13 Lessons for climate policy from monetary history

Dinner address

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It is difficult to say something new about climate change policy to a group of people who have a great deal of expertise in the area already. What I want to do in this talk is offer a way of thinking about climate policy from a perspective that is different from the usual. This presentation draws heavily on my recent 2007 Shann Lecture on *A New Climate Strategy Beyond 2012: Lessons from Monetary History*, and on a decade and a half of collaboration with Professor Peter Wilcoxen from Syracuse University.

When someone is new to a policy debate they often look for insights from experience in other areas. In a number of countries, including Australia, there are well trained economists who start working on climate policy and immediately look to trade policy for an analogy. This can be good and it can be bad. While there are important lessons to be drawn from trade debates, there are some fundamental differences between climate policy and trade policy. If you are a trade policy expert you conceptualize the problem of emissions reductions as similar to the debate on tariff reductions. Reducing tariffs to zero will generate economywide gains with ultimately enough benefits to share around. It will not matter about the pain that is caused during the adjustment period because the gains will be larger than the losses for the majority, so it becomes a question of income distribution. All that is needed to reduce tariffs to zero is to push the vested interests out of the way. A similar argument is made about fossil fuel intensive industries in the carbon reduction debate.

13.1 Climate policy is not trade policy

The trouble with climate policy is that it is not as easy as trade policy — nor are the lessons from the trade experience necessarily the most relevant for climate policy. First, in reducing carbon emissions we are talking about a transformation of the economy that is highly likely to be costly. So, instead of sharing benefits, policymakers need to worry about sharing costs. Second, the nature of the institutions in a trade policy world are not the type of institutions needed for implementing climate policy — consider, for example, the recent negotiations under the auspices of the WTO that have stalled in the Doha Round. This outcome is not what we need for credible climate policy. For most aspects of the climate policy issue, the trade policy approach is the wrong way to think about the problem. Unfortunately this mindset tends to drive the debate in Australia.

I (together with my co-author Peter Wilcoxen) propose an alternative perspective on climate policy — one that is unconstrained by political promises or political compromises that tend to dominate political reports. It is useful to think about climate policy from the point of view of monetary history because we learn a lot from looking at the history of the evolution of international agreements and collaboration between countries in the monetary area. What I first want to do is briefly touch on what we know from climate science and how that should drive policy — probably in a different way to how most people think. I then want to draw out a couple of lessons for climate policy design from our experience with the global monetary system. It will be a mix of theoretical insights but with a large dose of practical reality.

13.2 Lessons from monetary history

There are several points to stress. First, we have learnt from monetary history that common currencies do not last, which suggests that maybe a common carbon market will not last (for the same reasons). Second, there is no gain from short-run interest rate volatility so perhaps, for the same reasons, there are no gains from short-run carbon price volatility. Third, time consistency really matters in designing policies. It is a very good idea to tie the hands of future governments to prevent them from re-optimising policy decisions after economic agents have committed to an investment strategy. This constraining of policy revision can be done by creating balancing constituencies within an economy to prevent the government from reneging every time they think it is in their own self interest.

Fourth, it is really important to build independent institutions with clear goals to implement the policy. It is critical to get the institutional design right. It is not a

good idea to put climate policy in the hands of either Treasury, or the Climate Change Department. It should be put it in the hands of an independent institution like a central bank of carbon.

Fifth, the whole debate in the 20th century about the transfer problem and the Dutch disease issues caused by attempting to transfer large amounts of wealth between economies is relevant for the climate issue. Mixing climate policy with big income transfers from one part of the world to another, or from one part of society to another, makes it very much harder to implement. It is critical to take the transfer problem into account when designing global and national policy. Attempting too many goals with a limited number of instruments is problematic.

Finally, I want to discuss how climate policy should be designed, and deal directly with these issues. What I propose is not a perfect approach, but I think it is an approach that deals effectively with these core issues and does so better than recently published reports on climate policy design for Australia.

The good news is there are no big models required to evaluate this approach in 2050 or 2100 — there are no equations — but the unsurprising news is that the McKibbin–Wilcoxen hybrid will eventually emerge as the preferred approach.

13.3 Climate science

What do we know? We know quite a lot. We know that climate is a complex system that is always changing. This is not a situation that economists usually face. We are dealing with something that is continually changing and never reaches a steady state. This is a very difficult policy environment.

Average temperatures have risen roughly 0.7 degrees in the past century. Both natural variability and human-induced climate change are occurring. Unravelling how much is human induced and how much is natural variability is a complex question. We also know that we are pumping enormous quantities of greenhouse gases into the atmosphere, more than 7 gigatonnes per year. This is unlikely to be sustainable.

The problem is that there is an enormous vacuum in policy, globally and nationally in most countries, and this vacuum is causing significant economic losses. Even if you are a sceptic about human-induced climate change, the ‘do nothing’ option is costly because investment in energy infrastructure is not being undertaken due to the policy uncertainty. Everybody is waiting for the policy framework to be put in place. Even if you are a sceptic, it doesn’t mean do nothing is the best policy, because to do nothing actually costs. You need to take out insurance.

What else do we know from the climate science? First, scientists make it clear that it is not greenhouse gas emissions in any year that matter but the accumulation of these emissions in the atmosphere over time. These accumulations are known as concentrations. Science does not tell at what level concentrations of greenhouse gases should be to avoid dangerous climate change. There are different views among the scientific community as to the level of concentrations at which dangerous climate change occurs, but there is a pretty convincing argument that we should be heading towards concentrations of 450 parts per million. I should stress that this number has changed a lot since I started working in this area 18 years ago, but it is a good starting point.

The bottom line is that science should guide policy formulation, but science can not tell us exactly what we should be doing. Suppose we did know the global concentration target. Suppose scientists agreed that we cannot go past 450 parts per million. Science does not tell us how precisely to get there — do we cut emissions or increase sequestration? How quickly should emissions be cut? The profile of emission reductions to meet a given concentration target is not a scientific question. Science does not tell us whether we should cut sharply now, and then do very little, or cut mostly later but then do a lot. The issue of costs and benefits of different strategies is an economic or moral question posed in the context of risk management.

Science also tells us nothing about what a national emissions target should look like, because the way the global emissions pie is divided between countries is not a scientific decision. It is partly an economic decision. An economist would propose choosing the least cost emissions abatement opportunities to meet the global target. It is partly a moral or ethical question about who should bear the burden of the cuts. It is not a scientific question. Any national study which starts with the idea that science tells us that as a nation we have to cut emissions by a certain percentage is not based on any science that I am aware of. The climate change issue at the national level is an issue of not just science but of economics and morality, of politics, and a whole range of other issues, which makes it a very difficult policy debate.

What are the implications of this complexity? Many economists who start working on climate policy start with the idea that a cap-and-trade emissions trading market would be a good approach. Cap and trade is based on the idea that we know what the annual cap should be, or we know what the cap should be over a period of time, but that's really an assumption rather than an implication of science. We know from science what we need to do more broadly — we need an approach that moves towards a global concentration target that is uncertain. But this target is likely to vary over time as we obtain more information on the complex overall climate

system. Within the global concentration target, one of the key issues is to equalise the cost across countries, and minimise costs over time. This does not appear to be the current approach in international negotiations. The essence of the focus should be on how to design a global system that achieves the scientific goal but at minimum global and relative cost across countries. To stress again, science does not provide a national emissions target and timetable framework, but that tends to be the premise of the Garnaut and Stern Reviews and other studies.

13.4 What should be the focus of climate policy?

So what should climate change policy focus on? In my view it should focus on managing risk and dealing with climate uncertainty. That is the essence of the climate problem. We don't know how much to cut, but we think we should be cutting significantly. We want to manage the risks to the environment, and to the economy, so we have to design systems — markets in particular — that let us deal with uncertainty. It is not about picking arbitrary targets and meeting the target no matter what. That is a political argument, not a scientific or economic argument. The focus should be on creating a system that enables society as a whole to manage risk — the government should not bear all the risk. We need to create markets so that individuals and corporations can make decisions using markets and other mechanisms to manage their own risk. That is important when we are dealing with the sort of energy system development and technology deployment that is needed. Creating long-term robust institutions, globally and nationally, which steer the global economy to a low emissions future, is fundamental.

The institutional structures have to be thought about very carefully. When constructing a global system, starting from the top down and forcing countries to take action is not going to work. The starting point should be countries taking action that they see as in their own self interest, and then these national or regional policies can be knitted together into a global system with an overarching framework that helps sustain the national actions. The idea that you get uniform global agreement and consensus has not worked, and is unlikely to work in the future despite politicians' optimism about the Copenhagen conference in December 2009. They were also optimistic in 1997 when the Kyoto Protocol was negotiated and global emissions are much higher today than almost anyone predicted.

13.5 Pricing carbon is a necessary but not sufficient condition

A whole range of different policies are required. The carbon price needs to be at the core because it is a way of coordinating the carbon-emitting and carbon-abating decisions of all of the agents, all over the world. Yet the carbon price has to be designed and implemented carefully. There is no doubt that the short-term carbon price is a cost to the economy. If we change the price of carbon tomorrow, it will be costly. On the other hand, long-term carbon prices are, in my view, opportunities for the economy. People get these two time dimensions mixed up, either because they do not understand the key issue of investment incentives or because it is in their own self interest to confuse this point. Many argue that there should be a high carbon price today because that is the only way to stimulate renewable energy. My view is that a high initial carbon price is going to hurt the economy, and what matters for renewable energy sources is not the price of carbon today, it is the expected price of carbon over the next 20, 30 or 50 years. Everybody is focussing too much on the short run. We need to set very clear long-term carbon prices for the global economy that enable individual countries to manage their own domestic costs of carbon abatement to suit their own national and global self interest.

There are many ways to put a price on carbon. One way is a carbon-trading market. First, you create a regulation that requires carbon emitters to obtain a permit to emit carbon. But there are different ways of creating a carbon-trading system. First, the government could limit the supply of permits, creating a fixed amount of carbon. The market determines the price because carbon permits are scarce. A cap on emissions is called a cap-and-trade permit system. There are different versions depending on whether banking and borrowing of permits is allowed so that the cap is not binding in a given year but is over a period of years. The alternative approach is to set a price at which you can buy permits from the government, and allow as many permits to be bought as required in a particular year. This approach is the equivalent of a tax.

The advantage of the cap and trade approach is that once the cap is established, the environmental outcome is known. The disadvantage is that the cost is unknown, and there could be a lot of volatility in the short-term carbon market, because there is no flexibility in the supply. The advantage of a tax is that the carbon price is known — but the emissions outcome in any one year is not.

There are other differences between these approaches to pricing carbon which are of a long-term nature. The beauty of a carbon market where permits are allocated is that the allocation itself creates constituencies that change the nature of the interaction between the private sector and the government. The problem with a tax

is that if you are trying to generate a long-term carbon price, it is not clear what the tax will be in the future if the government has not credibly committed to the future tax profile.

In relation to the differences between national and global markets, there are attractions from an economic point of view in allowing global permit markets to emerge. In our modelling, the Australian carbon price for a plausible carbon target tends to be much higher per unit of carbon than an American or Chinese carbon price. If there is only a national market in Australia, it could be very expensive to reduce carbon in the Australian economy, when permits could be bought from an offshore market and abatement costs therefore lowered by effectively paying for abatement elsewhere.

The idea of using a global market to reduce the costs in Australia if it proves difficult to meet an annual emissions target, is the essence of the argument for a global market in the Garnaut Review and the Green Paper. Countries with high marginal abatement costs can buy permits from countries with low marginal abatement costs. This trading reduces costs within the national economy and a global market for carbon emerges with a common price. This is an efficient outcome. The price of carbon in any part of the world would end up the same.

Trading is good in theory and in our modelling work we demonstrate that it can significantly reduce the costs of abatement, but it does not solve the problem of uncertainty. Even though a target for Australia can be selected, and if it turns out to be too expensive, the costs can be reduced by trading offshore, the global cost of the target is not reduced. In other words, global costs can be shifted around but can not be reduced overall under a standard cap-and-trade system.

There are also problems associated with the allocation of permits. Trading permits across borders effectively transfers resources from one country to another through the trading mechanism. If an Australian buys a permit offshore they are transferring wealth to other markets. A third problem with trading across countries is that a lot of short-term price volatility is possible. The European trading system is a great example of how markets can trade from 36 Euros down to 2 Euros because some information is revealed to the market. Shocks in one market would be transmitted instantly to all linked markets.

There are no gains from short-term permit price volatility — the gains and the price discovery are in the long term. Who gets the rights to emit in each trading period is critical. If a series of national markets are created, as in the European or Australian systems, with a five or ten year horizon, property rights are re-allocated continuously. This is a waste of resources in terms of rent seeking activity.

There are some historical lessons to be learnt about linking markets. First — this is a lesson from economic history in general — our modelling work in the mid-1990s indicated that the way permits were allocated was important. Once trading starts, if there are big transfers from one region of the world to another, this can lead to large fluctuations in real exchange rates and trade balances, which can destabilise world trade. These effects are related to the Dutch disease and the classic transfer problem debates.

Trading permits is not just trading pieces of paper. Trading permits transfers resources from one part of the world to another. Why is that a problem? If you look at the experience of the United Kingdom when North Sea oil was discovered in the 1970s, Britain suddenly had a comparative advantage in oil. Resources had to shift from the manufacturing sector to the oil sector, so UK manufacturing industries had to be restructured. The country was better off in aggregate because wealth increased overall, but there were serious adjustment problems getting the resources from the non-traded sectors to the oil industry.

That would be a real problem if China or India were given an enormous volume of permits which are then bought by other countries, because this would change the comparative advantage of the Chinese and Indian economies from labour intensive manufacturing economies to carbon abating economies, which could be a very significant internal shock. Keynes wrote about this issue after World War I: how could German reparation payments be transferred out of Germany to the rest of the world without causing a major disruption to world trade? This may or may not be a problem in the climate change debate, depending on how permits are allocated. This depends on a lot of things — including how the world economy evolves, and how the price of carbon changes over time — which we are not good at predicting, but nothing can be ruled out.

The second lesson relates to the fact that there is not a single world currency. Countries have tried periodically to move towards a single world currency but this has failed to varying degrees although there have been some notable regional successes. I believe that there is not going to be a single world permit market because emission permits are very similar to money. An emission permit is not a physical commodity like a pork belly. Permits are government promises to meet an emissions target in the same way that a unit of money is a government promise to maintain purchasing power. The value of that promise depends on the government's credibility. Different governments in the world have different degrees of credibility and different incentives over time to debase their currencies, so problems may arise if governments renege on carbon-trading markets and debase the global currency. We have seen the consequences. The world tried to have a common global currency

after the end of the World War II under the Bretton Woods system, and when it unravelled in the early 1970s it was a significant shock to the global economy.

The third lesson from monetary history is how many countries have converged in the way they run monetary policy. Economists used to think that you could target the quantity of money and then let short-term interest rates fluctuate and that would result in a good outcome with the quantity of money tying down the price level. Policymakers discovered very quickly that this nice theory did not work very well in practice. In addition, there were substantial costs from short-term interest rate (or price) volatility. The gains to policy came from tying down expectations about the policy goal. In different countries nowadays, the target for monetary policy tends to be inflation, or inflation over the cycle, or other nominal targets. The policy is implemented through manipulating the short-term price of money while gradually adjusting to the long-term goal. This is exactly the lesson that we should learn for climate policy.

The carbon policy should have a short-run price goal, which is the price of carbon to the economy, and a long-run quantity goal, which is atmospheric carbon concentrations. Movements from the short term to the long term should occur in the same way that monetary policy works. Transparency, and flexibility in minimizing costs in transitioning from the short run to the long run are critical. We have learnt a lot about how to create a global monetary regime. You do not do it by having a big meeting every year where everyone makes a promise and then goes back to their own economies to run policy. You have national or regional monetary systems working in the national or regional self interest and you coordinate these across countries to internalise the global externalities. In the case of climate change, the externalities are orders of magnitude bigger than the externalities from monetary policy and these externalities are a large part of the climate policy story.

It is clear from the discussion so far that climate policy is more like monetary policy than it is like trade policy. The world and Australia need a system where there are clear targets, not necessarily timetables. There should be an independent agency at the national level charged with reaching those targets and managing the costs of adjustment, free from political interference. There needs to be a very clear long-term price for carbon, because, just as it is the long-term interest rate that drives investment, not the short-term interest rate, it is the long-term carbon price that will drive greenhouse-gas-reducing investment. It is the long-term carbon price that will drive technologies, not the short-term carbon price, but the short-term carbon price should be controlled in the same way that interest rates are controlled to minimise disruptions in the economy. The argument that if Australia does not have a carbon market today, at $35 per tonne, then you might as well forget it, is the wrong way to think about carbon pricing. I care much less about what the price of carbon is today.

I care much more about what the market says the price of carbon will be in 10, 20, 30 or 40 years into the future.

13.6 The McKibbin–Wilcoxen hybrid: a monetary approach to climate policy

So far I have drawn an analogy between climate policy and monetary policy but how can this be implemented? The answer is contained in a book and many articles I have authored jointly with Professor Peter Wilcoxen. The McKibbin–Wilcoxen hybrid (previously called the Blueprint until there where too many blueprints being proposed) is the monetary approach to climate change although it is usually described as a hybrid of emissions trading and carbon taxes. It is a cooperative approach based on a series of national systems that are plugged together. It could also be implemented as a global system if agreement from most countries was obtained.

How does the McKibbin–Wilcoxen hybrid work? First, the aim is to impose a long-term concentrations goal — we do not discard targets for emissions, only timetables. We argue for a particular concentrations target, but we are not sure when we are going to get there. We also propose a way to distribute this target across countries and across time. Second, we use this emissions commitment to determine a price, within a market, for a long-term carbon target within each national jurisdiction and that is what will drive energy investment decisions. At the same time, short-term costs are controlled. The problem of trading off the costs with the environmental benefits is at the core. We also want to create markets to enable corporations and households to manage their own climate risks. If a company wants to build a gas-fired power station in the LaTrobe Valley, using new technology, they can have a way of hedging that investment so they can proceed despite the risks. If the carbon price rises dramatically in the future because we need to cut emissions more quickly than expected, there is nothing to prevent closing that investment down and cashing in the long-term carbon rights, and moving to a different technology platform.

13.7 Components of the McKibbin–Wilcoxen hybrid

What are the components of the policy? First, we create what we call long-term permits. These long-term permits are a bundle of annual permits with different dates for each permit. The annual permits embodied in the long-term permits get smaller and smaller over time, so effectively the permits eventually disappear. The rights created are a diminishing right to a resource and the supply of these is fixed at the

national long-term target. The long-term permit reflects this target. They are allocated freely to households and to industry. The government gets no revenue from the allocation process. These rights are like real estate contracts, they are in the community owned by vested interests throughout society and they are traded in a long-term market. Why is that important? It's important because you want to create a constituency that owns the rights to the carbon, and can offset any government backsliding on future policy commitment.

The long-term permits can be thought of as a government bond which provides an annual coupon that gets smaller every year. As a company owning these emission rights, if you do nothing to change your emissions, you are going to run into a problem because long-term permits you have been given for free effectively disappear over time. The total initial emission for an economy in 2010 would be set 10 per cent below current emissions, so there is already a shortage. There is scarcity in the market, and each one of these annual permits can only be used in the year for which it is issued. This gives you the long-term pre-committed *ex-ante* target of the Australian government. By 2100 these long-term permits are gone.

The second component of the policy which is critical — and this is where the central bank of carbon comes in — is that the central bank of carbon can print annual permits to maintain a pre-announced price of carbon. This is the annual price that will apply for the next five years. If an emitter cannot get enough emissions from their long-term allocation, they can go to the central bank of carbon and get an annual permit for a fixed price.

This means there is a permanent elastic supply of these annual permits at a fixed price. This acts like a safety valve. In the US debate, it is a safety valve. In the Australian debate, this is what I presume the government and the Green Paper and the Garnaut Review mean by holding the price fixed at a low rate initially, because I don't know how you have a quantity target and a price target in a system unless you do it this way. This means that in any given year a company can reach their emissions allocation, either by using an annual coupon from the long-term permit or buying a coupon from the central bank. That's why the policy is called a hybrid, because it involves permit trading of the long-term permits and effectively a carbon tax implemented as the annual permit — the payment to the central bank of carbon is a tax. Emissions targets can be satisfied from either source. Since there is scarcity in the long-term permits from the very beginning, the annual price of permits will be the fixed preannounced price of annual permits, unless there is a miraculous innovation that drives the price down below that annual price — which would be very good news given the deep cuts proposed in the target path.

At a national level, the system controls the short-term cost because we do not know what the rest of the world is doing, and if the rest of the world has done nothing, we

can keep the price low forever. But if there was a global agreement and countries implemented policies to reach that agreement, there would be an international agreement to step up the short-term price over time, based on where global concentrations were heading. Thus, the price-stepping approach can be implemented either through national action or through a global agreement.

What is the issue facing an innovator? Suppose you are making investment decisions about a technology that may be worthwhile to invest in now, but needs a threshold of $50 per tonne of carbon to be worthwhile. Looking out along the yield curve of carbon prices generated in the long-term market, and the associated derivative markets, you might see that by 2020 or 2040 the price of carbon is expected to be $80 per tonne. At this price that technology would be viable. At that future date, if the price is lower than expected, you can take a short position in this market to bankroll the technology, and if the price ends up collapsing you can close down the technology and trade in your assets, and still make money out of the venture. This encourages investment in alternative technologies because you are managing your own risk.

More importantly, the value of long-term permits is the present value of the bundle of short-term permits contained in the long-term permit. Suppose that the annual permit price starts at $10 per tonne. A lot of people would say that at $10 per tonne nobody is going to do anything. But because these permits have been given out to all society, where you can reduce one tonne of carbon, in a standard carbon market you would save $10. In a McKibbin–Wilcoxen market you have that carbon right for a 100 years, you don't save $10, you save possibly $1100 because the saving is the present value of something that has been saved forever. The hurdle rates of return by using these long time frames are transformational. This approach totally changes the cost/benefit analysis for all sorts of different technologies, significantly changing the incentives people have to reduce their abatement, because if you reduce a unit of carbon today, it is a permanent reduction in carbon and should be rewarded that way.

The way I see the global system evolving is that each country will have their own system. It might be a carbon tax in a Scandinavian country, it could be the McKibbin–Wilcoxen hybrid in the United States and the European Union, but across the system there is a uniform price at the short end. Why is that an efficient outcome? Because there are no gains from trade in the way we have designed the system — a US company has no gains from buying a permit from a European company because they can buy the permits from their own government. You end up with an efficient market without cross-border transactions. Therefore you can partition policy in the United States, you can partition the European Union, you can partition Japan. Partitioning, or building firewalls between these permit markets, is

important because if there is a shock (for example, Japan pulls out of the system) it does not change the price of permits in the other systems. Under a global carbon market, you would destroy the market. Thus, a global permit market is more vulnerable to collapse from the actions of individual countries.

13.8 Bringing in developing countries

One of the big problems in negotiations is how to bring in developing countries, particularly when they are legitimately arguing that they do not want to bear the same costs as industrial countries. What can be done is to negotiate, in the international forum, a much larger allocation of long-term rights than a developing country currently emits. The short-term price of carbon in these economies would start at zero because they are not facing a constraint today, and the firewall between markets is binding. However, these countries would face a transparent constraint in the future. Thus the long-term carbon price in a developing economy will be non-zero (it is the expected value of future prices). Eventually, the short-term price would rise over time until it is equal to the price of carbon in developed economies.

This is differentiation based on the level of development, but the catch up in price is based on capacity to pay, which is determined by the allocation.

13.9 Summary of difference between standard approaches and the hybrid

There are several critical differences between the hybrid approach and the standard cap or taxes. First, as already discussed, the hybrid creates long-term returns for short-term actions. If you own the rights for carbon for 100 years and you change something you do today, the benefit is the present value of a 100 year benefit. That changes the hurdle rates and returns for different technologies. It also enables you to finance your own innovation because you can say to a bank or to a fund manager: 'Here is a technology, I can hedge the investment, lend me the money up front and the assets are in place to back the loan.'

Second, the hybrid is creating constituencies within the domestic economy who own the long-term rights to carbon in the economy. They are not owned by the Treasury, they are owned by a lot of corporations and individuals in superannuation funds. Any government that tries to tinker with the future of carbon policy would face the wrath of the voters. For example, governments in this country do not say they are going to take all real estate contracts and cancel them and reallocate the real estate. Thus, a constituent balance would be achieved that would not be

achieved in a taxed-based system or a carbon-allocation system, where you might get three to five years worth of pre-allocation, and after that who knows who is going to get the long-term rights.

To sum up: climate change policy is a serious issue. Dealing with climate change uncertainty is what matters. Any effective policy will be a major change to the Australian economy. A new market has to be created. It is not a short-term carbon market. It is not a new tax. It is a long-term market in trading climate uncertainty, which is needed at the national and global level.

The second point is that there is still a great deal of uncertainty about where the world is heading, so if a Garnaut-type approach is taken, where you commit to a precise target or a range of targets on the off-chance that you would be able to trade your way out of it by buying cheap permits offshore, and the permit market does not develop offshore, what do you do? You may have locked yourself into an international agreement with no safety valve. Relying on the development of a global trading system without a safety valve domestically is a very risky policy.

The final point I want to make is that we need to get away from the idea that we know exactly where we want to go and that there are no trade-offs in getting there. That's called religion. We have to deal with the trade-off between the environmental benefit of taking action, and the economic costs of getting there. If this is not acknowledged, international agreement will not occur, because it is over cost issues where the international negotiations are failing. Developing countries have bigger problems to deal with, from their own viewpoint, than climate change, but they are willing to be part of the international process if it is designed the right way.

Monetary history has a lot to teach policymakers about how to design effective climate policy at the national level within a cooperative global agreement. It is time to move in the direction of building a transparent, credible, national or regionally-focussed policy framework, with flexibility to adjust in a clear way over time towards a global concentrations goal. The almost religious focus on targets and timetables regardless of costs is the biggest hurdle to overcome in the climate change policy debate. There are better ways to generate carbon prices than what is currently proposed. One such better approach has been the focus of this presentation.

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