

UTS: CenSoC

Centre for the Study of Choice

Trading Plans That Australians Want Their Government To Implement

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Overview

- CenSoC designed and implemented 4 studies of public preferences for emissions trading plans from 2008-10.
- The purpose of the studies was to demonstrate that we can measure and model tradeoffs associated with such plans & identify plans that the public will support.
- The 1st two studies focused on 5 key plan features in reports (eg, Garnaut), political debate and the media; two recent studies add 3 features recently discussed.
- We randomly sampled 7000+ people on the Pureprofile online panel of voting age.

Brief description of studies

- August 2008: 768 respondents chose between pairs of plans described by 5 key features (16 pairs)
- May 2009: 3720 respondents chose between pairs of plans described by 5 key features (24 pairs)
- May 2010: 1760 respondents chose between 4 plans described by 5 or 8 key features (16, 20 or 24 sets of 4 plans)
- July 2010: 1204 respondents choose key features of plans described by 8 features (8 plans each)

The features studied

- **5 features discussed in 2008-2009**
 - **Start date** (lower cost with earlier date): Labour/Greens - 2010; Coalition - 2012
 - **What to do with revenues:** redistribute (Labour); reduce taxes (Coalition)
 - **Allocate 20% of revenue to R&D:** Yes - Garnaut, universities, some interest groups; No - Mixed Labour, some interest groups
 - **Exempt transport for 3 years:** Labour/opposed by Greens
 - **Concessions to energy intensive sectors:** Which sectors (electricity, exporters, farmers); free permits - how many/how long

Features studied, 2

- **Additional features arising since 2009**
 - How fast to cut back to reduce 60% by 2050?
 - Should the 2050 goal be tightened?
 - Use “hybrid” permits with price caps in early years?
 - Role of efficiency/renewable standards
 - How much should Australian actions depend on other countries such as U.S./China?

What we did

- Designed a tradeoff (choice) survey - respondents tradeoff features to decide which plan they will vote for.
- Objective: identify plans that the public will support.
 - Achieving the objective:
 - All plans can be described by the features in prior slides.
 - Any one plan is just a combination of different feature values; so, there is NOT ONE plan - many possible plans (16,384).
 - Use experimental design principles to “design” pairs of plans or sets of 4 plans at a time and observe which plans people choose.
 - People’s choices “reveal” preferences for each feature and various plans.
- Next slide has the survey glossary, a “pair” follows.

Next we will show you **16 sets of TWO** possible plans to reduce greenhouse gases. The plans differ in the features described below. All we want you to do is to tell us your **most preferred** plan in each pair of plans.

As we mentioned, each possible plan is described by different features. These features are as follows:

A. When to start a plan? There are two options currently being proposed by the political parties - starting the plan to reduce greenhouse gases in **2010** or **2012**. Both start dates can achieve a 60% cutback in greenhouse gases by 2050. Their start dates differ because a plan starting in 2010 should cost less. The cost of a plan is due to the increase in fuel prices required, the increase in electric prices required, and the overall increase in the price of goods and services that people consume. These costs are shown in the table below.

| Start Year | Fuel Price Increase | Utility Increase | Overall Price Increase |
|------------|---------------------|------------------|------------------------|
| 2010 | 5 cents per litre | 16% increase | 0.9% increase |
| 2012 | 6 cents per litre | 20% increase | 1.1% increase |

B. How to give back revenue raised by a plan? Revenue that the government raises from a plan can be used in different ways. One way is simply to return all the revenue to the public by reducing the GST from 10% to 9%. Another way is to give back most of the money raised to lower income households and seniors who probably will be hardest hit by cost increases. So, the two options are **1) return revenue by Lowering GST** or, **2) give the revenues to Low Income Households/Seniors**.

C. Whether to heavily invest in R&D? Another thing that could be done with part of the revenue raised by a plan is to invest 20% of it in research and development that focuses on reducing energy consumption and greenhouse gas emissions. This might reduce the future costs of controlling greenhouse gas emissions but also would result in 20% less money to return to the public. So, the two options are **"Invest in R&D" (Yes)** or **"Don't Invest in R&D" (No)**.

D. Should the transport sector initially be exempted? Initially exempting the transportation sector from having to cut back during the first three years of a plan would give people more time to adjust by doing things like buying more fuel efficient cars or finding other ways to get to work. However, a drawback of doing this is that it would further increase utility bills and the costs of other goods purchased. This will happen because the transportation sector is a big source of greenhouse gas emissions, so exempting them would force all cutbacks initially to come from other sectors. So, the two options are **"Exempt Transport" (Yes)** or **"Don't Exempt Transport" (No)**.

E. Special treatment for other sectors? There are proposals to give special treatment for the first three years to electric utilities, exporters who use lots of energy, and farmers, which would give them more time to adjust and reduce job disruption. A drawback of doing this is that it will force the rest of the economy to cut back more in the early years of a plan, which would return less money to households. So, the two options are **"Special Treatment" (Yes)** or **"No Special Treatment" (No)**.

Please click on ">>" to continue.

A typical pair of plans

Survey on Controlling Greenhouse Gases

| Plan Features | Plan A | Plan B |
|--|--------|--------|
| The year that the plan begins (Higher cost with later start date) | 2010 | 2012 |
| Use 20% of plan income to invest in R&D to more cheaply reduce CO2 | No | Yes |
| Transport sector initially exempted/included | Yes | No |
| Energy intensive sectors get special treatment | No | Yes |

The government should implement: (tick one)

- Plan A
- Plan B



How we analysed the data

- The surveys yield many plan choices - we count how many choices each plan gets over all pairs and people.
- We count the choices of each feature & feature level (eg, a feature is “start year”, and its levels could be 2010 & 2012).
 - We do this because the pairs are designed in such a way that the counts contain all the relevant statistical information.
 - So, eg, if 2010 gets 57% of the choices and 2012 gets 43%, we can confidently say that starting in 2010 is preferred.
- The total sample results for studies 1 to 3 are shown in the next slide.

Results for Studies 1, 2 and 3

| Attribute Level | 1 (2008) | 2 (2009) | 3 (2010) |
|---------------------------------------|----------|----------|----------|
| Start Date Soon v. Later | 57.1% | 54.6% | 52.8% |
| Redistribute (GST v. Seniors/Poor) | 48.4% | 49.0% | 44.0% |
| Transport Initial Exempt v. Not | 50.6% | 49.5% | 50.4% |
| 20% R&D Yes v. No | 58.7% | 56.2% | 53.2% |
| Energy Sectors Special v. No | 53.7% | 52.9% | 50.6% |

Results summary

- Australians evaluated many different variants of possible emissions trading plans since 2008.
- Their choices are remarkably stable:
 - Start a plan NOW & do not wait for other countries
 - Redistribute revenues - reduce taxes, give to poor & seniors
 - Invest some revenues in R&D
 - Exempt transport for some period of time
 - Do not exempt energy-intensive sectors
 - Set relatively high targets for cuts in emissions for 2020

Plans that are popular/unpopular

- The tradeoff survey approach we used allows one to rank many different plans from most to least popular.
 - ie, we “count” the choices of each plan, and we rank the plans from “most chosen” to “least chosen”.
 - This provides a simple way to “look” at the features and their levels associated with each plan; by showing the top and bottom choice 10 plans one can “see” which features and associated levels occur frequently, and so are most likely to lead to support/non-support for a plan.
- The next slides show the most & least popular plans by (respectively) 5 key features or 8 key features.

Carbon 3: Most popular plans - 5 features

Most popular plans
Carbon 3 - 5 features

| Votes | | Features of plans studied | | | | | | Rank (top) |
|-------|-------|---------------------------|--------------------|---------------------|----------------------------|-------------|----|------------|
| %No | %Yes | Start year | Revenue allocation | Method | Australia's role | 2020 target | | |
| 32.7% | 67.3% | 2011 | Lower GST | Hybrid Scheme | Begin large reductions now | 25% | 1 | |
| 36.4% | 63.6% | 2011 | Lower GST | Hybrid Scheme | Begin large reductions now | 25% | 2 | |
| 40.0% | 60.0% | 2011 | Lower GST | Hybrid Scheme | Begin large reductions now | 25% | 3 | |
| 40.0% | 60.0% | 2011 | low income/seniors | Hybrid Scheme | Begin large reductions now | 10% | 4 | |
| 40.0% | 60.0% | 2011 | low income/seniors | Hybrid Scheme | Begin large reductions now | 25% | 5 | |
| 40.0% | 60.0% | 2013 | low income/seniors | Hybrid Scheme | Begin large reductions now | 25% | 6 | |
| 41.8% | 58.2% | 2011 | Lower GST | Technology Standard | Begin large reductions now | 25% | 7 | |
| 41.8% | 58.2% | 2011 | low income/seniors | Carbon Tax | Begin large reductions now | 25% | 8 | |
| 41.8% | 58.2% | 2013 | low income/seniors | Carbon Trading | Begin large reductions now | 20% | 9 | |
| 43.6% | 56.4% | 2011 | low income/seniors | Hybrid Scheme | Begin large reductions now | 25% | 10 | |

Carbon 3: Least popular plans - 5 features

Least popular plans

Carbon 3 - five features

| Votes | | Features of plans studied | | | | | Rank (bottom) |
|--------|------|---------------------------|--|----------------|----------------------------|-------------|---------------|
| %No | %Yes | Start year | Revenue allocation | Method | Australia role | 2020 target | |
| 100.0% | .0% | 2013 | Improve govt services & reduce deficit | Carbon Trading | wait for China/USA | 20% | last |
| 98.2% | 1.8% | 2011 | Reduce business taxes | Hybrid Scheme | wait for China/USA | 5% | 2nd to last |
| 98.2% | 1.8% | 2013 | Reduce business taxes | Carbon Trading | wait for China/USA | 25% | 3rd to last |
| 98.2% | 1.8% | 2013 | Reduce business taxes | Carbon Tax | Begin large reductions now | 5% | 4th to last |
| 98.2% | 1.8% | 2013 | Reduce business taxes | Hybrid Scheme | wait for China/USA | 5% | 5th to last |
| 98.2% | 1.8% | 2011 | Reduce business taxes | Carbon Tax | wait for China/USA | 25% | 6th to last |
| 98.2% | 1.8% | 2011 | Reduce business taxes | Carbon Trading | Begin large reductions now | 5% | 7th to last |
| 96.4% | 3.6% | 2011 | Reduce business taxes | Carbon Trading | wait for China/USA | 25% | 8th to last |
| 96.4% | 3.6% | 2013 | Reduce business taxes | Carbon Trading | wait for China/USA | 25% | 9th to last |
| 96.4% | 3.6% | 2013 | Reduce business taxes | Carbon Trading | wait for China/USA | 10% | 10th to last |

Carbon 3: Most popular plans - 8 features

Most popular plans Carbon 3 - 8 features

| Votes | | Features of plans studied | | | | | | | | Rank (bottom) |
|-------|-------|---------------------------|----------------------|---------------------|----------------------|-------------|-------------------|--------------------|--------------------------|------------------|
| %No | %Yes | Start year | Revenue allocation | Method | Australia role | 2020 target | Invest 20% in R&D | Transport exempted | Energy special treatment | |
| 30.9% | 69.1% | 2011 | give to poor/seniors | Carbon Tax | large reductions now | 25% | Yes | No | Yes | 1 |
| 36.4% | 63.6% | 2011 | give to poor/seniors | Technology Standard | large reductions now | 25% | Yes | Yes | No | 2 |
| 38.2% | 61.8% | 2013 | give to poor/seniors | Carbon Trading | large reductions now | 10% | No | Yes | Yes | 3 |
| 40.0% | 60.0% | 2011 | give to poor/seniors | Carbon Trading | large reductions now | 25% | Yes | No | No | 4 |
| 40.0% | 60.0% | 2011 | give to poor/seniors | Hybrid Scheme | large reductions now | 20% | Yes | No | No | 5 |
| 41.8% | 58.2% | 2011 | give to poor/seniors | Carbon Tax | large reductions now | 25% | Yes | No | No | 6 |
| 41.8% | 58.2% | 2011 | give to poor/seniors | Technology Std | large reductions now | 25% | Yes | No | Yes | 7 |
| 41.8% | 58.2% | 2013 | give to poor/seniors | Technology Std | large reductions now | 25% | Yes | No | No | 8 |
| 41.8% | 58.2% | 2013 | Lower GST | Hybrid Scheme | large reductions now | 25% | Yes | Yes | Yes | 9 |
| 41.8% | 58.2% | 2013 | Lower GST | Hybrid Scheme | large reductions now | 30% | Yes | Yes | Yes | 10 |

Carbon 3: Least popular plans - 8 features

Least popular plans Carbon 3 - 8 features

| Votes | | Features of plans studied | | | | | | | | |
|-------|------|---------------------------|--------------------------------------|----------------|-----------------------------------|-------------|-------------------|------------------|----------------------|---------------|
| %No | %Yes | Start year | Revenue allocation | Method | Australia role | 2020 target | Invest 20% in R&D | Exempt Transport | Treat energy special | Rank (bottom) |
| 98.2% | 1.8% | 2013 | improve govt services/reduce deficit | Carbon Trading | Wait for China & USA | 5% | No | No | Yes | last |
| 98.2% | 1.8% | 2013 | improve govt services/reduce deficit | Carbon Tax | Wait for China & USA | 5% | No | No | Yes | 2nd to last |
| 98.2% | 1.8% | 2013 | Reduce business taxes | Carbon Trading | Wait for China & USA | 20% | Yes | No | Yes | 3rd to last |
| 98.2% | 1.8% | 2011 | Reduce business taxes | Hybrid Scheme | Wait for China & USA | 10% | No | Yes | No | 4th to last |
| 96.4% | 3.6% | 2013 | Reduce business taxes | Carbon Trading | Begin large carbon reductions now | 20% | No | Yes | Yes | 5th to last |
| 96.4% | 3.6% | 2013 | improve govt services/reduce deficit | Carbon Tax | Wait for China & USA | 20% | No | No | No | 6th to last |
| 96.4% | 3.6% | 2011 | Reduce business taxes | Carbon Tax | Wait for China & USA | 20% | Yes | No | Yes | 7th to last |
| 96.4% | 3.6% | 2013 | Reduce business taxes | Carbon Trading | Wait for China & USA | 20% | Yes | No | Yes | 8th to last |
| 96.4% | 3.6% | 2013 | improve govt services/reduce deficit | Hybrid Scheme | Wait for China & USA | 3% | No | No | Yes | 9th to last |
| 94.5% | 5.5% | 2011 | Reduce business taxes | Carbon Trading | Begin large carbon reductions now | 5% | No | Yes | No | 10th to last |

Summary of plans

- One can “look at” the top or bottom 10 plans to “see” which feature levels are most and least popular and the proportion of people that will support each.
 - We can produce tables like this for many dozens of plans.
- Our results provide evidence, not opinions, about which plans people will/will not support.
- Support for plans based on 5 or 8 key plan features has been quite consistent since 2008.

A more detailed look at feature levels

- Studies also 2 & 3 asked people to choose features & levels they most and least wanted in a plan.
- These choices can be used to measure preferences for each feature level on a ratio scale.
 - eg, “metres” & “speed” are ratio scaled; products & fractions (ratios) are meaningful.
 - So, one can say that a feature level is “twice” as preferred as another.
- The next slides contain these measures (RatioML).

Choices of feature levels: Study 2

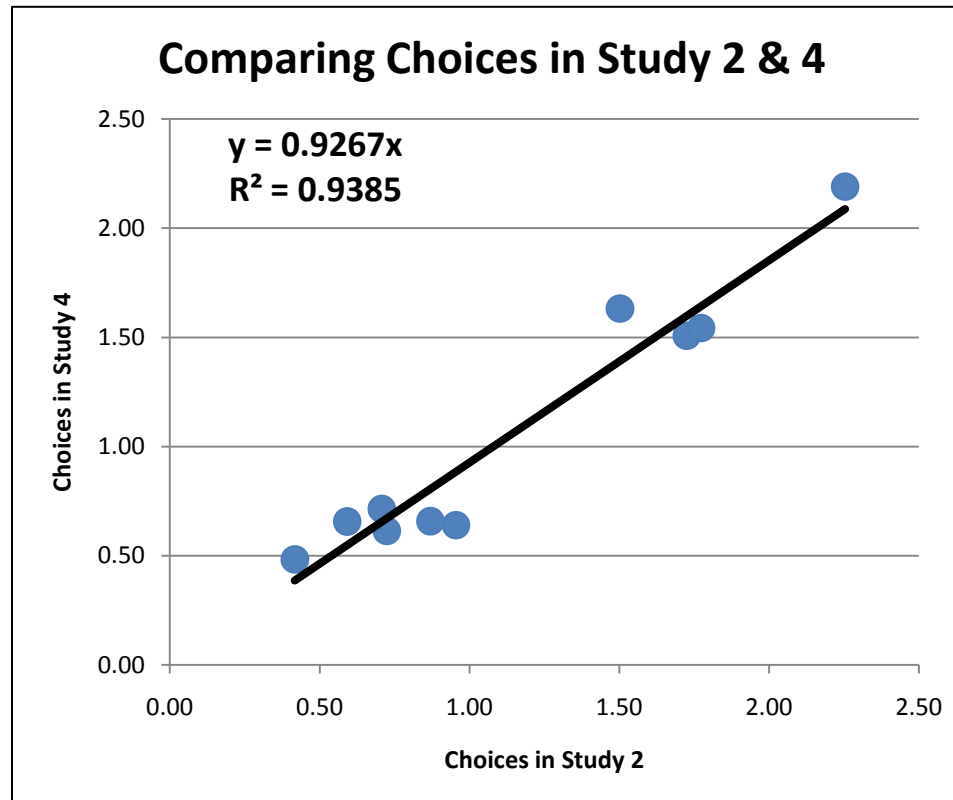
| Key Feature Levels | Most | Least | Ratio(ML) |
|---|------------|------------|-------------|
| Plan begins 2010 | 593 | 261 | 1.51 |
| Plan begins 2012 | 248 | 605 | 0.64 |
| Income will go to poor & seniors | 690 | 290 | 1.54 |
| Income will go to reduce GST (most preferred) | 782 | 163 | 2.19 |
| Do not invest 20% in R&D (least preferred) | 106 | 453 | 0.48 |
| Invest 20% in R&D | 429 | 161 | 1.63 |
| Do not exempt transport | 167 | 387 | 0.66 |
| Exempt transport | 181 | 480 | 0.61 |
| Do not exempt energy | 157 | 362 | 0.66 |
| Exempt energy | 199 | 390 | 0.71 |

Choices of feature levels - Study 4

| Key Feature Levels | Most | Least | Ratio(ML) |
|---|------------|------------|-------------|
| Start year::2011 | 1229 | 413 | 1.73 |
| Start year::2013 | 587 | 644 | 0.95 |
| Revenue allocation::GST reduction (most preferred) | 721 | 142 | 2.25 |
| Revenue allocation::Distribute to low income & seniors | 575 | 183 | 1.77 |
| Revenue allocation::Reduce business taxes | 266 | 337 | 0.89 |
| Revenue allocation::Improve govt. services and reduce deficit | 522 | 176 | 1.72 |
| Investment in R&D::None (least preferred) | 84 | 483 | 0.42 |
| Investment in R&D::10% | 168 | 166 | 1.01 |
| Investment in R&D::20% | 282 | 125 | 1.50 |
| Investment in R&D::30% | 382 | 124 | 1.76 |
| Transportation exempted::No | 104 | 297 | 0.59 |
| Transportation exempted::for 3 years | 139 | 265 | 0.72 |
| Transportation exempted::for 5 years | 148 | 338 | 0.66 |
| Transportation exempted::Permanently | 215 | 503 | 0.65 |
| Special treatment for energy sectors::No | 217 | 287 | 0.87 |
| Special treatment for energy sectors::for 3 years | 113 | 226 | 0.71 |
| Special treatment for energy sectors::for 5 years | 119 | 267 | 0.67 |
| Special treatment for energy sectors::for 10 years | 156 | 411 | 0.62 |
| How to implement carbon reductions::CTS | 211 | 291 | 0.85 |
| How to implement carbon reductions::Carbon tax | 186 | 375 | 0.70 |
| How to implement carbon reductions::Hybrid | 217 | 258 | 0.92 |
| How to implement carbon reductions::Technology standards | 261 | 145 | 1.34 |
| International role for Australia::follows E.U. & Japan to begin now | 1082 | 494 | 1.48 |
| International role for Australia::waits until U.S. & China commit | 530 | 1479 | 0.60 |
| 2020 Emission reduction target::5% | 173 | 506 | 0.58 |
| 2020 Emission reduction target::10% | 220 | 262 | 0.92 |
| 2020 Emission reduction target::15% | 259 | 211 | 1.11 |
| 2020 Emission reduction target::25% | 466 | 224 | 1.44 |

Comparing Studies 2 & 4

- The theory used to measure choices predicts that ratios of most and least popular choices will be proportional if the preferences are constant - the graph below shows this is approximately true.



Final summary

- The preferences/choices of the Australian public for emissions trading plans & key features/levels of such plans are remarkably stable & consistent over time and vary little over ways of measuring preferences.
- One can simply rank plans from most to least chosen to “see” which combinations of feature levels (ie, a “plan”) get support (are preferred).
- We urge public policy makers to seriously consider the evidence from 7000+ Australians who took the time and put in the effort to evaluate many possible plans.