

MANAGING CHANGE: Lessons for water¹

J.C. McColl, Visiting Fellow, Policy and Economic Research Unit, CSIRO Land and Water

M.D. Young, Chief Research Scientist, Policy and Economic Research Unit, CSIRO Land and Water.

Abstract

As Australia begins to implement the National Water Initiative, there are lessons to be learned from past experience in rural adjustment and rural assistance schemes. The experience is rich and the messages powerful.

Government intervention in the process of adjustment and change can impede, facilitate or expedite adjustment.

To maximise the opportunities arising from water reform, several important lessons can be identified. The role of autonomous adjustment processes in generating individual and community wealth is vital.

A portfolio of approaches to securing additional water for the environment through the market place are discussed. Opportunities exist to use existing processes to manage environmental impacts, facilitate water trading and target any adjustment assistance.

Key Words: Water reform, change, structural adjustment, rural assistance, environmental water, policy options.

1 Introduction

Australia has a rich experience in the development and implementation of structural adjustment programs, particularly in the rural sector. There have been, at least, ten rural structural adjustment schemes since the 1930s, each building upon the knowledge gained from those that came before them. There have also been at least five government initiated and funded reviews of the general rural adjustment schemes and a number of specific industry assistance enquiries, as well as more general reviews of rural adjustment in a number of government agricultural policy reports.

Drawing upon this experience, this paper highlights opportunities available to governments to facilitate and expedite autonomous change.

When adjustment is impeded, the most significant adverse impacts are often on the capacity of the most talented in a district or an industry to innovate.

¹ This paper is an abridged version of a CSIRO report (McColl and Young 2005). Copies of the report can be downloaded from <http://www.clw.csiro.au/publications/technical2005/tr16-05.pdf>

Adverse adjustment impacts on people and on the environment are most effectively managed using separate policy processes and instruments. History suggests that most attempts to impede autonomous adjustment backfire on people, regions, resource productivity, industries and the national economy. While recognising that adjustment from both economic and social perspectives has both positive and negative aspects, the approach taken focuses mainly on benefits and opportunities arising from facilitating and expediting change and adjustment.

Water allocation issues are capturing national attention. It is recognised that the implementation of the National Water Initiative (NWI) (COAG 2004) and the Intergovernmental Agreement (IGA) (COAG 2004a) and of the “Living Murray first step decision” which aims to recover 500GL over five years to enhance environmental flows (COAG 2004b) will have important structural adjustment implications.

Given the paper’s focus on ways to facilitate and expedite adjustment, a range of opportunities for securing water for the environment through the market place are identified and discussed.

2 Change and structural adjustment

Structural adjustment refers to changes in the size and make-up of an economy in terms of the distribution of activity and resources among firms, industries and regions. These changes occur from the interaction over time of a wide variety of natural, social and economic forces within the economy. The more obvious responses are resource shifts among industries and regions, and in the development of new products and processes.

Typically, structural adjustment is necessary when some of the original structures that are in place are no-longer viable or sustainable, often as a result of significant changes in both market demands and in technology and management systems.

Change and adjustment is an essential and inevitable outcome of economic growth and is a process without beginning and without end. If Australia is to remain a wealthy and affluent country, the reality of change needs to be accepted and the overall net benefits of competition and the autonomous structural adjustment it induces must be positively and continuously pursued. Exposure to competition is a necessary part of processes that maintain and increase national wealth.

Musgrave (1982) points out that although adjustment has both positive and negative dimensions, discussion of the issue generally takes place in the context of a declining sector. This leads to the term “adjustment” unfortunately tending to have a pejorative ring about it that makes objective discussion difficult.

Structural adjustment involves opportunity coupled with risk. There is an optimal time to change and, in cases where natural resource access is diminishing or more efficient technologies are being introduced, not all farm businesses can remain in agricultural production. The sum of many individual and often very difficult, personal choices determines how fast adjustment occurs.

One of the most difficult issues to come to grips with is the rate and extent of structural adjustment across rural and regional Australia resulting from changes in global market conditions, and reflecting the flexibility and innovativeness of farmers in adapting to these pressures. These forces for change are typically outside of the control of government. Change or perhaps more correctly described – structural adjustment – tends to be the norm and largely occurs autonomously.

While autonomous structural adjustment is a necessary part of the maintenance of a vibrant rural sector, four important questions about the role of government in structural adjustment are frequently raised:

- Is there a role to act to either speed or slow autonomous adjustment?
- Should policies be devised to change the nature and direction of structural adjustment?
- When are the distributional effects of structural adjustment – whether induced by government or forces beyond the control of government – sufficient to justify intervention in the process?
- If government intervenes, how effectively can it accomplish intervention goals?

Further, one of the most challenging issues for government is that autonomous adjustment processes often reveal the extent of government failure to put in place policies to manage social and environmental externalities. In such situations, it is tempting either to blame adjustment and/or attempt to impede adjustment rather than address the underlying failure.

2.1 Regions

A comparison of the rates of structural change across regions reveals diverse experiences with some regions doing better than others. Non-metropolitan regions had much greater variation in rates of structural change reflecting their typically smaller industry bases and a tendency for regional economies to be more specialised.

Experiences of regions in coping with change are mixed. A high rate of structural change does not necessarily result in a low or even a negative rate of income or employment growth. Those regions with a dominant farm sector generally have experienced the greatest variation in adjustment impact – sometimes positive and sometimes negative. Significant income and employment growth can be the result. In other regions, also with high rates of structural change, negative impacts have resulted. Similarly, regions with low rates of structural change have experienced a diversity of income growth and employment impacts.

One of the most important characteristics of adjustment at the regional level is that relatively inefficient businesses or practices are replaced by more efficient ones. Thus regional impacts are often much less than those that occur in an industry sector.

For example, the regional impacts of reducing water allocations are much less than those that occur at the industry level. The Centre for International Economics (CIE) (2004) recently observed that a 10% cut in the quantity available for irrigation would reduce agricultural income by around 2%. They go on to observe that a once-off efficiency improvement of 1.3% across all irrigators in Australia is sufficient to completely off-set direct value added losses.

There can, however, be significant impacts on local industry. If, for example, there is a decline in the volume of sugar or rice produced in a region, then one or more mills may need to close. Initially, local government revenue may be adversely affected but the experience in many towns is that often the resultant change develops more, not less revenue. Vulnerability is greatest when there is little diversity, industries are concentrated and no obvious alternative opportunities exist.

2.2 Farm businesses

At the farm level, adjustment is about individual farm operators and farm families continually adapting farm businesses and possibly lifestyles to a wide range of changes to their operating environment (Gow and Stayner 1995).

There is an early mover opportunity, those who respond as soon as a viable new opportunity arises tend to maintain the resources necessary to adjust, while those who continue with less competitive practices gradually consume the resources necessary to finance adjustment. Farm businesses that adjust tend to prosper.

Musgrave (1982) points out that while the need to adjust may be suggested by low returns to capital or low farm incomes, there is a distinct time lag in individual response for a range of reasons including non-pecuniary (lifestyle).

Experience suggests that Australian farmers, as a whole, and Australian rural communities have demonstrated great skill and capacity in adjusting to changing circumstances. Farm numbers have declined by about one quarter (or almost 46,000 farms) over the 20 years to 2002-2003 (Productivity Commission 2005). Overall, the result of exposing the farming sector to market forces has been the retention of a vibrant and internationally competitive Australian farm sector, dynamically engaged with an ever changing global economy.

One of the myths of Australian agriculture is that most rural households earn most of their income from "their" farm. Over the last decade or so, an important farm adjustment strategy has been the increasing linkage between farm households and rural towns through involvement in "off-farm" work (Peterson and Moon, 1994 quoted in Gow and Stayner 1995). For example, for family owned broadacre farms in 1992-93, the proportion surveyed earning off-farm income was 34%, earning around 37% of total income.

It is also important to recognise that businesses are in markets, and that industry structural adjustment is an outcome of business decisions and adjustment.

2.3 Communities

Changes on farms have outcomes that affect rural communities and, particularly in those regions where farming is the dominant economic activity. In those regions largely dependent on a dominant agricultural or horticultural industry with significant long-term investment and little opportunity for diversification, the adverse impacts can be quite significant.

The resilience of individuals and communities as reflected in the ability to absorb changes or manage changes successfully is important (Hassall & Associates 2003). Vulnerability is also greatest in areas where communities are living beyond sustainable limits. If, for example, salinity is widespread there may be little opportunity to continue with current practices.

Overall, however, given the natural resilience of most rural communities in exploring new opportunities, experience suggests that the actual effects of adjustment on communities are often less than may initially have been expected by those most likely to be affected. Opportunities to pro-actively replace income derived from producing services to agriculture with income derived from providing services to others often emerge.

2.4 Resource and environmental sustainability

Some responses to structural adjustment pressures can lead to reduced resource productivity. For example, on-going support for practices and actions that worsen impacts on resource productivity, such as fodder subsidies provided as drought assistance, encourage higher stocking rates than would otherwise be the case. Over grazing can be the result which in turn can lead to soil erosion, shrub invasion and the loss of perennial pastures.

On the other hand, structural adjustment can result in a reduction in the level of adverse external environmental impact. For example, the relocation of irrigation from a high salinity impact area to a lower salinity impact area resulting from water trading from the Kerang-Pyramid area in Victoria to new developments in the Sunraysia area. The new developments are in areas of improved long term sustainability in relation to river salinity management and are subject to salinity impact zoning and a salinity levy system.

Similarly, South Australia has recently introduced a salinity zoning policy preventing the trading or movement and use of water for new developments unless the impact on river water quality is reduced, or the impact is off-set by an agreement, undertaking or obligation for works, actions or practices to prevent increases in river salinity (DWLBC 2005). As a result, those involved in the relocation of irrigation can benefit from increased opportunities to produce, and other water users benefit from reduced river salinity.

Overall, a major benefit of a positive response to change through structural adjustment can be the relief of pressure on the natural resources being used in production. Conversely, programs that slow adjustment or shield farmers from the need to plan for change can lead to land degradation and reduce regional productivity.

3 Government intervention

3.1 Rationale

In line with other industries, the existence of various forms of market failure in agriculture has been suggested as justification for intervention by government and the provision of assistance. Market failure arguments for the provision of assistance have generally been based on:

- deficiencies in property rights (externalities), in pricing (resources priced below full cost), and in information;
- the impact of technical change leading to inefficient capital to land investment and the need to deal with the consequent sunk capital slowing down adjustment; and
- the erosion by policy-induced change of previous policy created rents through reduced barrier protection or by the introduction of new policies restricting resource use.

In general, governments intervene to improve the operation of markets and adjustment processes for:

- efficiency;
- equity; and

- welfare reasons.

There is an inevitable policy trade-off between pursuing efficiency, equity and welfare objectives. The nature of the trade-off generally reflects the political realities at the time.

Intervention for efficiency reasons aims to improve the efficiency of resource allocation whereas intervention for equity reasons focuses on meeting social equity objectives. However, if the market failure is due to a deficiency in the definition of property rights, it is more efficient to fix up the property rights problem first before considering any other form of intervention.

The equity case for government intervention in the adjustment process is somewhat difficult to argue. As a general rule, the equity case for adjustment assistance is greatest when the government policy change is sudden and unexpected or when the nature of formally defined property rights and other institutional arrangements is being changed. The case perhaps is least when intent to change the customary administrative conventions and implicit use rights in relation to access and use of resources for production is signalled for a reasonable period of time. In the latter situation, farmers have the time to develop alternative strategies and write-off investments made in the previous policy environment.

Welfare reasons are different from equity reasons and are reserved primarily for those, who as a result of an adjustment process are expected to or already are experiencing extreme financial or social hardship. In the past, farmers could be asset rich but income poor with the result that they were ineligible for welfare assistance. Recent policy reforms suggest, however, that asset rich but income poor people should have access to welfare assistance, and that this assistance is more efficiently and, arguably, more equitably administered through specialised welfare delivery agencies like Centrelink.

3.2 Policy and process issues

Change and structural adjustment raises a number of important policy and process issues relating not only to the justification for government intervention but also to the nature of, and the process adopted for the development and implementation of any government intervention. These include procedural fairness, equity issues, whether the change is policy or market-induced, and the question of compensation or adjustment assistance.

Where there is a case for government intervention, program choice tends to be influenced by whether or not the need for change is market or policy-induced. In the latter situation, a case for compensation can be made. Program choice, design and delivery can also be influenced by the need for procedural fairness and to be seen to be dealing with those adversely affected in an equitable manner.

Nevertheless, often a pragmatic choice is made between the payment of compensation and the provision of adjustment assistance. There are specific situations where the wider community, generally expressed through the political process, supports compensation payment to those adversely affected, even though there is no legal case for compensation.

Adjustment assistance can be appropriate in situations where the affected group is relatively easy to identify and limited in its capacity to handle the adjustment pressure, and where the impacts can be well specified and are clearly associated with the proposed policy change. Adjustment assistance programs tend to be more selective in

design and delivery than compensation programs, and are generally based on an assessment of need.

3.3 Rural adjustment and assistance

3.3.1 Changing policy objectives and tensions

A review of government policy since the 1930s reveals that there has been progressive incremental policy change from initially supporting farm incomes to ensuring that rural assistance was not, in effect, supporting otherwise non-viable farm business operations and thereby impeding structural adjustment (Botterill 2002). For many years, financial assistance was provided on an industry or individual basis for a range of reasons, generally related to market price or seasonal fluctuations adversely affecting farm incomes.

Competition is now recognised as an important ingredient in the search for national wealth and something that adjustment programs should avoid impeding. The stated policy emphasis has changed to one of facilitating adjustment and encouraging self-reliance.

Within this progressive change in objectives, there have been, and to some extent still are, some important policy tensions. These policy tensions relate to the questions of whether the provision of assistance is to support farm business income during periods of temporary hardship, or to provide welfare assistance to farm families, or for supporting self-reliance and facilitating adjustment.

3.3.2 Business or welfare assistance?

There has been continuous policy tension between the provision of assistance to farm businesses and a desire to meet the welfare needs of the farm family. While for much of the period little distinction was drawn between these two aspects, in recent years, there has been a move towards greater self-reliance of the farm business in line with the improved ability to access social security for farm family welfare needs.

The greater self-reliance of the farm business was to be achieved by improving the farm manager's capacity to cope with structural adjustment pressures largely through programs that invest in up-grading business and risk management capabilities.

3.3.3 Exceptional circumstances and climate change

Recently, a new policy tension has developed between the stated government policy of self-reliance and the continuing provision of drought "exceptional circumstance" business assistance funding. On the one hand, there has been an increasing emphasis on risk management strategies, recognising the increasing availability of financial instruments to deal with risks such as futures, and including the provision by the Commonwealth Government of an attractive financial arrangement in the form of the Farm Management Deposit Scheme. On the other, there is evidence of virtually continuous provision of drought "exceptional circumstance" business support to certain so-called "marginal" agricultural areas. This business assistance arguably discourages desirable adjustment of farming systems and business size to that more in harmony with the natural environment. In effect, the provision of exceptional circumstances business assistance is in conflict with the requirements of long term sustainable natural resource management.

Perhaps more importantly, there is a risk that adverse climate change may be mistakenly interpreted simply as a 'prolonged drought'. During the public debate on the

recent drought and the provision of exceptional circumstances assistance, mention was made of the possibility that Goyder's Line² has shifted, and that special assistance perhaps should be provided to farmers to change farming systems in the "marginal lands". Currently there is no evidence as to whether Goyder's Line has shifted or not. In any event, more generally, recent research relating to Australian broadacre agriculture indicates that appropriate farming systems can effectively manage the risks associated with a highly variable, low rainfall climate so long as they have adequate scale. Further, biophysical indicators of vulnerability such as rainfall and soil type are poor indicators of the vulnerability of farm households. A range of factors such as education levels, average farm income, diversified and appropriate farming systems, farm size, internet access and membership of Landcare groups are more important than climate risk in predicting which farms will survive (Nelson et al 2005).

3.3.4 Differential effects – a two-edged sword

Generally, structural adjustment assistance given to some erodes the competitive position of the non-recipients of this assistance.

The provision of adjustment assistance can be a two-edged sword with the extent of differential effect depending upon choice of instrument and the rules used to determine eligibility of access to the program. Further, depending on how diligently the rules of eligibility are applied (for example, in assessing future viability), providing assistance carries the risk that some farm businesses assisted may become long-term clients of assistance programs. In any case, it could be argued that if the farm business is viable, then by definition the financial system should be willing to provide whatever finance is required.

Failure to understand how structural adjustment and other support measures in one market adversely affect another market is common. The essential point is that all dimensions of the market must be considered with care. Farm businesses compete with one another in three markets:

1. The market for their products;
2. The market for the land they use; and
3. The market for production inputs, including water.

Often even well-intentioned assistance programs frequently distort input and land markets.

In the long run, if individuals and communities are isolated from important changes in the market place and/or the emergence of new technological opportunities, the changes necessary to ensure their survival may not be adopted.

4 Policy Instruments and adjustment packages

In line with the progressive changes in scheme objectives, and in the development of adjustment and assistance packages, there has been expansion and refinement of policy instruments used to provide adjustment assistance. These include concessional loans, interest rate subsidised commercial loans, rehabilitation loans, household support, and grants to individuals or groups.

² For a description of Goyder's Line see Meinig D.W (1962).

From both an efficiency and equity perspective, governments can and in the past have, intervened in ways that have impeded, facilitated or expedited structural adjustment, sometimes using instruments that are in conflict (see Table 1).

4.1 Adjustment packages design

In developing effective adjustment packages, a number of essential elements must be considered. These include broad economic, environmental, social, regional, political, financial market and risk aspects. The process of development of policy options, and the most suitable implementation approach (for example, timing including the interval between announcement and implementation, whether up-front implementation or phasing in, and perhaps providing a choice of options) are also important.

A recent example is the Dairy Industry Adjustment Package developed to assist the dairy industry to adjust to the removal of State regulations on milk production from 1 July 2000. Harris (2005) provides an interesting review of the design and implementation of the adjustment package.

4.2 Critical lessons

What has past experience taught us about change, structural adjustment and government intervention?

- Forces for change will continue, and there will be opportunities (benefits) as well as costs.
- Overall, national benefits from structural adjustment will exceed the costs.
- Most structural adjustment is and will continue to be autonomous without specific government intervention.
- The “appropriate” rate of structural adjustment is not known and providing changes are occurring in a procedurally fair manner, there is no logical basis for masking, slowing or speeding up the rate determined by markets.
- When pressures for change are high, there is a risk that well-intentioned adjustment programs can be counter-productive and in the longer term, result in a reduction in community well-being and wealth.

What should governments do?

In the long run, economic experience suggests that the nation, regions and communities will be better off if governments:

- remove impediments to adjustment;
- facilitate and expedite rather than impede such adjustment; and
- separately manage the consequences, including any adverse effects on third parties and /or the environment, rather than trying to buffer or even counter change.

Table 1: Rural Assistance - instruments, objectives and impacts

Adjustment instruments	Adjustment objectives	Expected adjustment impact	Comments
Concessional loans including interest rate subsidies	Debt reconstruction	Impedes	Inequitable, leave to financial system and autonomous adjustment
	Farm build-up	Expedites/Impedes?	Inequitable, eligibility criteria may impede, leave to financial system and autonomous adjustment
	Land trading by adjustment authority	Expedites	Ineffective and unnecessary
	Drought exceptional circumstances (business assistance)	Impedes	In conflict with self-reliance, with natural resource management, and is inequitable,
Grants	Exit and re-establishment	Expedites	Useful in an adjustment package but generally low uptake
	Retraining for other employment	Facilitates	Useful in an adjustment package but generally low uptake
	Improving management capacity	Facilitates	Improves decision making and risk management capabilities
	Obtaining qualified professional advice	Facilitates	Assists with adjustment related decisions
	Industry adjustment	Expedites	Provision of transition assistance following policy change
	Regional adjustment and development	Facilitates	Stimulates regional economic activity, response to change encouraged

What about the use of specific instruments?

- The general provision of concessional finance including its provision for exceptional circumstances is not only inequitable but also unnecessary and generally counterproductive (impedes structural adjustment);
- While the uptake of re-establishment grants or loans tends to be very low, they can be offered at minimal administrative cost and may be important in speeding up acceptance of an entire reform program (expedites adjustment);
- Grants and loans for improving management skills and obtaining qualified professional advice can be effective in facilitating adjustment;
- Grants within an industry adjustment package with clear adjustment objectives can be effective in expediting industry adjustment; and
- Regional development grants with an emphasis on improving both hard and soft infrastructure can encourage a positive environment for adjustment in which individuals and communities accept the need for change and pro-actively search for new opportunities (facilitates adjustment).

In summary, it appears that government structural adjustment policies and programs will have better economic, equity and welfare outcomes if they concentrate on:

- improving institutional arrangements, in particular, providing clear definition of interests, rights and obligations in resource access and use, and charging the full costs of resource use;
- facilitating structural adjustment by establishing and using efficient markets enabling dynamic response to changing social, economic, technical and biophysical conditions;
- assisting managers to adapt to change by improving understanding of both managers and regional communities of the issues involved in the adjustment process;
- providing increased access to relevant information and training; and
- investing in specific and targeted economic (industry or regional) development and adjustment packages and projects.

As part of these initiatives, there is a need to ensure that there is effective coordination among relevant agencies coupled with consultation and community or industry involvement, and monitoring to ensure desired outcomes are achieved.

Finally, it often seems easier for governments to hinder autonomous adjustment in response to local pressures and reflecting a failure to manage social and environmental externalities, but in the process disadvantage those adjustments of greatest value to the community and even to an entire region.

4.3 Implications for water reform

One of the general thrusts of the NWI is to increase the range of individual choices available to irrigators and, in particular, to make structural adjustment more attractive than it otherwise would have been.

Trading water is one of the main mechanisms that irrigators use to adjust where and how they use water. In the irrigation industry, pressures for structural adjustment will

come from autonomous external processes associated with changes in technology and the market for irrigated products. Other pressures have arisen because of previous decisions that sometimes located irrigation in sub-optimal areas. In addition, pressures can be expected to emerge as the NWI is implemented. As a result, there is likely to be:

- Increased opportunities to trade water;
- The separation of land use controls from water allocation policy;
- Increased allocations to the environment and decreased allocations to water users;
- The emergence of new competitors in the water market, including urban water suppliers, environmental managers and investors; and
- Actions to reduce the adverse impacts on rivers of increased forestry, more farm dams, less irrigation water returning to rivers and increased groundwater development.

All can be expected to increase the value of water and change the ways that people seek to use water and the places where water will be used. In any event, the price of permanent (entitlement) and temporary (allocations) water, including options and other derivatives that may develop, will always be set according to future expectations of such factors as market prospects, climatic conditions and risk. The elastic demand for many irrigated exports will establish a logical limit to water prices.

4.4 Adjustment package design

The agreement by governments to fund the securing of the first step Living Murray environmental water could be argued as representing an acceptance by governments that it is a policy-induced change and on equity grounds adjustment assistance is justified.

The experience summarised in this paper suggests that any efforts made to mask long-term adjustment signals or even actions that distort these signals will not be in the interests of regions or the majority of people affected by them. Typically, signal masking and distortion works by disadvantaging more successful irrigators and, as a result, reduces the quantity and quality of induced innovation that would otherwise have occurred and work to the detriment of the region.

The management of externalities should not be confused with the management of adjustment. An essential step in addressing many of the problems associated with water management is the fuller specification of water access entitlements and the development of efficient water markets with low transaction costs coupled with an effective suite of policies to address any adverse effects of land and water use. It also requires the assignment of risks associated with these property rights and the full specification of opportunities and obligations associated with the application of water to land and other forms of water use. Ideally, this should be done before any consideration is given to adjustment assistance.

Care needs to be taken in designing any adjustment package, noting that adjustment assistance can impede, facilitate, or expedite efficient and equitable adjustment.

4.4.1 Impeding adjustment

Typically, the efficiency case for impeding the rate of structural adjustment is weak. Sunk costs are sunk and, as a whole, a nation will be better off if it invests to maximise

net benefits at the margin. Nevertheless, the extent of sunk capital in irrigation both on-farm and in water supply infrastructure is substantial and there may be efficiency gains from improving price signals in the short to medium term to make use of these assets. Where maintenance costs are greater than expected benefits, however, it is important that systems are in place for facilitating the rundown and eventual closure of inefficient channel systems and encouraging longer term investments in irrigation infrastructure elsewhere.

To deal with this possibility, the NWI also provides for water suppliers to introduce access and exit fees, but in a manner that does “not become an institutional barrier to trade”. The apparent aim is to ensure that water users are unable to:

- make free use of common pool resource infrastructure paid for and maintained by others; and/or
- avoid an obligation to maintain such infrastructure which they had previously agreed to maintain.

Other institutional barriers to trade and adjustment include the annual percentage limit on the permanent trade of entitlements out of an irrigation area, the jurisdictional inconsistency in the definition of entitlements, and the complexity and delay in water transfer administrative processes.

4.4.2 Facilitating adjustment

A desirable characteristic of instruments that aim to facilitate adjustment is that they do not mask long term signals in national and global markets for goods and services dependent upon water use, and do not lead to detrimental environmental outcomes.

The NWI heralds a new approach to water management characterised by the delivery of increased opportunities for water users to adjust. In particular, Murray-Darling Basin parties have committed “to immediate removal of barriers to temporary trade ... by June 2005”. Removing barriers to trade increases opportunities for individuals to adjust and become more profitable. If temporary transaction costs are low, then it is possible to couple this mechanism with long term leasing and other similar arrangements to efficiently facilitate adjustment whilst retaining ownership of the water access entitlement assets in a region.

Further, while at first glance the NWI’s interim threshold limit on the level of permanent trade out of an irrigation area may appear restrictive, 4% per annum over five years will result in movement of almost 20% of permanent water access entitlements and through the use of interim leasing arrangements, the effective transfer of potentially unlimited amounts of allocation water. Transfer waiting lists are emerging and administrative pathways are being found to circumvent the intent of this restriction. The main effect is an increase in transaction costs – a dead weight economic loss.

4.4.3 Expediting adjustment

Opportunities to introduce policies that expedite adjustment are many. For example, introducing programs that correct market failures associated with salinity and other adverse environmental impacts of water use. Adjustment programs and policies could also be used to facilitate the speedier re-alignment of supply channel infrastructure. The relocation of water through trading is likely to result over time in significant reduction in water users and use in some supply areas. Given the sunk capital in supply channel systems, the adjustment of the channel supply system may be slower than desirable and it may be beneficial both from an environmental and water use efficiency perspective to

encourage the remaining water users to withdraw from irrigation and possibly to relocate.

Once all efficient opportunities to save water at less than the cost of buying water from irrigators have been found, an important structural adjustment issue is the question of how to source the next tranche of environmental water for the River Murray and elsewhere. In the case of the River Murray, our impression is that most efficient infrastructure reconfiguration and other large management opportunities to realise water savings at a cost less than the value of purchasing water entitlements have been exhausted. If this is the case, then the next most efficient option is to find ways to encourage irrigators to return water to the river. Options for doing this include:

- taking out options for the supply of water for environmental purposes when pre-specified conditions apply;
- purchasing water on an opportunistic basis and essentially placing a price floor in the entitlement market until sufficient water is found;
- running a voluntary entitlement buy-back process where irrigators are asked to nominate how much water they are prepared to offer at different prices per unit of entitlement;
- compulsory buy-back of a small proportion of each water entitlement;
- the compulsory acquisition of larger amounts of water from selected areas or entitlement types; and
- making pro-rata reductions to all entitlements with or without the payment of compensation and the provision of adjustment assistance.

In specific situations and as being well articulated by ABARE research (Heaney et al 2005), the purchase of options has a clear role in the development of a portfolio of arrangements necessary for the efficient delivery environmental outcomes.

Typically, voluntary buy-back programs acquire water from those most able to do without it at a nominated price. On completion of the buy-back process, a settlement price is announced and all offers less than the settlement price are settled at that the settlement price. (It is also possible to run a tender program where entitlement holders are paid only the price they offer.)

The main merit of voluntary buy-back programs is that they search efficiently for those most able to adjust the size of their holding. The main downside of voluntary buy-back programs is that the payments made to entitlement holders are subject to capital gains tax.

While many states would need to legislate to allow compulsory acquisition of water entitlement, compulsory acquisition has a number of unique features that differentiate it from other options. First, any capital gains tax liability can be deferred. Second, the fair and just price that legislation requires normally includes a payment to compensate for any inconvenience and disruption imposed. Third, all irrigators are forced to consider carefully whether or not they could do without some water. If only a small proportion of each entitlement is acquired then most irrigators could be expected to seek ways to do with less and invest the money received in actions that make this possible. In cases where doing with less is difficult and if the price paid is just, irrigators should have enough money to buy-back entitlements from irrigators more able to adjust. In order to signal government awareness of the cost of buying back water, governments could offer

to waive any transfer, registration and stamp duty charges associated with the repurchase of water.

The main disadvantages of compulsory acquisition are administrative and political. In most jurisdictions new legislation would be required. Moreover, as most registers are not yet electronic, the costs of dealing with each entitlement could be high.

Under voluntary and compulsory options, there is a case for considering the merits of targeting acquisition to selected areas and entitlement types. In particular, there is a strong case for biasing an acquisition program towards those areas and entitlement types where use and/or the consequences of further development or trade tend to work against river health objectives. But before one targets, the likelihood that a voluntary buy-back program would target these same areas and entitlement types needs to be considered. The main areas and entitlement types that work against river health include:

- areas where salinity impacts are high;
- properties where unused “sleeper” groundwater entitlements exist;
- areas where water use is inefficient and no return flow obligation is in place.

On efficiency grounds there is also a case for targeting or compulsory closure of branches of irrigation systems, which as a result of trading, are now expensive to maintain.

Economic theory would suggest, however, that in many if not most cases, there will be a strong correlation between willingness to sell and situations that work against river health objectives. That is, the market place may well be such a powerful targetor that there is little advantage in attempting to develop a formal targeting process. The costs may outweigh the benefits.

Coincidence between buy-back offers and river health objectives is particularly likely if a premium over and above market price is offered and those considering significant adjustment see participation in a voluntary buy-back program as their best opportunity to get a high price for their water. If this is the case, then voluntary buy-back possibly underpinned by the power to compulsory acquire unprofitable channel systems and areas where irrigation and land use works against river health may be the most efficient way to expedite adjustment.

5 Concluding remarks

If adjustment is impeded, the most significant adverse impacts are often on the capacity of the most talented in a district or an industry to innovate. Australian history is rich with stories of the adverse effects of attempting to shore up existing businesses experiencing financial difficulties rather than allowing others the opportunity to enter and existing businesses to adjust and expand.

There are many opportunities for governments to facilitate and expedite change.

The future of Australia and its people – at the regional and at the National level – lies with processes that allow and encourage autonomous changes to occur.

Where unacceptably adverse impacts occur, whether on people or the environment, experience suggests they are most effectively managed using separate policy processes. In all cases, the first best option is always to address underlying policy

failures and not use restrictions on adjustment as a means to postpone the need to do so.

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