Why the ETS will not succeed

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Abstract

Justification for Australia's carbon-pricing scheme assumes there will be a global carbon pricing system with our ETS a part of it. This assumption is probably wrong. It is unlikely a global carbon pricing system will be implemented, let alone sustained for the decades or even centuries that would be required.

Without a global carbon-pricing system, national or regional carbon-pricing schemes would be prohibitively expensive if they are to achieve the projected benefits and, therefore, would not be sustainable. The high cost means that a scheme like the one Australia has legislated is not viable, and even regional carbon pricing schemes like the European ETS will not last.

The post explains why carbon pricing cannot succeed unless it is global; global carbon pricing is unlikely to be achieved; and the Australian carbon pricing scheme, if continued, would be high cost and deliver little if any benefit.

The 'ball-park' analysis presented here suggests Australia's ETS would cost $12 for every $1 of projected benefit, to 2050. However, the benefits would be negligible, unless there is a global carbon price.

Introduction

Australia's carbon pricing scheme began in July 2012 and is legislated to change to an emissions trading scheme in July 2015. The government recently announced, if re-elected, it would try to change the legislation to bring the date of transition from carbon tax to emissions trading scheme (ETS) forward by one year (from 2015 to 2014). However, even if the proposed change in start date passed parliament (unlikely), it would make little difference to the total cost of the ETS. According to Treasury's projections, the ETS will be very expensive.

Proponents of carbon pricing argue it is the least cost way to reduce greenhouse gas (GHG) emissions. Their argument is based on assumptions that are appropriate for a theoretical exercise but unlikely to be achieved in practice, let alone sustained for the

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time the policies would need to operate (decades or centuries). Significantly, little research has been done to investigate the probability that carbon pricing can be implemented and deliver the expected benefits in the real world.

Uncertainty about the problem (man-made climate change) is a given; but uncertainty about the chosen solution is inexcusable. This is to say, we should be confident that our solutions are going to be effective, and the more expensive the solution the more confident we should be. In short, big responses require high levels of confidence that they will work. There seems to be a lack of credible evidence to demonstrate carbon pricing passes this test.

The questions examined here is the likelihood of the Australian ETS being successful.

The following sections explain why:

- Carbon pricing cannot succeed unless it is global;

- Global carbon pricing is unlikely to be achieved;

- The Australian carbon pricing scheme, if continued, would be high cost and provide little if any benefit.

Carbon pricing cannot succeed unless it is global

Analyses by Professor William Nordhaus, a long time advocate of carbon pricing and a world authority on estimating the costs and benefits of climate change, greenhouse gas mitigation policies and the optimal carbon price, demonstrates that carbon pricing must be global or it will not succeed. Nordhaus (2008), p198 [1], says:

> "*Complete participation is important because the cost function for abatement appears to be highly convex. We preliminarily estimate that a participation rate of 50 percent instead of 100 percent will impose a cost penalty on abatement of 250 percent.*"

What this means is, if only 50% of GHG emissions are included in the global carbon pricing scheme, the cost penalty for the participants would be 250%. The 50% participation could be achieved by, for example, 100% of countries participating in the scheme but only 50% of the emissions in total from within the countries are included, or 50% of countries participate and 100% of the emissions within those countries are included in the scheme (i.e. taxed or traded).

The explanation for the convex abatement cost penalty curve is as follows. With a high level of participation the least cost abatement options are used first. However, if there is less participation, some low cost options are not available, so higher cost options have to be used to achieve the same emissions reductions. Figure 1 shows the ratio by which the abatement cost would increase for less than full participation. For example, at 50% participation, the cost penalty would be a factor of 3.5 (i.e. 250%)

higher than with full participation (ref. "*A Question of Balance*", Chapter VI, pp116-122) [1].

Figure 1:

Abatement cost penalty (ratio to complete particpation) versus particpation rate
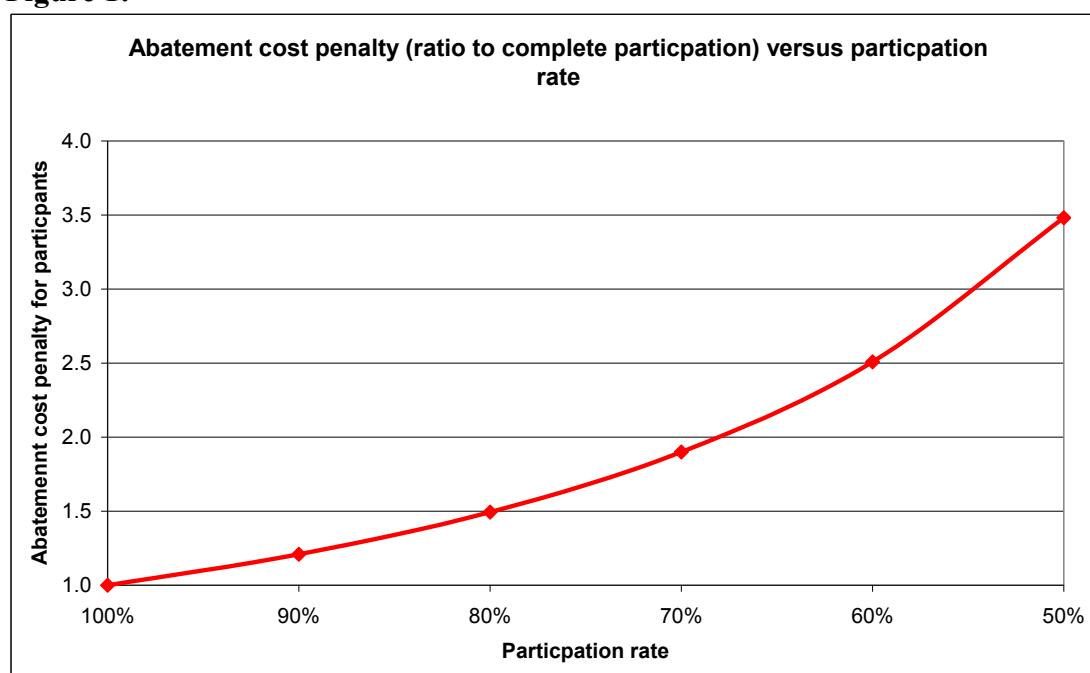
In reality, the cost penalty for the participants would be worse than this because with less than full participation there would be leakage of emissions from the participants to the non-participants.

The abatement costs are likely to be higher than Nordhaus has estimated because the compliance cost of carbon monitoring, reporting, policing and disputation has not been included. The compliance cost would escalate as smaller and smaller emissions sources are included.

Given the above, we should consider what level of participation could realistically be achieved and what the compliance cost would be. Furthermore, given the cost penalty for the participants, we need a persuasive case that there is a high probability of a global agreement to price carbon being implemented and maintained for as long as necessary to achieve the goals?

Nordhaus explains that the assumptions used for the cost-benefit analyses, which are used to justify global carbon pricing, are academic; they are unrealistic for the real world. He says, p68 [1]:

> "*We should provide a word of caution about the optimal case. It is not presented in the belief that an environmental czar will suddenly appear to promulgate infallible canons of policy that will be religiously followed by all. Rather, the optimal policy is a benchmark to determine how efficient or inefficient alternative approaches may be. This is the best possible policy path for emissions reductions, given the economic, technological, and geophysical constraints that we have estimated.*"

In other words, the assumptions that underpin the economic analyses used to justify carbon pricing are academic; they are appropriate for an academic modelling exercise but they are unrealistic, impracticable and highly unlikely to be achieved in the real world. Some of the key assumptions that underpin the economic analyses are:

- There will be negligible leakage (of emissions between countries, between industries and between emissions sources)

- All GHG emission sources are included (all countries and all GHG emissions in each country)

- There will be negligible compliance cost and negligible fraud

- There will be an optimal carbon price and the whole world implements it in unison

- The whole world acts in unison to increase the optimal carbon price periodically and will continue to maintain the carbon price at the optimal level for all of this century (and thereafter).

If these assumptions are not met, the estimated benefits of carbon pricing would not be achieved.

Global carbon pricing unlikely to be achieved

Professor Richard Tol, a long time advocate for carbon pricing and a leading world authority on estimating the damages of global warming, discusses the probability of achieving a global agreement [2]. He said in November 2012:

> *"The 18th UN Conference on climate change negotiations has just started in Doha. This column suggests that the probability of success is a mere 2.3%. Recently, over $100 million per year was spent on fruitless negotiations. Having flogged, ever harder for 18 years, the dead horse of legally binding emission targets, the UN should close that chapter and try something new."*

The article (and chart) explains why a meaningful global agreement is highly unlikely to be achieved. For example he says:

> *"Game theory suggests that attempts to negotiate an international environmental agreement, aiming to provide a global public good such as greenhouse gas emission reduction, are bound to fail (Barrett 1991, Carraro and Siniscalco 1992, Carraro and Siniscalco 1993)."*

Richard Tol's article reveals that it was predicted back in 1991, the world would not agree to legally binding international agreements, such as targets and timetables for emissions reductions with penalties for breaches of commitments, or carbon pricing.

Australia's ETS would be high cost for little benefit

This section provides a 'ball park' estimate of the benefit, the cost and the cost to benefit ratio for Australia ETS to 2050.

Estimated benefit (to 2050)

The benefit of a CO_2 price is the climate damages avoided by having the CO_2 price. Nordhaus (2012) [3] estimated the present value of climate damages that could be avoided by an optimal carbon price applied to the whole world for 50 years would be $3.5 trillion (in 2012 prices) [4]. For 40 years, the period examined by this paper, the amount is $2.7 trillion. Australia's share would be $32 billion, assuming our share is proportional to Australia's share of global GDP (1.17%) [5].

The figures above are, more correctly, the present value of *net benefit*; i.e. the *benefit* minus the *abatement cost*. In these figures the *abatement cost* is about 13% of the *benefit*. Therefore, the present value *benefit* is $36 billion

This estimate of the benefit assumes the whole world implements an optimal CO_2 price and and maintains it at the optimal price for 40 years. Other important assumptions are listed above. If the assumptions are not achieved, the estimated benefits would not be realised.

Estimated cost (to 2050)

The *net cost* (i.e. cost minus benefit) is the reduction in GDP. Treasury estimated the loss of GDP the ETS will cause. The cumulative loss of GDP to 2050 is $1,345 billion[2] (undiscounted) (Chart 5:13) [6]; the present value is $390 billion (discounted at 4.34% pa, the average rate for the USA in the Nordhaus model for the period).

This is the *net cost*, not the *cost*. The *cost* is *net cost* plus *benefit*. I don't have Treasury's numbers for costs and benefits, so I've assumed the present value benefit is the $36 billion derived above. Therefore, the present value *cost* would be $390 billion + $36 billion = $426 billion. (This is rough, but sufficient for this ball park estimate).

Cost to Benefit ratio (to 2050)

From the above, the present value *benefit* for Australia of a globally optimised CO_2 price (if the world implements an economically efficient CO_2 pricing scheme in unison) would be $36 billion. The present value *cost* would be $426 billion.

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[2] This is total of the differences between the 'SGLP core' and 'Medium world action' scenarios: (Treasury, '*Strong Growth Low Pollution*', Chart 5:13)

Therefore, the cost of the ETS would be about twelve times the benefit. For the ETS to be justified, the benefit should exceed the cost. Clearly, this is not the case, by a wide margin.

Conclusions

Carbon pricing cannot succeed unless it is global.

Global carbon pricing is unlikely to be implemented, let alone maintained.

Australia's ETS, if continued, would be high cost and deliver little if any benefit. Treasury projections of the net cost of Australia's ETS and Nordhaus' global projections of benefit scaled to Australia reveal Australia's ETS would cost $12 for every $1 of projected benefit to 2050. However, the benefits would be lower, perhaps none, unless there is a global carbon price.

Australia's ETS is economically damaging and, therefore, unlikely to survive.

References

1. W. D. Nordhaus (2008). '*A Question of Balance*' http://www.econ.yale.edu/~nordhaus/homepage/Balance_2nd_proofs.pdf

2. R. S. J. Tol (2012) '*Global climate talks: If at the 17th you don't succeed*' http://www.voxeu.org/article/global-climate-talks-if-17th-you-don-t-succeed

3. W. D. Nordhaus (2012) *'In the Climate Casino; An Exchange'*. The New York Review of Books http://www.nybooks.com/articles/archives/2012/apr/26/climate-casino-exchange/

4. W. D. Nordhaus (2012). *'RICE climate-economic model available for NYRB readers'* http://www.econ.yale.edu/~nordhaus/homepage/NYRB_RICE.htm

5. Wikipedia, List of countries by GDP (PPP), '*International Monetary Fund (2012)*' http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)

6. The Treasury, (2011) '*Strong Growth Low Pollution*', Chart 5:13 http://archive.treasury.gov.au/carbonpricemodelling/content/chart_table_data/chapter5.asp