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A New Horizon

Speech given by

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A New Horizon?

A few years ago, I spoke of the Tragedy of the Horizon – how the catastrophic impacts of climate change will be felt beyond the traditional horizons of most banks, investors and financial policymakers, imposing costs on future generations that the current one has no direct incentives to fix.[1] Once climate change becomes a clear and present danger to financial stability it could already be too late to stabilise the atmosphere at two degrees.

The paradox is that risks will ultimately be minimised if the transition to a low-carbon economy begins early and follows a predictable path. But for markets to anticipate and smooth the transition to a 2-degree world, they need the right information, proper risk management, and coherent, credible public policy frameworks.

Today, catalysed by the COP21 Paris Agreement, and national policies such as the UK Government's Clean Growth Strategy, some of these elements are coming into place, creating a potential path to break the Tragedy of the Horizon. But the task is large, the window of opportunity is short, and the stakes are existential.

In pursuit of that New Horizon, let me briefly discuss progress and prospects in three critical areas - reporting, risk and return.

First, reporting

Three years ago in response to a call from G20 leaders, the FSB began addressing the financial stability risks associated with climate change by ensuring the market had the right information to price climate risk and reward climate innovation.

The FSB established the Task Force on Climate-Related Financial Disclosures (TCFD) led by businesses from a wide range of industries across the G20. Eighteen months later, the TCFD delivered to the Hamburg G20 Leaders Summit its recommendations for voluntary disclosures of material climate-related financial risks.

Since then there has been a step change in both demand and supply of climate reporting.

On the demand side, current supporters of the TCFD include three-quarters of the world's globally systemic banks, 8 of the top 10 global asset managers, the world's leading pension funds and insurers, major credit rating agencies and the Big Four accounting firms.[2] In total, these financial firms manage almost US$110 trillion in assets.

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[1] Carney, M. (2015). *Breaking the Tragedy of the Horizon.* Available: https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability

[2] Full list of current TCFD supporters available on: https://www.fsb-tcfd.org/tcfd-supporters/

As a consequence, the incentives for companies to disclose and manage climate-related risks have increased dramatically. Moreover, climate change claimed its first S&P 500 bankruptcy last year,[3] climate-related shareholder resolutions spiked to 90 last year,[4] investment managers controlling over 45% of global assets under management now back shareholder actions on carbon disclosure, and companies representing over 90% of all shareholder advisory services now support the TCFD.

Not surprisingly, the supply of disclosure is responding. Over 600 organisations, with a total market capitalisation of US$9 trillion, have endorsed the TCFD recommendations since 2017.

The TCFD's September 2018 Implementation Report assessed, using artificial intelligence, some 1800 companies, and analysed in detail an additional 200 of the largest companies, drawn from eight representative sectors from across the G20.[5]

In both cohorts, the majority of companies were already disclosing information in their 2017 filings that aligned with one or more of the TCFD's recommendations. This is commendable given companies only had six months to respond to the final TCFD recommendations, but more progress is needed. In particular:

- Financial implications are often not yet disclosed;
- Disclosures are often in multiple reports making comparisons harder; and
- Disclosure varies by industry and region, with higher percentages of European firms and higher shares of those on the climate frontline – such as the energy sector – disclosing more information aligned with the recommendations.

The next milestone will be the TCFD implementation report for the G20 Leaders Summit in Osaka, which should set out:

- The growing momentum behind disclosure;
- The types of disclosures that are most decision-useful for investors; and
- Best practice examples, including examples of scenario analysis so that firms can test their strategic resilience to different climate outcomes.

[3] WSJ. (Jan 2019). *PG&E: The First Climate-Change Bankruptcy, Probably Not the Last.* Available: https://www.wsj.com/articles/pg-e-wildfires-and-the-first-climate-change-bankruptcy-11547820006.
[4] Horster, M and Papadopoulos, K. (2019). *Climate Change and Proxy Voting in the U.S. and Europe.* Available: https://corpgov.law.harvard.edu/2019/01/07/climate-change-and-proxy-voting-in-the-u-s-and-europe/
[5] Task Force on Climate-Related Disclosures (TCFD). (2018). *TCFD:2018 Status Report.* Available: https://www.fsb-tcfd.org/publications/tcfd-2018-status-report/

The momentum behind TCFD's voluntary disclosure is creating a virtuous circle by encouraging learning by doing. As companies apply the recommendations and investors increasingly differentiate between firms based on this information, adoption will continue to spread, disclosure will become more decision-useful and efficient, and its impact will grow.

As firms work to enhance their disclosures, they are being supported by various TCFD Preparers' Forums from energy to finance.[6] The TCFD will also continue to work with market participants to refine metrics so that they are consistent, comparable and decision-useful; and it will share best practices on the disclosure of risk management and governance.

In the future, disclosure will move into the mainstream, and it is reasonable to expect that more authorities will mandate it. IOSCO could play a constructive role in coordinating such mandates and in any event, the current iterative process of disclosure, reaction and adjustment will be critical to ensure that these eventual market standards are as comparable, efficient and effective as possible.

Second, risk analysis

The second step on the path to a new horizon is better climate change risk management.

Climate change creates both physical and transition risks.[7]

Physical risks arise from the increased frequency and severity of climate- and weather-related events that damage property and disrupt trade.

Transition risks result from the adjustment towards a lower-carbon economy. Changes in policies, technologies and physical risks will prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent. The longer meaningful adjustment is delayed, the more transition risks will rise.

Climate risks also have a number of distinctive elements, which, in combination, require a strategic approach. These include their:

- Breadth, as climate risks affect multiple lines of business, sectors and geographies;
- Magnitude, as the full impacts of climate risks are large, potentially non-linear and irreversible;
- Foreseeable nature;

[6] For example the Oil and Gas industry group convened by the World Business Council on Sustainable Development and the Institute of International Finance for banks.

[7] The other channel concerns liability risks. These stem from parties who have suffered loss from the effects of climate change seeking compensation from those they hold responsible. Such claims could arise well into the future, as the science and evidence of climate change hardens, though some are already taking action against companies on the grounds of failure to disclose the risks posed to their business models by climate change.

- Dependency on short-term actions given that the size of future impacts will, at least in part, be determined by the actions taken today; and

- Uncertain time horizon which may stretch beyond traditional business planning cycles.

The nature of these risks means that the biggest challenge in climate risk management is in assessing the resilience of firms' strategies to transition risks.

Part of the genius of the private sector-led TCFD is its recognition that disclosure needs to go beyond the static to the strategic. Markets need information to assess which companies can seize the opportunities in a low carbon economy and which are strategically resilient to the physical and transition risks associated with climate change.

The Bank of England has also become increasingly active in such assessments, consistent with our financial stability and prudential mandates.

As the supervisor of the world's fourth largest insurance industry, we know that general insurers and reinsurers are on the front line of managing the physical risks from climate change. Insurers have responded by developing their modelling and forecasting capabilities, improving exposure management, and adapting coverage and pricing.[8] In the process, insurers have learned that yesterday's tail risk is closer to today's central scenario.

Sadly with climate, history repeats not as a farce but as tragedy and with growing frequency.

For banks, the financial risks from climate change have tended to be beyond their planning horizons. The PRA's survey of 90% of the UK banking sector, representing over $11trn of assets, found that these horizons averaged four years – in other words, before risks would be expected to be fully realised and prior to ambitious climate policies taking effect. [9]

That notwithstanding, the PRA's latest survey finds that almost three quarters of banks are starting to treat the risks from climate change like other financial risks – rather than viewing them simply as a corporate social responsibility issue.

Banks have begun considering the most immediate physical risks to their business models – from the exposure of mortgage books to flood risk, to the impact of extreme weather events on sovereign risk. And they have started to assess exposures to transition risks in anticipation of climate action. This includes exposures to carbon-intensive sectors, consumer loans secured on diesel vehicles, and buy-to-let lending given new energy efficiency requirements.

[8] Prudential Regulation Authority. (Sept 2015). *The impact of climate change on the UK insurance sector.* Available: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/publication/impact-of-climate-change-on-the-uk-insurance-sector.pdf

[9] Prudential Regulation Authority. (Sept 2018). *Transition in thinking: The impact of climate change on the UK banking sector.* Available: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/report/transition-in-thinking-the-impact-of-climate-change-on-the-uk-banking-sector.pdf?la=en&hash=A0C99529978C94AC8E1C6B4CE1EEC.

Informed by these findings, the PRA will soon publish its final Supervisory Statement for banks, insurers and investment firms.[10] This statement will set out the PRA's expectations regarding firms' approaches to managing the financial risks from climate change, including with respect to:

- Governance, where firms will be expected to embed fully the consideration of climate risks into governance frameworks, including at board level, and assign responsibility for oversight of these risks to specific senior role holders;
- Risk management, where firms will need to consider climate change in line with their board-approved risk appetites;
- The regular use of scenario analysis to test strategic resilience; and
- Developing and maintaining an appropriate disclosure of climate risks.

Recognising the need for industry to build capacity and to develop best practices, the PRA has established a Climate Financial Risk Forum, jointly with the FCA, to work with firms from across the financial system.[11]

The responses to our supervisory consultation reflect the urgency and significance of the issues. Perhaps for the first time in financial regulation, firms are both thanking their supervisors for raising an issue and pushing us to go further; with some asking for more prescriptive recommendations and others for mandatory disclosures.[12]

Certainly, while climate risk management is improving, there is more to do particularly when assessing strategic resilience.

For companies, that means conducting scenario analysis.

The TCFD 2018 Status Report found that non-financial industries (energy, transport, building and agriculture) were the most advanced at measuring strategic resilience, including some examples of scenario analysis.[13,14]

The TCFD review found that the financial sector is also moving toward enhanced strategic analysis. For example half of all insurance companies reviewed used the 2°C scenario, and the majority of banks described the potential impact of climate-related issues on their businesses.

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[10] Prudential Regulation Authority. (Oct 2018). *Consultation Paper on Enhancing banks' and insurers' approaches to managing the financial risks from climate change*. Available: https://www.bankofengland.co.uk/prudential-regulation/publication/2018/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change.

[11] Prudential Regulation Authority. (March 2019). *PRA and FCA's joint Climate Financial Risk Forum*. Available: https://www.bankofengland.co.uk/news/2019/march/first-meeting-of-the-pra-and-fca-joint-climate-financial-risk-forum.

[12] Forthcoming April 2019

[13] As described in TCFD September 2018 report: These companies disclose the inputs to and outputs of their scenario analyses including strategic responses to the low-carbon transition, such as changes in portfolio mix or investment

[14] Encouragingly, all members of the oil and gas preparer forum used the 2-degree energy transition scenario to inform strategic decisions. The materials and building sector also had the highest percentage of companies disclosing information about strategic resilience and most provided some information on the climate-related scenarios they used to make these assessments.

However, the September TCFD report showed that while firms were starting to consider strategic resilience, few systematically conducted scenario analysis.

Indeed, the PRA has found that despite the sophistication of insurers in modelling climate risks, there are still gaps in their own risk management. The PRA is increasingly focused on cognitive dissonance in some insurers whose careful management of climate risks on the liability side of their balance sheets is not always matched by similar considerations on the asset side.

And the PRA's banking survey last September found that, although almost three quarters of banks recognised the risks of climate change, only one in ten were taking a long term, strategic approach to them.

With that in mind, we expect firms to consider scenario analysis as part of their assessments of the impact of climate risks on their balance sheet and broader business strategy.

An important question is the form these scenarios should take. Climate scenarios aren't forecasts, but data-driven narratives that help companies think through different possible futures. The scenarios should be comprehensive, rigorous and challenging. The assumptions and methodologies in the models – such as the assumed global temperature rise, the energy mix, or whether the transition happens smoothly or abruptly – should be sufficiently transparent to allow for comparisons and external challenge. And finally, scenarios should be implemented consistently across the business, linking identification of risks and opportunities to both strategy and disclosure.

To do this, firms will need either to develop their own transition scenarios or build on commonly available models. The TCFD report signposts existing models that firms can use, and the PRA's Climate Financial Risk Forum will work with industry to review tools and metrics, with the view to publishing reference scenarios and standard assumptions.[15]

For supervisors, assessing strategic resilience will require climate-related stress testing. This involves linking high-level data-driven narratives on the evolution of physical and transition risks to quantitative metrics to measure the impact on the financial system.

Next month, the PRA will ask UK insurers, as part of a market-wide insurance stress test, to consider how their businesses would be affected in different physical and transition risks scenarios.

Testing the banks, and possibly other participants in the financial system, with climate-change scenario stress tests would have two objectives:

[15] The most widely used and well-known are the IEA transition scenarios, which model six different assumed pathways and associated temperature increases. For modelling physical risks, the IPCC's four Representative Concentration Pathways (RCPs) fix greenhouse emissions and analyse the resulting change to the climate.

1. To consider whether, across the financial system, financing flows are consistent with an orderly transition to the climate outcome set out in the Paris agreement. These long-term scenarios can facilitate discussions between firms and their clients about possible risks across different sectors and geographies; and

2. To consider whether the financial system would be resilient to shorter-term shocks – including a climate "Minsky moment" when climate risks materialise suddenly.

These long and short-term risks are, of course, linked – any overall misalignment with climate goals increases the short-term risks from a disorderly transition, possibly caused by extreme weather events or abrupt shifts in climate policy. A system-wide stress test can help supervisors and climate policymakers judge the adequacy of the current transition and whether further actions could be expected.

As the Bank of England considers the timing and design of such a stress test, we are working with colleagues in the Network for Greening the Financial System (NGFS) to develop a small number of high-level scenarios.[16] And in our Climate Financial Risk Forum we will work with banks, insurers and asset managers to ensure these scenarios are rolled out effectively within their organisations. Together with our work on this year's insurance survey, these initiatives will provide a basis for our future assessments of the system-wide exposure to climate risks.

The third and final area is return

A new horizon brings new opportunities.

The IEA estimates that the low-carbon transition could require $3.5trn in energy sector investments every year for decades – twice the rate at present. Under their scenario, in order for carbon to stabilise by 2050, nearly 95% of electricity supply will need to be low carbon, 70% of new cars electric, and the CO2 intensity of the building sector will need to fall by 80%.

With an estimated US$90 trillion of infrastructure investment expected between 2015 and 2030, smart decisions now can make sure that investment is both financially rewarding and environmentally sustainable.

[16] The voluntary network was set up by 8 central banks and supervisors in December 2017 at the One Planet Summit, and has since grown to 29 members, representing countries accounting for nearly half of global emissions, and five observers. It is a voluntary, consensus-based forum whose purpose is to share best practices, contribute to the development of climate- and environment-related risk management in the financial sector and mobilize mainstream finance to support the transition toward a sustainable economy. The analytical work is split into three work streams and the research will be published in April 2019: WS1 microprudential/supervisory; WS2 macrofinancial; and WS3 Scaling up green finance.

Regulators and market participants are collaborating to facilitate cross-border investments in green infrastructure. The European Commission's Sustainable Finance Action Plan is developing a classification system for sustainable economic activities, a harmonised green bond standard and methodologies for low-carbon indices.[17] The three major credit rating agencies have all integrated environmental risk and green certification into credit ratings. And international organisations such as the Climate Bonds Initiative (CBI) and International Capital Markets Association (ICMA) have developed definitional frameworks, certification and validation methods for green financing.[18]

This work is helping the green bond market to gather pace, with issuance quadrupling from $45bn in 2015 to $168bn in 2018.[19] Last year also saw inaugural sovereign green issues from five countries.[20]

For investors, green bond markets offer stable, rated and liquid investments with long duration. For issuers, green bonds are a way to tap the huge US$100 trillion pool of patient private capital managed by global institutional fixed-income investors. The shift to the capital markets from banks will also free up limited bank balance sheet capacity for early-stage project financing and infrastructure lending.

Over the last two years, the City of London has been glowing green with sixteen renewable infrastructure funds with a value of $7bn listed on the LSE. The City has been the centre of a series of landmark global green bond issuances, from China's first Green Covered Bond – the country's first ever international issuance of a green bond – to the first green Masala Bond worth INR 20bn. In our view, such local currency green bonds will be particularly important to the climate transition in emerging market economies (EMEs).

However, while they are important catalysts, green bonds will not be sufficient to finance the transition to a low carbon future. They accounted for only 3% of global bond issuance in 2018.

Achieving the transition will require mobilising mainstream finance.

Advances in reporting and risk analysis are paving the way for investors to realise the opportunities in climate-friendly investment by re-orienting their focus to broader, more sustainable long-term value creation.

Such investment approaches are becoming increasingly common. There are now almost 2000 signatories, with over $80 trillion in assets under management, to the UN Principles for Responsible Investment (UN PRI), an international network of investors committed to considering ESG factors in their work.[21]

This swell of support is driven by the expectation that sustainable investment can generate excess returns in three ways.

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[17] For more information on the Commission's Sustainable Plan, see: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en

[18] See: CBI https://www.climatebonds.net/about and ICMA https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/

[19] Climate Bonds Initiative. (2018). *Green bonds: The state of the market 2018.* Available: https://www.climatebonds.net/resources/reports/green-bonds-state-market-2018

[20] By Indonesia, Belgium, Lithuania, Ireland and Seychelles

[21] See: https://www.unpri.org/pri

First, companies that score well on ESG metrics could better anticipate future climate-related risks and opportunities. This makes them more strategically resilient and therefore able to anticipate, and adapt to, the risks and opportunities on the horizon, generating true alpha from ESG.

Second, strong ESG scores could signal that a firm is more naturally disposed to longer-term strategic thinking and planning. Climate disclosure is increasingly seen not only as necessary in and of itself, but also as informative about the extent to which companies are focused on long-term value creation.

And third, strong ESG firms may enjoy valuation premiums consistent with shifting investor preferences. Millennials, keenly focused on company values and sustainability, are set to inherit $24trn of wealth in the US alone over the next 15 years and will seek the investment opportunities to match.[22] Already, assets are moving to ESG strategies at 20 per cent annual growth.[23]

A review of over 200 sources on ESG performance by Oxford University and Arabesque showed that in the overwhelming majority (88%) of companies that focused on sustainability, operational performance was improved, translating to higher cash flows.[24]

And meta-analysis of over 2000 studies confirms that the responsible, as well as the economic case for ESG investment is tangible. 90% of studies find that there is no penalty on return on ESG investment, and the majority suggest that focusing on ESG criteria generates a positive return.[25]

The outperformance of strong ESG companies is uncorrelated with underlying factors such as return on equity or capital employed, and reflects greater earnings stability and lower share price volatility. While "screening" - excluding poor ESG performers - is still the most common tool among investors, some research finds that a more proactive consideration of ESG factors may pay off. [26,27, 28]

"Tilt" strategies, which overweight ESG stocks, and "momentum" strategies, which focus on companies that have improved their ESG rating, have outperformed global benchmarks for close to a decade.[29]

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[22] Deloitte. (Nov 2015). *The future of wealth in the United States*. Available: https://www2.deloitte.com/content/dam/insights/us/articles/us-generational-wealth-trends/DUP_1371_Future-wealth-in-America_MASTER.pdf

[23]The Cerulli Edge, Global Edition, Issue 206 (Apr 2018). Available: https://www2.deloitte.com/content/dam/insights/us/articles/us-generational-wealth-trends/DUP_1371_Future-wealth-in-America_MASTER.pdf

[24] Clark, G, Feiner, A, and Viehs, M. (March 2015). *From the stockholder to the stakeholder: how sustainability can drive financial outperformance.* (Oxford University and Arabesque Partners)

[25] Friede, G, Busch, T, and Bassen, A, (2015) ***ESG and financial performance: aggregated evidence from more than 2000 empirical studies***, Journal of Sustainable Finance & Investment, 5:4, 210-233

[25] Nordea Markets. (Sept 2017). *Cracking the ESG code*. Available: https://nordeamarkets.com/wp-content/uploads/2017/09/Strategy-and-quant_executive-summary_050917.pdf

[27] BlackRock. (Feb 2019). *Sustainability: The Future of Investing*. Available: https://www.blackrock.com/us/individual/literature/whitepaper/bii-sustainability-future-investing-jan-2019.pdf

[28] A recent review by Hermes Investment Management shows that companies with good or improving social factors have outperformed other companies by 15bps per month over a decade and good governance generates a 24bps per month elevated return. A focus on the E in ESG – environmental – meanwhile has no penalising effect on returns, and companies with strong environmental policies do better in downturns by 19bps than their peers.
See: https://www.institutionalassetmanager.co.uk/2018/11/13/270456/hermes%E2%80%99-esg-study-reveals-social-characteristics-outperforming

[29] Nagy, Z, Kassam, A, and Lee, L-E,. (June 2015). *Can ESG add alpha?*.Available: https://www.msci.com/documents/10199/4a05d4d3-b424-40e5-ab01-adf68e99a169.

This suggests that there is more to well-regarded ESG companies than simply better management of downside risk.

Given this growing track record, companies are developing ways to better score ESG performance and invest accordingly. For example, Arabesque uses machine learning models to assess the performance and sustainability of companies, and stock selection strategies to tailor portfolios to a wide range of investor ESG preferences. This week BNY Mellon adopted such an approach motivated in part by the EU's Directive on Pensions (IORP II).[30] Earlier this year UBS launched a pilot project that will allow investors to rate how much weight they want to place on different ESG factors.[31] And last month, BlackRock launched six new Exchange Traded Funds (ETFs) that combine an ESG uplift and a 30% reduction in carbon emissions.[32] These sustainable building blocks can be substituted into many traditional portfolios, improving ESG scores and reducing greenhouse gas (GHG) intensity without sacrificing performance.

In the future, climate and ESG considerations will likely be at the heart of mainstream investing. Investors will tailor their investments and fulfil their fiduciary duties through: better quality and more widely available data on sustainability and performance; superior data analytics through the advent of AI and Machine Learning; and more informed judgements of strategic resilience.

Conclusion: a New Horizon

Financial policymakers will not drive the transition to a low-carbon economy. Governments will establish the climate policy frameworks, and the private sector will make the necessary investments.

Nonetheless, financial policymakers do have a clear interest in ensuring the financial system is resilient to any transition hastened by those decisions. Our role is to develop the frameworks for markets to adjust efficiently.

A market in the transition to a two-degree world is being built. It will reveal how the valuations of companies could change over time as climate policies adapt and carbon intensity declines.

It will expose the likely future cost of doing business, of paying for emissions, and of tighter regulation.

It will help smooth price adjustments as opinions change, rather than concentrating in a climate "Minsky moment".

And it will allow feedback between the market and policymaking, making climate policy a bit more like monetary policy, with policymakers learning from markets' reactions, and markets internalising policymakers' objectives, strategies and instruments.

[30] See: https://www.bnymellon.com/us/en/newsroom/news/press-releases/bny-mellon-debuts-service-to-evaluate-environmental-social-and-governance-factors-in-investment-performance-03-19-2019-newsid-13.jsp
[31] See: https://www.ubs.com/global/en/ubs-news/r-news-display-ndp/en-20190121-wef.html
[32] See: https://www.ishares.com/us/strategies/sustainable-investing#esg

In this way, recent progress in disclosure, risk management and return optimisation is creating a path to a New Horizon. A virtuous circle is becoming possible where companies disclose more information, investors make better informed decisions, and sustainable investment goes mainstream.

But the speed with which this market develops will be heavily influenced by the coherence and credibility of climate policies. Finance will complement - and potentially amplify – but never substitute for climate policy action.

The policy frameworks with the greatest impact will be: time consistent (not arbitrarily changed); transparent (with clear targets, pricing and costing); and committed (through treaties, nationally determined contributions (NDCs), domestic legislation and consensus).

As countries build their track records and their credibility grows, the market will allocate capital to deliver the necessary innovation and growth and pull forward the adjustment to a low carbon future.

The more prolific the reporting, the more robust the risk assessment and the more widespread the return optimisation, the more rapidly this transition will happen, breaking the Tragedy of the Horizon.