The Economic Club of New York

492nd Meeting
111th Year

Mark Carney
Governor, Bank of England

October 19, 2018
New York City

Interviewer: Glenn Hutchins
Vice Chairman, Economic Club of New York
Chairman, North Island

Introduction

Vice Chairman Glenn Hutchins

Welcome to the 492nd meeting of the Economic Club of New York in our 111th year. If there's one thing we can do around here, it's we can count. I am Glenn Hutchins, Vice Chairman of the Club and Chairman of North Island. The Economic Club of New York is the nation's leading nonpartisan platform for discussion of economic, commercial, social, and political issues. More than 1,000 prominent guests have spoken to the Club over the last century forging a tradition of excellence which will continue today.

Before we get started, I'd like to recognize the members of the Centennial Society seated in the front here. They have each contributed $10,000 to the Centennial Fund, which serves as the financial backbone of the Club. The other thing we know from the Economic Club is someone has to pay the bills. Thank you. I would also like to greet the 2018 Economic Club of New York Fellows, new program which enables the Club to introduce ourselves to a new generation of leaders in the business community. Greetings to that group.

It's with great pleasure today that I welcome back to the Economic Club today's guest and my friend, Mark Carney, Governor of the Bank of England. In addition to his role at the Bank of England, Mark serves for the G20 as Chair of the Financial Stability Board and as First Vice Chair of the European Systemic Risk Board. I highlight those two roles because they are quite relevant to his remarks today. We're very lucky to have him in those roles.

Previously, Mark was the Governor of the Bank of Canada and had a distinguished 13-year career at Goldman Sachs. Born in the northwest territories of Canada, Mark received a bachelor's degree from Harvard and a PhD from Oxford, both in economics. Personal highlights for Mark include being probably the best backup goalie in the history of Harvard Hockey, running a personal best of three hours, 31 minutes, and 22 seconds in the 2015 London Marathon – not bad – I barely beat that when I was 20 years younger – and rooting for the Everton Football Club, which is also known as The Toffees. Now, for those of you who follow football, that makes Mark a Toffeeman, which I'm sure is a status he's very proud of. So, the Chancellor of the Exchequer recently announced that Mark had agreed to stay in place through 2020. To quote the Chancellor, "to support a smooth exit from the European Union and provide vital stability to our economy through what could be quite a turbulent period." I'm sure that after today's session, you'll understand why that was so important.

A little bit of housekeeping, our format today includes a speech by the Governor followed by a conversation, which I'll moderate. I would like to remind everyone that this event is on the record – especially we should remind Mark of that – and that we do have Live broadcast cameras, and other media in the back of the room. You're also welcome to be with us today.

Mark, the podium is yours.

Mark Carney

Governor, Bank of England

Thank you very much, Glenn. Thank you for that generous introduction. Note, a stickler for accuracy, Glenn says “probably” the best backup goalie. You can hide a lot with probably, and don’t look up how many minutes I played for Harvard because it’s better measured in seconds actually. But it’s a great pleasure, a pleasure to be back at the Economic Club of New York. I was last here five years ago, roughly five years ago, just before the holidays, to talk about R-star, at the time a relatively obscure topic, but one that you brought to the mainstream and one we all think about.

But I’m in a slightly reflective mood because I just came back from, I’m on my way – I should say – Glenn mentioned that I have had the privilege of being Chair of the Financial Stability Board, which is a group of regulators, central banks, and treasuries of the G20 and beyond, and I’m on my way to the financial capital of Eastern Ontario, Ottawa, on Monday for my last meeting as Chair of the FSB. So that makes me slightly reflective. But I also, with some of you and with all my central banking and finance minister colleagues, was in Bali last week for the annual meetings of the IMF and the World Bank. And I think we were all conscious at the time that that was the 10th anniversary of the global financial crisis, that October, the 20th anniversary – and that was one of the reasons why it was in Bali, the Indonesian host, 20th anniversary of the Asian financial crisis, the 30th anniversary of the Latin American debt crisis. And I know this room can spot a pattern. And so the question I want to ask is a question that many have asked, is after ten years of financial reform, whether anything has really changed given that sort of weary history.

And I have to say that, you know, if you read the massive articles and commentary that came on the anniversary of Lehman's failure and the subsequent weeks, many suggested that, are suggesting that nothing has changed. And I'm going to argue today that such weary fatalism is at odds with reality. That the radical, and it has been a radical program of G20 financial reforms have made the system safer, simpler, and fairer. That these measures are creating a system that better serves households and businesses across our economies. And that really, that there has been true change and that's creating true finance, which is a platform of openness and for innovation.

But I'll also go on to caution that we'll forfeit these gains if we once again fall under the spell of the three lies – what I'm calling the three lies of finance, that helped cause the global financial crisis. And that to resist them, we have to maintain the new institutional frameworks that we've put in place, and some of those are domestic, like here in the United States. But the most important of those internationally is the FSB. So a basic point, that we can't rest on our laurels, that financial history rhymes all too frequently with enormous costs.

So, let me get into what happened and what I'm calling these three lies. And the first lie is the four most expensive words in the English language...”this time is different.” This misconception is usually the product of something good, an initial success, early progress gradually builds into a blind faith of a new era of effortless prosperity. So, the early stages of the Minsky cycle. Now, if you think about the runup to the crisis, there was a revolution in macroeconomic policy that occurred in the 80s and 90s that helped win the battle against high and unstable inflation, rising unemployment and volatile growth. But price stability alone was not a guarantee of financial stability and that initially healthy focus on price stability eventually became a dangerous distraction. And so against this sort of serene backdrop of the, at the time called the Great Moderation, a storm was brewing across the G7. There’s many ways to illustrate this point. But across the G7, total non-financial debt of more than 100% of GDP built up in the runup to the crisis.

And several factors drove that debt buildup – demographics, the stagnation of middle-class wages. In the U.S., as Raghu Rajan has argued, households had to borrow to increase consumption. Let them eat cake became let them eat credit. Financial innovation made it easier to do so. And a ready supply of foreign capital made it cheaper.

And most importantly – and this is the lie – complacency amongst individuals and institutions fed by a long period of macroeconomic stability and rising asset prices, made this remorseless borrowing seem sensible. And so when the crisis broke, the policymakers had to drop the received wisdoms of the Great Moderation and quickly re-learn the lessons of the Great

Depression, and Minsky became mainstream.

Now, a deep-seated faith in markets lay beneath the new era thinking of the Great Moderation. Captured by the myth that finance can regulate and correct itself spontaneously, authorities retreated from their regulatory and supervisory responsibilities. And this is the second lie, that markets always clear. And it has two dangerous consequences. First, if markets always clear, they can be assumed to always be in equilibrium – said differently, assumed always to be right. If markets are efficient, bubbles can neither be identified nor can their potential causes be addressed. And such thinking led to the practical indifference amongst policymakers to the housing and credit booms before the crisis.

And the second dangerous consequence is that if markets always clear, they should possess a natural stability. And evidence to the contrary must be evidence of either market distortions or missing markets. Much of the financial innovation that we saw in the runup to the crisis springs from the logic that a solution to market failures is to build new markets on old ones – a form of progress through infinite regress.

During the Great Moderation, this view became an organizing principle for financiers and policymakers. And the latter, the policymakers, pursued a light touch regulatory agenda in the quest for a perfect world of complete markets first described as abstract theory by Arrow and Debreu. And there’s not many audiences in which you can quote Arrow and Debreu, and I’m glad to be in front of one today.

And, of course, but as this audience knows, particularly – and this is one of the great things about this group, bringing together the theory and the practice – is this audience knows markets only clear, or only always clear in textbooks. In reality, people are irrational, economies imperfect, and nature itself is unknowable. When such imperfections exist, adding markets can sometimes make things worse. And that was the case of synthetic credit derivatives which were supposed to complete markets in default risk and improve pricing and allocation of capital. However, the system had only spread risk contingently and opaquely in ways that ended up increasing it. And once the crisis began, risk quickly became concentrated on the balance sheets of intermediaries – banks themselves who were capital constrained. And in a hyper-connected world, risk ricocheted between the core and the periphery.

So a truth of finance is that the riskiness of an asset depends on who owns it. And when markets don’t clear, agents may be surprised to find out what they own and for how long. And when those surprises are – or are thought to be – widespread, panic ensues.

Now, the third lie that I’m going to mention is that markets are moral. And it takes for granted the social capital that financial markets need to fulfill their promise. The crisis showed that if left unattended, markets can be prone to excess and abuse. And repeated episodes of misconduct, such as the Libor and FX scandals, called into question that social license that markets need to innovate and grow.

So, to resume for the moment, this time is no different. Markets don't always clear and we can suffer from their amorality. And the question, of course, is what do you do with that knowledge? And how do you retain it? And my argument is that to resist the three lies of finance, policymakers and market participants need to bind themselves to the mast. And that means building, for policymakers it means building institutional frameworks that make it easier to resist these falsehoods as they regain their allure.

And over the past decade, great strides have been made. Let me begin with global reforms that have addressed the third, that markets are moral. There's a cycle of scandal, response, integrity, then drift, and then new scandal. And that's been the case throughout financial history. And the response to those scandals, the potential solutions tend to oscillate between the extremes of Light Touch Regulation, or self- regulation, and Total Regulation.

And, of course, there's problems with each. By undervaluing the importance of hard infrastructure and soft infrastructure to the functioning of real markets, light touch regulation directly led to the financial crisis. So think undervaluing the ways that certain benchmarks were set or FX was fixed and undervaluing soft infrastructure such as supervision. But if you go to the other extreme, total reliance on regulation and large ex-post fines – recall that since the crisis, global banks have paid over $325 billion of fines related to the crisis – equivalent to $5 trillion of lending capacity – that approach is similarly bound to fail because it promotes a culture of complying with the letter of the law, not its spirit. And because authorities such as myself inevitably will lag behind market developments.

So, the post-crisis approach has been something in between, something which combines public regulation with private standards, and then buttresses both, not with institutional responsibility but with incentives that materially increase the accountability of individuals at the heart of the system. In the United Kingdom, new laws and regulations are doing just that. We have compensation reform that's aligning better risk and reward, including misconduct risk, with variable compensation deferred up to seven years and a potential to claw back up to a decade in the most extreme cases. We've also introduced regulatory references, so people can't job-hop, staying one step ahead of misconduct, so people will know the misconduct histories of individuals they hire.

Authorities have also used their convening power to encourage private sector, market participants, to come up with standards of market practice. I think the Global FX Code or the private Financial Market Standard Board has a series of standards for FICC markets that are being put in place. And crucially, in the UK, something called the Senior Managers' Regime gives teeth to these voluntary codes by incentivizing firms to embed them and re-establishing the link between seniority and accountability.

Now, globally, the FSB has identified a similar menu of tools under its Misconduct Action Plan, but thus far, action to promote good conduct has varied widely across the G20. And absent a more comprehensive response, it's hard to see how we can prevent the ethical drift which periodically undermines market integrity and impairs finance's ability to function effectively. And more fundamentally, I'd argue that without greater individual responsibility, it's hard to see how social capital can be fully regained.

So, turning to the second lie that markets don't always clear, this has spurred probably the biggest swath of reforms and response with an objective to make markets less complex and more robust. Since the fall of Lehman, and the panic in the derivatives markets, the FSB has designed a series of reforms to make these markets safer and more transparent, including by requiring trade reporting and encouraging central clearing of all OTC trades, or of standardized OTC trades. These reforms are working. Market participants and authorities can now see what's actually going on in these markets. And 90% of single-currency interest rate derivatives are now centrally cleared. And an additional $1 trillion of collateral is held globally against all derivative trades despite lower overall risk.

Central counterparties reduce systemic risk, provided they meet the highest standards of resilience, recoverability, and resolvability. And that's why we have instituted a series of reforms to increase that and also to increase operational resilience. I'd argue that now is the time, though, for FSB and G20 countries to address any gaps in the implementation of those standards and also to step back and assess whether taken together, these reforms to the 3 R's – resilience, recoverability, and resolvability – whether they are accomplishing what they are intended to do and they're working together as efficiently as possible.

Now, turning to another aspect of complexity, a series of measures are eliminating the most fragile forms of shadow banking while reinforcing the best of market-based finance. And I won't go into all those measures here, but they're making a real difference and you can see it in the numbers. But I would say that while the fault lines are closing, or closed in shadow banking in advanced economies, they're widening in some emerging economies.

For example, while China's economic miracle over the past three decades has been extraordinary, it's post-crisis performance has increasingly relied on a large buildup of debt and an associated explosion of shadow banking. The non-bank financial sector in China has increased from around 10% of GDP a decade ago to over 100% now, with developments echoing those in the pre-crisis U.S. such as off-balance sheet vehicles with large maturity mismatches, sharp increase in repo financing, and large contingent liabilities of both borrowers and banks.

More broadly, a potentially new vulnerability has emerged across the G20, including in advanced economies. And as often is the case, the risk starts with a fundamentally positive development. In this case, the developments in global assets under management, they have grown from around $50 trillion a decade ago to over $80 trillion today. And this is good news. It brings diversity to the system. It's helped fund all of the net lending to emerging economies, as one example. However, asset management's growing importance could increase the risks of sudden stops and intense capital flow reversals in emerging markets, amongst other markets. That's because more than $30 trillion of assets today are held in funds that promise daily liquidity to investors despite investing in potentially highly illiquid underlying assets. In other words, they're built on the lie that markets always clear.

The FSB has committed to G20 leaders to address structural vulnerabilities in asset management. And to honor this commitment, there must be greater consistency between funds' redemption terms and their assets and investment strategies. And these funds should have the liquidity management tools to deal with stress conditions.

My final point in this section is on developments in global leveraged lending. Now, leveraged lending globally is growing at rates – and has reached a scale – relative to overall credit markets and relative to underlying GDP that is comparable to sub-prime on the eve of the crisis. Underwriting criteria have loosened just as rapidly, and there's limited information about the ultimate holders of the debt and their ability to absorb losses. And in recent years courts have overturned the requirement that managers retain a portion of their securitizations.
Now, to be clear, there are important differences between leveraged lending and pre-crisis sub-prime. Not least, banks at the core of the system are much more resilient and they have limited direct – and it would appear – very limited indirect exposure to the asset class. And as well, the

horizons of CLO investors appear to better match the underlying – in other words, this liquidity mismatch issue I raised earlier is less present in leveraged lending.

But every time you see a major asset class develop and to grow consistently at double digit rates, you have to be careful, and I would remind – as some in this room know all too well – that the last two vintages of sub-prime were twice as likely to default as their predecessors, and that the leveraged lending market shows few signs of slowing.

So turning finally to the lie that this time is different, if there's one thing the experience of living through the financial crisis should teach us all, it's humility. And that means we can't anticipate every risk or plan for every contingency, but what we can do, and must do, is plan for failure. And that's how you work to create a more anti-fragile system, something that's robust, both to the intensification of known risks such as the risks that I've tried to outline, but also to those sort of Rumsfeldian unknowns.

You start with resilient banks, that's what you need for such a system. And regulation has made the banks more robust, less complex, and more focused. Common equity requirements for the largest banks are ten times their pre-crisis levels. Business strategies that relied on high-leverage, risky trading activities or wholesale funding are disappearing as intended. Trading assets of the major banks have been cut in half. Inter-bank lending is down by two-thirds. They're focused more on lending to the real economy than to each other. And to give one example of the shift, contingent liquidity of the UK banks, own liquidity and contingent liquidity, only covered 10% of runnable assets in 2007. They cover 110% today.

Now higher capital liquidity requirements are necessary but not sufficient conditions. Banks also need to be able to fail without systemic consequences. And so, to bring back the discipline of the market and to end the reliance on public funds, FSB members have agreed standards to ensure global banks can do just that. And we're seeing, as those are put in place, as TLAC or bail-in-able debt is put in place, as banks restructure, we're seeing market discipline come back. In the UK, the implied public subsidy for our largest banks is down 90% on pre-crisis levels. But given the importance of this issue, it's time again to take stock, and the FSB just agreed that we will undertake a thorough assessment of the effectiveness of the "too big to fail" reforms over the next year and report to G20 leaders on that.

Now, it's not just about financial failures, an anti-fragile system must be as robust to operational failures, and that brings me to cyber. To improve cyber defenses, the largest banks and market infrastructure at the core of the UK system are now subject to regular penetration tests and they have a list of remedial actions to address the learnings from those. But there is an analogy with "too big to fail." It's not enough just to improve the defenses, improve the resilience. We need to think about what happens when there's a successful cyber-attack. So, to flip it around, literally plan for failure. And we've begun to do that in the UK by setting standards for how quickly systemic financial institutions must be able to restore vital services following a successful attack.

And we will be conducting cyber stress tests to test those. And we are working, also in this room, we are working very closely with the U.S. Treasury as co-chairs of the G7 cyber expert group to develop and disseminate best practices across the core of the global financial system.

And the final thing that an anti-fragile system requires is what I call a Comprehensive Macroprudential Framework, again another phrase I can use in this room but not many others. Now, macroprudential frameworks require authorities to meet the next challenge, not just fight the last war. And so to ask themselves what could happen, not engage in the false comfort of what's most likely to happen. We have to consider the safety of the system as a whole. The system as a system needs to be countercyclical and think about the macro-financial implications of imbalances in the real economy, such as in housing markets or in the balance of payments.

And I want to give you a topical example, which is the Bank of England's approach to Brexit. Now, with respect to Brexit, the Bank of England doesn't focus on the most likely outcome, but rather the possible consequences of a disorderly cliff-edge exit from the European Union, however unlikely that may be. So, to be clear, the most likely outcome is a deal and a smooth transition, but we assume that doesn't happen in terms of preparation.

And we start by ensuring that our banks are ready for Brexit, such a Brexit. And to do so, we use severe, but plausible, which means coherent stress test. And in our stress test last year – to give you a sense of the orders of magnitude – UK GDP fell by 4.5%, commercial real estate by 40%, UK house prices by a third, Bank Rate rose by 4 percentage points, and unemployment went from the low 4s to 9.5%. In addition, there was a major emerging market shock and substantial misconduct costs for the banks. All at once. In our judgment, the judgment of the Bank of England and its independent Financial Policy Committee, our stress test last year was severe enough to encompass the wide range of macroeconomic and financial risks that could happen, could be associated with a low probability disorderly Brexit.

The bottom line is that we judge that the UK banking system has the capacity to absorb, not only the consequences of a no-deal, no-transition Brexit, but also losses that could be associated with intensifying global trade tensions, a sharp further tightening of financing conditions for emerging markets, and again substantial additional misconduct cost.

Liquidity is the second item of our contingency planning. And to give you some hard data on that, UK banks currently have around £300 billion of borrowing capacity. They pre-position collateral with the Bank of England. That gives them £300 billion of borrowing capacity from the Bank of England if they were to need it. That more than matches our lending at the peak of the global financial crisis, even though the owned liquidity positions of the UK banks, as I just mentioned, have improved ten-fold since then.

The third thing we do is to take a countercyclical approach. In the UK, we have deployed the Counter Cyclical Capital Buffer in which capital is accrued in good times in order to be released in bad or stress positions. Two years ago, immediately following the referendum amidst a period of heightened uncertainty, we cut the CCyB releasing a potential £150 billion of additional lending capacity for the banks. As that uncertainty receded, the economy grew, we required the banks to rebuild it, and then some. And today, that capital buffer is twice as high so we're in a position, if needed, to release £300 billion of lending capacity into the economy in the event of a stress condition. And the point is, we will want UK households and businesses to be in a position with total confidence that if they have a good idea, they're in a position to buy a property, take out a loan, that there will be capacity in the system to serve them.

Now, the fourth thing we've done over the course of the last year and a half, we've done this publicly and transparently, is we've identified the major cross-border risks to financial services that could arise in the event of a cliff-edge Brexit. And since then there's been considerable progress in the UK to address these risks, but only limited progress in the European Union. In the limited time remaining, as we move towards March 29, 2019, it will not be possible in our judgment for companies to self-solve the risks of disruption to cross-border financial services. And so the need for authorities to take action now is pressing.

For example, EU rules will restrict EU households and businesses from continuing to use financial services provided by UK firms. And in some cases, particularly in insurance, UK companies have been restructuring these contracts so they can continue to serve their clients, but even if all of those restructurings go through, 9 million EU policyholders will still be at risk after

Brexit.

In contrast, the UK government is taking forward legislation that will allow UK households and businesses to continue to access financial services provided by EU companies after Brexit. This solves all the issues for UK insurance policyholders for EU firms operating in the UK and for the use by UK firms – UK-based firms – of EU CCPs. Timely action by EU authorities is now needed to mitigate the risk to financial stability, particularly those associated with derivative contracts. Around $100 trillion of cross-border derivative contracts could be disrupted by the loss of EU regulatory permissions if they don't.

And these examples, I hope, illustrate a broader point that I want to make about our approach to Brexit, which is throughout the Bank's preparations and the broader UK preparations, we've been clear that we will maintain the traditions that have underpinned the UK's position as a leading international financial center. In particular, we'll maintain the current levels of resilience in the system and the commitment to openness.

So, let me conclude. Eight hundred years of financial history teaches us that financial crises occur roughly once a decade. And that's a frequency that in part – not wholly, but in part – reflects short institutional memories in finance. But our citizens haven't forgotten the last crisis. Certainly not in the United Kingdom where real incomes are still below their levels prior to the crash. Or here in the United States where confidence in banks remains near historic lows. The reforms of the past decade have put in place a new financial system which should, and could, in time regain that confidence of the people.

However, the challenge for policymakers is that when it comes to financial stability, success is an orphan – not failure – success is an orphan. As memories fade, complacency sets in and pressure to compromise re-emerges. So we all, in the private sector and the public sector, bear heavy responsibilities to safeguard recent progress and address emerging vulnerabilities. Safeguarding progress, just to be clear, does not mean defending all aspects of that reform program at all costs. And that's why the FSB is now working to evaluate the reforms, see what's working as intended, see where there's unintended consequences, and then adjust those. And there will be specific recommendations that go into the Buenos Aires Summit to do just that. But we need to tailor, not taper. It's critical that the process of evaluation and adjustment doesn't compromise overall systemic resilience.

Addressing emerging vulnerabilities means having the foresight to anticipate new risks, whether they come from cyber to CCPs, accountability to asset management. And it means having the discipline to build that anti-fragile system that's robust to risks that we don't anticipate. The bottom line, as this room knows well, we won't abolish crises, but we can reduce their frequency and lessen their severity. And by resisting the three lies of finance and by voicing truths seldom told, we can build a true finance which better serves our citizens in bad times as well as good. Thank you very much for your attention. (Applause)

Discussion Session

VICE CHAIRMAN GLENN HUTCHINS: Thank you Mark. I thought that was very good. Your basic message I found very reassuring, which is that the Bank of England has thought through the consequences of Brexit and has the financial system in the UK kind of prepared for that. But that was a terrific core message of yours. Am I getting that wrong?

GOVERNOR MARK CARNEY: You're getting that right. You're getting that right. I hope that was clear. I mean we have been, as you would expect, we have been focused on that from the day of the referendum and, you know, we should be held to account if we're not prepared for it.

VICE CHAIRMAN GLENN HUTCHINS: Well, your other message is you think Europe has work to do.

GOVERNOR MARK CARNEY: Well, there's a couple of specific issues and we are working directly with the ECB – President Draghi and myself chair a working group scoping out these issues. The decisions are taken by different parts of the European institutional framework. And, you know, these are constructive discussions and one would expect the issues to be addressed. But they are important issues and, you, know, we're in a day and age of transparency that's expected – rightly expected – of central banks, authorities such as the Bank of England, that we have to expose these issues and make sure there's a common understanding of them. The private sector has perspectives on these. A number of banking associations, individual institutions have raised these issues now publicly. And then, you know, the powers that be have to address them.

VICE CHAIRMAN GLENN HUTCHINS: So, let's say that the outcome is in the middle of the road between the kind of scenarios that were worked out. I'm not asking you to make a political judgment because I know that you won't do that. So let's just assume that you get something that's relatively close to the Chequers plan or something that's kind a muddle through between that and a hard Brexit. What do you think, what would you identify in that middle of the road outcome as the key stresses to the system that the Bank of England would need to be prepared to deal with?

GOVERNOR MARK CARNEY: Well, I think – and I appreciate you not pushing me on, in some respects the unknowable...

VICE CHAIRMAN GLENN HUTCHINS: Well, I haven't asked yet...

GOVERNOR MARK CARNEY: Well, you can ask me but I don't, we don't know. We don't know. It's in negotiation and there's many factors that are there and leave it to the political side. It's a fundamentally political issue, which ultimately has to be decided by the various parliaments or approved by the various parliaments. In a scenario of an agreement, there aren't really stresses. There won't be stresses in the system because an agreement to some form of future economic partnership, wherever it is on the spectrum, what would come with that is a transition period to that, which will help the financial sector to, you know, adjust to new realities. And I would say as well that in the case of a free trade agreement or a Chequers agreement or other partnership, there is a range of financial, long-term financial arrangements that could be there, which are all subject to negotiation. The issues arise if there's no agreement and there's no transition to what is called a WTO world, so a world where we just trade under WTO.

VICE CHAIRMAN GLENN HUTCHINS: That's what people are calling the no-deal hard Brexit.

GOVERNOR MARK CARNEY: That's a no-deal hard Brexit and that, in the absence of an agreement in the coming months, it would happen on the 29th of March. Now, we have, you know, we're preparing for the worst. That's the worst-case scenario. We prepare for that. And I said, you know, carefully, however unlikely that may be, both sides are absolutely working to make sure that that doesn't happen, but until there is an agreement, you have to prepare for the alternative.

VICE CHAIRMAN GLENN HUTCHINS: So, let's talk about the longer term. Not as long term as it might take for the Oilers to win the Stanley Cup, but...

GOVERNOR MARK CARNEY: Ooh, Connor McDavid...

VICE CHAIRMAN GLENN HUTCHINS: They needed to beat the Bruins.

GOVERNOR MARK CARNEY: They beat the Bruins last night, I was just going to say.

VICE CHAIRMAN GLENN HUTCHINS: That's right. But you have, can you share with us your views about your longer-term vision post-Brexit? Let's assume you have a reasonable Brexit. You manage your way through it. I know that you have some views about longer term, financial services, economy, and UK, a broader UK economy.

GOVERNOR MARK CARNEY: Well, I think the, so, if one takes a Brexit agnostic view, so whatever is agreed in the fullness of time, the UK system will adjust. You know from our perspective there are a couple of things and I mentioned two of them in the speech. The first is the standards in the UK will continue to exceed international standards so it's very important for that system to be resilient. It's one of the most important global hubs, you know, alongside New York, the two most important global hubs. Unlike the US, if I may, so we have a system in the UK which is, the aggregate size is ten times GDP. It's a different order of magnitude relative to GDP in the US. So it's that much more important that we maintain these standards.

VICE CHAIRMAN GLENN HUTCHINS: You're talking about the financial services economy as part of the overall UK economy.

GOVERNOR MARK CARNEY: And the assets relative to the size of GDP. So you have to have a system where you've addressed "too big to fail", where you have resilient hubs such as CCPs, and that the markets are robust enough, and that the domestic financial system, and it literally is now as of this year, ring fence from the rest. So high standards of resilience, first point. Second, a fundamental belief in openness. And one of the things, one of the points I'd like to make is that – and this is very much UK government policy, but I think it's sound financial policy – is here in the US, in the UK, and in a number of other jurisdictions there's been this whole reform process for the last ten years. And standards have been substantially raised everywhere. And we now are in a position where you could have much freer trade in financial services. You know, we should be able to rely on each other much more. We know what standards people are holding themselves to. You have better supervisory cooperation. You have better information. And so with like-minded jurisdictions, like the US, like a Canada, like Japan, and we expect, like Europe, you can have freer flow of financial services. And I think the UK has a fundamental commitment to openness, if I can give a short example of that. With Brexit, a year ago we said, look, we are going to effectively authorize European entities into the UK under the standards that we have had in the past. And we're going to presume that we have a supervisory cooperation. We're going to presume openness, presume cooperation. And it's only if we're disabused of that over time that we would ring fence parts of the system, so I don't anticipate that. I think the – I'll make two other points, though, with it – one, I do think the UK is the fin-tech hub in Europe, one of the most important fin-tech hubs in the world, and I do think both on the wholesale and the retail side there's real potential for not just development there in the UK, but export of those technologies and business models. And then the last is just on, you know, cross-border emerging market flows will continue, should continue to come through London. Local currency international markets, and those run in the extreme of this, which could become mainstream. So the flipside of wealth management, trust, funding, Chinese, municipal infrastructure and energy infrastructure, which is a less stable model is local currency, you know, green bonds that are listed internationally and domestically, which is, you know, potentially a $50 to $100 billion per year market in the next few years. Those are the types of markets that internationally flow through London as well as onshore.

VICE CHAIRMAN GLENN HUTCHINS: So you see a path, despite the dire forecast of recent years, through Brexit to maintain the primacy of London in the financial, world financial system?

GOVERNOR MARK CARNEY: I think, you know, to retain the primacy you've got to get the first principles right – resilience, openness, and then allow innovation.

VICE CHAIRMAN GLENN HUTCHINS: That's the path.

GOVERNOR MARK CARNEY: And that's the path. And my view is that that is the path the UK will take. Those are the first principles. Those are the reflex actions. And that the measures we've collectively taken over the last ten years reinforce all of those.

VICE CHAIRMAN GLENN HUTCHINS: So let's move to the broader world economy a bit. You're just back from Bali, as you said.

GOVERNOR MARK CARNEY: Yes, working all the time...

VICE CHAIRMAN GLENN HUTCHINS: Is that right? Sure.

GOVERNOR MARK CARNEY: I was.

VICE CHAIRMAN GLENN HUTCHINS: You didn't take a bathing suit with you?

GOVERNOR MARK CARNEY: I didn't use it. (Laughter)

VICE CHAIRMAN GLENN HUTCHINS: There, you gave a speech where you warned against "the weaponization of assets in a global financial system." As I got it right, you stressed the need for investment flows to remain open in light of the risk of US protectionism that could affect the real economy through trade flows, supply chains, import costs. Can you elaborate a little, or correct and/or elaborate a little bit on that? I tried to summarize it.

GOVERNOR MARK CARNEY: I have a slightly different recollection of that, which, of course, I had the advantage of being there.

VICE CHAIRMAN GLENN HUTCHINS: And saying it yourself.

GOVERNOR MARK CARNEY: And saying it myself. I was answering a question which was about those financial issues. And I think, I'll make two points – if I can – around trade and open finance. The first is I referenced a moment ago free trade and financial services. And if I could broaden that out to freer trade and services. So, as we all know, a series of trade disputes, trade discussions across the world, many of which have the US at the center, a lot of the discussion has focused on the goods side, you know, manufacturing, goods trade. And the point we've tried to make in the last several years, which is beginning to get some traction, is that if you liberalized services trade by the same amount that the goods trade has been liberalized over the course of the last 10, 15 years, you'd cut the US deficit in half. Just the same amount, you'd cut the US deficit in half. The IMF came out with some analysis, in Bali actually, and they say if we did it in the global economy, you liberalize services, same proportion, down by about 15%, which are non-tariff barriers, not tariff barriers as you know, then you would add $350 billion to the world economy, equivalent of another South Africa. These are big numbers. And this is, I mean this is the un-liberalized bit of the global economy. It is a positive leveling-up agenda as opposed to – if you will – leveling down through protectionism around goods. It's, in many respects, the future of trade because it's financial services, it's data, it's creative services, and getting those rules right is the opportunity. And, again, to be, you know, my glass is almost totally full, it's not just half-full here, but is the, all this progress on finance, you know, well, what was the purpose of it? Yes, serve our citizens better, but also really take a big step potentially for broader openness in finance. Now, to get to the more dangerous second part of your question, which is around the interplay between financial services and foreign policy and sanctions, I mean, I think, I'll limit my response to absolute importance of the highest standards of any money laundering, counter-terrorism finance, first point. The second point, that being truly effective MLCTF, and in order to be truly effective in MLCTF, we're increasingly of the view that a series of reforms and measures, financial technology measures, are necessary to do that. And I'll give you one example so it's tangible, it's not just words. So, one of the things we're doing is we're changing our entire payment system, the core of our payment system. Large value, $600 billion a day, sterling goes through the core of the Bank of England. We are going to require – we're consulting on this, but it's likely to happen – that every payment has to have something called an LEI associated with it. Now, Legal Entity Identifier, those in the financial services would know this, was put in place for the derivative market. There's 1.2 million of them now in the world. So, for every corporate transaction that comes through, you've got an LEI. That's absolute, know your customer, transparency. What we would like is everyone to do that.

VICE CHAIRMAN GLENN HUTCHINS: That attaches across the payment system.

GOVERNOR MARK CARNEY: Attach across the payment system. You know who is on whose behalf it's coming. And that's a big step. It doesn't deal with all the individual issues, but it deals with the corporate issue. And it's those kinds of building blocks which, quite frankly, you know, five, ten years ago you couldn't do. You didn't have the technology to do it. Now you can do it. You put it in place and that starts to address some of the underlying flows at which sanctions look to get.

VICE CHAIRMAN GLENN HUTCHINS: Interesting. Okay, so global macro outlook, I know that's something else you think a little bit about. Perhaps the biggest change happening, ramifying around the world today is a policy change at the Federal Reserve Bank – balance sheet normalization, interest rates on the path upwards. Let's talk about the risk to the global markets and the economy from all that. Starting perhaps, I was going to ask you about emerging markets to begin with because that's obvious, but right now everybody is focused on Italy. And a question someone asked me in preparation for this is why would anybody buy an Italian bond today when you can't be assured of ECB support, and when US rates are rising, it might be on a risk-adjusted basis, much more attractive?

GOVERNOR MARK CARNEY: Well, I'm not going to give investment advice in general and certainly not to this room.

VICE CHAIRMAN GLENN HUTCHINS: You know where I'm going.

GOVERNOR MARK CARNEY: Yes, I know. I know where you're going, but...well, I'll say a couple of things. First is that let's acknowledge, as you would, why is the Fed on the path they're on? And they're on the path they're on for fundamentally, good, positive reasons.

VICE CHAIRMAN GLENN HUTCHINS: That's good news.

GOVERNOR MARK CARNEY: Yes, it's good news. The strength of the US economy, you know, potentially a 4% annualized quarter, this quarter, and the return of both wage growth and with that, a firming of underlying inflation, so fundamentally good. Now, like anyone, like any other central bank, they have their challenges in calibrating and looking forward, and I have every confidence that they'll get it absolutely right – as they do of us, because it's this tight mutual admiration society amongst central bankers. But alongside this, I'm going to make two other points if I may, one is that you alluded to balance sheet normalization. And it is a big swing in terms of the flow between, if you take the G4 central banks and include the Bank of England in that, you look at the flow of fiscal policy. You know, for the last four years, basically no net debt added between Europe, Japan, the US, and the UK because the purchases, not evenly spread, took it all out. Now, we flip to a trillion, roughly a trillion this year, probably a trillion five, maybe almost two, next year of net debt added.

VICE CHAIRMAN GLENN HUTCHINS: That's without that buyer...

GOVERNOR MARK CARNEY: Without that buyer. You know that's a big swing. And it's being done for the right reasons and it's positive development, but the market has to adjust to that. In terms of whether it's Italy, you know, or a large corporate credit, or emerging market sovereign, why would you, you know, why would you buy the asset? I mean the first question is, why would you buy the asset, is are they going to pay it back? I mean again whether it's a bank or corporate or, you've got to make that fundamental credit judgment. And, of course, there is, I mean I'm telling you this, but there's a risk with everybody in terms of likelihood – from the United States down to the smallest issuer out of a volatile emerging market – and you have to make that judgment. The judgment shouldn't be based on whether or not the central bank is going to be there to take you out. Now there may be a reason for the central bank to be in that market, but we're moving back to a world – and this is fundamentally good news – where fundamental credit analysis, thinking through the cycle, recognizing there's an economic cycle and the financial cycle comes back on top of that, where those judgments, those skills, those judgments are going to increasingly have to be made, as opposed to quasi-emergency policies of central bank providing that support. So, yes, that makes it a little harder. It makes those judgments harder. But it will bring back a discipline to the market that's welcome

VICE CHAIRMAN GLENN HUTCHINS: You talked in your remarks about, the quote I wrote down, "when it comes to financial stability, success is an orphan." By the way, I'm going to steal that. "As memories fade, complacency sets in." And you talked about future financial crises, the four different dimensions. But aren't there, couldn't one argue that there are financial crises occurring in the world today, right now – places like Argentina, Turkey, and South Africa?

GOVERNOR MARK CARNEY: Yes.

VICE CHAIRMAN GLENN HUTCHINS: And talk a little bit about how the pressure on emerging markets from the capital flow reversals that are coming from these dynamics that you're talking about.

GOVERNOR MARK CARNEY: So, that's, I mean that's one of the biggest – in my judgment – one of the biggest macro questions right now is the question of, so we've seen this tightening in financial conditions, I think it would be acknowledged that in the first two countries on your list, that there were some domestic factors, some idiosyncratic factors that made things worse as opposed to generalized. But we're now seeing, as we've always seen with Fed tightening cycles, that there is an element of capital flow reversal, that the tightening in financial conditions for emerging markets is more than one-to-one than the tightening in the United States. Normally the tightening in credit markets is more than one-to-one than the tightening with the underlying. There has been a lag for this happening. This has been an unusual tightening cycle and it's taken a while for them, but now it's started. It's likely to continue. And we have seen capital flow reversals. And one of the questions, which I raise and don't fully answer, is how, given that all the net lending flow was effectively out of daily liquidity – you know, mutual funds and others, ETFs, others, into emerging – when that pulls back, does that amplify the normal dynamics that you expect to see? So, that is, in many respects, it's a natural development. It's a product of the way the system is, the way, as an individual emerging economy you lessen the risk on that, and a number of them have done this. It's better to have borrowed into your own currency. It's better to have a flexible exchange rate. It's better to have a proper macro framework, inflation-targeting framework, credibility of your institutions. And most of the big ones do have that. But it's a test. And the macro question, apart from those individuals, you know, these are economies that 15, 20 years ago, Latin American debt crisis I mentioned, 20 years ago, we were talking less than 40% of global GDP. Well, now it's 60% of global GDP. And so the spillover from the US and then the spill-back to the core, to the US, will be, how material will that be? And it's, as yet, unanswered, but it is a consideration. And I think the Fed has acknowledged this and takes it into consideration. Not because of some global benevolence, they're not taking on the problems of emerging economies, but they're recognizing the greater inter-connectedness of the system.

VICE CHAIRMAN GLENN HUTCHINS: So, I think, Barbara, we have time for one more question? One last question. Okay. So many asked, this has been a fascinating conversation, so much we could talk to you. But you highlighted four key potential risks looking forward. I thought your remarks were very useful in terms of looking forward rather than looking backwards. And you talked about China, daily liquidity on the assets under management, cyber, and leverage lending. But you've also talked separately about climate change and you're, I think, unusually – particularly for a central banker – vocal about that issue and the potential "catastrophic" impact it could have on the financial system. Do you want to talk a little bit about...

GOVERNOR MARK CARNEY: Yes, well, and Bob Steel is here who is Chair of SASB, so he knows this better than I do, but from our perspective, from a, so, a couple of points of context. First, the Bank of England regulates the fourth largest insurance sector in the world. We regulate Lloyd’s of London. So we see property and casualty, reinsurance, we see this. The best risk managers of climate change risk are the reinsurers and the P&C insurers. They see it every day. They change the pricing and they change the coverage. Okay, so we see it. For the core of the system, banks, and the system as a whole, the biggest risk is not physical risk – the manifestation of a hurricane or the impact of extreme weather or unpredictable weather on supply chains, although that is a risk. The biggest risk is the transition from here to the future and particularly the transition from a high carbon to a low carbon economy, right? And is that transition going to happen late? Is there going to be a Minsky moment in climate? Or is it going to happen relatively smoothly? The key component for it to happen relatively smoothly is not for regulators to start dictating to asset managers or banks or others how to manage climate risk in the future. But it’s for those institutions to have the information they need to make a judgment about who is managing this risk, who is not? What their current footprint is? What it could be in the future? Where they see opportunities and where they don’t? And under Michael Bloomberg, the Task Force for Climate-Related Financial Disclosures, which is entirely private sector, has come up with the disclosures that they think companies should disclose. As of today, there’s $100 trillion of assets backing that disclosure, so 25 systemic banks, eight of ten of the top asset managers, Glass Lewis and ISS is the proxy firm, and on and on, sovereign wealth funds, pension funds saying we want this disclosure. And our point is, as a regulator, is we want a market in transition because some people think it's a big issue, others thing it's less of an issue. Some people think governments are going to more or less come through on their commitments. Others think policy will lag. But you don't have an ability to express that, those views, as you want to in a market until you get the proper disclosures. So our job has been to get that disclosure out there. There has been tremendous progress under Mike's leadership. The private sector has picked this up. Now the asset side is looking for it. And if I can make one last point, which is a point for the judgment of people like yourselves and others in this room and beyond, is that one of the questions is, you know, this whole sort of movement towards long-term value creation – you think about BlackRock's initiatives, Vanguard's initiatives, other initiatives around this, and the question is, okay, is there a correlation between managements and firms that think about structural issues like climate, like the impact of artificial intelligence, like demographics, like the emergence of China, other, is there a correlation between that and creating long-term value? There's a big chunk of the market that thinks there is. And this is part of the way to get the information to see that.

VICE CHAIRMAN GLENN HUTCHINS: I think it's lunchtime. Mark, thank you very much. Well done. (Applause)

GOVERNOR MARK CARNEY: Thank you. (Applause)