Magic pudding is vanilla economics

Introduction

Both the US and Australia failed to achieve political and broader community support to implement their proposed emissions trading schemes in 2010, but interestingly each county has taken a different policy path since then.

Australia now proposes an interim carbon tax as a transition measure to an emissions trading scheme. Although this is pitched at increasing investment certainty, the real effect appears to be a weakening of the effective emissions reduction target. The rejected Carbon Pollution Reduction Scheme (CPRS) target aimed to reduce emissions by 5% on 2000 levels by 2020. If the interim carbon tax is set at a similar level to the permit price expected under the CPRS, and if Treasury modelling is to be believed, this would put Australia on track for emissions 7% *above* 2000 levels by 2020.

In contrast, President Obama used his 2011 State of the Nation address to propose a "Clean Energy Standard" (CES) for the electricity sector. This would operate like a renewable energy target, but include credits for gas and nuclear generation. This is similar to the GGAS scheme that has been operating in NSW since 2003, or the Queensland Gas Scheme which commenced in 2005. Resources for the Future (RFF), an independent US think-tank, commented in a submission to the US Senate[1] that:

> "in some important economic and practical regards a CES may be a better first step than the cap-and-trade proposals floated in Congress....it can be significantly more cost-effective and it avoids, at least initially, large increases in energy prices, which are a major political hurdle for emissions pricing policies." ... "Emissions pricing policies without the revenue-recycling benefit may no longer be superior to the CES on cost-effectiveness grounds. This is because emissions pricing policies have a bigger impact on energy prices, and hence cause more exacerbation of pre-existing tax distortions".

RFF made the point that an ETS is *only* more efficient if governments use revenue to offset other distorting taxes, though this was not a feature of Australian or US proposals. The RFF report affirms Frontier Economics Australia's previous modelling of and commentary on the Carbon Pollution Reduction Scheme (CPRS). A carbon tax or cap and trade style emissions trading scheme in particular will interact with existing taxes on labour and capital to exacerbate the economic distortions these taxes already cause. The cost of these tax distortions can greatly exceed the 'direct' cost of reducing emissions: the cost

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1 Parry and Krupnik (2011), *Is a Clean Energy Standard a Good Way to Move U.S. Climate Policy Forward?,* http://www.rff.org/RFF/Documents/RFF-IB-11-04.pdf

of wealth redistribution far exceeds the cost of reducing emissions. This means that a carbon price can be efficient if the carbon revenue is used to reduce other distorting taxes. However, if carbon revenue is distributed mostly as lump-sum compensation (as it was under the proposed CPRS) then measures such as a Clean Energy Standard will be more efficient. The Labor Government has dismissed this well known concept of the tax interaction effect as a 'magic pudding'[2], but the US commentary confirms what Frontier Economics has been saying all along, that it is actually just vanilla economics.

The remainder of this article discusses the tax interaction effect and the options available to implement an interim carbon abatement policy with significantly lower economic cost than a carbon tax or the CRPS. However, we begin by testing the carbon tax against its stated objectives – to increase certainty for investors.

A carbon tax: does it increase certainty for investors?

The Australian government has proposed an interim carbon tax before transitioning to an ETS. It is often argued that a carbon tax provides greater certainty over the carbon price (since the price is fixed), while emissions trading provides greater certainty over emissions (since the emissions target is fixed).

Unfortunately this price certainty is likely to be illusory because governments frequently intervene in renewable and emissions markets if the market deviates too far from initial expectations. This occurred recently in Switzerland, which has a carbon tax applied to fossil fuels initially set at 12 CHF/tCO_2 in 2008. In 2010, the government raised this to 36 CHF/tCO_2 when it became clear that Switzerland's Kyoto target would not be met. The tripling of the tax occurred despite the fact that the Swiss economy contracted in 2008 and 2009.

Australia also has examples of government intervention in markets:

- Australia has a target for a given quantity of renewable energy. Additional credits were introduced in 2010 to increase the incentive to install residential solar panels. This was so successful that solar panel installations were far higher than expected, supply of these certificates flooded the market, and renewable energy certificate (REC) prices dropped. This effectively 'crowded out' large scale renewable plant such as wind farms. The government responded by creating a separate market for these small scale RECs from 2011 onwards. The large scale REC price has begun rising again as a result

[2] Sydney Morning Herald (2009), "Call for honesty in emissions debate", Weblink: http://www.smh.com.au/environment/climate-change/call-for-honesty-in-emissions-debate-20090723-duxc.html

- NSW has a solar feed-in tariff (a price target). Demand for residential solar panels was far greater than anticipated in 2010, so the NSW Government has announced that it will close the scheme to new applications and retrospectively reduce the tariff rate to customers eligible for the original 60/c/kWh tariff to 40c/kWh from July 2011 for the remainder of the Scheme.

It is unlikely that a carbon tax will provide much greater price certainty and confidence to industry and investors than an ETS, particularly given that Australia will be a price taker in the global carbon market under emissions trading with international linkage.[3] This means that a carbon trading market will actually operate more like a carbon tax anyway, where international carbon markets set the level of the carbon price. Similar to a share portfolio, a global price would be less volatile than individual domestic prices due to diversification: the market is far broader and domestic deviations in carbon supply/demand will tend to cancel out.[4] There is also the likelihood that governments will intervene to adjust either targets or recognised imports/offsets to manage global prices to meet expectations.

Leaving aside the risk that governments will likely intervene in a carbon market, it is difficult to see why investors will commit funds to large scale energy intensive infrastructure projects with an interim carbon tax that is set to change to an emissions trading scheme sometime in the future and in some unspecified form. The Minerals Council of Australia has already identified this concern[5]. No investor in a long lived asset like a power station will take this risk, particularly where the Government promoting the interim carbon tax has already made fundamental changes to its policy position on its schemes (RET) and proposals for an emissions scheme, and where there is no bipartisan political support.

A lower price or lower abatement target

If the carbon tax is set below the carbon price expected under an ETS then this will result in lower abatement costs, which may be appealing to some stakeholders. At this stage this would only be speculation as the government has not announced the expected price.

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3 Weblink: http://www.frontier-economics.com/europe/de/news/783/
Weblink: http://www.frontier-economics.com/australia/au/news/1032/

4 The carbon price in the EU ETS was only volatile during Phase I (2005-7) because excess permits were issued and these could not be "banked" into Phase II. The carbon price volatility has reduced considerably since the start of Phase II of the EU ETS.

5 Weblink:
http://www.minerals.org.au/__data/assets/pdf_file/MCA_News/CIE_Investment_Confidence_March11_(3)_(2)%5B1%5D.pdf
http://www.minerals.org.au/__data/assets/pdf_file/MCA_News/CIE_report_uncertainty_with_fixed_price_policy_March_2011.pdf

However, simply shifting to a carbon tax set at the same level as expected under an ETS would constitute a potentially material reduction in the abatement target compared with the CPRS5. This is an important distinction between a carbon tax and emissions trading which has been overlooked by many. If a carbon tax is set at the same level as was expected for permit prices under the CPRS5 scenario (a 5% reduction on 2000 emissions by 2020), Australia would expect the same level of domestic abatement that would have occurred under emissions trading. In the Treasury modelling of the CPRS5 (2008)[6], domestic emissions were projected at 585Mt, compared with an emissions target of 525Mt. The difference (60Mt) was to be met through permit imports.

If Australia sets a carbon tax at the same level as the carbon price assumed for CPRS5, domestic emissions should be around the same level (585Mt), assuming that the modelling is accurate. The difference is that under emissions trading, emitters would only be able to purchase 525Mt[7] of permits from the government and would have to purchase the additional permits from overseas. Permit imports of 60Mt by 2020 would have a value of around $2.4b in that year alone. Under a carbon tax, emitters would pay this amount to the government rather than purchasing from overseas.

Consequently, a carbon tax based on CPRS5 prices would also mean that global emissions would be higher than under emissions trading, since Australia would no longer purchase abatement from overseas. Each 5% cut in Australia's emissions represents around 25Mt of permits, so an additional 60Mt of global emissions represents around a 12% weaker emissions target for Australia. *So rather than CPRS minus 5 (a 5% reduction on 2000 emissions), if the carbon tax were maintained until 2020, Australia could be facing an equivalent target which is closer to CPRS plus 7.*

Given the above, it appears that the Greens are perhaps conceding more than anyone in their efforts to achieve consensus, which is at odds with their justification for rejecting the CPRS legislation on the grounds that the target was too weak. Of course, the emission reduction actually achieved will depend on the level of the carbon tax. The only way the Greens can resolve their dilemma is by supporting a carbon tax higher than the permit price forecast by Treasury, anything less will represent a weaker target than even the CPRS.

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6 Weblink: http://www.treasury.gov.au/lowpollutionfuture/ . See Chart 6.14.

7 Strictly speaking, not all emissions would be "covered" under emissions trading or a carbon tax. Under the proposed CPRS, emitters would purchase around 450Mt from the government (75Mt would not be "covered").

Tax interaction and tax cuts

Two years ago, Frontier Economics proposed amendments to the CPRS that would have substantially reduced the economic distortions that the proposed CPRS or carbon tax would create. The savings are due to a reduction in the inefficiency of the 'tax interaction' effect associated with the CPRS[8]:

> "[T]he direct cost of abatement represents only a proportion of the overall economy-wide costs. Emissions trading ensures that the direct abatement costs are low. However, other costs stem from a number of sources, primarily distortions to investment and savings decisions that can arise from introducing a new tax; the interaction between higher prices and existing tax-induced distortions (known as the "tax interaction effect") and inefficiencies and distortions that arise from recycling revenue to finance lump sum transfers."

Pre-existing taxes already create economic distortions that discourage investment, consumption and labour. When a carbon price/tax is imposed in addition to these existing taxes, the resulting economic costs are *multiplicative*, not additive. The Frontier Economics report pointed out that while the direct cost of reducing emissions is relatively low (as expected under emissions trading), the bulk of the economic cost of the CPRS would be due to this 'tax interaction' effect.

If a carbon scheme can be designed to achieve the same level of emissions cuts but with a smaller tax interaction effect, then it is difficult to imagine why this would not be considered by a government. Frontier Economics proposed a scheme that involved a relatively minor variation on the way the electricity sector was treated that substantially cut the tax interaction effect on the economy while achieving double the 5% emission reduction target. This could transition into a cap and trade scheme (if required) at any time. The Australian Government dismissed this proposal at the time as a "magic pudding" but the benefits can be explained by plain vanilla economics.

Minimising the tax interaction effect

The amendments to the CPRS that Frontier Economics proposed in 2009 included increased permit allocations to emissions-intensive trade-exposed industries (EITEI) and the electricity sector based on the emissions intensities for each sector. This approach can be called an intensity target, an output based allocation, a performance standard or a "feebate". What it means is that emitters are penalised for emissions intensity above the standard, but rewarded if emissions intensity is below the standard. It preserves the same incentive to reduce emissions but it does not raise tax revenue (or electricity prices) in the same way as a tax or a cap and trade on all emissions. This intensity approach is equivalent to introducing a tax on emissions but providing a *targeted* reduction in a production or company tax – the carbon tax introduces a distortion but the

8 Weblink: http://www.frontier-economics.com/europe/de/news/783/

effective reduction in other taxes (by rewarding lower emissions) reduces these distortions and hence the size of the tax interaction effect.

In the case of electricity, the benefit of this targeted tax reduction flows to electricity consumers. It is not widely understood that most electricity abatement will come from the supply side: price increases to curtail demand will be a minor contributor to reducing emissions, yet create great political resistance to the introduction of a carbon pricing scheme.

Frontier Economics has previously pointed out that this is not the only way to reduce the tax distortions of the CPRS: recycling revenue to cut income, company or consumption taxes can also achieve efficiency gains relative to the CPRS.[9] If the government does implement broader tax reform (previously rejected by the Australian Government) then this would be a welcome, though unlikely development.

In the absence of an ongoing policy of using revenue from the sale of carbon permits or carbon tax to offset inefficient taxes, the Frontier Economics approach is the closest alternative to an effective cut in consumption and company tax which would ensure revenue neutrality, would most directly target the distortionary "tax interactions", could target assistance in line with areas that may be hardest hit (including small business) and would allow for a politically acceptable transition given that electricity prices are already rising.[10] It also addresses equity concerns to the extent that a tax on electricity is inherently regressive.

US Clean Energy Standard and Resources for the Future

The points made by Frontier Economics in 2009 were recently affirmed by the RFF in the US in response to President Obama's proposed Clean Energy Standard[11].

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9 Weblink: http://www.companydirectors.com.au/~/media/Resources/In%20My%20State/Newsletters/VIC/AICD1562%20Newsletter%20Dec_VIC_v5_FINAL.ashx

10 The fact that electricity prices are already rising may make further increases less acceptable to electricity consumers.

11 Parry and Krupnik (2011), *Is a Clean Energy Standard a Good Way to Move U.S. Climate Policy Forward?,* http://www.rff.org/RFF/Documents/RFF-IB-11-04.pdf

RFF stated that:

> "...in some important economic and practical regards a CES may be a better first step than the cap-and-trade proposals floated in Congress. In particular, it can be significantly more cost-effective and it avoids, at least initially, large increases in energy prices, which are a major political hurdle for emissions pricing policies."
>
> "[P]olicymakers should also be open to a pricing alternative to the CES, known as a feebate, which involves fees for generators with above average emissions intensity and subsidies or rebates for those with below average emissions intensity. The feebate appears to represent a more transparent and cost-effective approach".

The "Feebate" proposed by RFF is essentially the same policy that Frontier Economics proposed for the electricity sector in 2009. RFF went on to say:

> "The second (and more surprising) implication is that emissions pricing policies without the revenue-recycling benefit may no longer be superior to the CES on cost-effectiveness grounds. This is because emissions pricing policies have a bigger impact on energy prices, and hence cause more exacerbation of pre-existing tax distortions"

Modelling results

Frontier Economics' modelling of the CPRS found that the direct cost of carbon was **$33.30/tCO2** by 2020, to achieve emissions reductions of 5% on 2000 levels by 2020 (178Mt, made up of domestic abatement and permit imports). When the cost of tax-interaction was also taken into account, the cost to the economy (loss in GDP per tCO2, relative to the Reference Case) rose to **$43.4/tCO2** in 2020.

Frontier Economics also modelled an alternative intensity target for the electricity sector, though this scenario was based on emissions reductions of 10% on 2000 levels by 2020 (199Mt, also made up of domestic abatement and permit imports). In this case the cost to the economy (GDP loss per tCO2 relative to the Reference Case) was just **$22.5/tCO2**. This is because the intensity approach reduced or avoided the tax interaction distortions. Similar reductions in cost could be achieved if carbon revenue was used to reduce company or payroll taxes, for example. This result is verified by the RFF, which recently reported modelling of different policy alternatives and concluded:[12]

> "Our intuition about the inevitable superiority, on cost-effectiveness grounds, of economywide, market-based approaches to reducing CO2 emissions appears to break down when we take into account inevitable interactions between policies and the broader fiscal system, at least for the scale of emissions reduction considered here. A big problem with market-based approaches is that they generate large revenues or rents—the more so the more comprehensive the policy. If these revenues or rents are not used to increase economic efficiency, it

12 Parry and Williams (2011), *Moving U.S. Climate Policy Forward Are Carbon Taxes the Only Good Alternative?* http://www.rff.org/RFF/Documents/RFF-DP-11-02.pdf

> is quite possible that sector-specific policies and nonregulatory approaches are superior on cost-effectiveness grounds. In fact, the economy-wide cap-and-trade policy without the revenue-recycling effect performs the worst of all the policies considered in Table 1."

Conclusion

Governments around the world are finding it difficult, and increasingly so under more difficult economic conditions, to convince their respective communities of the merits of introducing carbon pricing schemes. A key barrier is the cost to the economy of these schemes. Frontier Economics has focussed on developing an option that reduces the costs to the economy of a carbon pricing scheme, while being effective in reducing emissions. We have shown that it is possible to double the cuts of the CPRS scheme while halving the effective carbon costs and reducing the regressivity of electricity price rises with relatively minor changes to the CPRS. Instead, the Labor Government and the Greens are pursuing a carbon tax that, if set at the same level as the Government's forecast permit price, and assuming Treasury modelling is correct, will result in an emissions level that we estimate will be 7% *above* the 2000 level of emissions, as compared to the CPRS target rejected by the Greens of 5% below the 2000 level. The only reason the Government, with the active support of the Greens, would prefer such an option is that they prefer a model that delivers them control over more revenue and the political power that comes with the redistribution of this revenue.