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Recording emissions permits in the national accounts

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A Introduction

1 The treatment of emissions permits was not one of the 44 issues to be considered during the update of the SNA. However the emerging importance is such that it cannot be ignored. It is necessary to consider how will these permits should be recorded in both of the 2008 SNA and BPM6, what the implications are for existing draft texts, what the implications are for government finance statistics and revenue statistics, and the implications for environmental accounting.

2 Emissions permits are not the only way in which the consequences of the emissions of green house gases on the environment are reflected in instruments that have a market value. A treatment of emissions permits that does not take account of other ways in which emissions affect the economy is not likely to be satisfactory in the long-term.

3 At present there are three ways in which permits issued by governments (or others) that satisfy the conditions to be treated as assets may be recorded in the SNA.

The first of these is the mobile phone licence case where government issues licenses for the use of a natural resource.

The second is the case of a long-term lease on land.

The third is the case of a permit to operate a taxi or a casino, for example.

Looking at the emissions permits case raises questions about whether these three treatments are fully consistent and also allow for a consistent treatment of emissions permits.

1. Types of emissions permits

4 Most thought has been given to the question of how tradeable emissions permits operated under a cap-and-trade scheme consistent with the Kyoto protocol should be recorded. However there are two other mechanisms under the Kyoto protocol that affect the recording of emissions and not all emissions permits are operated under cap-and-trade schemes¹. In addition, there are voluntary schemes such as carbon offsets offered by airlines and car hire firms to private individuals. In total, therefore, there are five sorts of instruments related to emissions that should be considered. These are:

1. Permits issued under an emissions trading scheme (ETS) consistent with the Kyoto protocol (cap-and-trade);

2. Certified environmental reductions (CERs) resulting from a joint implementation (JI) scheme; also consistent with the Kyoto protocol;

¹ Some brief information on the various schemes in operation is given in an attachment.

3. Emissions reductions units (ERUs) resulting from the clean development mechanism (CDM) also consistent with the Kyoto protocol;
4. Emissions permits that do not operate under a cap-and-trade scheme (not Kyoto);
5. Private carbon offset schemes.

B Permits issued under a cap-and-trade ETS

5 A cap-and-trade scheme is one where the government, or an international organisation, sets a limit on the amount of a greenhouse gas that may be emitted in a period of time. Allocations of the total amount of gas that may be emitted are made to specified enterprises. These are typically large emitters in designated industries. The allocations are deliberately set lower than previous experience so that there is an incentive for the enterprise to reduce its emissions. If it does not manage to do so, it is at liberty to purchase allocations from other enterprises if those enterprises are prepared to sell them. Allocations are typically made from multi-year periods and those allocations not used in one year may be carried forward to subsequent years in the period covered by the current agreement.

6 The allocations made by government, often called allowances, are expressed in terms of physical units and are monitored in terms of these physical units. An enterprise receiving an allowance is obliged to indicate how much they have emitted and surrender the appropriate number of allowances. Independent checks are carried out to verify the amount of emissions that have taken place and if an emitter exceeds his allowance and has not already purchased extra allowances to cover the difference, he must then purchase the extra and pay a fine to government. (The treatment of the recording of the fine payable to government is the one unambiguous element of the issue. Fines are recorded as other current transfers in the secondary distribution of income account.)

7 An allowance held by an enterprise clearly satisfies the conditions of an economic asset. It represents a benefit to the owner and represents a store of value that can be realised by selling it. There is no amount strictly corresponding to a liability matching the asset. Further these assets are not issued, sold or monitored by financial institutions. Thus the asset must be treated as a non-financial assets and since it represents a tradeable permit it is appropriate to treat it under the category of contracts, leases and licences in the SNA.

8 A number of questions have to be answered;

What type of transaction should be recorded when the permit is issued?

At what time should they be using up of the benefit implicit in the allowance being recorded?

What value should be applied to the permit?

How should changes in the value of the permit be recorded?

9 There are three possible options for recording emissions permits. The first is to treat the payment for the payment as a tax; the second is to make a parallel with the mobile phone case for

licensing the use of a natural asset; the third is to treat the payment as a payment for services. Each is discussed in turn below.

1. Option 1: Treatment of the payment for a permit as a tax

10 This option is based on the argument that the cost of a permit is similar to the costs imposed by an environmental tax on petrol, so the treatment of the cost of a permit as an type of environmental tax is appropriate. Normally, a tax is a transfer, that is there is no quid pro quo. In this case, in return for the payment of a tax, the unit making the payment receives in return an emission permit which has a value that can be realised by selling to another unit. This is at variance with the basic accounting rules of the system, but conforms to the exception agreed in the context of taxi and casino licences.

Case 1: Permits are sold and their value does not alter

11 Suppose the government, G, sells a permanent to the value of 100 to a polluting enterprise, P.

12 Suppose that P emits exactly the amount of green house gas covered by the allowance conveyed by the permit. The amount paid by P to G should be recorded as a tax, to be treated as a tax on production. Because the permit covers a number of years, *it seems appropriate to record the initial payment as an other account payable receivable and record the tax as actually paid as the emissions take place.*

13 In considering the case of a taxi licence, the SNA states that it is only acceptable to show government having an account payable recorded in its balance sheet at the end of year if government is liable to make a refund in some circumstances. (This is the view of those responsible for the GFS.) If not, it was agreed that the initial payment should be recorded as a tax, at the full amount when the licence was issued. Since the intent is to issue ETS permits simultaneously for all countries for the same set of years, a decision not to record these as payable on an accrual basis would have the undesirable effect of higher than normal taxes on production recorded in the first year. *This might suggest revisiting the decision on recording the full payment at the time of payment if there is no possibility of a refund.*

14 If P goes bankrupt before the end of the period covered by the allowance, the permit remains an asset which can be sold when the enterprise is wound up. Thus the fact that there may be no refund payable by government may not be a problem in practice as the allowance is likely to be used by the new purchaser of the permit.

15 Suppose G issues permits to two enterprises, P1 and P2. P1 emits more than its allowance and purchases some of P2's allowance. In the other changes in the volume of assets account the other account payable by G to P2 has to be reclassified to one due to P1. (In practice this is unlikely to be a problem at the sector level since all emitters will be non-financial corporations. It might be a problem if the corporations were sub-sectored according to ownership.) Apart from this, G will receive taxes equal in total to the original amounts paid by P1 and P2 but will receive more from P1 and less from P2 than the original allowances suggested.

16 Suppose that P2 is non-resident and has received its allowance from another government, G2. This leads to the unsatisfactory situation where P1 is now paying a tax on production (corresponding to the part of P2's allowance bought by P1) to a non-resident government, G2. *This would be a new departure in the SNA; taxes on production are currently only paid by units resident in the economy or operating temporarily in it.*

Case 2: Permits are issued without charge but have a market value

17 This case is less easy to handle. The argument for treating a taxi licence, say, as a tax is the objection to government raising national wealth by using legislation to create monopoly profits by restricting the number of persons who can operate taxis. To accommodate this objection, the SNA allows the fee for a licence to be recorded as a tax on production but the licence holder also acquires an asset at the same time.

18 In the case of an emissions permit issued without charge, the government makes the asset available. Suppose again that the value of the permit is 100. As the allowance is used up, government would appear to receive taxes eventually totalling 100 even though no payment is actually made by the polluter to government. It has been suggested that the way to deal with this is to treat the granting of the permit as a subsidy which would then be offset over time by the payment of the tax. This is problematical on a number of fronts.

19 At the time of issue of the permit, the enterprise would receive both the subsidy and the asset, leading to a two-fold increase in net worth.

20 Extending the idea that a tax can be paid in exchange for an asset stretches the SNA accounting rules; to do the same with a subsidy would stretch them further.

21 However, in parallel with the former case, and avoiding an inconsistency with it, an account receivable from the government to the enterprise could be recorded, which would decrease as the tax was paid.

22 There is a major problem associated with what value to ascribe to the permit both when allocated and when surrendered. There is no actual impact on the government's accounts but one would show if the initial allocation were recorded at the market value of the permit at that time and the use of the allocation were recorded at different values as they change over the period of validity, most likely increasing towards the end of the period as they become scarcer. One solution would be to continually increase the value of account receivable by government in the revaluation account to match the increase in value to the permit holder but this is inelegant and non-intuitive but it is difficult to see a simpler way to record the value of the permits when used at their market value and not show an impact on government tax revenue.

23 The question of how to record the purchase of an allowance from a non-resident may raise more complex questions when the values of the permits are imputed. However, if there is a fully operational international market in the permits, presumably the value of the permits for P1 and P2 would still be aligned.

24 ***A simple solution would be to record only the actual transactions, such as that between P1 and P2, in monetary terms and record the transactions between P1, P2 and the two governments where no actual monetary transactions occur only in physical terms, rather than imputing monetary transactions.*** Since it is intended to move to a scheme whereby permits are sold at auction rather than being issued freely (in the main) the recording problem would phase out except for those cases where free issue of permits remained.

Case 3: Permits are sold but have a different market value

25 This is a combination of the first two cases. In this case, P may pay 80 to G but receive in return a permit whose market value is 100. The simple solution proposed for case 2 would work well. Actual transactions between P1 and P2 would be recorded at market value; the tax receipts of

government would be the same as the initial sale price (assuming the other complications of case 1 are solved.)

2. Option 2: Treat the issue of a emissions permit in a manner similar to the mobile phone case

26 Not everyone is persuaded by the case for treating the payments for emissions permits as a tax, especially when the permits are issued free and so the taxes are imputed. Like taxes, permits [can] raise money for government and aim to achieve an environmental improvement. However, while taxes fix the price that enterprises have to pay for emissions, the amount they emit is uncertain while permits fix the amount of the emissions but the price is uncertain. Some argue this means that the permits should not be treated as a tax or, at the very least, should be distinguished from "normal" environmental taxes.

27 On a practical level, given the size of the value of permits, the impact on tax receipts and tax burdens expressed as shares of macro-aggregates would be significant without matching actual receipts to government. The next option to explore, therefore is the parallel with the mobile phone licence.

28 One immediate attraction of this option is that what is at issue is the use of a natural resource (the atmosphere). Other parallels with the mobile phone case are less exact, however. It is not clear that the atmosphere can be treated as an economic asset.² Nor is it clear that government can be said to claim ownership over the atmosphere on behalf of the population at large because the atmosphere cannot be considered to consist of "national" elements; it is precisely the global nature of the atmosphere that is the cause of concern.

29 *Pursuing the mobile phone analogy is as likely to raise questions about its treatment as to solve those of emissions permits.* Why is the radio spectrum treated as a separate asset? Why is a licence to use land treated as sale of the land but a licence to use the radio spectrum is not the sale of the spectrum? Why is the value of a taxi licence held to be a tax in order to prevent its creation adding to national wealth whereas the creation of monopoly profits from use of the radio spectrum adds to national wealth and is not a tax? The difference between the mobile phone treatment and the taxi licence treatment is held to be whether there is an associated asset or not. The question of whether this is appropriate when the owner of the asset is not government, but government is intervening using its powers to tax to protect owners affected by externalities they cannot combat themselves is not addressed. The original ruling on the treatment of the mobile phone licence said the treatment may need re-examining in future; the parallel or lack of it with emission permits may be the justification for this.

3. Option 3: Treat the sale of an emission permit as the payment for a service

30 The values of ETS permits (at least when expressed at market prices) are out of all proportion to the service provided by the distribution and monitoring of permits. *In the case of a cap-and-trade ETS, therefore, this option is not appropriate.*

31 It may be the case, however, that for the purposes of environmental accounting, the notion of services provided by the environment (as distinct from services produced within the SNA

² It could be argued that the spectrum has no value other than the licence shown separately and so is not an economic asset either.

production boundary) may be considered as a means of measuring the degradation of the atmosphere due to pollution, on a willingness-to-pay principle.

C CERs and ERUs

- 32 These result from interactions between enterprises in different countries with little direct intervention from government. The objective is to reduce emissions and thus claim credit for reducing emissions abroad rather than at home. Measured in physical terms, CERs and ERUs are consistent with allowances under ETS and are monitored in similar ways.
- 33 The simple solution would be to record actual transactions at their appropriate values and keep track of the benefits of CERS and ERUs in physical terms only.
- 34 There may be conceptual problems here, with a risk of double counting. The initial assumption might be that the payments from country A to country B would represent payments for services produced by B. But it is not clear that any services are rendered to A. The services do not leave the economy where they are produced, except in so far as the atmosphere is improved and it has no national boundaries. Further, if the output were recorded as exports, it could not also be recorded as fixed capital formation which, in other circumstances, might be the appropriate treatment of it.
- 35 If a value were attributed to a free allocation of an allowance from government, it would not be parallel with an allowance earned via a CER or ERU. However, since these are not granted by government or indeed involve government in any direct way, it is difficult to see any justification from bringing them within the scope of taxes and subsidies. *This might also be an argument in favour of the simple treated of allowances issued without charge.*
- 36 In terms of environmental accounting, the costs of achieving CERS and ERUs could be seen as costs of ameliorating the environment, offsetting the costs treated as degradation under ETS schemes.

D Emission permits not issued under a cap-and-trade scheme

- 37 The treatment of these would have to be worked out according to the nature of the regime involved. For example, a scheme where the revenue from the sale (or auction) of permits is used to further green technologies could be seen as one where the payments for the permits was seen as payment for services (within the production boundary of the SNA). However, if the beneficiaries of the green technologies are not the same group of units that pay for the permits, the case for continuing to treat the payments as a tax is still strong. In this case, implicit taxes and subsidies might be introduced as under the cap-and-trade schemes but given the variations in schemes that might exist, keeping a parallel with other ETS schemes in all cases might be difficult. *Keeping a parallel between Kyoto and non-Kyoto schemes in the absence of implicit taxes and subsidies would inevitably be simpler.*

E Private, voluntary carbon offsets

- 38 More information on exactly how these work would be helpful but it seems that the authorities responsible for monitoring qualifying schemes would be aware of the sums involved, the countries of origin of the payments and the particular enterprises benefiting from the payments. Many of the same problems of recording the transactions involved appear as in the CER and ERU case.
- 39 It is unusual for current transfers to be made by households to corporations, but when individual consumers opt to make voluntary carbon offset payments, this might be one solution. *Finding a solution to this problem has implications for the BPM as well as the SNA.*
- 40 The environmental accounting solution of treating this as a payment to improve environmental services would fit well with similar treatment of the other types of permits but does not carry over immediately to the national accounts.

F Summary

- 41 So far consideration on how to treat emissions permits seems to have been given only to cap-and-trade schemes. It seems desirable to consider other forms of permits at the outset to ensure consistent treatment across all forms of permits.
- 42 The option of treating actual payments for permits as taxes on production seems to have merit. It raises the question of whether the decision to record the whole payment at the time it is made if there is no chance of a refund presents problems however and a review of this decision might be appropriate. (Those most in favour of the proposal came from the government finance side; they would need consulting in a review.)
- 43 The options of treating permits issued free (or well below market price) as involving implicit taxes and subsidies would be difficult to implement, cause problems of interpretation of the tax burden and present difficulties in ensuring parallel treatment of permits issued in other ways. Is the case for estimating implicit taxes and subsidies so strong that it should be pursued?
- 44 If actual payments for cap-and-trade permits are not treated as taxes, the alternative seems to be to adopt a solution following the example of the mobile phone licence. However, the parallels are not exact and the case for re-examining the mobile phone case may mean a solution along these lines would be more far-reaching and perhaps longer than desirable.

Background information

Kyoto protocol processes

The Kyoto protocol establishes three ways in which emissions may be monitored:

The first of these is an emissions trading scheme (ETS) which must work on a cap-and-trade basis.

The second is the joint implementation (JI) scheme where projects in one Annex 1 country may be sponsored by another Annex 1 country. In particular it is supposed that this might apply to OECD countries assisting countries in transition.

The third process is the clean development mechanism (CDM). Under this countries without targets for emissions (non-Annex 1 countries) are assisted to reduce their emissions usually by Annex 1 countries.

Reductions made under JI schemes result in certified emission reductions (CERs) and these may carry forward from one year to the next.

Under CDM processes the result may be emissions reduction units (ERUs)

Both CERs and ERUs may be traded and traded internationally. They effectively act in the same way as an allowance either granted or purchased under an ETS.

Annex 1 countries

Annex 1 countries consist of most OECD countries (excluding Mexico and Korea but including Turkey) and most European countries in transition and Russia. The EU is also listed. Both Australia and the USA are included in the list although Australia has only recently, and USA has not, ratified the Kyoto protocol.

Annex 2 countries consist of the OECD countries in annex 1 and the European commission.

Other countries are simply referred to as non-Annex 1 countries.

EU-ETS

The EU ETS scheme is structured in terms of three tranches. The first of these ran from 2005 to 2007. The second runs from 2008-2012. The third will begin in 2012. In the second phase, now current, attention is focused only on the emission of carbon dioxide. Only very large emitters from a specified range of industries are considered. In the third tranche it is intended to expand the number of green house gases considered and also the range of industries concerned. Enterprises that are below the pollution limit or in an industry not covered by the agreement are not subject to the ETS.

The scheme operates in terms of the granting of allowances expressed in physical measures of CO₂ emissions. These are granted to an industry falling within the scope of the scheme and must be surrendered when corresponding emissions take place. There is a strict and complicated process of registering the industries and monitoring their submissions about how much they have emitted and also a regulatory monitoring system to validate this.

Until now the ETS has operated by issuing allowances to businesses usually based on past experience and most of these have been free. By the third phase it is expected that most of the allowances will be sold at auction but with some transfer arranged between more developed and less developed countries within the EU.

The EU ETS covers all EU member countries plus the members of the EEA and accession countries.

The EU scheme is intended to be consistent with the UNFCCC scheme although this latter is not yet as far advanced as the EU scheme.