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INCOME DISTRIBUTION EFFECTS OF CLIMATE CHANGE MITIGATION POLICY

Key points

Low-income households spend much higher proportions of their incomes than other households on emissions-intensive products.

The direct price effects of the emissions trading scheme will be regressive. The effects will fall heavily on low-income households, so the credibility, stability, efficiency and longevity of the scheme require the correction of these regressive effects by other measures.

Correction of income effects in the lower half of the distribution is also necessary for anti-inflationary reasons through the early years of the scheme.

Approximately half the proceeds from the sale of all permits could be allocated to households.

Part of the payments to households could assist energy efficiency adjustments. The bulk could be passed through the tax and social security systems, with heavier energy efficiency commitments in the early years. The Henry taxation review could consider these issues.

This chapter provides a brief and preliminary survey of income distribution issues associated with the introduction of an emissions trading scheme. The Review is conducting modelling of distribution effects, which will be reported in the supplementary draft report. More detailed analysis of the policy response to distributional issues will be presented at that time.

The main guarantor of equity during rapid structural change is maintenance of economic growth and full employment within a flexible economy. Contemporary Australia is well placed to absorb major structural change, and it is important to the success of implementation of strong mitigation policies that this continue to be the case. Australia is currently experiencing high demand throughout the country for skilled labour of the kind that may be temporarily displaced by the differential impact of an emissions trading scheme. It is also experiencing shortages of unskilled labour in many regions.

While sustainment of these favourable circumstances is the hope of all citizens and the focus of official policy, these hopes and intentions may not be continuously realised. The mitigation regime, if it is to achieve its purpose, will need to last for a long time, and maybe indefinitely. Even a happy century would include periods of diminished prosperity. And even if labour displaced by the structural change associated with the mitigation regime were quickly employed elsewhere, there would still be important income distribution effects to be considered.

The emissions trading scheme is likely to be introduced into an environment of recent and perhaps continuing large increases in fuel, electricity and food prices—precisely the goods and services whose prices will be affected most by the scheme. In the early years, and perhaps for many years, other causes of increases in fuel, electricity and food prices will be much more important than the scheme.

This might be thought to make the introduction of an emissions trading scheme easier. What does it matter if prices that have increased by large amounts increase a bit more?

But it will in fact make the introduction of the scheme much harder. Households will not be able easily to distinguish between the varying sources of price increases, while agitators against the scheme will be busy spreading disinformation. And the price increases with other origins will have heightened the sensitivity of consumers and the polity to any further increase in prices.

Equity issues were always going to be critical to the successful introduction of the emissions trading scheme. The febrile environment of historically exceptional increases in energy and food prices, independently of the scheme, makes the development of measures to counter the potentially regressive effects of the scheme even more important. The transparent and effective communication of responses on equity issues to the community will be the key to acceptance of the scheme, and therefore to its credibility, stability, efficiency and longevity.

19.1 Impacts will flow through the economy, and will be uneven

An emissions price will influence patterns of production, consumption and investment. This, in turn, will change the distribution of income.

The distributional consequences of the emissions price will be spread unevenly throughout the economy. The way in which the emissions price flows through the economy is described further in Box 19.1.

Box 19.1 Economic versus legal incidence of the emissions price

There is an important difference between the legal and economic incidence of the emissions price. The legal incidence will rest with a range of industries that have emissions or imputed emissions above a certain threshold—that is, ‘points of obligation’. Parties with an obligation will need to acquire and acquit permits equal to their actual emissions. Such parties may include:

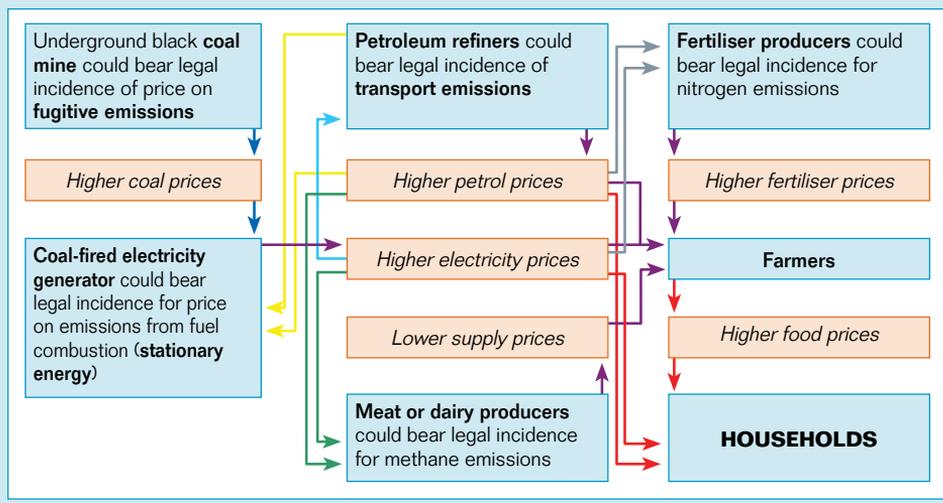
- electricity generators, for emissions from electricity production
- factories, for the release of industrial process emissions during production
- point of excise for (imputed) petrol emissions.

Parties will meet their obligation in a number of ways. They may purchase permits to cover their actual emissions, reduce their own emissions, reduce production (and associated emissions) or pursue some combination of these activities.

Most sectors will pass the cost of purchasing permits and reducing emissions down the supply chain. Pass-through will be quick and complete in some industries, and incomplete in others, depending on the nature of the competitive environment, and especially competition from imports. It is likely to be complete for petroleum products, and substantial but less than complete for electricity.

With a price on emissions, production costs will increase, with electricity, natural gas, petrol, diesel, chemicals, fertiliser and other inputs costing more. These costs will be reflected in higher priced goods, from cement and steel, to paper and plastic. This will have an impact on the input costs for a range of industries, including construction and retail. Through the supply chain, those disposing of waste will also be likely to pay more, and transport costs will be higher.

Figure 19.1 Who pays the emissions permit price?



Box 19.1 Economic versus legal incidence of the emissions price (*continued*)

Costs will be embodied in final and intermediate products, and be passed down the supply chain until these goods and services are sold to consumers.

Much of the cost of reducing emissions will eventually rest with consumers, who will pay higher prices for products.

As well as affecting consumer prices, the carbon price will be felt in other ways. For example, it may affect firms' profits, and wages. Whether these impacts are positive or negative will depend on a range of factors, including who has power in the marketplace.

19.1.1 Impacts will change over time

The emissions price will fluctuate over time around a rising trend. The price will depend on the emissions limit set for the scheme, the demand for emissions-intensive goods and services determined by income growth and the structure of the economy, the level of hoarding and lending of permits, international links and the costs of producing low-emissions substitutes.

In the transition period at the commencement of the emissions trading scheme, 2010–12, the permit price is to be set at a fixed, low level. Because those with an obligation will not be required to pay more than this price for permits, or be driven to undertake mitigation activities with a cost above that level, impacts on the rest of the economy will also be limited. When the scheme commences unconstrained operation in 2013, with the likelihood of higher permit prices, effects on household costs will increase.

The permit price is not a reliable guide to the effect of mitigation on costs and prices in the long term. Once a low-emissions technology has been brought into the market by a specified emissions price, it is likely to undergo faster technological improvement than other technologies because it is new. As a result, the general price impact of a given amount of increase in the permit price will fall over time.

19.1.2 Why income distribution impacts warrant a response

The price imposed by the emissions trading scheme is not intended to result in large, arbitrary transfers of wealth, and particularly not regressive changes in income distribution.

There will be a role for government in alleviating the effects of climate change mitigation policy on those people who are most affected by an emissions price and least able to respond (see Box 19.2).

How and the extent to which government compensates for real income losses among low-income households will become an important issue in wage determination in response to higher consumer prices following the introduction of the scheme. It will therefore become an important element in determining whether the introduction of the scheme will be inflationary, warranting the imposition of contractionary monetary and fiscal policy.

Box 19.2 Equity and social welfare

Economic efficiency is of utmost importance in designing the emissions trading scheme. Distributive efficiency is also an important consideration. Distributive efficiency occurs when goods are distributed to those who gain the most utility¹ from them (Lerner 1944).

It is accepted that income has diminishing marginal utility—that is, that an extra dollar has more utility to the poor than to the rich. Income distribution is a key dimension of welfare. If maximising welfare is the objective of society, then the introduction of an emissions price without consideration and assistance to low income households will reduce social welfare.

The initial transfer of wealth as a result of the emissions trading scheme will have impacts on the distribution of income—some inequitable. The way in which the wealth transfer is handled in the longer term—that is, the use of permit auction revenue—will determine whether or not that income distribution is corrected. Therefore, in responding to the impacts of the emissions trading scheme, equity must be considered.

In addition to matters of principle, there are highly practical reasons for containing the regressive income distribution effects of mitigation. If the application of the emissions trading scheme is seen as being unfair, it is unlikely to have the community support that will be necessary for stability and credibility over long periods of time.

The potentially regressive impacts result directly from an emissions trading scheme. However, they can be dealt with efficiently only outside the scheme, and not by altering scheme design.

Two basic approaches are available for addressing the regressive income distribution effects of the scheme. One involves simply compensating disadvantaged households. This is done most efficiently through the tax-transfer system. The second involves assisting adjustment to a low-emissions environment through influencing the availability or selection of goods and services.

Where the former response can be implemented in a way that reduces barriers to efficient participation in the labour market, or that reduces the deadweight costs of other forms of taxation, it brings an efficiency gain that helps to offset the costs of mitigation. Similarly, where the latter can be implemented in a way that reduces the effects of market failures in adjustment to the emissions price, it carries an efficiency gain of another kind, which in some circumstance could

be substantial. Therefore the form in which support is provided to households has potentially large economic consequences.

19.2 Effects of an emissions price on households

19.2.1 Prices for goods and services

A major part, if not all, of the costs faced by electricity generators will be passed down the chain from electricity generators, distributors and retailers and finally to households through higher prices for electricity. Consumers will pay more for a range of other goods and services as businesses pass on the emissions price. Petrol and food prices will rise as a result of the scheme's coverage of emissions from transport, energy and eventually fertiliser and stock.

These higher prices will require households to spend a greater proportion of their income to obtain the same goods and services purchased before the introduction of an emissions price. This will reduce households' real incomes and purchasing power.²

Low-income and regional households

Low-income households spend a greater proportion of their income on basic necessities, including electricity, petrol and food, than households with higher incomes (Figure 19.2). For example, the proportion of income spent on transport fuel, gas and electricity is around 9.5 per cent for low-income households, and around 4.5 per cent for upper-income households. Emissions pricing is therefore regressive—that is, as the income of the individual rises, the impact will be smaller in terms of the proportion of income.

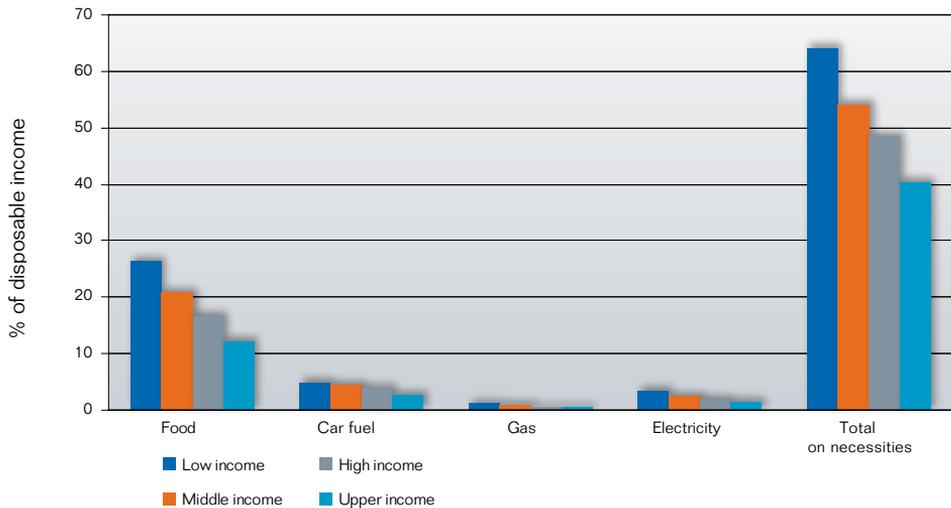
There is also likely to be differentiation between the impacts on people living in and outside capital cities. First, higher product prices will be exacerbated by higher transport costs, disadvantaging rural or outer-suburban dwellers.

More significantly, however, because of their dependence on private transport, non-urban and outer-suburban dwellers are likely to be worse off under an emissions trading scheme than their capital city counterparts. These households will be particularly vulnerable to rising petrol prices because of their need to drive longer distances to access services—such as shopping, medical care, and schooling—and because of the limited accessibility of adequate public transport.³

Evidence suggests that the impacts arising from increasing fuel costs will be unevenly distributed across cities, with vulnerability concentrated in the urban fringes (Dodson & Sipe 2007).⁴ The urban fringes are associated with low incomes, and usually with limited access to adequate public transport (Randolph & Holloway 2005; Baum et al. 2005).

Small, remote Indigenous communities through northern and central Australia are likely to be another group particularly affected given their reliance on diesel fuel for power supply as well as transport.

Figure 19.2 Expenditure on basic goods as a share of disposable income



Note: Income deciles used to group households into low, middle, higher and upper income households are based on total current weekly household income from all sources divided by the (modified OECD) equivalising factor, and weighted using sample weights. The lower and upper percentiles for low, middle, high and upper income households are 10 and 29, 30 and 49, 50 and 69, and 70 and 100, respectively. Reported are the mean shares of household expenditure on necessities expressed as a percentage of disposable income. Results weighted using sample weights.

Source: Unique expenditure codes from the Household Expenditure Survey 2003–04 (ABS 2006) grouped as 'necessities' by the Melbourne Institute of Applied Economic and Social Research.

The impact of rising fuel prices, combined with low incomes and limited access to public transport, means that for some very low-income households, lowering the use of private transport will be the primary means of reducing exposure to costs. Reduction in mobility has negative flow-on effects, such as feelings of isolation and social exclusion (eds Currie et al. 2007; Dodson et al. 2006).

19.2.2 Households' capacity to respond to effects of emissions prices

The longer-term burden for households will depend on the extent to which they can reduce their exposure to emissions prices and respond to price signals and changes in community and industry structures. Key questions are:

- What low-emissions substitutes are available?
- Are there any constraints on the uptake of those substitutes?

Ability of low-income households to respond to higher energy prices

Reducing energy use would reduce households' exposure to higher prices. The demand by the household sector for energy—particularly electricity—is generally considered to be inelastic in the short term (IPART 2003; Kamal & Stern 2001; NIEIR 2007; Owen 2007).⁵

However, over the longer term there is likely to be greater price elasticity of demand for energy, as consumer preferences change and assets are turned over for more energy efficient appliances and houses. In responding to higher petrol prices, in the longer term households may move toward private transport that is less emissions intensive or, where the alternative is available, switch to public transport.

In many cases, lack of access to lower-emissions substitutes and barriers to their uptake make it difficult to reduce energy demand. For instance, one factor constraining uptake of energy efficiency by households is a lack of information (see Chapter 18).

Rental households or those living in public or community housing will be further constrained in adopting low-emissions substitutes. Around 29 per cent of households rent their homes (ABS 2007). They have limited incentive to access substitutes, such as insulation, space heating, hot water systems and cooking appliances. Investing in such technologies is generally the decision of the property owner.⁶ Those in rental and public housing are disproportionately low-income households, meaning that there is a range of constraints to responding effectively to the emissions price (ABS 2007).

Ability of low-income and non-urban households to respond to higher transport fuel prices

Demand for private transport also has a low price elasticity where there are limited substitutes.

As petrol prices rise, responses will be determined by the proximity of public transport services. Where substitutes are available, there will be a switch in demand away from private transport and fuel. However, for many households public transport is not available. As noted above, this is particularly the case in outer-suburban and regional areas, which tend to have a higher concentration of low-income households (Wulff & Evans 1999; Baum et al. 2005; Dodson & Sipe 2007). The emissions trading scheme will raise community interest in and pressure for extension and upgrading of public transport infrastructure and services, but in the best of circumstances, change in services will be slow. Noticeable improvements in public transport for many communities are likely to occur over decades rather than years.

Households' reliance on emissions-intensive industry

It is possible that an emissions price could affect some industries in ways that cause damage to some communities. While there may be impacts on business owners and shareholders, these are unlikely to generate distress of a kind that would warrant intervention on equity grounds. Industry impacts may be concentrated in particular regions or towns, such as regions that rely heavily on the affected industries. Such concentrated effects are likely to be felt in rural and provincial rather than metropolitan communities.

Ability of communities to respond to adverse impacts on a local emissions-intensive industry

The availability of substitutes, including low-emissions technologies to retain industries' viability in the long term, can determine the fate of regions that are heavily reliant on emissions-intensive industries.

For example, regions that are home to coal-based electricity generation—and eventually coal exports as mitigation is taken more seriously in Asia—may face a bleak future if carbon capture and storage technology is not made commercially viable. Without this technology, some fossil fuel-fired power generators will be negatively affected by an emissions trading scheme. Reduced operation would, in turn, have implications for the welfare of workers and the communities in which these industries are based. On the other hand, commercially successful carbon capture and storage could turn the coal-based areas into regions of expansion and prosperity.

Adverse effects on employment and incomes in particular regions would require specific responses.

19.2.3 Addressing equity issues

The Review's recommendations on responses on equity grounds to the income distribution effects of the emissions trading scheme will be provided when the modelling results are available, in the supplementary draft report. Meantime, it may be useful to set down some pointers to the directions of current thinking.

More than half—probably significantly more than half—of the costs of the emissions price are likely to be passed through to the household sector in the first decade of the emissions trading scheme. In some sectors, notably transport, the pass-through is likely to be immediate and complete.

If the permits are sold at auction, as recommended in Chapter 15, the sales revenue should be able amply to cover full compensation of the bottom half of the income distribution. As a rule of thumb, it may be equitable and good policy notionally to allocate half of the permit sales revenue to payments to households, focusing on the lower half of the income distribution.

The payments to households could take two forms, each of which could be structured to make positive contributions to economic efficiency. One would

be expenditures linked to adjustment to the low-carbon economy: information and other measures related to energy efficiency for appliances, housing and vehicles. The second would be through changes to the tax and social security systems, to be integrated with the Henry taxation review.

The income distribution effects during the period of the low, fixed carbon price (2010–12) would be small. This might be a good period to emphasise consumer-level energy efficiency in motor vehicles, appliances and housing design. One area of focus should be electricity generation in remote communities.

The distribution effects would become more important, within the unconstrained emissions trading scheme from the beginning of 2013. Adjustments through the taxation and social security systems would then be permanent.

It is crucial that assistance to energy efficiency be designed to avoid dampening the emissions price signal.

Notes

- 1 Utility can be considered to be personal satisfaction or benefit derived by individuals from the consumption of goods and services.
- 2 Even in the absence of an emissions trading scheme, energy and food costs are likely to rise over time. Simultaneously, incomes for all income groups are expected to increase. The extent to which expenditure as a share of income changes over time will depend on the increases of prices compared to incomes. This will be considered further in the supplementary draft and final reports.
- 3 There is some evidence of a relationship between car ownership, income and location. Currie and Senbergs (2007) suggest that for many low-income households in urban fringe locations, car ownership is 'forced' upon them as a result of low access to public transport and distance to local activity centres.
- 4 This study applies the 'vulnerability index for petrol expense rises' (VIPER), which illustrates the spatial distribution of oil vulnerability at the local suburban scale. VIPER considers three variables to provide a composite vulnerability index: (1) socioeconomic index for areas; (2) household motor vehicle ownership; and (3) car dependence for the journey to work (Dodson & Sipe 2007).
- 5 In this context, inelasticity means that energy demand change is unresponsive to changes in price.
- 6 Chapter 18 discusses this issue as a principal–agent problem.

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