Submission to the Financial Stability Board's Task Force on Corporate Climate Change Reporting

Climate Change as a Systemic Risk to the Financial System

In the last year or so we have given upwards of thirty talks and presentations to groups of institutional asset owners and asset managers (collectively "investors") on the risks to investment portfolios from future climate damage. Although some are well informed, our experience is that most have given climate risk little thought. Even those who are knowledgeable are (understandably) unaware of the academic literature debating the possible economic consequences of warming of 4°C or more (relative to pre-industrial)[i] and the major defects of integrated assessment models of the likely economic outcome[ii]. Most investors give little or no consideration to the possible economic consequences of warming much more than a decade or two into the future. Industry publications do little to discourage this perspective[iii], which is very short-term compared to the timescale on which the consequences of climate risk will become evident. In our view there is a self-reinforcing complacency about climate risk amongst the majority of investors.

The global economy is poised to begin an energy transition aimed at keeping warming to 2°. This will mean overhauling the energy supply and industrial process infrastructure within about 60 years to reduce greenhouse emissions to net zero. This means that emissions need to fall at around 3% to 4% a year with some residual level of emissions captured and stored. If the global economy continues to grow at around 3% annually, this implies reducing the carbon intensity of the economy by 6% to 7% a year[iv] or so against the 1% to 2% that has been achieved historically[v]. Electrification of the transport system must be well under way by 2030 and renewable energy supply will need to grow at around 6% a year for half a century and be accompanied by major breakthroughs in the technology and economics of energy storage. Industrial scale carbon capture and storage, presumably enabled by a global carbon price of at least $50/tonne CO_2, will be needed to catch the emissions that cannot be engineered away by process changes[vi]. To state the obvious, these are profound and immensely fast changes to the foundations of the global economy. They create their own transition risk alongside the climate risk they are intended to avoid. In our experience, few investors have a sense of the scale of this transition risk or the speed at which it may materialise.

Investors and lenders could easily be on the wrong side of both transition risk and climate risk. Those who bet on the energy transition happening by supporting a massive expansion of renewables, investing in low-carbon investment products and by divesting from fossil fuels could be severely disappointed during the next decade or so if the transition doesn't happen. Those who bet against it by being heavily exposed to fossil fuels and to emissions-intensive industry sectors could equally be disappointed if it does. All investors may suffer if continuing business-as-usual emissions eventually destabilise the climate sufficiently that global economic growth slows or goes into reverse. Prominent economists have speculated that this is a possible outcome if climate shifts combine with productivity losses and food and water shortages to provoke prolonged and region-wide social, political and economic instability and migration[i]. Even a global economy that has historically been highly robust to geo-political changes may prove vulnerable to a significantly altered climate. Elementary estimates (see below) suggest that the value at risk from this possible outcome may already be material.

Investors and lenders who bet heavily in the wrong direction could do systemic damage to the financial system: this is the frequently repeated experience of banks through many market booms and busts. We judge that both transition risk and climate risk have the potential to scale into systemic risks to the global economy. Moreover, climate damage is unlikely to build steadily. It is more likely that

the year-to-year variability of damage will be high. So as with other busts, the risks could materialise quite suddenly. Here are some of the risks that we, as advisers on climate risk to investor groups, see:

1. Increasing physical damage from extreme weather events. This damage may be running at around £100 billion a year currently or of order 0.1% of global economic output. This is very bad for those who suffer it, but even if this damage were an order magnitude greater, it is doubtful whether, in isolation, it would pose a systemic risk to the financial system.
2. Prolonged oil price weakness creating global economic instability. Within a decade or so there could be a rapid transition to clean energy use in transport, through the increasing adoption of electric, hydrogen and bio-fuel as transport power sources. Some estimates suggest that electric vehicles may have a 30% market share by 2030. Electric vehicle growth at this rate would see the demand for oil peaking in the 2020s and imply permanent price weakness thereafter, perhaps with a price bound in the range $30 to $40 per barrel indefinitely. The potential for instability that a low oil price can bring was evident in 2015. Permanent budget pressure on oil exporting countries could lead to social and political instability and require a long period of adjustment. In this way the stranded asset risk to individual countries and companies could be compounded into a systemic risk to the global economy.
3. Decarbonisation may not work at sufficient scale or speed. Decarbonisation plans consistent with warming of 2° or less depend fundamentally on the extensive use of unproven negative emissions technologies that require both the extensive cultivation of bio-energy crops and the capture and storage of carbon emissions[vii]. Widespread use of carbon capture and storage, in turn, presumes a high and globally enforced price for carbon that may disrupt economic activity if poorly implemented. Even if it has broad and consistent political support, an energy transition consistent with 2° or less of warming may not be technically possible, or may only succeed at the expense of systemic economic dislocation.
4. Abrupt decarbonisation triggered by regional-scale weather extremes. If business as usual continues, with warming of, say, 0.3° a decade, we might be faced in the 2030s with an exceptional run of years when regional drought combines with water shortages to provide a food-price spike[viii] that destabilises regional economies and societies and triggers a wave of migration. A globally mandated decarbonisation at an even more rapid pace than currently contemplated could then result in a radical and destabilising reappraisal of asset values[ix].
5. A significant reduction in labour productivity. The evidence here is not clear-cut[x]. It points to a reduction in productivity at modest amounts of warming that may, quite plausibly, also significantly reduce long-term global economic growth. Since many asset prices implicitly factor in long-term growth expectations, even a small reduction in these expectations could have a significant and detrimental impact on asset prices and thus on the stability of the financial system.
6. If warming continues to 4° and beyond, a level it might reach in the second half of the century under business as usual emissions, we enter an economic no man's land where we just do not know the consequences for human societies of seriously modifying the climate. Some economists think that annual damage might run at a few per cent of gross world product[xi]. Others argue that at some level of warming of between say, 4° and 6°, damage might be half of gross world product or more[i,xii], which is systemic to say the least. The consequences of these various outcomes for the value of an investment portfolio can be inferred by making use of the assumptions that over the long term dividends from a well-diversified portfolio track the growth of the world economy and that portfolio value is the present value of expected future dividends. Initial estimates suggest that expectations of future damage may reduce the current value of a portfolio by around 10% at probabilities of occurrence of a few percent[xiii].

This is the scale of value at risk that a bank would already need to take into account in a stress test designed to detect systemic risk.

The last three possibilities remain hypothetical causes of systemic risk because the behaviour of our social, economic and political systems under material warming-induced stress is not understood. They are, however, the kinds of outcome that scientists, economists, insurers and regulators worry seriously about.

Financial markets are good at anticipating. If an energy transition begins in earnest, asset prices will adjust rapidly to the likely financial consequences and strand fossil fuel reserves that cease to be economic to exploit. A random run of extreme weather in the short term that affects food supply might have significant geo-political consequences[xiv], point the way to the scope of more distant climate damage and trigger a significant market reaction[xv]. Technical failings of negative emissions technologies or the continuing absence of a high carbon price will point towards missed objectives for containing warming. In any of these cases there may be systemic financial consequences from the anticipation of future climate damage or the measures to avoid it much earlier than most market participants expect.

Suggested action

To help overcome the complacency about the systemic risk from climate change and from the energy transition that we detect amongst investors, we make a number of suggestions.

Firstly, investors in listed companies should be encouraged to publish business plans that explain how they will cope with an energy transition that goes sufficiently fast to deliver 2°, including what investments they will make and how their business streams will be affected by emissions-reducing regulations and a high carbon price. This is important for energy users (particularly those with high energy and/or emissions intensity such as cement, iron and steel, aluminium, paper and board, chemicals), energy producers (both of fossil fuels and renewables) and financiers, such as lenders, insurers and investment banks. With these plans before them investors could then assimilate the financial consequences of what is intended. For example, listed lending banks might be asked to include in new loan proposals over some threshold (say $50m initially) an analysis of the incremental emissions attributable to the capital spending financed by the loan and to publish annually the aggregated information. This would merely require an analysis of final energy use for major investment projects together with the emissions due to this energy production and use and any additional process emissions. It is not therefore an onerous requirement. Within the few years' life of a typical loan book, a picture would emerge of the incremental emissions being financed by lending banks and how these emissions were changing. Lenders could then include in their published business plans an account of the lending policies that they were adopting to reduce the carbon intensity of their loan books at the 6% to 7% per annum or so needed to be consistent with a 2° warming limit.

Investors should also be encouraged to request such plans (by demanding them through shareholder votes if needed) and to make use of them to manage their investments much more actively than they do at present. Investors who act in a fiduciary capacity or who have a contractual duty of care (such as pension trustees and life assurers) have a legal duty to control investment risk and some of these investors have corresponding liabilities extending into the period when climate damage to the global economy might rise steeply. Senior lawyers have concluded that investment fiduciaries have a duty to control for risk[xvi]. Systemic climate risk is manifestly a risk that they should therefore be controlling. By definition, systemic climate risk cannot be reduced merely by adapting traditional risk management tools such as portfolio construction or hedging. Asset owners and asset managers could, however, use their influence on the boards of the companies they own to manage actively how these companies navigate the energy transition and to accelerate it. It is estimated that quoted companies account for around a quarter of carbon dioxide emissions[xvii] so that, in principle at least, asset owners

and asset managers could significantly influence the energy transition if they acted collectively, for example, by encouraging companies to seek value-enhancing projects that reduce energy use or emissions, to lead or join industry sector consortia aimed at establishing sector carbon prices, to invest in carbon capture and storage pilot plants or energy storage projects, and so on.

Where corporate managements are unresponsive to such requests, investors should demonstrate their commitment to reducing systemic risk by being willing to vote for resolutions that ask companies to undertake actions of this kind. In this way a strong message would be sent to governments that investors were serious in wishing to reduce systemic risk. Traditionally, and with some notable exceptions, the majority of investors has shied away from this kind of intervention, preferring to sell shares in companies rather than act assertively to change corporate behaviour. This is obviously not an adequate response to the systemic risk from climate change. There is a case for the regulations of fiduciary investors, such as pension trustees and insurers, to direct them specifically to consider how they are addressing systemic climate risk.

Thirdly, the message that systemic transition and climate risks are something that investors must attend to needs to be passed throughout the investment chain. For example, in their know-your-client questionnaires, asset managers should ask their clients whether or not they want their manager to seek to reduce systemic climate and transition risk. This simple procedure would concentrate the minds of pension trustees, for example, on their duty to control risk. Asset managers should be encouraged to report to their asset-owning clients annually on their assessment of systemic climate and transition risk and what steps (if any) they have taken to reduce it for the benefit of their clients. Proxy voting agencies should be encouraged to publish their internal guidelines for assessing how proposed resolutions contribute (or not) to a reduction in systemic climate and transition risk. Research reports from investment banks on sectors most likely to be affected by the energy transition (such as fossil fuels, automotive, steel, cement, renewables) should routinely include a disclaimer to the effect that the long-term prospects of the companies covered are likely to be materially affected by the speed at which an energy transition takes place.

Prospectuses, listing documents and reports from credit-rating agencies should at least include a risk warning in similar terms and ideally should include an analysis of the possible effects of the energy transition on the value of the securities in question and whether and how the issuer is preparing for the energy transition. Investment consultants, whose clients typically have multi-decade liabilities, should report annually on the systemic energy transition and climate risks to their clients' investment portfolios and how this should be managed. They should also report on whether and how the asset managers they recommend incentivise their staff to take climate and transition risks into account alongside their incentives related to short-term investment performance. This might most easily be achieved by the Task Force recommending that pension trustees and the investment arms of insurers should seek appropriate advice on how to take these risks explicitly into account in portfolio valuations and setting portfolio strategy, and on how such risks might be reduced through investment and stewardship strategies.

In short, investors should be encouraged, through regulations, directives and reporting requirements, to adopt an active stance in relation systemic climate risk and energy transition risk and thus to demonstrate by their actions (and not merely their words) that these are risks that they are not ignoring. Since investors tend to cluster together in their response to regulations and directives even a modest requirement to manage climate and transition risk actively could produce a large change in market practice.

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