1. Introduction

Many complex decisions are involved in the multi-stage production system for food and fibre in Australia (and globally). Decisions include: quantities to produce and consume; where, when and how to produce; and, the distribution of incomes and wealth. Decision makers include farm input suppliers, farmers, processors, wholesalers and retailers in the private sector using markets, and government policy makers. The decision making context is characterised by evolving changes in domestic and international consumer choices, technology, input costs, climatic variability and so forth. There is much uncertainty about many of these future changes, at least about their timing and magnitudes. Agriculture is a heavy user of natural resource inputs which are quasi-fixed inputs, but often with competing uses for both alternative private good uses such as land for housing and land and water for environmental amenity. The sector has to compete with other sectors of the economy (and often in a global market) for mobile labour, capital and management inputs. Much of the decision making and the outcomes in the agricultural sector are influenced by government policies applying across the general economy, but also there are many government policies with a fairly specific and direct focus on agriculture. This paper seeks to review the arguments for and against government policy intervention in decision making in the agricultural sector, and to assess the comparative strengths and weaknesses of the options of markets versus governments across different sets of decisions and outcomes.

The Australian agricultural sector is a mixed economy, as is the case for other sectors of the economy. Private sector businesses, including machinery suppliers, farmers, supermarkets and so forth make most of the decisions with earning profits a key motivation. Effective markets require government intervention in the establishment and operation of a secure property rights system, provision of information, macroeconomic stability, a set of redistribution instruments to meet...
equity goals, and support for social capital. Australian governments, unlike most northern hemisphere developed countries, largely have withdrawn from interventions to product prices and input costs, as providing few if any benefits to efficiency, stabilisation or equity objectives\(^1\). Much of the credit for the efficiency benefits of market prices in guiding key decisions on quantities and production methods can be attributed to the logic and public debates provided by members of our profession in previous decades\(^2\). A number of issues, including excessive regulation causing high transaction costs, the funding of R&D, and equity implications of the continuation of structural changes facing the sector, are still on the “to be reformed agenda”. New and challenging areas for government policy towards Australian agriculture include the management of environmental resources with public good properties, asymmetry of information in the area of food quality and safety, and potential market power in the farm input and post-farm marketing sectors.

The paper is organised as follows. Section 2 sets out the arguments in favour of market forces to achieve efficiency, and with the flexibility and capacity to respond to changing circumstances, in deciding what quantities to produce and consume and how to produce. It also reiterates the arguments to limit government policy intervention in product and input markets of the agricultural sector unless there are demonstrated market failures. Market failures associated with public goods, external costs and benefits, common pool resources, monopolistic power and asymmetric information in the agricultural sector are assessed in Section 3. Consideration is given to the desired effect of government policy intervention, and to the form that intervention might take. Challenges in trading off market failure versus government failure in the choice of the form and magnitude of government policy to correct market failures are discussed in Section 4. Section 5 considers some of the issues of government intervention to redistribute to achieve society equity objectives. A particular focus is given to the question of whether the

\(^1\) Some notable exceptions include subsidies for some farmers for drought, and a number of tax expenditures, or tax concessions and special exemptions, for primary producers.

\(^2\) These included journal publications, conferences, a strong set of analysts in commonwealth departments and agencies, and in particular Bureau of Agricultural Economics and Industries Assistance Commission, and in the states, and staff in the farm organisations, particularly the National Farmers Federation, which supported changes in agriculture as a part of the economy microeconomic reform program.
general income transfer system with means tested pensions and allowances, a progressive income tax, and provision of education, health and other services available to all Australians at below cost is adequate for households in the agricultural sector, or are there arguments for additional “agricultural sector specific” redistributions, and if so in what form? Section 6 draws some conclusions.

2. Markets and Decision Making
About 75 per cent of Australian GDP is determined by the decisions of businesses and households responding to market prices in deciding what to produce and consume and in what quantities, how to organise production and the mixes of inputs in production, and in allocating the output as market incomes. The role and share of markets in the agricultural sector likely is higher again. Key results of economic analysis are that in the absence of market failures market decisions also are efficient, both in a static sense of Pareto efficiency but more importantly in the Austrian dynamic efficiency sense of near automatic changes and revisions of these decisions in response to changes in consumer tastes and incomes, changes in technology, input availability and costs, and of nature. The effective operation of markets requires secure property rights for inputs and outputs, and low transaction costs. Government policy can support or hinder a good set of property rights and low transaction costs.

Consider first the efficiency of markets in a static context (with reference to any microeconomics text book, such as Perloff, 2009). Prices adjust to equate the demand for and supply of quantities of outputs and of inputs used in their production. These market equilibrium decisions are Pareto efficient in the sense that no further reallocation is possible to improve the profit or utility outcome for a business or individual without reducing the profit or utility outcome for others.3

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3 Here, and throughout this paper I ignore any second best considerations associated with distortions elsewhere in the economy. While admittedly a convenient but also an unrealistic simplification, it permits the use of a partial equilibrium framework. Second best arguments for concessions to agriculture as an offset to tariffs on manufacturing products was an important debate in the 1970s (see for example the Green Paper (Harris, et al. 1974) and the survey paper by Edwards and Watson (1978)). The Australian microeconomic reforms over the 1980s and 1990s included a program of lower tariffs, deregulation of the finance market, including the exchange rate, greater competition in the provision of previously monopoly dominated government services, and a shift from centralised to
Formally, the market price, $P$, equates marginal private benefit (MPB) and marginal private cost (MPC). Further, in the absence of market failures market prices also equate marginal social benefit (MSB) and marginal social cost (MSC) across the different products and inputs

$$\text{MSB} = \text{MPB} = P = \text{MPC} = \text{MSC}. \quad (1)$$

Although the conditions (1) require that the market players behave as price takers, as exemplified by perfect competition, the price taker assumption as an outcome also is a reasonable approximation with oligopolistic behaviour with many firms and/or close to homogeneous products, and with monopolistic competition with close to homogeneous products or factors.

In this market efficiency model, individual businesses and households are rational maximisers who take into account the long term as well as the short term effects of their decisions. For example, farmers in crop and stocking decisions consider not just the current period returns but also longer term effects on soil fertility and pasture productivity and their implications for future property values. Individuals in buying food consider the longer term effects on health, obesity and so forth as well as the more immediate taste and hunger reduction benefits. Rational decision makers recognise the variability and uncertainty of market prices, seasonal conditions and so forth, and the decisions taken include the use of risk management strategies when available and justified to contribute to the long term welfare of the agricultural sector decision maker.

An enduring characteristic of Australian agriculture is that it and its decision makers face continual changes, and many of the changes are not well predicted or even capable of prediction without wide confidence intervals. Changes appear, for example, on the market demand side with a heavy dependence of Australian agriculture on international trade, both of exports and imports, as well as changes in the number of domestic consumers and in their tastes and incomes, the relative competitive position or comparative advantage of agriculture with respect to other sectors, technology, the availability and cost of labour and capital, a fickle climate with flow-on effects to water availability, diseases and pests. Often government enterprise labour markets. These broader economy changes have reduced the second best concerns of earlier debates.
policy changes are an additional source of uncertainty facing agricultural sector decision makers. Any of the above changes shift the demand and/or supply curves, which in turn leads to price changes which play the key role in signalling the need for changes in decisions to move towards a new equilibrium of efficient decisions as the decision making environment changes. Markets are able to tap the full set of private information on preferences and constraints held by individual firms and households to shift to a new equilibrium. By contrast, such information needed to change production and consumption decisions to respond to changing circumstances is not available to governments, no matter how omnipotent and diligent.

An important feature of the private enterprise decision concerns the choice of an expanded firm versus using markets as part of the process of reducing transaction costs. Many of the difficulties in defining and monitoring contracts required with market transactions can be reduced by mutual cooperation and long standing repeat negotiations within a firm. Vertically integrated firms often can reap the benefits of economies of scope at lower cost than separate firms operating via markets, particularly where long lived specific-purpose assets are important.

Australian history of market domination of decisions at the farm and other levels of the food and fibre supply chain indicates success on several criteria. Over the last thirty years Australian farm output nearly doubled, but with less labour and land and more capital, and multifactor productivity rose by 2.1 per cent annum, compared with an average of 1.1 per cent for the market sector of the economy (Productivity Commission, 2009). Responding to climate variability, a fall in the terms of trade, changes in relative product prices and input costs, adopting new technology, and other changes results in changes in the structure of farms, the mix of products produced, production methods, and risk management strategies. These processes and responses illustrate the flexibility and adaptability of most of the market sector to respond positively to an evolving decision making environment.

Key requirements for markets to do their allocative and investment decision making magic is that there are well defined property rights for each of the products and inputs, transaction costs are low, and buyers and sellers are well
informed. Governments have important roles in the supply of each of these preconditions. Good property rights have the characteristics of exclusivity, transferability and enforceability (Tietenberg and Lewis, 2009). In general, government legislation and funded law and order both establish and ensure the operation of good property rights. In the context of Australian agriculture, the system of land rights is an example of a good property right, while current water property rights are an example of an area for improvement, with problems of over allocation, uncertainty about storage and transfer rights, and in some cases limitations on and/or costs on the right to transfer ownership from a less valuable to a more valuable use. For the most part well defined property rights apply to market inputs and outputs along the food and fibre supply chain. On-going reviews of regulation across the economy, with initial inspiration from the Banks Review (Regulatory Task Force, 2006) and subsequent work through COAG and the Productivity Commission, including primary sector regulations (Productivity Commission, 2007), suggest opportunities to reduce transactions costs generally, and for the agricultural sector in particular. Given the public good nature of much information needed by individual firms and households, for example on climate data, meteorological forecasts and market prices and quantities (discussed further below), governments have a role in ensuring the availability of a relevant information base for effective decision making by market participants.

Given the desirable static and dynamic efficiency properties of markets decisions described above, the inefficiency of old-style Australian, but current Northern hemisphere developed country, interventions in market prices for agricultural outputs and inputs is well recognised. Examples of inefficient policy interventions to raise domestic prices of farm products include tariffs, quotas and export subsidies, and in Australia home consumption price schemes with domestic prices above export prices for wheat, butter, sugar and dried vine fruits, and to reduce the farm costs of inputs such as subsidies for fertilisers and transport. The interventions lead to excessive production and input use with MSC > MSB. Often the price interventions mute the signals for changes in resource allocations in the

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4 There is however often changes in property rights such as for the rights and responsibilities of employers and employees in the labour market with current transition from Work Choices enacted by the Coalition government to Work Fair introduced by the Labor government in 2009.
face of changes in demand, technology and so forth. While designed to stabilise prices, it is arguable that the Australian home consumption price schemes destabilised rather than stabilised farmer revenues or incomes as often claimed. From a distributional or equity perspective, the largest gains of the market price interventions go to the larger producers, and they quickly are capitalised in a one-off windfall increase in the price of the quasi-fixed resources, principally agricultural land. The net effects on consumers depend on the chosen instrument, for example tariffs and the home consumption price schemes raise consumer prices with regressive effects on poor consumers, while input subsidies reduce consumer prices. Also, consideration of the costs of interventions to change market prices and quantities in the agricultural sector has to include the general equilibrium effects of the loss of national productivity, the costs of distortions to labour and capital markets of extra tax revenues required, and in some cases additional loss of environmental amenity.

Reality is that the above story of market efficiency is conditional on the assumption of no serious market failures. Section 3 to follow indicates the presence of significant market failures affecting many decisions in the agricultural sector. They provide a prima facie case, or a set of necessary conditions, but not always sufficient conditions, for government policy intervention to improve efficiency.

3. Market Failures
This section seeks to provide a check list of some of the important examples of market failure in Australian agriculture with some illustrative examples. It then indicates the general direction and nature of government intervention to achieve a more efficient allocation, and proceeds to discuss some of the pros and cons of different market failure policy correction options5.

(a) Public Goods
Public goods with the characteristics of non-rival consumption and high costs of exclusion are under provided by markets as individuals and firms have incentives

5 Chisholm, et al. (1974) provide an early but coherent set of arguments on these topics.
to free ride. In agriculture there are two broad categories of public goods where government policy intervention potentially can provide efficiency dividends. First, in a number of cases agriculture competes for the use of natural resources, including land and water, and one of the alternative uses is environmental amenity providing a number of non-use, option and heritage for future generations values for the broader society, and in some cases the global society. With markets allocating the limited natural resources, too much will be allocated to agriculture and too little to environmental amenity. Second, with a competitive market structure of many firms producing close to homogeneous products, the farm sector in particular can improve the productivity of firm decisions, and in turn efficiency, by government policy intervention to increase the resources allocated to the important farm inputs of information, including R&D, market outcomes and future prospects, and climate outcomes and future prospects.

The efficient quantity of a public good to provide is given by the equating the sum of individual MPBi, for i = 1, 2, ..., n users of the public good, with its MSC, namely

\[ \text{MSB} = \sum \text{MPB}_i = \text{MSC} \]

The challenges in finding the information to determine the efficient quantity to satisfy (2), and the properties of different policy intervention instruments, differ across the two sets of public goods of importance to agriculture.

In the case of reallocating some natural resources to the provision of environmental amenity, the benefits are non-market benefits. To obtain an estimate of the MPB_i and then the MSB involves collecting information on (i) the ecological effect of more land and water allocated to the environment on measures valued by the general population, such extra hectares of red gums or increases in the survival rates of native flora and fauna, (ii) using this information for choice modelling and other techniques to place a marginal value by individuals in dollars per unit environmental improvement, and (iii) weighting and aggregating the individual valuations for the society MSB. Like any other good or service valued by consumers, the idea is to find a downward sloping marginal value or demand.

*Compulsory industry levies to fund generic promotion programs also can be included in this list.*
curve for the public good which can be compared with a related demand curve for the alternative private good use of the limited supply of a natural resource. Here lies large debates and controversies between many ecologists and the environmental lobbies and economists. The former prefer to focus on delivering a pristine product or they see environmental demands as a binary function (where \( X - \varepsilon \) allocation to the environment delivers no environmental value and \( X + \varepsilon \) delivers all that is required), whereas economists focus on opportunity costs and on downward sloping demand curves for both private and public goods.

A number of policy options with similar efficiency gains but with different distributional and operating cost effects to reallocate natural resources from agriculture to the environment, and in some cases the reverse, are available to governments to achieve the reallocations that meet (2). These include: direct government purchase or tendered purchase, for example the Murray-Darling water buyback and the Victorian Bush Tender system, with a voluntary Pareto win for agriculture using general taxpayer funds; regulations limiting the use of natural resources for agriculture, such as restrictions on land clearing and the use of water; and, subsidies to reallocate natural resources from agricultural production to environment uses. Taxation on the alternative private good use of natural resources would release some of the resource for environmental amenity, but with a transfer of wealth from agriculture to government.

Consider next the provision of public good information associated with R&D, market intelligence and climatic information and forecasts. In principle, and with numerous practical examples reported in the literature, the private and social benefits of (2) can be derived from market models to estimate the returns from R&D (for example, in Alston, Norton and Pardey, 1995) and from a variety of decision making under uncertainty models for estimating the benefits of more accurate information on market prices and climatic conditions. In current Australia, the funding of these information public goods is close to 100 per cent direct government funding for market and climate information and for basic research, significant (up to one half) farmer contributions for applied research organised via Rural Research Development Corporations (RIRDC) and their compulsory levy system, and taxation concessions for R&D by corporations.
reduce the initial cost to the private sector investor. Of course, even when farmers
and other firms pay for these inputs, much of the final or economic incidence will
be on consumers as additional costs of production are passed forward as higher
output prices; but also, by symmetry of argument, some to all of the productivity
gains are passed forward to buyers as lower prices and superior products. Patents,
and other forms of intellectual property rights, are used to support another set of
R&D by businesses. Many estimates of the returns to R&D in the agricultural
sector are high relative to the returns on alternative investments in machinery and
buildings, suggesting under investment (see, for example, Alston et al., 2009).
Also open for future analyses is the appropriateness of the structure and operation
of the RIRDC and other R&D funding systems.

(b) External Benefits and Costs
External costs, or spill-over costs on third parties not recognised in market
transactions, are associated with the production of food and fibre at all stages in
the agricultural sector supply chain, excessive consumption of some foods and
beverages, imports bringing exotic diseases and pests to Australia, and possibly
exports of low quality products.

In terms of external costs associated with production activities, some external
costs are endemic to the economy as well as agriculture, such as greenhouse gas
emissions and building wastes, while others are more specific to agriculture, such
as soil erosion, chemical run-offs, animal manures, contagious pests and diseases
of crops and animals, irrigation and dry land salinity, and wastes from food
processing. Imports that introduce exotic diseases, pests and weeds which in time
reduce the productivity of Australian producers of these products is a type of
external cost, since the importer seldom is held responsible for the spill-over costs
of reduced production or higher production costs on Australian producers.

On the side of food and beverage consumption, an emerging set of policy issues is
government intervention to reduce external costs associated with the excessive
consumption by an increasing proportion of the population of alcohol, high-
energy foods leading to obesity, and tobacco. In addition to the private costs of
higher mortality and morbidity, and of reduced outcomes in the labour market
caused by such consumption decisions, there are external costs associated with extra health care expenditures funded from the general tax revenue, more road accidents, a net draw on government revenue with less taxes paid and more social security payments, and more family violence. Another aspect or market failure with some food and beverages is that of inconsistent time preferences discussed in behavioural economics whereby many consumers are aware of the habit forming and longer term costs of excessive consumption, but when the actual decisions to consume are taken they over-weight current period pleasures and under-weight future period costs, and these biases are repeated period after period.

Another area of potential external costs is the spill over of loss of reputation and sales for Australian quality product exporters in the event of low quality or falsely advertised sales by other exporters. This also can be seen as a type of information asymmetry market failure, with import customers less informed than the exporter about food quality and production method. The problem has given rise to calls for regulation of minimum quality standards on exports, or grading and information systems by government.

Where external costs are incurred, and essentially where there is no effective property right on the external cost output, potential economic efficiency can be achieved by reducing the quantity of the offending input or output so that

\[
MSC = MPC + MEC = MSB
\]  

(3)

where, MEC is the marginal external cost and the other terms are defined as before.

In practice, the application of (3) embraces a number of problems and challenges which affect the chosen policy intervention instrument and reduce its effectiveness in correcting the external cost and gaining an efficiency dividend.

Because an external cost by definition arises as an outcome of the absence of a well defined property right, neither its quantity nor its value is measured with conventional accounting measures of market transactions. And, in most, but not all, cases it will be difficult or very costly to develop and implement an appropriate measure. As a consequence and in practice, often a corrective tax,
regulation or other instrument to reduce the quantity produced and consumed of a product or input with external costs will focus on a related input or output which is both easier and less costly to measure but which is imperfectly correlated with the external cost. As the correlation declines, the potential efficiency gain of correcting the external cost also falls, and may in fact rule out policy intervention. Take two examples. A uniform tax on alcohol helps correct the external cost associated with excessive consumption, but at the same time it creates efficiency costs on normal rates of consumption which generate no external costs, likely 70 per cent of consumption (Clarke, 2008). Regulations restricting the removal of trees in a geographic region to reduce dry land salinity almost certainly affect some areas where no reductions in dry land salinity follow and cause efficiency losses.

External costs come in many different forms which have important implications for the measured external cost and the target of the market failure correction intervention. Some external costs are global in their effects, for example emissions of greenhouse gases and climate change, some are of national concern, for example the introduction of pests and diseases with imports and excessive consumption of high energy foods, and some are more local, for example run-off of chemicals and dry land salinity. On another dimension, some external costs derive from the stock of the pollutant, for example greenhouse gases, and others depend more on the flow, for example many but not all chemical run-offs into water ways. Some external costs are referred to as point pollution and are more easily measured, while others are of a non-point form and are more difficult and costly to measure.

A number of policy instruments are available to correct the market failure associated with external costs. The obvious answer proposed by Coase of government establishing a property right for the missing market for the external cost product is ruled out in most examples of agriculture sector external costs by the administrative problems and costs of specifying and measuring the property right, and by the high transactions costs of a market with many players. A tax at MEC, determined at the socially efficient quantity, raises MPC to MSC. A tradable permit, with the quantity determined from (3), effectively creates the
missing property right which then has an opportunity cost and market price equal to MEC. The property right can be auctioned, with government receiving a revenue windfall as in the case of a tax, or it can be gifted to incumbents in a grandfather arrangement, often as part of a political package, or gifted to others, including consumers. In a static and perfect knowledge context, these two market based instruments have identical economic effects, apart from the distribution effect if the permits are gifted. But, in the more realistic cases of uncertainty about the MEC function and the marginal adjustment cost (MAC) function which describes the costs of reducing the external cost (associated with choosing more costly production methods or choosing alternative imperfect substitute products, both with smaller external costs), the tax provides a stable price or cost but a variable and uncertain reduction in the pollution quantity, while the tradable quota provides a known quantity and a variable and uncertain price or cost.

Subsidies for substitute products and production methods with less external costs are another policy option with costs to government revenue. Command and control regulations on output or input levels, or on production processes, closely correlated with the external cost are another potential policy intervention. Producers capture extra benefits with regulations as most of the costs are passed forward to consumers as higher prices. In most cases, regulations involve government picking the best way(s) to reduce the external cost. By contrast, a market based instrument sends a general price incentive and reward to the market, and individual firms and consumers draw on their own richer sources of information to find the least cost ways, including further R&D, to reduce the external cost.

One example of an external benefit is that in some countries, and particularly in Europe, rustic farms provide an unpaid benefit to city tourists. This argument

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7 From here there is an extended literature in a general equilibrium context about the possibility of a second efficiency dividend if the revenue windfall is used to reduce other distorting taxes and their efficiency costs, and in particular income and payroll taxes on labour. A full general equilibrium assessment also recognises that the higher cost of production associated with the tax or tradable permit itself distorts labour market decisions by reducing the quantity of market goods and services which can be purchased for an hour of work. This set of extra distortions roughly can be offset by using the externality correction revenue windfall to reduce income and payroll taxes in an aggregate revenue neutral package. For more, see for example, Fullerton, et al. (2008).
draws little weight in Australia, and where such benefits are valued a large portion is internalised in bed and breakfasts, on-site winery sales of produce and so forth.

(c) Common Pool Resources
Common pool resources are characterised by the properties of rival consumption and of high costs of exclusion, which leads to over exploitation. To a large extent Australia has in place regulations and tradable quotas to overcome efficiency losses for its forest, fishery and land resources.

There is however a number of areas requiring further policy work. Extending policy interventions to fish resources in international waters requires the cooperation of independent national governments. One area under Australian control and yet to be treated fully in the interests of efficiency is many of the underground water reserves. Often this is part of a bigger problem involving interactions between surface and underground water and poorly defined water property rights more generally.

(d) Market Power
Farmers as members of an atomistic industry are prone to cry monopolistic and monopsonistic exploitation by either or both of the more highly concentrated industries who supply farm inputs and who transport, store, process and distribute their products. Important policy issues include a number of related questions: is market power used, and then does it result in efficiency losses or largely redistribution of some of the residual return to the quasi-fixed farm inputs; does the economy-wide anti-monopoly body, the Australian Competition and Consumer Commission (ACCC), provides adequate scrutiny and policy intervention; and, are the investment levels in and the pricing of the natural monopoly infrastructure either directly provided by government or by regulated private providers efficient?

Many of the industries supplying farm inputs and marketing farm outputs are highly concentrated oligopoly industries. For example, the two large supermarket chains control over 80 per cent of the retail grocery trade, and petroleum products is dominated by four companies (ABS, 2002). These and other industries have
been the subject of numerous inquiries and reports by the ACCC for monopolistic behaviour, and in general they have been exonerated. Even so, it seems likely that the presence of the ACCC acts as an effective deterrent to adverse abuse of market power across the economy generally as well as specifically to the agricultural sector.

The combination of large geographical areas, sparse population and economic activity, together with economies of scale (relative to demand), provide the ingredients for natural monopoly in many industries in country Australia, including transport, communications, energy supply, water delivery and often also in the transport, storage and processing of farm products. The quantity and pricing of these natural monopoly products are determined directly by government as the supplier or provided by the private sector subject to regulatory control on such conditions as universal service supply and price. In many cases these decisions significantly depart from an efficient level. An efficient price would be marginal cost, and here there are arguments for and against short run marginal cost (SRMC) versus long run marginal cost (LRMC) or a two-part tariff with a quantity charge set at SRMC\(^8\). Instead, in reality it is not uncommon for quite different prices to efficient prices to be set. Current prices include: a flat rate universal price for all regardless of differences in cost for equity and simplicity reasons; a price to cover costs for financial viability reasons, and then there are options on historical versus replacement costs and on the opportunity cost of funds; or, indexation of an arbitrary historical price. In many cases prices are well below supply cost resulting in excessive and inefficient levels of production and consumption of the inputs and the outputs they contribute to. Achieving society equity objectives with subsidies for infrastructure, and especially for business inputs, is a very blunt and inefficient instrument relative to the income tax and social security systems.

\(^8\) The Productivity Commission (2006, and especially chapter 3) provides an excellent and succinct summary of the different pricing options for road and rail transport, but with more general application.
When it comes to investments and major repair and maintenance projects for infrastructure, political pork barrelling seems to play a bigger role than formal, transparent and publically available benefit cost studies\(^9\).

Greater efficiency in the use of infrastructure and investment in infrastructure throughout Australia, but particularly in country Australia, will require significant changes in current mind sets and then in the transparent application and reporting of more formal economic benefit-cost analyses.

(e) Information Asymmetry

Differences in information held by the buyer and seller about product or input characteristics or about behaviour can lead to market failure in terms of a loss of the quality market resulting in efficiency losses and also losses for both the buyer and the seller as a result of the more informed player opportunistically exploiting their information advantage. Two, of perhaps several, areas of concern where asymmetric information has the potential to cause market failure in agriculture are food quality and safety, and insurance.

In many cases, consumers, and also buyers earlier in the supply chain, know less about some of the quality characteristics of food than do sellers, including health and nutrition, production method (such as organic fruit and vegetables and free range eggs). These experience and especially credence characteristics are not easily observed at the time of purchase by the buyer. In its extreme form, and as initially modelled by Akerlof (1970), opportunistic behaviour by the more informed seller can result in the market segment for the higher quality food (in terms of nutrition and taste, low probability of adverse health effects, organic grown) disappearing with an efficiency loss, including loss of the quality product segment of the market for both the buyer and seller.

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\(^9\) The story so far has been mixed. In the 1960s formal benefit cost studies were required for major water investments. But, the use of these evaluations for government investments in transport infrastructure has been infrequent, and then seldom made public. The recently established Infrastructure Australia has been charged with undertaking formal benefit cost assessments of public investments in infrastructure, however to date no public studies have been released, including for the infrastructure investment announced with the 2009 Australian budget.
In many cases businesses have both the incentive and the means to overcome information asymmetry problems. For example, many large and multi-product firms use quality brand names with reputations to protect, guarantees and warranties, return of product if not satisfied, and other marketing devices to effectively eliminate the information asymmetry between buyer and seller about high food quality and safety. Most but not all of consumer food purchases are from large businesses who trade on the safety and quality attributes of the products they sell. Further, these firms are forever on the search for innovative more effective and cheaper ways of guaranteeing food safety and quality to enhance consumer preferences for their branded food products.

Another set of strategies involving government policy intervention to reduce information asymmetry include regulations on processing and other production activities to ensure food safety, mandatory labelling of attributes, imposing standards and grades of “quality”, and providing a low cost legal system for buyers to take action against sellers for breach of contract. Government intervention, relative to the business strategies, may stifle business innovation and searching for lower cost ways of responding to the problem of information asymmetry.

In many parts of the food industry we find a combination of active business marketing strategies and government regulations. Questions to be asked include: the rationale for government intervention over business corrective strategies; if intervention, then the choice of regulations on production processes or product outcomes, mandatory labelling of product attributes, strengthening the legal system against misleading and deceptive product marketing, or education and training of industry and their employees; who pays; and, rationalising the current system of duplication and different regulations across states and different businesses.

Insurance as one of the strategies to manage and reduce risk raises similar information asymmetry and market failure problems across the economy in the case of buildings and machinery, but the problems are much larger in the case of insurance against the variability of climate and of yields. In the later cases,
problems of moral hazard as well as adverse selection can result in market failure. This is one of the reasons for the limited use of crop and livestock production insurance as a risk management tool in Australian agriculture. However, the agricultural sector does have access to other risk management strategies, including diversification in production and employment, and prudent financial management.

4. Market Failure Versus Government Failure

Market failure provides a necessary condition but not a sufficient condition for government intervention to achieve a more efficient outcome. In the majority of cases of market failure the policy intervention will change the allocation of scarce resources to reap only a proportion of the theoretical efficiency benefit. In some cases, perhaps extreme ones, the correction will result in a net efficiency loss. The establishment and operation of policy interventions involve administration and compliance costs, and the diversion of scarce resources from alternative productive uses. Inevitably government intervention to correct a market failure provides incentives and rewards for costly to society rent seeking by organised pressure groups, usually of producers. That is, in practice, government failure has to be matched against market failure. Ultimately the magnitudes involved in the trade-off are empirical questions, and then only imprecise and often contentious estimates can be provided. An element of differences in philosophical position and belief and legitimate differences in estimates of the benefits and costs of intervention will lead different people to reach different answers on the extent of a market failure, the choice of intervention instrument, and the magnitude of policy correction for individual market failures.

Politicians and the bureaucracy responsible for policy interventions to reduce the adverse effects of market failures often have other objectives in addition to efficiency. Politicians are heavily motivated by decisions that achieve better electoral outcomes. Here, distribution of the benefits and costs of policy interventions loom large. Usually the benefits are widely dispersed across the economy, while costs are more concentrated and resisted by more effective lobby groups. The bureaucracy often gives some weight to interventions which expand

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10 Stigler (1975), Peltzman (1976) and Olson (1982) were early and influential contributors to the points made in this section.
their empires, and they favour command and control interventions which they control relative to market based taxes and tradable permits as the policy instrument.

Even with the best intentions to correct market failures to achieve efficiency gains, the responsible political and bureaucracy processes are hampered in their interventions by imperfect information and imperfect instruments. Choice of the socially efficient quantity with externalities, public goods, monopolistic behaviour and the use of a common pool resource require extensive technical and economic information about the relevant MPB, MSB, MPC and MSC functions. Given the imperfect information, the market failure correction inevitably will be below or above the efficient level, and in extreme cases the correction will result in a net efficiency loss. Further, with changes in tastes, technology, other parts of the economy, and so forth, the efficient quantity and market correction also change over time.

In the case of interventions for external costs and information asymmetry, in most cases only a proxy variable with a less than unity correlation with the variable of direct interest can be measured and used as the base for the corrective tax, tradable permit, or regulation. As a result, some non-distorted decisions are changed by the intervention as well as the decisions to be corrected, and so reducing the net efficiency gain to society.

A complement to government policy interventions in the operation of markets is the incentives and rewards for rent seeking by lobby groups. Not only do the lobby groups focus more on the distributional outcomes and less on efficient interventions, political rent seeking by lobby groups divert resources from otherwise productive activities to investing resources to capture for their constituents some of the economic rents often referred to as the much larger rectangles of economic surpluses than the efficiency triangles. Further, additional public resources often are required to respond to and partly to balance these private rent seeking activities.
Policy interventions to correct market failures require additional resources for administration by government and for compliance by the private sector. These are a part of the social cost of the intervention, and it reduces the net gain in economic efficiency. Differences in administration and operating costs by instrument often are important considerations in the choice of the market failure policy intervention.

5. Equity and Redistribution

Equity of outcomes and opportunities is an important objective guiding economic and social policy interventions throughout the Australian economy. Market forces driving an efficient allocation of resources can generate a variety of distributional outcomes for producers and consumers. There is a comprehensive set of redistributive instruments available to all, including those in the agricultural sector. These include: a means tested system of direct social security pensions and allowances (for the aged, those with disabilities, carers, the unemployed and for families with children) provide over a half of the income of the bottom twenty per cent of the population (ABS, 2007); a progressive income tax system whereby the five per cent of highest income taxpayers (with incomes above $75,000 in 2006-07) pay 60 per cent of the total income tax (ATO, 2009); free or heavily subsidised education and health services with universal access conditions; and, a large number of public goods available to all. Of special concern to the agricultural sector is whether over and above these general redistributive instruments there is a case for additional special assistance to the sector, such as drought assistance.

There seems to be little debate, and with good reasons, that the general redistributive programs meet the society equity objective for employees, those willing to accept an employee position, the aged, those with physical and mental disadvantages, carers, and single person families with child care responsibilities in the agricultural sector as well as those in other parts of the economy. Even so, under current policy, Australian primary producers, but not other small business

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11 These results are provided formally in the first and second theorems of welfare economics (for example in Perloff, 2009).
owners, are entitled to Newstart type unemployment benefits with much more
generous income and asset tests.

The main area of contention is the social/political acceptance of, and the
effectiveness of, the general system of support for both temporary income
fluctuations and longer term structural income losses facing the self employed
operating small businesses, not just farmers but also those in the farm input
supply, transport and restaurant segments of the food and fibre supply chain.
There is ample evidence that farm businesses face large fluctuations in their
incomes as a result of, for example, variable climate, and not just droughts but
also frosts, floods and unseasonable storms, with bush fires, and with variable
commodity prices. But, small businesses in other parts of the agricultural sector,
and in other parts of the economy, can make similar claims. In terms of economic
efficiency, these fluctuations are a given feature of the decision environment, and
resources should be invested only if over time the good years more than
compensate the bad years. Also, appropriate risk management strategies can be
used, and are used by many, to smooth income and consumption. In deed, most
farmers recognise the uncertainty and variability context in their decisions. For
example, over 70 per cent of farmers did not draw on drought assistance over the
last few years (Productivity Commission, 2009).

Like small businesses in other parts of the economy, farms experience a high
turnover rate with many failures. The Productivity Commission (2009) found that
the bottom 25 per cent of Australian farm businesses reported a negative taxable
income throughout the period 1988-89 to 2007-08. This suggests a large structural
adjustment problem in the farm sector, although some of these are mature families
and life-style farmers with other non-pecuniary objectives.

There are different views about whether small businesses in general, and primary
producers in particular, should be offered special assistance to adjust to structural
changes. One view, expressed in Garnaut (2008) for example, is that Australian
redistribution policy focuses on compensation for low returns to labour, including
unemployment, but not on low returns to capital, and this includes farm capital.
Generally this has been the policy outcome. But there are some notable exceptions
for agriculture with the compensation programs for restructuring the egg laying and dairy industries, drought assistance to farm businesses, and very significant compensation to some pollution intensive industries under the proposed Carbon Pollution Reduction Scheme.

For assessed long term financially viable small businesses, the finance sector provides assistance to bridge short term fluctuations in revenues and income. The Productivity Commission (2009) found no evidence of market failure in viable farms gaining access to finance. That is, there is an effective market solution to the variability issue\(^{12}\). The absence of market failure in the capital market then rules out the need for government intervention via an income or revenue contingent loan system operated through the Australian tax system as proposed by Botterill and Chapman (2009). Government provided information, with its associated public good properties, to improve management, including risk management strategies, of small businesses generally, and of farmers in particular, potentially corrects a market failure.

Old lessons on the bluntness of subsidies on inputs such as on interest rates and transport and on outputs as a mechanism to provide assistance to low income farm families seemingly have to be rerun from time to time. The subsidies are poorly targeted in supporting the genuine disadvantaged, they distort investment and production decisions and the incentives and rewards from risk management decision options, often they will hold-up voluntary restructuring, and they perpetuate similar problems arising again in the future.

While highly critical of past drought assistance policies, the Productivity Commission (2009) recommend a significant revamp of drought assistance on the basis that farm family businesses are different to other businesses. I am happy to agree that the proposed alternative is less distorting to decisions and better targeted for redistribution for equity than current policy. However, the claims of

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\(^{12}\) Government policy in this area is characterised by inconsistent statements along the lines that only farmers assessed as long term viable are assisted, yet the private capital markets with arguably more expertise and inside information than the government agencies have not assessed the businesses to be long term viable. Of course, in reality both the private sector and government agencies will incur both type 1 and type 2 errors in such assessments because of imperfect knowledge.
peculiar attributes of farm family businesses in order to justify an additional
income support over and above that available to all other small businesses are
difficult to defend. The claimed special conditions by the Productivity
Commission (2009, p. 173) are:

“These factors include the impediments to some farmers or their families seeking
off farm sources of income, the need for ongoing environmental stewardship of
farming land and the desirability of retaining current ownership of valuable assets
in some situations, even when income is temporarily negligible or negative.
Having a farmer-specific income support program of limited duration also has
some synergies with addressing barriers to adjustment.”

While some farm families are geographically distant from alternative employment
in terms of travel distances, at the same time many are no further away in terms of
travel time than those in the capital cities and large country “sponge cities”\(^\text{13}\). In
the cases of all small businesses, not just farming, low incomes for some do not
destroy the land and capital assets. Their continued availability to the economy is
not an issue, but rather their ownership and price. Because poor environmental
stewardship has an explicit cost of loss of asset value to the owner, there is no
market failure case for additional assistance to farmers to preserve assets.
Handouts to selected recipients merely slow down the transfer of the assets from
poorer managers to better managers. The special assistance is a barrier to
structural adjustment rather than a facilitator as claimed. Operating a small
business in all industries is a tough Darwinian game of survival of the fittest in
which it is inevitable that there are losers as well as winners. Entrepreneurs,
including farmers, are volunteers to the industry who should, and most do,
recognise the risks of failure as a trade-off to the chances of success and other
forms of utility.

It seems clear that a sizeable proportion of farm families earning low incomes and
adjudged non-viable by the finance sector will continue to have income and
consumption levels below general community standards, and that for them
adjustment out of their current farm is the only long run sustainable option. In the
future, past pressures for structural changes associated with supply expanding

\(^{13}\) Around 40 per cent of farm families report earning off-farm wages.
faster than demand resulting in a long term downwards trend in the terms of trade, labour costs rising relative to capital costs, and scale biased technological change, are likely to place continued pressure for larger and more capital intensive farms. To date, the provision of government financial grants to people unable to adapt to structural changes and to exit agriculture has proved to be a tough policy problem with no effective solutions. The farm exit package of current drought assistance arrangements designed to facilitate this structural adjustment process has been little used and has been assessed by the Productivity Commission (2009) as ineffective. Similar assessments were made of the Rural Adjustment Schemes available in the 1970s and 1980s (Musgrave, 2000). Providing management information, and retraining and education programs as available to the long term unemployed, may assist.

6. Conclusions
The Australian agricultural sector in the future, as in the past, will make better decisions using a mixture of markets and government policy interventions.

Responding to changes in market prices, businesses and individuals are best informed and placed to respond flexibly and quickly to the multitude of changes, both shorter term fluctuations and longer term trends, in climate, technology, relative input costs, tastes and incomes, and so forth which characterise Australian agriculture. In the absence of market failures, these market based decisions on what quantities to produce and consume, and how to produce, also are efficient from society’s perspective.

Government policy interventions can contribute to better market decisions in at least three general areas, namely property rights, correcting some market failures to improve efficiency, and redistribution to achieve society equity objectives. Each of these areas is evolving and arguably is in need of further research and actual reform. Quality property rights and low transactions costs are basic building blocks for effective markets for both products and factors of production to work. Water property rights and a review of regulations in other markets to reduce transaction costs should be high on the Australian reform agenda.
Market failures can be found in agriculture for public goods, externalities, common pool resources, monopolistic behaviour and information asymmetry. While the corrective policy correction is well understood, in practice the choice of government intervention, and its form and magnitude, has to balance the market failure against a number of challenges and government failure. In particular, information on the magnitude of the market failure and then the required corrective intervention is imperfect, and governments tend to rely too heavily on information provided by rent seeking lobby groups. In many cases the feasible or low administrative cost point of policy intervention is imperfectly correlated with the externality. Current areas of poor policy, and priority areas for policy analysis to correct market failures, include the allocation of land and water resources between agriculture and the environment, asymmetry of information about food quality and safety between buyers and sellers, the pricing of and investment in infrastructure for agriculture with natural monopoly characteristics, and external costs of land, air and water pollution by all sectors of the food and fibre supply chain.

To meet society equity objectives on both outcomes and opportunities, Australia has in place an extensive income transfer system and low cost provision of basic services to all. Arguments that agriculture is special, and that it needs additional redistribution instruments over and above these general provisions, such as drought assistance, tax concessions for remote living and structural adjustment assistance, are contested in this paper.
References


