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Your Ref:

Date: Fri 17-Mar-2006

Stern Review
2nd Floor, Room 35/36
HM Treasury
1 Horse Guards Road
London SW1A 2HQ

Dear Sir,

Response to papers from 31 Jan lecture to Oxford Institute of Economic Policy

Thank you for the opportunity to respond to the papers from your lecture of 31 January to the Oxford Institute of Economic Policy, in which you set out the key approaches and questions for your review. It is likely that the outcome of your review will set the framework for the British approach to climate change for the foreseeable future, both in terms of domestic policy, and our approach to international negotiations. Our company therefore takes your review very seriously, and welcomes the opportunity to contribute at an early stage.

Summerleaze is a major renewable electricity generator in the UK. We generated over 300 GWh in 2005, primarily from landfill gas, but with an increasing emphasis on anaerobic digestion. As a private company with substantial assets and a strong commitment to the environment, we are eager to invest in further green projects, to grow our business whilst helping tackle the problems of climate change and resource depletion. However, we can only do so if we have confidence that the market in which we are operating is fair and reliable.

After a promising start, the Labour government has more recently overseen increases in business rates for our industry, changes to tax regimes, arbitrary and inconsistent application of expensive new permitting requirements, planning decisions inconsistent with declared environmental objectives, uncertainty over the future of energy policy, and above all manipulation of the Renewables Obligation, in short a plague of bureaucratic micro-management, which has led us to consider more than once in recent times whether we should remain invested in the environment sector. A root-and-branch review of the economics of climate change is therefore timely. We hope that the result of your review will be a clear recommendation of clear, simple, long-term measures to place equal value on all greenhouse gas emissions and an instruction that regular tweaking of these measures will deter not encourage investment. It is a message that needs to be sent loud and clear to Whitehall and Downing Street, if there is to be any hope of developing a sustainable economy with all sectors playing their part.

Yours sincerely,

Bruno Prior
Managing Director
Summerleaze RE-Generation Ltd

NOTES ON THE PAPERS FROM THE SPEECH OF SIR NICHOLAS STERN TO THE OXFORD INSTITUTE OF ECONOMIC POLICY ON 31 JANUARY 2006

The science of climate change

The various papers made available from the speech to the Oxford Institute of Economic Policy (text of the speech, lecture notes, slides, discussion paper and technical annex) all commence with a summary and assessment of the science of climate change. This is a balanced statement of the majority scientific view, from which it would be unreasonable of those who are not climate scientists to dissent. The only point to add is that scientific reports since the speech have identified effects of climate change, such as the melting of the Greenland and Arctic ice sheets that are accelerating faster than the models had predicted. It seems that we may suffer serious climate impacts sooner and at lower temperatures than was envisaged in the models at the time that the speech was prepared. This will have to be taken into consideration in the choice of atmospheric carbon concentration at which we aim to stabilise, and the balance between adaptation and mitigation.

Summary points from the Discussion Paper

It is hard to disagree with the following points from the Executive Summary of the Discussion Paper:

- Climate change is a serious and urgent issue
- The problem is global in its cause and consequences
- The current pathway of emissions is unsustainable
- We can still take action to avoid the worst impacts of climate change
- An equitable international response to climate change must include action on both adaptation and mitigation

However, further comment is required on the other points. The common factor is that they attempt to analyse what we should do about climate change by trying to forecast what the effect of climate change will be. This is somewhat circular – what assumptions should we make about policies and their efficacy when trying to predict future impacts of climate change in order to decide on these policies?

“The economic challenges are complex.”

The political and scientific challenges are complex. The economics are only complex if a number of different objectives are wrapped into climate change economics and if the intention is to use a dirigiste approach (which one might argue is the antithesis of economics), whose complexity derives from the complexity of the science and politics on which dirigiste solutions depend.

“Climate change may impede growth and development.”

Probably, but this is only relevant to the economics if one needs to take future projections into

account when designing the appropriate economic response. For instance, it is relevant to the discount rate used to calculate the cost of future impacts (suggesting that it should in fact be negative), if one believes it is possible to derive a meaningful value for those costs. If one believes that real costs will only emerge from an appropriate market mechanism, abandoning the attempt to calculate costs means that one does not need to estimate future growth rates.

“Effective action requires an understanding of how mitigation may effect economic growth.”

The driver of a train may apply the brakes in an emergency without considering the consequences of his action for the welfare of his passengers. The rationale for stopping and the method used to achieve it has nothing to do with the consequences for his passengers of the delay. It would be inappropriate for the driver to be responsible also for his passengers' plans – we can be sure that he would be a less effective guardian of their intentions than they would be themselves. They will do their best to adapt to the unavoidable delay, and some will do better than others. Just because some may experience costs or even harm from the emergency stop is no reason not to slam on the brakes, nor even to do so more gently.

“A combination of policies, institutions and changes in preferences will be needed.”

Because several ineffective (possibly contrary) measures are better than one simple mechanism? As an assumption this would be unsafe, and when tested can be shown to be untrue. The problem is in the plural; restating in the singular – *a combination of policy, institution, and change in preferences will be needed* – would significantly improve this point.

“The private sector will respond if governments set clear, long-term and credible incentives.”

In theory, but risk-aversion appears to be hardening amongst institutional fund managers and shareholders. It is not clear that it is possible to deliver credible, long-term incentives in a democracy, let alone from a collection of democracies and totalitarian states.

Government policy rarely improves imperfect markets. Simple measures that ignore the complexities of markets are the best protection that government can provide for competition: for instance, preventing collusion, monopoly, monopsony or oligopoly, and ensuring artificial barriers to entry cannot be erected. More detailed, specific interventions are almost always counterproductive. As Murray Rothbard would observe, government intervention is by its nature used only where it is necessary to coerce market agents to behave other than they would voluntarily. As coerced markets are less perfect than voluntary markets, minimising government intervention (other than to ensure fair and free participation in the market, and to take account of externalities) will normally lead to the least imperfect solution.

Attempting to incorporate other policy goals into climate change policy is an excellent example of how government intervention increases market imperfections. The British government is caught in the horns of a dilemma, where they wish to encourage people to use less energy, but also wish to keep energy prices low because of concerns about “fuel poverty”. The two concepts should never have been mixed. Fuel poverty is a meaningless concept, as though one could be rich in money but poor in fuel. As defined (where more than 10% of household income goes to the payment of energy bills), it would probably cover several hard-pressed aristocrats, whose income is no longer sufficient to provide for the upkeep of their stately pile. It is no more

meaningful a concept than if we were to define “tobacco poverty” as any household that spends more than 10% of its income on cigarettes. Such households probably exist, but it is unlikely that the government will recommend reducing the rate of duty on tobacco in order to assist the tobacco poor. Instead, we will encourage them to mend their ways for their own benefit, and we should do the same for those who are profligate with their energy consumption.

Those who are not profligate with their energy consumption but nevertheless pay more than 10% of income towards energy bills are not fuel poor, they are simply poor. Government should address this by considering the many distortions of the tax and benefit system that make it difficult for many on the bottom rung of society to extricate themselves from their predicament, and the high level of tax on employment that deters the creation of jobs, not by trying to put a sticking plaster over one aspect of their poverty. These distortions are themselves government interventions that have made bad systems worse, and resulted in the poorest in society paying the highest effective marginal rates of income tax, primarily thanks to the aggressive withdrawal of benefits that removes the incentive to work for those who are out of work or on low pay. Trying to deal with this problem by maintaining energy prices at the lowest possible level is like trying to deal with the problem of deprived neighbourhoods by providing state-sponsored supplies of crack cocaine to anyone who wants it.

If the government wants people to use less energy, which cannot be ignored as part of the solution to climate change, it is going to have to allow energy prices to rise. It may or may not use the price mechanism to reduce demand, but even if it constrains demand by means other than price (e.g. rationing), the constraint itself will lead to higher prices. It would be a useful message for the Stern Review to send to the politicians, that they cannot buck the energy market if they want to see rational consideration not only of the utility of energy consumption but also of the external costs.

The rules of the Renewables Obligation (RO), and before that the Non-Fossil Fuel Obligation (NFFO), are further good examples of how incorporation of other policy objectives into a climate-change mechanism increased the imperfections in the market. Supposedly, these mechanisms offered a premium over the wholesale price of electricity that represented the value of the avoided external costs, and a signal to further investment. The avoided external costs of greenhouse gas emissions are the same whether the carbon was not emitted from a wind turbine or from a municipal waste incinerator. But the government had other policy objectives to pursue, so defined a complex set of rules that included some technologies or feedstocks, but included others of apparently a very similar nature. Consequently, the value of avoided carbon from burning municipal waste (MSW) in a fluidised-bed boiler is zero, whereas the value of carbon from burning MSW in a gasifier is (at present prices) equivalent to £45/MWh. Under changes incorporated in the RO Order 2006, avoided carbon emissions due to combustion of waste in a fluidised-bed boiler may also be worth £45/MWh, providing heat is recovered from the plant. Effectively, therefore the carbon value applies to the avoided production of heat from fossil-fuels. But mines-gas, landfill gas or biomass plants do not get additional RO Certificates (ROCs) if the waste heat is utilised, although that would have displaced just as much fossil carbon as utilisation of heat from an MSW incinerator.

The result of trying to make a mechanism satisfy multiple policy objectives is usually to ensure that it satisfies none of them. Perverse incentives are always created. There may be legitimate reasons for concern about conventional MSW incineration. If there are fears about health impacts, apply emission standards, continuous monitoring and heavy penalties for exceeding limits. To use a financial mechanism to manage health risks is to imply that there is a price at which health impacts would be acceptable. It may be desirable to encourage displacement of fossil-fired heat production, but to use an incentive based on electrical output to incentivise one

form of renewable heat distorts the market and diminishes the opportunities for wider carbon savings.

The lesson is simple and obvious. Have a climate-change mechanism to provide appropriate incentives to deal with climate change, a security of supply mechanism to provide appropriate incentives to ensure security of supply, and an appropriate tax and benefit system to ensure that people are not trapped in poverty. Mixing the policies, objectives and mechanisms does not work.

“Uncertainties and irreversibilities permeate the story.”

To be pedantic, if uncertainties permeate the story, then it is impossible also to state baldly that irreversibilities permeate the story. They may do, or they may not. It may be best to ignore the possibility (that undoubtedly exists) that irreversibilities exist, as a significant risk that climate effects are irreversible might lead to the conclusion that the best course of action is to do nothing to try to prevent the outcome. This has a danger of being a self-fulfilling prophecy. We should never cease to believe in human capability both to change and to innovate, which leads to the belief that there is always a possibility to reverse a course of action or set of consequences.

Irreversible changes in climate are one thing, irreversible investments are quite another. It is clear right now that building large fossil-fired, unsequestered plant is a bad investment on a long-term basis. If our company invests in a loss-making enterprise, we do not continue to operate it and destroy more capital; we consider if changes can be made to bring it to profitability, and if not, we write it off, accepting that, apart from residual value, the capital invested in it has already been destroyed. There is no such thing as a large, long-lived capital investment that locks in emissions for decades to come – not unless governments choose to underwrite a foolish and callous decision.

“Climate change requires an international response.”

Yes, but failure to reach agreement on international action does not absolve countries of the responsibility to take their own measures regardless. Waiting for agreement between several hundred parties is the best way to ensure that nothing is done.

“Incentives need to be in place to support action in fast-growing developing countries.”

Why only fast-growing developing countries? Incentives need to be in place to support action in all countries. Developed countries (fast-growing or otherwise) need strong incentives as they have to deliver the greatest changes to their greenhouse gas emissions. And undeveloped or slow-growing developing countries might not remain that in the future, and should have an incentive to continue to emit as little carbon as possible to ensure that growth is not at the expense of the environment. Special policies for fast-growing countries will result in yet more distortions.

If complex, interventionist, micro-managing solutions are not the answer, what is the alternative?

As far as I am aware, there has never been a successful refutation of Murray Rothbard's restatement of Pareto's Unanimity Rule as the guiding principle of welfare economics, and his rejection of the concept of cardinal utility. Rather, New Welfare Economists have found it convenient to ignore the objection, on the basis that no useful work on welfare economics can be carried out without assuming cardinal utility. One need not regard this justification as specious to concede that, where it is possible to work within Rothbard's constraints, it would be a superior approach.

There is an argument that climate change offers an opportunity to follow the approach suggested by Rothbard's reconstruction of utility and welfare economics, along the lines suggested by Ronald Coase. It certainly beats proceeding by guesstimate (i.e. long-range economic forecasting under conditions of almost impenetrable uncertainty), where unquantifiable costs at indeterminate points in the future are discounted backwards at an unjustifiable rate to produce a meaningless social cost of carbon emissions, which is sufficiently low that it provides very little incentive to mitigate, and misdirected so that it contributes nothing to the cost of adaptation of those who will suffer the impact. Shared property rights in the global atmosphere extending beyond national boundaries are not recognised and remunerated by the conventional but spurious approach to internalising the externalities of greenhouse gas emissions. Another approach is needed.

Let us consider two statements:

1. At any point in time, all emissions of greenhouse gases have an equal impact (per tonne of carbon equivalent) on climate change, and therefore an equal cost of climate impact.
2. No one has a right to inflict on others an impact to which they have not agreed.

One might object that this immediately fails Rothbard's tests, since the second point (at least) is an ethical judgment, and the Austrian objective is to retain the scientific nature of economics by removing ethical considerations. However, even Austrian economics is not free of ethical assumptions, and the second point may be regarded simply as a statement of the ethical basis on which the economic science relies.

From the first statement we might further conclude that all avoided greenhouse gas emissions (at any point in time, per tonne of carbon equivalent) have an equal value. But, though true, that is to start down the wrong road. Much of the work on climate change economics has focused on valuing emissions reductions. But quantifying an absence of something is problematic to say the least. Quantifying emissions of greenhouse gases is both simpler and more meaningful – it is greenhouse gases, not their absence, that have a measurable effect, and whose impact may meaningfully be traded.

From the second statement, we may argue that, where human activities inevitably cause harm to others, no one has a greater innate right than another to inflict that harm (the innate right is different to the question of whether one might buy or sell rights to differential consideration). And from this, we reach the conclusion that, where global harm is caused by global human activity, all humans have an equal right to carry out the activities that cause the harm, or in other words, a right to an equal share of the emissions (in this case) that cause the harm. That is not to say that all people should cause the same amount of harm, or that no one may emit more than

his share. That ignores differences in personal utility between the value of emitting and not emitting, which, if traded, may result in differential emissions. But we may only assess the interpersonal comparison of utility through the trading of those rights, we cannot attempt to value it by calculation. The individual constraint on emissions is not absolute but commercial. The absolute constraint only applies in the aggregate, not even at a national level, but only at a global level.

One might say that the above is a convoluted attempt to rationalise the obvious. To put this into context, let's consider some numbers. Let's say that global, man-made greenhouse gas emissions currently amount to 9 Gigatonnes (Gt) of Carbon equivalent (Ce) per annum (p.a.), and that the sustainable level of greenhouse gas emissions is 4 Gt Ce p.a. It is not important at this stage whether these numbers are accurate or fixed. It will be seen that a simple mechanism may adjust itself easily to new data, which diminishes the significance of uncertainty. So, continuing with the assumptions, let's say that the science indicates that a political compromise to reduce to the sustainable level over 20 years carries acceptable risks in terms of climate impact.

With a global population of 6 billion people, each person has a right in year one to emit 1.5 tonnes Ce. This does not assume actual allocation to individuals, nor absolute constraint on those who wish to emit more. In year two, global emissions will be limited to 8.75 Gt Ce. With a static global population, this would equate to individual rights of 1.46 tonnes Ce, but in reality there will be further adjustments to make to allow for changes in population. The impact of such a system on incentives to breed will be considered later. They are not such an obstacle as might be considered at first sight.

Most citizens of poor countries could be expected to value carbon emissions rights less highly than citizens of rich countries, although the option would be theirs. Citizens of developing countries could be expected to use some of their excess emissions rights for consumption to increase their standard of living and some to trade to increase household income, also increasing standards of living. As roughly half of all greenhouse gas emissions are currently released from rich countries, it might not be unreasonable to expect that a reduction of 5% in rich countries' emissions would be sufficient to produce an excess of supply over demand for emissions rights. By making relatively small carbon savings, rich countries could place themselves in a position to negotiate reasonable terms to purchase poorer countries' emissions rights. Those countries would have an incentive to use the income from sale of emissions rights to develop the economy along low-carbon lines, in order to continue to have emissions rights to trade in future years. If rich countries failed to make the relatively modest savings needed to ensure an excess of supply over demand, they can expect the price of emissions rights to be very high for the 50% (in Europe) or 75% (in the USA) of their activities for which they do not have sufficient emissions rights. This provides a very strong incentive to target at least the 5% saving.

Such a system would provide incentives for all economies to focus on sustainability, without demanding sudden and large changes to rich economies, or preventing poorer economies from developing. The big emitters would have the assurance that they could continue with above average emissions, provided they (a) made sufficient marginal emissions reductions that they made it possible for global emissions to fall within the reducing annual targets, and (b) paid for lesser emitters to continue with their carbon frugality.

A simple per capita allocation of emissions rights places a value on human life. It might be a concern that this value would be an incentive to breed, which is hardly helpful when global population levels are a contributor to the climate change problem. However, in rich countries, the additional carbon allocation attributable to increased population would be less than the

expected increased in demand for emissions rights from people who are above-average energy consumers, which means population increases would be unhelpful. In poor countries, there would indeed be an incentive to increase population, as additional emissions rights would be expected to exceed additional emissions. But there are two ways to increase population. Breeding (and improving the survival rate of the babies) is one, but taking care of the adult population to extend life-expectancy is at least as effective. Leaders of poor nations would for the first time have a direct financial incentive to try to keep their population alive. If this led to an increase in medical care, education and living standards, which are the factors that would best deliver greater longevity, these same factors tend to be connected with reduced birth rates. Placing a value on every human life may not be a bad thing.

In practice, it would be difficult to allocate emissions rights to each member of the global population, and to secure the agreement of some governments to this approach. But it may be less contentious to propose that emissions rights are allocated to each government (or group of governments) in proportion to their population. The allocation of any emissions rights would be contingent on agreement to rigorous international assessment of (a) population levels, and (b) fossil-fuel consumption (whether produced locally or imported). Both poor and rich countries will want all poor countries to be involved, because poor countries stand to gain from sale of rights, and rich countries need those rights to be available for purchase if they are not to have to make much more painful cuts in their own carbon emissions.

It would then be up to each government how it handled those emissions rights. Some might adopt the enlightened approach proposed by the Irish think-tank Feasta for EU-ETS, of issuing equally to individuals, for them to trade on to fuel suppliers. Others might auction the emissions rights to maximise the value to government. Or deals could be done directly between governments. Doubtless some less savoury third-world leaders would abuse the system to fill their coffers, but they would at least, as argued above, have reason to treat their citizens with more care than they had before. It may be necessary to risk this abuse to find a simple system that could be widely supported.

It would also be up to each government to decide how it would balance emissions reductions and purchase of emissions rights, and how to incentivise those emissions reductions. Some might choose taxes, some might choose permits, some might choose direct state control. However achieved, it would be each government's responsibility to demonstrate that it had retained or purchased sufficient emissions rights to match the greenhouse gas emissions from the country during the year. Penalties for poor countries could be the threat of withdrawal from the system, sacrificing a very significant revenue stream. Penalties for rich countries could be to effectively charge interest on the missing rights, so that more than the missing rights would have to be purchased (or saved) the following year, in addition to the rights needed for that year's emissions.

The main difference between this approach and Contraction & Convergence (C&C) is that C&C sets a specific path of emissions reductions that each country has to achieve, forcing quite dramatic reductions onto rich countries almost immediately. It may be no more in the interests of poor countries to be given emissions rights they don't need while benefactor countries cut funding under the pressure to make wholesale changes to their own economy, than it would be for rich countries to commit to such a course of action. A mechanism that achieved the same overall emission levels (in fact, might offer the possibility of reducing emissions sooner) without forcing such draconian changes to the developed economies, and which replaced relatively small flows of aid from rich to poor countries with much larger volumes of trade in emissions rights, might be in the interests of economies of all scales. It is possible, given pragmatism over the trajectory of emissions reductions (e.g. perhaps small reductions in the

first five years to allow for investments to be made to achieve internal reductions), that this could prove more acceptable to those countries (America, Australia, China and India particularly) who either are not party to the Kyoto protocol or have no emissions constraints within it. And even if the option is not attractive, the moral force underlying the mechanism would provide significant pressure to agree, however reluctantly. To refuse an agreement based on such simple ethical principles would be to say either “I don't believe the science of climate change” or “I believe I have the right to inflict harm on others without their agreement”. Unlike C&C, this approach makes no assumptions about the relative utility of carbon emissions and reductions to different people in different countries and different circumstances.

It is also very flexible to changes in the science. The trajectory of annual global emissions limits could be set now based on the current scientific consensus. As our understanding of climate science advances, new target levels and dates could be set and the trajectory changed accordingly. No need to predict future science or plan for uncertainty – just adapt a simple mechanism as changes occur.

Although the mechanism appears to be principally about mitigation, it also addresses adaptation. A poor country facing substantial adaptation costs has a choice – trade its excess emissions rights to earn cash to pay for adaptation to the expected impacts, given emissions at the projected global levels, or sit on its excess emissions rights, diminishing the global pot that is available for use, thereby forcing richer countries to reduce emissions by more than they expected to (but sacrificing the income that would have enabled it to adapt to the only marginally reduced impacts). It will be in the interests of both rich and poor countries to find the most efficient ways to adapt, and the most efficient ways to mitigate, and choose the optimum balance between the two, in order to maximise value to both sides.

Ronald Reagan's “Zero option” made nuclear negotiations possible. It was impossible to agree on the comparative value of a certain number of one missile versus a certain number of another, or complex mechanisms to constrain deployment or use. The only valuation that was difficult to disagree with was the one that said no missiles on one side equaled no missiles on the other. Complexity is a barrier to agreement not an aid. Equal, tradable shares of falling global emissions rights might be sufficiently simple to gain the support of those who can benefit by selling their excess rights and those who can minimise the impact of climate constraints by buying other people's rights.