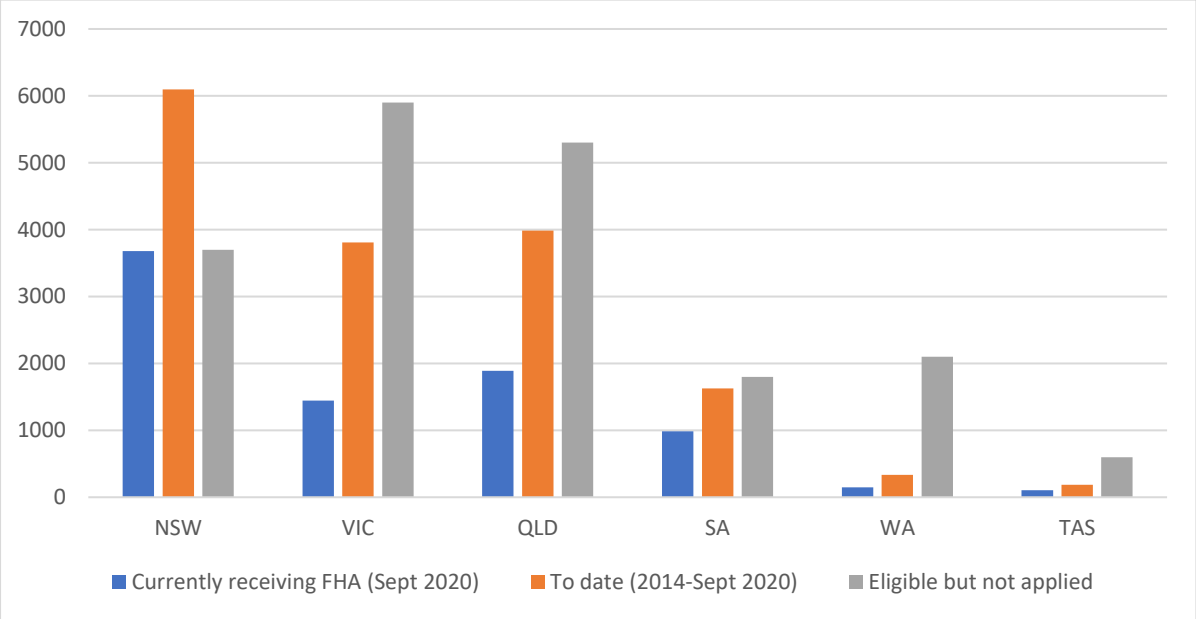

Figure 6: Number of people by state who have received FHA since 2014
Source: (Department of Agriculture, 2020b)

4.4.6. Rural Financial Counselling Service (RFCS)

The RFCS operates across Australia (see Figure 7), providing confidential and free services for farmers, forest growers and harvesters, fishing enterprises and related small businesses.

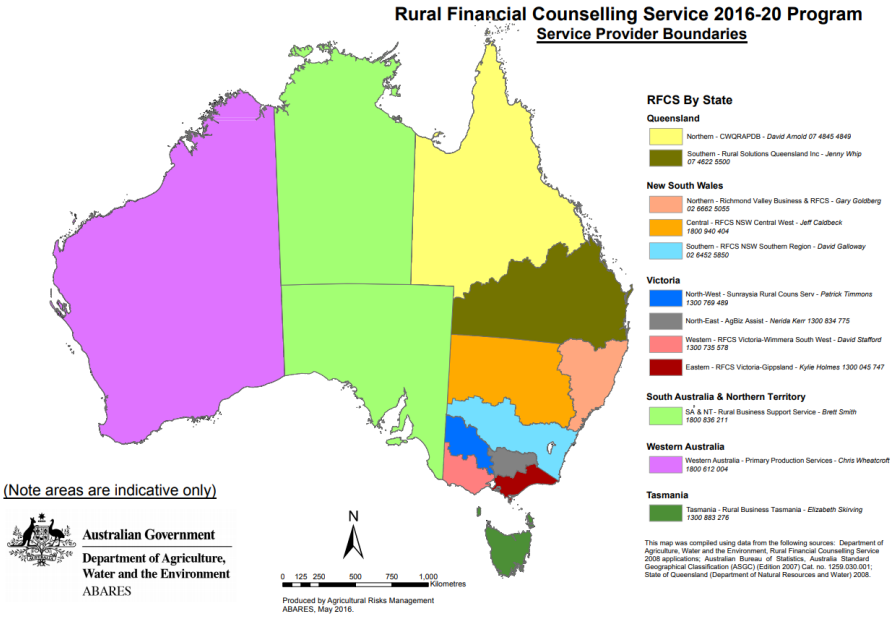

Figure 7: Financial counselling service map of Australia

Source: (Department of Agriculture, 2020d)

The RFCS has over several decades provided valuable support to many farm families confronting financial difficulty. The advice and support provided by the counsellors has helped farmers at times of financial distress to either find solutions to the problems confronting the business or to accept a decision to exit the business. However, the RFCS has been criticised at times for failing to finalise

cases promptly enough, leading to ballooning caseloads and failure to find timely conclusions for the clients of the service.

The service is delivered by a various service providers in different regions. The majority of funding is provided by the Commonwealth Government under separate agreements with each provider. State Governments also contribute to the funding of the services in the respective States. The current funding of the RFCS by the Commonwealth Government will expire on 30 June 2021. As a preliminary to an extension of funding, the RFCS was subject to an internal review by the Commonwealth Department of Agriculture during 2019. That review identified a number of matters that need to be addressed so that the RFCS can continue to improve, namely:

- In some regions, high caseloads were resulting in counsellor fatigue and burnout.
- Caseloads include helping clients apply for immediate relief through Australian and State Government programs. While this acts as 'gate opener' into the service for many clients it also limits effective case management.
- The program's objectives need to emphasise the importance of behavioural change among the clients facing financial difficulty.
- Government has established flexible funding arrangements for the RFCS to address fluctuating demand, but this causes uncertainty for providers and makes business planning difficult. State Government funding also needs to be reviewed to ensure it is both secure and does not add further uncertainty.
- The quality, skills, training and qualifications of counsellors is a key to the success of the RFCS, and attention needs to be given to more training and resources to develop their skills.
- Early referral of clients to the service is highly beneficial because counsellors then have more options to assist clients to improve their financial circumstances.
- The reporting of client data using the Rural Financial Counselling Portal is time-consuming. The reliability of portal data and output reports is also questionable. All service providers reported the portal as a major concern.
- The use of data by government is not well understood.

The RFCS is a critical element in providing a social support network for farmers who fall into financial difficulty. Like the FHA, it operates at the difficult nexus between the farm business and the often urgent needs of the farm family. The service addresses the prospects for the farm business while also providing support for the family. This exposes a fine line between facilitating adjustment for the farmer client while not impeding the adjustment process for struggling businesses.

While early intervention in a declining business provides more options and more possibility for behavioral change (and a turnaround for the business), the RFCS also needs to guard against morphing into a publicly-funded quasi-extension service aimed at farm businesses that are inefficient, poorly structured and in chronic decline.

4.5 Drought programs

Drought is generally considered to be the greatest weather risk facing Australian farm businesses and has been a focus of Government intervention in the industry. In this section we identify the range of Government programs that address drought risks for farmers, consider the various programs in the context of whether significant market failure exists, and analyse whether Government intervention is likely to result in better outcomes for agriculture and Australia as a whole.

Because of the importance of drought policy - and because it has undergone many changes in objectives - we have also traced some of the recent history of drought policy.

4.5.1 Past drought policies

The conflict over how Government should respond to severe droughts has extended over many decades and many policy iterations. During the 1970s and the 1980s, Australian Government policy treated drought as a natural disaster. Government programs responded to drought with similar forms of assistance to those used in other forms of natural disaster. In 1989 drought was removed from the natural disaster arrangements, because this type of response to drought was considered to be poorly targeted, had distorted farm input prices and worked as a disincentive for farmers to prepare for drought.

This led to establishment of the National Drought Policy in 1992, which emphasised self-reliance and sustainable management of farms to protect the resource base. Under the National Drought Policy, the Rural Adjustment Scheme offered grants and interest rate subsidies and the Drought Relief Payments provided income support for farmers within declared Exceptional Circumstances (EC) areas. From 1997 to 2012 these programs became the EC Interest Rate Subsidy and the EC Relief Payment. To be declared an 'exceptional circumstance', drought had to:

- be rare and severe, that is it must not have occurred more than once on average in every 20 to 25 years and must have been of a significant scale
- have resulted in a rare and severe downturn in farm income over a prolonged period of time (that is, greater than 12 months)
- not be predictable or part of a process of structural adjustment.

As the EC arrangements were put into effect, they were shown to be inequitable; particularly because eligibility was determined by so-called 'lines on a map'. After successive reviews found that EC assistance was ineffective and could result in farm businesses being less responsive to drought conditions, the EC programs were closed in 2012.

4.5.2 Current drought policy

From December 2018 the Council of Australian Governments (COAG) agreed to a new National Drought Agreement (NDA). The NDA sets out a joint approach to drought preparedness, responses, and recovery, with a focus on accountability and transparency. The context in which the NDA operates is defined by the Commonwealth and State Governments as:

> *"Droughts are part of Australia's landscape and managing drought is a feature of Australian agriculture. Australian farming businesses and farming communities are adopting increasingly sophisticated and effective strategies to deal with drought and respond to climate change and variability.*
>
> *"It [NDA] prioritises objectives and outcomes that enhance long-term preparedness, sustainability, resilience and risk management for farming businesses and farming communities in Australia."*

Under the NDA the Commonwealth is responsible for:

- funding and delivering household support payment based on individual and farming family needs, including:
    - reciprocal obligations that encourage resilience; and

    - case management to support reciprocal obligation requirements.
- establishing and operating a Future Drought Fund, to enhance drought preparedness and resilience.
- providing continued access to incentives that support farming businesses' risk management, including taxation concessions, the FMD Scheme and concessional loans.
- improving and maintaining national, regional, and local predictive and real time drought indicator information, drawing on the Bureau of Meteorology's (BOM) observation network and forecasting.

Each State or Territory is responsible for:

- encouraging the delivery and uptake of capability-building programs to improve farming businesses' skills and decision making that are flexible and tailored to farming businesses' needs.
- ensuring animal welfare and land management issues are managed during drought.

There are wide discrepancies between the policies of different States in relation to drought assistance. Western Australia, South Australia, the Northern Territory and Tasmania provide no State-originated programs for assistance in dealing with drought. New South Wales and Queensland, on the other hand, provide a range of drought relief subsides including fodder and water transport subsidies (QLD and NSW), concessional drought loans (NSW) and concessional farm improvement loans (NSW). These assistance programs have many undesirable features:

- The assistance has unintended consequences and adverse incentives that are inconsistent with the NDA.
- The assistance is based on transaction subsidies and concessional lending that have been criticised by many past reviews of drought policy as discussed above.
- The assistance programs are inconsistent with the NDA to which the States are signatories.
- The programs do little to reward preparedness and self-reliance which are objectives of the NDA.
- The dramatic difference in state assistance regimes causes significant inequity between farming businesses in different States.

As the centrepiece of Government risk management for agriculture, the NDA must be evaluated for its impact on whether it provides material assistance to farmers in preparing for and managing severe drought events. Such an evaluation must resolve whether the intervention by government will result in improved outcomes for the agricultural sector and for Australia as a whole and not violate reasonable equity considerations. In the following we identify specific programs made available under the NDA.

4.5.3 RIC Drought loan

The RIC Drought loan is intended to enable eligible farmers to prepare for, manage or recover from the impacts of drought (see Section 4.4.4). As discussed in relation to the RIC Farm Investment loan, there is little evidence of a market failure regarding management of drought risks that can be addressed by provision of concessional lending facilities to farm businesses. If market failure does exist, it is most likely related to the provision of insurance products which would allow risk transfer transactions to occur. In the absence of a more robust suite of risk transfer options, farm businesses employ a range of strategies to manage drought risk (as discussed in Section 4.3).

The provision of concessional finance to some farm businesses directly counteracts the principal strategy of maintaining a conservative debt ratio on the business balance sheet. This disadvantages those who have adopted a self-reliant approach to drought risk and undermines the decision-making process related to balancing investment in the farm business and mitigating risk. The somewhat unpalatable fact remains that the overwhelming majority of farm businesses survive even the most severe droughts without receiving support from Government drought programs - and thus the assistance to the few, is at best, rescuing those who took on more risk than their particular business could sustain.

Some comments from our interviews with key informants on this topic are telling:

> *"Those [businesses] that need assistance to get through a drought either didn't make enough money in the good seasons, or didn't save enough of what they made."*
>
> *"Good farmers who get caught by a drought always have an option – they sell assets, pull back or find off-farm income."*
>
> "*For every farmer that bought the next-door farm there is a second bidder who wasn't prepared to pay as much, who didn't want to take such a big risk."*

From the consultations undertaken for this project (and prior research) we cannot conclude that there is any significant incidence of technically competent, well-managed farm businesses failing as a result of an untimely drought event. As discussed above in the context of the RIC Farm Investment loan, we can find no evidence that commercial banking sources are not competent in assessing the viability of farm businesses or are withdrawing finance to businesses that would otherwise have sound long-term prospects.

Given the long history of findings against successive incarnations of concessional financing arrangements aimed at drought and risk management for Australian farm businesses, and the likelihood of adverse incentives and perverse outcomes for the agricultural industry, we are unable to support continuation of the RIC Drought loan as a risk mitigation policy.

4.5.4 Emergency Water Infrastructure Rebate

The National On-Farm Emergency Water Infrastructure Rebate is available to horticulture farmers and primary producers in each State and Territory, with each relevant State body administering the scheme. The rebate was made available for three years from 2018-19 to help drought impacted farmers with the cost of buying, installing, or updating on-farm water infrastructure by rebating 25% of eligible costs. The program was introduced as a short-term measure by the Commonwealth Government as a response to drought in the eastern States.

While this rebate superficially addresses issues relating to ability to withstand the effects of a drought, it exhibits many of the deficiencies that have characterised previous incarnations of drought policy, such as:

- There is no market failure or impediment to farmers undertaking this investment at their own expense.
- The subsidy was an unplanned, ad-hoc response in the midst of a drought which disadvantages prudent farmers who invested in these assets prior to the drought and destroys incentive to make drought preparedness investments prior to the next drought.
- The assistance overlaps with standing accelerated depreciation provisions for investment in water assets.

- The assistance is likely to result in biasing investment decisions and resulting in inefficient, unproductive investment.
- The assistance may contribute to incentives to hold livestock further into a dry period with adverse effects on the land, animal welfare and future recovery of pasture.
- The assistance applies to new investment as well as routine maintenance expenses (such as de-silting dams) which would ordinarily be undertaken in a dry period.
- Like other transactional subsidies, much of the benefit will be absorbed by suppliers, contractors, and transport businesses rather than farmers.

These kinds of adverse features – notable in legacy programs which were attached to previous drought policies - have been comprehensively criticised by successive reviews such as the 2009 Productivity Commission report on Government Drought Support.

4.6 Is the National Drought Agreement appropriate?

The NDA is barely a year old and was implemented in the midst of a severe drought across much of eastern Australia. It is too early for there to be empirical evidence of its impact on farmers and their management of drought risks; however, we consider that the policy has not significantly addressed the deficiencies of earlier regimes of drought policy and that the underlying philosophy of the policy is flawed.

The NDA proceeds on the basis that drought is a definable event that is somehow different from other seasonal variations in rainfall. There is an assumption underlying the NDA that farmers are not self-reliant in preparing for and managing seasonal rainfall variability, when the clear evidence is that most farmers are fully cognisant of the risks and do effectively manage the effects on their business.

While it lays out objectives that farmers should be resilient, self-reliant and prepared, the NDA continues to hold out the option for provision of concessional lending and other unspecified in-drought financial assistance. This sets up an obvious internal inconsistency within the Agreement and ignores the many past reviews that have found that financial assistance measures provided during droughts are ineffective, distort markets for important good and services, set up perverse incentives or have adverse consequences.

The Agreement mandates concessional lending within the conflicting guidelines of current financial need and future viability while also ensuring that Government not be a 'lender of last resort' and that assistance not be market distorting.

The Agreement sets out a shared responsibility between jurisdictions to deliver consistency in drought policy but fails to make any commitment to winding back those programs, principally at State level, that are creating major policy inconsistency.

The policy also fails to emphasise the imperative of making preparation for drought during the good seasons in order to achieve the desired resilience and self-reliance, nor does it indicate consequences for not taking such action.

The continuance of a regime of uncertain assistance measures will likely have further adverse effects, for example by perpetuating an incentive to delay the balancing of stock numbers with feed availability (i.e. destocking) as dry conditions turn to drought. This has implications for animal welfare, and in turn leads to assistance measures specifically targeting drought situations where animal welfare breeches could otherwise occur. Removing animals from situations where there

would be undue suffering is a primary responsibility of all livestock owners. That responsibility should not be undermined, diminished or put at risk by holding out an uncertain possibility of government assistance targeted at the avoidance of animal suffering.

While the NDA is fraught with the deficiencies outlined above it does contain elements that are positive and should be not only retained but also emphasised. The Agreement provides for ongoing support for:

- Continuation of family household support where there is financial hardship
- Continued financial support for the RFCS
- Continuation of appropriate taxation incentives and FMDs
- Emphasis on the importance of farmers upgrading their skills in business risk management
- Provision of improved weather and climate information as an aid to farmer planning and management decisions.

We consider that the NDA contains a mixture of seriously flawed and positive attributes. It should be amended to remove the provisions which continue to deliver perverse outcomes through ongoing assistance towards farm businesses, while retaining the measures directed more towards providing a social welfare safety net.

5. Evaluation

This section considers barriers to uptake of new or improved farm financial risk management measures by the Australian Government and by farmers. It identifies the conditions required for long-term viability of improved Government farm financial risk management measures as well as the commercial impact of such measures.

5.1. Barriers for Government

5.1.1 Removing financial assistance provisions from the National Drought Agreement

The uncertainty, confusion and adverse incentives which arise from the current and past policies do more harm to agriculture than the good resulting from occasional financial support to a few farms during major droughts. The lack of political acknowledgement of this harm - or motivation to change the current policy strategy - is the principal barrier to removal of these inconsistencies. Strong political leadership from the Commonwealth and State Governments would be required to overcome this barrier. While this may be possible even with resistance from the major farm organisations, we consider that support from those organisations would be highly desirable.

If there was more evidence on the impact of the assistance which has been provided to date, all parties (i.e. government and representative organisations) would find decisions about the effectiveness of drought policies - now based on the principle that government can consistently define a point at which assistance should be provided in a severe drought - easier to make. A close study should be made of the recent drought in Eastern Australia, identifying farm businesses that failed during the drought, comparing them with those which survived and analysing the impact of government assistance, to provide a stronger evidence base for policy action.

The NDA provides for annual monitoring and evaluation of the policies and programs delivered under the Agreement. However it is disappointing to observe that the most recent annual report on the implementation of the Agreement by Commonwealth and State Agriculture Ministers (Department of Agriculture, Water and the Environment, 2020) provides no evaluation of the impact or effectiveness of the various policy programs. It is only a listing of the expenditure made by each jurisdiction on various programs. This information does not assist in evaluating whether the Agreement has had any impact whatsoever in achieving its objectives. Without collection of adequate data on the impact of government programs, evaluation at any time in the future will not be possible.

A secondary barrier to withdrawal of the current drought assistance measures could be the media focus that is usually attracted to severe drought events. Television images of bare paddocks, wind-blown dust, and unfortunately malnourished livestock provide a potent trigger for political intervention that would need to be countered. To overcome this barrier, it would be essential to deliver clear messaging from government leaders and farm industry groups that farmers have prepared for these events and transparently acknowledge that previous policy was not effective.

5.1.2 Revision of the Farm Household Allowance

The recent revision of the FHA and implementation of its findings must be kept under scrutiny to ensure that it delivers improvements to those farm households that experience financial need. Farm organisations should be involved in determining what data is collected on delivery of the FHA and granted access to that data in order that they can contribute to the evaluation.

5.1.3 Risk management training

We would not envisage political barriers to Government adopting recommendations to support the delivery of training in risk management for farm owners and managers. However, we consider that

risk management training programs should be delivered through a strong partnership between Government, the farm industry and risk management professionals through an appropriate, dedicated, independent organisation, funded by Government.

5.2. Barriers for farmers

The project survey questioned farmers about their awareness and participation in a range of government programs that address farm financial risk management. Around two-thirds of participants answered one or more of these questions. Those who responded to specific question about awareness indicated that there is a high level of awareness of FMDs (100%) and accelerated depreciation for fencing fodder and water facilities (91%) There was also a strong awareness of Farm Household Support (78%) and Rural Financial Counselling (91%). It is notable that FMDs and other taxation measures have been in place for several decades, as have the government emergency support measures, which have been widely promoted during several droughts and other extreme events.

The more recently introduced measures, or where administrative arrangements have been recently altered (including concessional loans and support for education about risk management), are less widely understood. The awareness of loans available from the RIC and the Emergency Water Infrastructure Grants was 67-70%. There was a low awareness in the educational rebate for the Managing Farm Risk Program (37%).

The participation rates in those programs that are subject to eligibility criteria was generally low (less than 10%); 32% of respondents indicated they had FMDs in the last five years and 43% indicated that had used the accelerated depreciation measures in the last five years. No conclusions can be drawn from these responses as the respondents were not randomly selected.

Our perception from the survey results is that barriers to awareness of government programs is mostly associated with recently introduced or transitory programs, such as the educational rebate for the Managing Farm Risk Program. Longstanding measures, such as FMDs and accelerated depreciation, are well understood. It is uncertain whether uptake is limited by other than eligibility as a large proportion of respondents indicated they had not applied for most of the programs in the last five years. This may be because they judged they were ineligible, or were discouraged from applying for other reasons such as complexity of the application process or awareness of specifics of the applicability to their circumstances.

5.3. Long-term viability of improved government measures

We consider that the key requirement for long-term viability of Government farm financial risk management measures is **clarity of the policy and consistency in its delivery** across all levels of Government. They must also not violate reasonable standards of economic efficiency and equity across agriculture and the Australian community.

The Government measures that directly address financial risk management – FMDs and various investment incentives – have for the most part demonstrated long-term viability because they meet all these criteria.

Drought policy has seemingly failed the test of long-term viability to date, having been revised every 10-15 years over the last half century. The past policies have been vague in how they would apply in individual circumstances, eligibility criteria have not been transparent, and many measures have been criticised for their inequitable treatment of farmers facing similar circumstances.

We consider that the current policy also lacks clarity about how it will apply to individual circumstances and how it will be delivered by different governments. It is expected that the policy will face difficulties in gaining wide understanding among farmers about how and when it will be applied. These deficiencies must be addressed, so that when called upon in the next severe rainfall deficiency the policy will be freed from the ad hoc implementation which results in inequities among farmers who have made greater or lesser provision for the event.

5.4. Commercial impact of improved Government measures.

The impact of suggested changes to assistance programs designated for drought and other related disaster and adverse events is difficult to quantify, as the effect is heavily dependent on how and when such events unfold and how the government policy is promoted prior to and during the event.

In broad terms, the impact is expected to be minimal. As a share of total spending by agriculture and total indebtedness in agriculture the current assistance is relatively small, both in aggregate and on average per farm.

In 2016/17 total farm debt was estimated at $71 billion at an average of $481,000 per farm over around 145,000 farms. In 2018/19 the Rural Assistance Corporation provided loans of $138 million in total to 141 farms. In that year, the NSW Government provided drought assistance loans of $64.4 million to 1347 farms, and concessional drought loans of $11.6 million to 24 farms. The Queensland Government provided loans to farms and small business in response to floods cyclones and storms but not for drought and the data provided does not distinguish between loans to farm and non-farm loans. Publications by other states indicate they did not provide loans in relation to drought or other adverse events. This data indicates a total of $214 million of loans to 1512 farms, equivalent to 0.3% of total farm debt to 1% of farms.

The share of total farm lending represented by the drought loans described above does not capture the importance of the loans to the individual recipients. For some it may have been the difference between the business surviving and failing because of the drought, but for many it may also simply have replaced loans, perhaps for a lesser amount, from commercial sources. In some cases, the concessional loans may also have prolonged financial difficulties for a business that will ultimately fail in later years. For these reasons, the commercial impact is likely to be far smaller than the relatively small share of lending and farm that are helped by the assistance provided.

It is difficult to conclude that the assistance provided for drought in 2018/19 had a material commercial benefit for the Australian agricultural sector.

6. Conclusions and recommendations

6.1 The preferred role for Government in farm risk management

We consider it a fallacy to believe that Government can define a point at which agricultural risks reach such a severity that they exceed what a well-managed farm business could be reasonably expected to bear.

The uncertainties around how weather events, market or other risks unfold - combined with the impossibility of defining what can reasonably be expected to be managed, and the variations in individual risk awareness and preferences - make it impossible for Government to maintain a policy that can be readily understood. Under these pressures, policy cannot preserve reasonable equity between individual farmers and between regional or industry cohorts of farmers and between taxpayers and farmers.

Farmers, banks, insurers and other sectors in agribusiness are operating under imperfect knowledge about many agricultural risks, and markets for those risks are also impaired. We consider that management of agricultural risks is a field in which Government intervention cannot resolve the imperfect knowledge nor collectively improve the outcomes for farm businesses. Indeed, we consider that the inevitable uncertainty attached to how and when Government intervenes in severe climatic events most likely leads to outcomes for Australian agriculture that are worse rather than better. To avoid the continuation of the uncertainty that the current policy inflicts on farm businesses, the provision of direct financial assistance to selected farm businesses under the NDA should be discontinued.

In contrast to the uncertainty generated by ad hoc subsidies and various concessional finance arrangements, the existing income averaging arrangements for farm businesses are longstanding, sustainable and are available to all primary producers, and should be maintained. These taxation provisions are essential to redress an inequity that would otherwise exist between farmer taxpayers (and some other occupations) who have fluctuating incomes, and the majority of taxpayers who have more stable annual incomes.

We consider that the Farm Management Deposit (FMD) scheme should be maintained as a mechanism that also facilitates smoothing of income and tax liabilities. However, it has been noted that the flows of FMDs appear to be unresponsive to serious droughts and other events which would be expected to trigger withdrawal of deposits in order to smooth income flows within farm businesses. Further analysis of how FMDs are being utilised is required to determine whether the scheme is fulfilling its original intentions or whether modifications are required to improve its effectiveness.

The range of investment incentives that are available to all businesses are important to agriculture to facilitate strong levels of investment in improvements in technology and productive efficiency, as well as infrastructure and systems that mitigate weather-related risks. Agriculture benefits from these measures in the same way as other industries, and as such they should be continued.

Fulfilling the expectation that farmers should be responsible for managing all of the risks that confront their business should be balanced with a commitment by Government to social security measures that are timely and accessible, should a farm business be unable to provide basic household necessities for the farmer and their family. The implementation of the Government's response to the recent review of Farm Household Allowance should kept under scrutiny to ensure it delivers an improvement in the access to support for farm families that face financial hardship.

The Rural Financial Counselling Service (RFCS) has provided valuable support over several decades to many farm families confronting financial difficulty. The advice and support provided by the counsellors has helped farmers in financial distress to either find solutions to the problems confronting the business or to accept a decision to exit the business. The RFCS should also not only be maintained but also preferably expanded, and the findings of the recent internal review addressed by Government so it continues to improve the service it provides. While the assistance provided by the RFCS is vital, Government and service providers need to guard against the service straying into being a publicly funded farm business extension service competing with commercial advisory services.

Most farm businesses are periodically confronted with intense financial pressures as a result of the risks they face. In many instances the financial pressure and personal anxiety of a catastrophic event could have been lessened by better preparation and action to mitigate the risks. There is little prospect that agricultural risks will reduce in future; indeed, they may well worsen. This is an indicator that risk management skills in agriculture will become increasingly important to maintaining viable farm businesses. We consider that there is an imperative for Government to facilitate risk management training for farmers that would improve their skill level and lead to better identification of risks, better assessment of their impact and better management of the financial consequences.

6.2 Recommendations

The interventions by most foreign governments which are aimed at redressing agricultural risks largely fail to do so. These interventions have altered the structure and efficiency of their agricultural industries for the worse, and are completely inappropriate to agriculture in Australia.

In the domestic context, the many iterations of drought and disaster relief policies in Australia have perpetuated a chasm of uncertainty for farmers around how they are expected to address the most severe weather risks. The central philosophical proposition that there is a severity of weather events which is beyond what a well-managed business can reasonably expected to provide for is impossible to use as a basis for policy action. Reliance on this policy philosophy continues to discourage action to mitigate the risks, rewards management inaction by farmers, crowds out any potential commercial products that may assist farmers, and creates gross inequities between various cohorts of farmers and between farmers and other taxpayers.

We therefore recommend that the preferred role for the Australian Government in improving farm risk management should focus on:

1. *Assisting individuals and families*

   The preferred government policy regime addressing risk in Australian agriculture should be focused on assisting individuals and families through:

   - delivering improvements to the adequacy, availability and administration of the Farm Household Allowance,
   - continuation, improvement and expansion of the Rural Financial Counselling Service, and
   - provision of appropriately targeted skill development programs that assist farmers to improve identification, assessment and management of risk.

2. *Incentivising preparation and innovation*

   Policies directed towards farm businesses need to focus on incentives for preparation, innovation in risk mitigation, and an ability to smooth variability in income generation through:

   - continuation of incentives for capital investment in businesses to support productivity improvement and preparedness for drought and other adverse risks, and
   - continuation of existing tax averaging and Farm Management Deposit arrangements.

3. *Removing perverse and distortionary outcomes*

   Improved return on investment in Government programs which assist individuals and families and incentivise preparedness can be achieved through the removal of measures that create perverse and distortionary outcomes; thus, Government should:

   - discontinue provision of direct financial assistance to farm businesses under the National Drought Agreement between Commonwealth and State Governments, including concessional lending and grant programs for drought relief and recovery and
   - provide an explicit statement (by all governments) that farmers are responsible for managing agricultural risks that confront their businesses (including animal welfare risks).

4. *Ensuring data-driven analysis*

   Government risk policies for agriculture - and in particular, drought measures - have a long and chequered history. A rational analysis of the success (or otherwise) of existing measures would be aided by a commitment from State and Commonwealth Governments to collect appropriate data for the purpose of evaluating the impact of risk management and drought support programs.

7. References

Anton, J., & Kimura, S. (2012). Measuring risk in agriculture and implementing good risk management policies. *Farm Policy Journal*, *9*(1).

ABARES (2020) Australian Bureau of Agriculture and Resources Economics and Sciences, *Farm Survey*, viewed August 2020, http://apps.agriculture.gov.au/agsurf/

ATO. (2020). *Farm management deposits scheme*. Australian Taxation Office. https://www.ato.gov.au/business/primary-producers/in-detail/farm-management-deposits-scheme/?default

DEFRA. (2019). *Farm business income by type of farm in England 2018/19*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/847722/fbs-businessincome-statsnotice-21nov19.pdf

Department of Agriculture. (2020a). *Farm Household Allowance*. https://www.agriculture.gov.au/ag-farm-food/drought/assistance/farm-household-allowance

Department of Agriculture. (2020b). *Farm Household Allowance data dashboard*. https://www.agriculture.gov.au/ag-farm-food/drought/assistance/farm-household-allowance/dashboard

Department of Agriculture. (2020c). *Farm Management Deposits Statistics*. https://www.agriculture.gov.au/ag-farm-food/drought/assistance/fmd/statistics

Department of Agriculture. (2020d). *Rural Financial Counselling Service (RFCS)*. https://www.agriculture.gov.au/ag-farm-food/drought/assistance/rural-financial-counselling-serviceDepartment of Agriculture, Water and the Environment 2020, *Interim National Drought Agreement Report*, Canberra, March.

Drought Review Panel 2004, *Consultations on National Drought Policy - Preparingfor the Future*, Department of Agriculture, Fisheries and Forestry, Canberra

Ecorys and Wageningen Economic Research. (2017). *Study on risk management in EU agriculture—Final Report*. European Commission, Directorate General for Agriculture and Rural Development. https://op.europa.eu/en/publication-detail/-/publication/5a935010-af78-11e8-99ee-01aa75ed71a1

Feichtinger P, Salhofer K (2013) What do we know about the influence of agricultural support on agricultural land prices? A summary of results. In: Swinnen J, Knops L (eds) Land, labour and capital markets in European agriculture. Diversity under a common policy. Centre for European Policy Studies (CEPS), Brussels, pp 14–28

Helming, J., Tabeau, A. (2017) The economic, environmental and agricultural land use effects in the European Union of agricultural labour subsidies under the Common Agricultural Policy. *Reg Environ Change* **18,** 763–773 (2018). https://doi.org/10.1007/s10113-016-1095-z

Keogh, M. (2012). Including risk in enterprise decision in Australia's riskiest businesses. *Farm Policy Journal*, *9*(1), 11–21.

Key, N., Prager, D., & Burns, C. (2017). *Farm Household Income Volatility: An Analysis Using Panel Data From a National Survey* (p. 49) [Economic Research Report Number 226]. USDA.

Laurie, A., Curtis, M., Heath, R., Darragh, L., & McRobert, K. (2019). *Australian agriculture: An increasingly risky business* (p. 84). Australian Farm Institute.

McFadden, J. R., & Hoppe, R. A. (2017). *The Evolving Distribution of Payments from Commodity, Conservation, and Federal Crop Insurance Programs*. 56.

Productivity Commission 2009, *Government Drought Support*, Report No. 46, Final Inquiry Report, Melbourne

Rae, A., Nixon, C. and Lattimor, R. 2003, Adjustment to Agricultural Policy Reform – Issues and Lessons from the New Zealand Experience, Conference Paper, Workshop on Agricultural Policy Reform and Adjustment Imperial College, Wye, October 23-25.

RIC. (2020a). *Drought loans*. https://www.ric.gov.au/drought

RIC. (2020b). *Farm investment loan*. https://www.ric.gov.au/farm-investment

van Kooten, G. C. (2018). *Farm Programs and Agricultural Support in Canada* (p. 41). University of Victoria.

8. Appendix

8.1 Farmer reference panel

Name	*Commodity*	*Region*	*Expertise / focus area*
Alison Larard	*Beef*	*North Queensland*	Alison is a beef farmer and Nuffield Scholar who studied Better Business Management and Succession Planning in NQ Extensive Family Beef Businesses. She is a finance, economics and beef business specialist who advises family-based beef businesses on risk management.
Claire Booth	*Horticulture and cropping*	*Central West NSW*	Claire and her husband are first-generation farmers, having started their farm business in 2012 at age 28 after saving the deposit in their 20s. Claire has completed a Nuffield Scholarship focusing on land values, debt and financial literacy in agriculture.
Ed Biel	*Horticulture*	*Greater Sydney*	Orchardist Ed has been growing stone fruit for 30 years in the Greater Sydney Basin. He is a co-architect of the Agricultural Enterprise Credit Scheme now under trial in the Wollondilly Shire, which aims to mitigate risk by rewarding farmers with saleable credits.
Ian Gourley	*Grain and Cotton*	*North West NSW*	Innovative early adopter of risk products. David farms in a particularly variable climate that has been in severe drought for the last three years.
Kelly Pearce	*Grains and sheep*	*WA Central Wheatbelt*	Kelly is a director of Farmers Mutual Limited, a 2012 Nuffield Scholar, committee member of the Corrigin Farm Improvement Group and the WA Sheep and Goat Industry Funding Scheme Management Committee and Graduate of the Australian Institute of Company Directors.
Mark Swift	*Grains and cotton*	*Central West NSW*	Part of a rapidly expanding innovative family partnership, is a director of Farmers Mutual Limited and has performed extensive research into risk management structures and policy.
Daniel Meade	*Dairy*	*Western district, Victoria*	Victorian dairy farmer Daniel Meade received a 2017 Nuffield Scholarship to investigate the world's most powerful and effective agricultural organisations.
Michael Murray	*Cotton*	*Southern Qld*	General Manager - Operations, Cotton Australia
Burn Ashburner	*Cane*	*Central Qld*	Senior Manager - Industry, CANEGROWERS

8.2 List of Interviewees

Name	Organisation
Michael Whitehead	ANZ Bank
Will Rayner	Rural Bank
Sean O'Connell	NSW Rural Assistance Authority
Bruce King	Regional Investment Corporation
Jodie Dean	NSW Farmers
Trevor Whittington	Western Australian Farmers Federation
Simon Fritsch	Agripath
Alison Larard	Rural Financial Counsellor
Mark Swift	Farmer
Peter Mailler	Farmer

8.3 Coefficients of variation of family farm income for different farm types and EU Member States over the period 2007-2013

	Member State	Arable			Fruits and vegetables and olives					Livestock					Mixed	Average over sectors
		Specialist cereals	General field cropping	Mixed crops	Various Permanent crops	Specialist horticulture	Specialist vineyards	Specialist fruit and citrus fruit	Specialist olives	Specialist dairying	Specialist sheep and goats	Specialist cattle	Specialist grainivores	Mixed livestock		
AT	AT	0.67	0.53	0.60	0.61	1.00	0.76	0.69	0.00	0.46	0.83	0.56	0.60	0.49	0.51	0.64
BE	BE	0.00	0.43	0.60	0.17	0.75	0.00	0.76	0.00	0.42	0.45	0.46	0.64	0.42	0.48	0.51
BG	BG	0.94	0.72	1.01	1.29	0.97	1.29	1.37	0.00	0.96	0.73	0.73	1.48	1.00	0.93	1.03
CY	CY	1.55	1.29	1.24	1.16	1.56	1.51	1.23	0.95	0.91	1.38	1.66	1.28	3.89	1.19	1.49
CZ	CZ	0.70	0.54	0.70	0.83	0.30	0.88	0.83	0.00	0.47	0.34	0.43	0.61	0.55	0.54	0.59
DK	DK	0.97	0.95	0.86	1.05	1.02	0.00	1.09	0.00	1.25	0.72	0.91	1.50	1.03	0.97	1.02
DE	DE	0.92	0.74	0.70	0.71	0.79	0.57	0.82	0.00	0.50	0.93	0.87	0.96	0.75	0.87	0.78
EL	EL	0.76	0.63	0.53	0.59	0.66	0.52	0.62	0.66	0.48	0.42	0.61	2.37	0.41	0.56	0.70
ES	ES	0.69	0.65	0.58	0.62	0.84	0.61	0.83	0.74	0.48	0.50	0.50	0.79	0.66	0.67	0.65
ET	ET	0.83	0.48	0.39	0.00	1.02	0.00	0.76	0.00	0.55	0.73	0.70	0.90	0.61	0.62	0.69
FI	FI	1.07	1.15	1.22	0.00	0.89	0.00	0.99	0.00	0.45	2.13	0.73	0.83	2.14	0.86	1.13
FR	FR	0.76	0.61	0.75	0.64	0.63	0.76	0.86	1.73	0.51	0.64	0.63	0.73	0.53	0.69	0.75
HR	HR	1.70	1.54	1.95	1.80	2.31	1.95	1.82	1.51	1.70	1.98	1.82	1.52	2.28	1.76	1.83
IR	IR	0.54	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.56	0.65	0.00	0.79	0.49	0.58
IT	IT	0.82	0.71	0.70	0.65	0.72	0.68	0.65	0.55	0.56	0.51	0.67	0.70	0.67	0.66	0.66
LT	LT	0.73	0.75	0.49	0.00	0.72	0.00	0.65	0.00	0.43	1.02	0.74	1.32	0.43	0.55	0.71
LU	LU	1.21	1.19	0.33	0.00	0.00	0.38	0.00	0.00	0.54	0.43	0.73	1.29	0.81	0.75	0.77
LV	LV	0.84	1.00	0.64	0.00	1.22	0.00	0.70	0.00	0.50	0.67	0.53	1.46	0.55	0.56	0.79
MT	MT	0.00	0.52	0.46	0.50	0.48	0.38	0.72	0.50	0.84	1.25	1.69	1.39	1.51	0.68	0.84
NL	NL	0.92	0.99	1.51	2.81	1.03	0.00	1.10	0.00	0.67	1.28	0.94	1.89	0.72	1.56	1.28
PL	PL	0.62	0.58	0.65	0.79	0.71	0.00	0.98	0.00	0.49	0.78	0.62	0.60	0.57	0.59	0.66
PT	PT	0.71	0.75	0.84	0.71	0.79	0.90	0.63	0.98	0.55	0.61	0.65	2.08	0.66	0.67	0.82
RO	RO	0.63	0.66	0.68	0.73	0.89	1.22	0.65	0.00	0.45	0.55	0.50	0.98	0.64	0.69	0.71
SE	SE	1.32	1.19	0.00	0.00	1.09	0.00	0.00	0.00	0.88	4.76	1.62	1.69	1.00	1.26	1.64
SK	SK	1.42	1.86	1.50	4.21	0.00	2.21	0.00	0.00	1.33	1.00	1.50	2.30	0.00	1.23	1.86
SI	SI	0.90	1.15	1.29	1.13	1.01	1.39	1.31	0.85	0.79	1.04	1.38	1.09	1.61	1.53	1.18
UK	UK	0.76	0.68	0.69	0.24	0.76	0.00	1.12	0.00	0.55	0.63	0.84	0.78	0.71	0.72	0.71
EU	Average over MSs	0.92	0.85	0.84	1.06	0.92	1.00	0.92	0.94	0.67	0.99	0.88	1.22	0.98	0.84	0.93

Source: (Ecorys and Wageningen Economic Research, 2017)

8.4 Share of direct payments in farm revenues by sector and member state (2007-13 averages)

Member State	Specialist cereals	General field cropping	Mixed crops	Specialist vineyards	Specialist olives	Various permanent crops	Specialist sheep and goats	Specialist dairying	Specialist cattle	Specialist grainivores	Mixed livestock	Mixed crops and livestock	Median
BEL	0.18	0.17	0.07	0	0	0	0.1	0.11	0.14	0.02	0.06	0.12	0.11
BGR	0.16	0.09	0.12	0.04	0	0.09	0.06	0.05	0.1	0.01	0.05	0.07	0.08
CYP	0.92	0.09	0.14	0.09	0.19	0.12	0.06	0.02	0.16	0	0	0.1	0.17
CZE	0.18	0.11	0	0.03	0	0	0.4	0.12	0.36	0.01	0.1	0.12	0.16
DAN	0.12	0.15	0.1	0	0	0.06	0.14	0.1	0.18	0.05	0.1	0.13	0.11
DEU	0.24	0	0.12	0.01	0	0.06	0.37	0.13	0.22	0.06	0.1	0.16	0.15
ELL	0.39	0.15	0.22	0.16	0.34	0.24	0.17	0.06	0.44	0	0.11	0.18	0.21
ESP	0.28	0.2	0.18	0.06	0.27	0.13	0.14	0.08	0.18	0.02	0.14	0.18	0.16
EST	0.17	0.14	0.11	0	0	0	0.25	0.07	0.2	0.01	0.07	0.12	0.13
FRA	0.23	0.15	0.11	0.01	0.12	0.04	0.15	0.14	0.21	0.04	0.1	0.17	0.12
IRE	0.31	0.08	0	0	0	0	0.53	0.13	0.46	0.23	0.07	0.35	0.27
ITA	0.26	0.15	0.1	0.03	0.2	0.09	0.13	0.06	0.14	0.02	0.09	0.12	0.12
LTU	0.17	0.13	0.11	0	0	0	0.29	0.11	0.24	0.01	0.11	0.13	0.14
LUX	0.15	0.15	0.13	0.02	0	0	0.1	0.13	0.2	0.02	0.09	0.13	0.11
LVA	0.1	0.07	0.1	0	0	0	0.18	0.08	0.19	0.01	0.11	0.12	0.11
MLT	0	0	0.06	0.33	0	0.08	0.04	0.07	0.1	0	0.04	0.06	0.09
NED	0.15	0.06	0.03	0	0	0	0.03	0.09	0.1	0.01	0.04	0.06	0.06
OST	0.27	0.2	0.16	0.06	0	0.04	0.06	0.09	0.13	0.06	0.1	0.14	0.12
POL	0.17	0.12	0.09	0	0	0.8	0.2	0.09	0.19	0.04	0.1	0.12	0.19
POR	0.38	0.19	0.1	0.02	0.23	0.11	0.22	0.08	0.22	0	0.15	0.19	0.16
ROU	0.15	0.09	0.06	0.03	0	0.05	0.05	0.05	0.07	0.01	0.05	0.06	0.06
SUO	0.22	0.3	0.24	0	0	0	0.21	0.11	0.21	0.06	0.2	0.19	0.19
SVE	0	0.16	0.06	0	0	0	0.25	0.1	0.22	0.04	0.11	0.15	0.14
SVK	0.16	0.1	0.1	0.07	0	0.13	0.49	0.16	0.31	0.02	0.14	0.14	0.17
SVN	0	0.12	0.09	0.01	0.05	0.04	0.14	0.12	0.17	0.09	0.15	0.16	0.1
UKI	0.21	0.15	0.12	0	0	0.28	0.34	0.08	0.3	0.02	0.1	0.19	0.18

Source: (Ecorys and Wageningen Economic Research, 2017)