Implementing Australia's carbon price floor

Submission on Australian Government discussion paper "Price floor for Australia's carbon pricing mechanism: Implementing a surrender charge for international units" (January 2012)

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Summary

The price floor for Australia's emissions trading scheme should be implemented so that it creates a price signal commensurate with the legislated floor price, allows liable entities to hedge their exposure to price risks (if desired) without creating market distortions, and ensures that domestic permit auctions clear to maintain revenue from government permit sales, all with minimal complexity and implementation risk. Our analysis leads us to recommend the following approach:

- As a default, determine the surrender charge for international emissions units on the basis of benchmark market prices at the time of surrender, as per Option 3 in the discussion paper.
- Complementing Option 3, the Government could provide the opportunity for liable entities to lock in a surrender charge ahead of time, as a backup in case financial markets do not provide such hedging products at reasonable prices. Implementation needs to avoid offering contracts for surrender charges below their risk-adjusted market value, otherwise the policy could result in an expected carbon price below the floor price along with incentives to over-commit on international emissions units, and unwarranted loss of fiscal revenue.
    - Suitable implementation could be achieved by pre-contracting for a surrender charge based on forward market prices, as a variant of Option 4. The surrender charge would need to include a fee for hedging one-sided risk, or the surrender charge would need to be set at a minimum threshold.
    - Alternatively, hedging of price risks could be achieved by allowing the early surrender of international emissions units, and up-front payment of the surrender fee. The surrender fee would be determined on the basis of the market price at the time of surrender, the floor price during the chosen year of liability, and an adjustment for the time value of money. Compared to Option 4 or variants, this approach is simpler, does not require an observable forward carbon price for the units, and involves less risk of crowding out desirable market provision of risk management products.
- Furthermore, Government should rely primarily on the international surrender charge to maintain the price floor, as there are sound arguments that the reserve price at auction for domestic permits should be set some level below the price floor. This would help ensure that auctions of domestic permits clear and the appropriate amount of fiscal revenue is achieved, in the face of possible differences between actual market prices for international emissions units and the assessed benchmark prices.

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Introduction

The *Clean Energy Act 2011* and related legislation include a price ceiling and a price floor for the first three years of the flexible price period. The price floor is intended to reduce downside price risk and encourage investment in low emissions technologies by establishing a minimum carbon price in this period. In January 2012 the Department of Climate Change and Energy Efficiency released a discussion paper (Australian Government 2012) and called for submissions on implementation options.

The price floor in the Australian carbon pricing scheme aims to provide greater certainty for investors in low-emissions assets, while allowing Australian liable entities to use international emissions units, the prices of which tend to be highly volatile and may at times be too low from the perspective of encouraging domestic investment (Jotzo 2011, Wood and Jotzo 2011, Jotzo and Hatfield-Dodds 2011).

Achieving an effective price floor with open international trading in emissions units poses a number of challenges for implementation. In particular, liable entities seek assurance that they can hedge price risks, and government needs to be sure that implementation maintains appropriate incentives and that revenues from the sale of domestic permits are safeguarded.

This submission provides comments on these implementation issues and Options 1-4, as set out in the discussion paper (Australian Government 2012).

The need to determine the surrender charge on the basis of market prices at the time of surrender

To create an effective carbon price that is at least at the level of the price floor legislated for 2015-16 to 2017-18, the surrender charge should be based on market prices at the time of surrender (Option 3), or expectations of the price at the time of surrender (Option 4), rather than prices at the time of purchase ahead of surrender (Options 1 and 2).

Option 1 (surrender fee based on actual price paid for individual units) is not suitable because of the problems in establishing the actual cost of permits in private transactions, and associated moral hazard issues, as set out in the discussion paper (see also Jotzo and Hatfield-Dodds 2011).

Option 2 (surrender fee based on market price at the time of purchase or private purchase contract) is not suitable because of the problem of bias towards international units (as identified in the discussion paper): if market prices rise, liable entities could sell the units they bought earlier and replace them with new units bought at the same price, thereby minimizing the surrender charge payable. This would risk undermining the effectiveness of the floor price. A comparable advantage does not exist when holding domestic emissions permits, and so this option would distort market choices towards holding international units. There is no obvious design feature that could alleviate this problem.

Option 3 (surrender charge based on market prices at the time of surrender) is the most effective, efficient and workable option in principle. The key advantages are that the surrender charge is determined on the basis of observable market prices (as opposed to Option 1), and determining the charge at the time of surrender ensures there is no bias from opportunities to benefit from price fluctuation through time (as opposed to Option 2).

The model leaves a compliance cost risk even after an international emissions unit (or forward contract) has been purchased, because the surrender fee is unknown in advance. It seems a reasonable expectation that financial markets will, for a price, provide hedging products that eliminate this cost risk related to the surrender fee.

However, liable entities have voiced concerns that such hedging products might not be provided by financial intermediaries, or might be provided only at inappropriately high prices. To provide a backup, government could complement Option 3 by providing the ability to lock in the surrender charge ahead of the time of permit liability. The next section examines options for this.

Providing the ability to lock in the surrender charge

a. Implementation issues with Option 4

Under Option 4 in the discussion paper, government would provide the opportunity for liable entities to enter a binding agreement with government to surrender of a given number of units at a particular date in the future at a predetermined surrender charge, which would be linked to observed forward prices of the international units in question.

This could be interpreted to mean setting the surrender charge equal to the gap between the forward price for international units (at the time of entering the contract) and the floor price (at the contracted surrender date), if the forward price is lower than the floor price:

(1) Surrender charge = max ($0, (floor price – forward price))

The problem with this formulation is that it could create incentives to take out contracts for the surrender of large amounts of international units, in a situation where the forward price curve is at or near the floor price and future market prices are uncertain. The contracts would then create value for liable entities if prices fell, but impose no extra costs if prices rose. Under formulation (1) there would be no charge for the hedging function offered.

This would be of concern for several reasons: the choices by liable entities would be distorted; the amount of fiscal revenue would be reduced relative to other design options; the expected cost of carbon would be lower for those entities that take out the contracts; and the reduction in expected permit price would benefit only those liable entities that took out contracts, thereby possibly disadvantaging smaller emitters and those with less sophisticated financial management systems.

To illustrate, consider the following example. If during 2014 the forward price for 2016 emissions units was equal to the floor price (at say $16/t of CO_2 equivalent), then contracts would be offered at a zero surrender charge. However the actual price at the surrender date in 2016 would be either lower or higher than $16/t. If the price were to fall to $10/t at the contracted surrender date, then the liable entity would make a $6/t saving because of the contracted zero surrender charge. The contract option thus provides a possible upside if prices fall, but no compensatory downside if prices rise.

The effect could be sizeable, depending on the variability of prices for international units through time. The higher the expected future price variability, the greater the incentive to lock in contracts if forward prices are at or near the floor price. Experience in international markets has shown that prices are highly variable.

As a rough indication, the expected value implicit in a contract according to formula (1), struck when the forward price is equal to the floor price with a zero surrender fee, might be in the order of two dollars per permit contracted, and could well be higher.[3] The value of the contract depends on expectations about price volatility over the period of the contract, with greater expected variability and longer time frames increasing the value of the contract. Pricing in financial markets would be based on more sophisticated financial models than the simple illustration here. It would include an additional margin for profit and to compensate the issuer for any residual risk taken on, increasing the price demanded for the option above its pure statistical value.

Taking the above estimate as a conservative benchmark, this would reduce the expected carbon price, which investors would figure into their decisions, by around $2/t or more for contracted international emissions units, and reduce overall expected government revenue by $2/t for each emissions unit under contract. In simple terms, this implies that the formula (1) would provide a subsidy of $2 in expectation terms per international unit and thus a strong incentive in favour of the use of international rather than domestic units.

It is important to note that this issue – creating incentives to contract a large amount of units because of the potential financial upside – becomes a problem only if the market price of emissions units is of a similar magnitude as the price floor level, and the financial implications only come to bear if it subsequently falls. However, given volatility in international carbon markets and the overriding role of EU policy developments and EU economic outlook in shaping international price expectations in the near term, such a constellation is a distinct possibility.

Furthermore, there is a potential practical issue in implementation of Option 4. Forward market prices would be required for different types of emissions units, ideally in A$ terms. Such market data may not be readily available. Combining current market prices with a chosen uplift factor for the time value of money could substitute for it.

b. Option 4 variations

The problem of creating incentives to enter contracts because of the possible financial benefit could be addressed by way of government setting the pre-contracted surrender charge to include a fee that reflects the expected financial value of the option provided, denoted $*x* in the formula:

(2) Surrender charge = max (*0*, (floor price – forward price)) + $*x*

By charging a fee *x* on any contracted surrender charge, government could avoid crowding out private market providers of financial hedging products, and avoid any disadvantage to those liable entities who are not in a position to avail themselves of the contracts.

The fee *x* could be set with reference to results from financial market models.

[3] The $2/t indicative value is derived using the observed historical variability of the daily EU permit price from 2008-11 as a proxy (standard deviation 4.5), and assuming a normal distribution of realised prices around a $16/t expected mean. Different parameter choices and alternative methodologies will yield different values.

Alternatively, government could focus only on precluding the distortions that would arise from a rush on contracts offered at a zero or very low surrender charge, by setting a threshold level for the surrender charge offered in pre-contracting arrangements:

(3) Surrender charge = max ($*x*, (floor price – forward price))

Again, the fee $*x* could be set with reference to results from financial market models. Our indicative calculations based on price volatility in EU carbon markets (as described above) suggests that $x might need to be at least $2 to avoid the possibility of creating an implicit subsidy and the associated incentive in favour of international units.

Under both options, forward price information would be needed, or an uplift factor chosen.

While these variants would perform better than Option 4 (as set out in the discussion paper), they may result in government provided hedging at a price somewhat above competitive market rates. This is consistent with the view that government should avoid crowding out market provision of risk management, and instead act as a provider of last resort.

c. Allowing early surrender

A different route to provide cost certainty to liable entities (not canvassed in the discussion paper) would be to allow the surrender of international emissions units at any point in time, to cover future emissions liabilities.

The surrender charge would be based on the difference between current observed market prices and the price floor at the chosen date of liability. An adjustment would need to be made to the assessed market price to account for the time value of money. The surrender charge would be payable at the time of early surrender.

This approach allows liable entities to fully lock in future compliance costs. It would require liable entities to pay for both emissions units and the surrender charge up-front, and would thus bring some fiscal revenue forward in time. However this early financial commitment would be recognised in a surrender charge that is adjusted for the time value of money.

The option of early surrender has a number of advantages over Option 4 and the variants canvassed above. In particular, it does not require an observable forward price for the international units, and it involves less risk of crowding out market provided risk management products.

Reserve price at auction

An issue not canvassed in the discussion paper, but relevant and important in the context of price floor implementation, is the level of the reserve price at auction.

The Clean Energy Future legislation stipulates a reserve price equal to the floor price (in line with thinking in earlier papers, and akin to the US Waxman-Markey legislative proposals). However, in the case of the Australian carbon pricing scheme, to achieve the objectives of the floor price it is appropriate to rely primarily on the international surrender charge to maintain the price floor, and set the reserve price at auction for domestic permits some level *below* the legislated floor price.

Setting the reserve price at a level below the floor price would help ensure that auctions of domestic permits clear and the appropriate amount of fiscal revenue is achieved. If the reserve price were equal to the floor price, and the surrender charge set to target an effective cost of international units also equals the floor price, then the system is over-specified. Given that there can be differences between actual market prices for international emissions units and the assessed benchmark prices, a situation could then occur where the actual cost of using international units is below the reserve price at auction, and domestic permits remain unsold. This would involve a loss of fiscal revenue without any environmental benefits, and should be avoided.

Setting the reserve price below the floor price mitigates this risk. If implemented properly, the surrender charge for international units will be sufficient to uphold the price floor by itself. The (lower) reserve price at auction can then simply act as a backup.

The theoretical possibility then exists that the domestic permit price falls to the (lower) reserve price, if domestic emissions in the Australian carbon pricing scheme turn out to be below the level of the scheme cap, and if demand for permit banking does not drive up prices. On the basis of the available modelling and other analysis, this outcome appears unlikely. Even if it did eventuate, the outcome would be compatible with the intent of the policy, because the low price would have arisen primarily as a result of a strong domestic abatement response rather than as a corollary of international market conditions.

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