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Top Article: The Spence Solution

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The road to global cooperation on climate change mitigation at the forthcoming Copenhagen Summit is currently gridlocked by an apparent direct clash of interests between the mitigation priorities of the developed countries and the growth priorities of the developing world. Nobel laureate Michael Spence has an imaginative strategy for getting around the gridlock that is both fair and efficient. The International Panel on Climate Change, the acknowledged global authority on the subject, estimates that 50 years down the road the acceptable safe level of CO2 emissions will be about 14.7 billion tonnes or 2.3 tonnes per capita per year. The average emission today is about double that limit at 4.8 tonnes per head. In the absence of a serious mitigation effort this will rise further to about 8.7 tonnes per head or four times the safe limit by 2060 as many large high-growth developing countries approach the living standards and consumption patterns of the advanced countries.

Much of the CO2 emissions come at present from the advanced countries. USA and Canada in particular emit about 20 tonnes per head. The other advanced countries emit between 12 and 6 tonnes per head. Most developing countries, including India, emit well below the safe level of 2.3 tonnes per head and China just exceeds that benchmark. The developing countries accordingly maintain that the advanced countries have the responsibility to curb their emission levels.

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However, the emissions balance will continue to shift rapidly if the fast growing developing countries maintain their pace of growth. In 50 years the major share of emissions will come from the developing countries, especially China and India. Hence, the advanced countries maintain that climate change mitigation is not feasible without critical action being taken by these countries. But any commitment to contain CO2 emissions will compromise growth and poverty alleviation in these countries. What is the way out of this impasse?

In the Spence solution, much of the mitigation action at present has to be taken by the advanced countries in the form of a Carbon Credit Trading System (CCTS). First, there has to be agreement on a global carbon emission mitigation time path leading to average emission levels of 2.3 to 3 tonnes per head in 50 years. This determines the available volume of carbon credits or emission rights in a given year. These should be distributed among the advanced countries according to some agreed formula, say in proportion to their population size. The countries should be allowed to exchange these carbon credits between themselves, based on their national priorities.

They should also be allowed to earn additional carbon credits through mitigation activities. These would include behaviour adjustments that reduce per capita emission levels, introduction of lower emission technologies and mitigation activities such as afforestation either in the country itself or elsewhere where the cost of mitigation is the lowest. These two features would establish a price for carbon credits that supports the permissible level of global CO₂ emissions and is based on the global marginal cost of mitigation. Of course this will require the establishment of cross-border mitigation arrangements that are collectively described as the Clean Development Mechanism (CDM) under the Kyoto Protocol.

The Spence solution does not require developing countries to take any action at this stage except to commit to the international agreement on the time path of global carbon emissions and commit that they would join the CCTS once they reach the living standards and emission levels of the advanced countries. In the next 25 to 30 years many of the fast growing developing countries would 'graduate' to advanced country status and at that stage they would start participating in the CCTS.

In preparation for their eventual entry into the CCTS on favourable terms, it would be in the interest of the developing countries to also engage in mitigation efforts at present to the extent these are compatible with high growth. Their efforts would be facilitated by cross-border mitigation investments and technologies provided by advanced countries which choose to increase their share of carbon credits through the CDM.

The Spence solution is attractive because it is both fair and cost-efficient. But can it be actually implemented? The G20 countries account for 90 per cent of global output and two-thirds of the global population. It is this group plus a few other large

emerging economies such as Mexico, Egypt, etc that will have to deal with all the economic and technological challenges of mitigation. That helps because the group is small enough to allow for effective negotiations yet large enough to determine global trends if they do reach agreement. However, the Spence solution also assumes that the technologies and behaviour adjustments required to move along the agreed global emission path will be available. Hence the feasibility of his solution ultimately depends on whether or not the incentives built into the proposed CCTS will be sufficient to generate the required technologies and behaviour adjustments.

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