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with

THE GOVERNOR OF THE BANK OF ENGLAND

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Heard in Public

Questions 1 - 18

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3.35 pm

Witness: the Governor of the Bank of England

Members present

Lord Hollick (Chairman)
Baroness Blackstone
Baroness Bowles of Berkhamsted
Lord Forsyth of Drumlean
Lord Griffiths of Fforestfach
Lord Lamont of Lerwick
Lord Layard
Lord May of Oxford
Lord Sharkey
Lord Teverson
Lord Turnbull
Baroness Wheatcroft

Examination of Witness

Dr Mark Carney, Governor of the Bank of England

Q1 The Chairman: Governor, I welcome you to the House of Lords Economic Affairs Committee. I believe that you have an opening statement, which we would very much like to hear. Then we can move to questions.

Dr Mark Carney: Thank you very much, Chairman, and thank you for the invitation. I begin by expressing my appreciation to your Lordships for your debate, scrutiny and improvements to the Bank of England and Financial Services Bill, which, as you know, is continuing its passage through the Commons, will reinforce the transformation of the Bank that was begun by the Financial Services Act 2012. It does so by placing the Bank's three main policy committees on the same statutory footing, by streamlining the MPC's meeting schedule, and by further enhancing the transparency and governance of the Bank's operations. This legislation will ensure that the institution can operate more effectively as One Bank to promote the monetary and financial stability of the United Kingdom. That is crucial because, in a challenging global environment, it is more important than ever that the Bank co-ordinates its microprudential, macroprudential and monetary policies.

This afternoon I should like to expand briefly on this general point by giving three specific examples where the Bank's policy functions act in a complementary fashion to achieve our objectives. First, they address the vulnerabilities in the buy-to-let market. Secondly, they set

the countercyclical capital buffer. Thirdly, they manage risks associated with the referendum on the UK's membership of the European Union.

Starting with buy to let. The Bank's Financial Policy Committee is mindful that there is a long history of rapid credit growth becoming associated with deteriorating underwriting standards and rising systemic threats. Growth in mortgage lending is now being driven solely by the buy-to-let sector. Buy-to-let mortgages increased by 11.5% last year and now account for 17% of the stock of total secured lending, twice the proportion of a decade ago. As a consequence, the PRA has just reviewed the plans of the 31 top lenders in the industry, who represent over 90% of total buy-to-let lending.

The review revealed that some banks were applying weaker standards and highlighted the risk that more might do so to meet their aggressive growth plans. In response, the PRA has clarified its expectations for buy-to-let underwriting standards and introduced new guidelines for the minimum stressed interest rate to be used when lenders test affordability. Given the combination of this prudent reinforcement of underwriting standards and major tax changes now coming into force, the FPC has decided to take no further action at this stage but will continue to monitor potential threats to financial stability from buy to let.

The second example of the synergies within One Bank is the setting of the countercyclical capital buffer, or the CCyB. Over the past few years, the FPC has assessed the capital needs of the banking system and clarified: first, the amount of capital that our banking system requires given the risks it faces; and, secondly, how that capital should be allocated across different types of firms and risks.

In reaching those judgments, the FPC carefully considered the costs of the crisis, the benefits of the reforms made in response, and the results of two years of severe-but-plausible stress tests. The FPC has made it clear that the UK capital framework will involve the active use of macroprudential tools, including the CCyB. Buffers make the capital framework more efficient, lower borrowing costs for households and businesses, and create the right incentives for banks to increase resilience. The countercyclical buffer will be built up as risks increase and released to ensure the banking system can withstand stress without restricting the supply of credit to the real economy. With UK financial conditions shifting out of the post-crisis repair phase, the FPC has indicated its preference to raise the CCyB gradually to the region of 1%. To that end, the FPC raised the CCyB rate to 0.5% of risk-weighted assets in March.

The FPC's decision was informed by discussions with the Bank's other policy committees. The FPC worked closely with the PRA Board to avoid duplication between the risks captured by current supervisory capital buffers and the CCyB. Joint meetings with the MPC considered the impact on monetary policy. The FPC's approach balances the desirability of a higher capital buffer with the likelihood that gradual increases will reduce the costs to the economy and maintain appropriate monetary flexibility.

On the third example, the referendum, the Bank of England has not made, and will not make, any overall assessment of the economics of the UK's membership of the European Union. At the same time, the Bank must assess the implications of the UK's membership for our ability to achieve our core objectives of maintaining monetary and financial stability. The Bank has a duty to report our evidence-based judgments to Parliament and the public. This is the fundamental standard of an open and transparent central bank. Assessing and reporting major risks does not mean becoming involved in politics; rather, it would be political to suppress important judgments that relate directly to the Bank's remits and which influence our policy actions. These policy actions include developing, and if necessary implementing, contingency plans. As with the Scottish referendum, we will communicate as much as is prudent about those plans in advance of any risk materialising and as comprehensively as possible once risks have dissipated.

The Bank published a detailed, comprehensive report last year that reviewed the how EU membership affects the Bank of England's ability to achieve its objectives. A core conclusion of that report was that, to the extent to which it has increased economic and financial openness, EU membership has reinforced the dynamism of the UK economy, making it more resilient to shocks and able to grow rapidly without generating inflationary pressures or financial stability risks. This judgment is grounded in extensive evidence, including the fact that the UK's trade intensity accelerated both upon joining the European Community and following the creation of the single market, and that EU countries have seen the largest increase in trade intensity among advanced economies over the past 15 years. Gravity model analysis shows that EU membership contributes positively to trade flows between member states after controlling for the size of these countries and the distances between them. The reality is that since the establishment of the single market, FDI inflows have increased faster in both the UK and the rest of the EU as a percentage of GDP than in the US and the rest of the world, with the UK being the largest recipient in the EU. Survey evidence indicates that,

as a result of FDI, UK firms report the greatest extent of positive technology spillovers in the G7.

Finally, there is extensive evidence that while being a member of the EU, the UK has retained among the most flexible product and labour markets in the G7.

The report's second major conclusion is also grounded in evidence and derives from the more general reality that greater economic and financial openness means that the UK economy is more exposed to shocks from overseas. In recent years, as a result of closer integration with the euro area, this may have increased the challenges to the UK's economic and financial stability. The euro-area crisis likely had a material impact on UK GDP growth through a number of channels, including lower demand for our exports, weaker domestic activity because of greater uncertainty, and lower asset prices, as well as higher financing costs for our banks. Overall, by the middle of 2012, the level of UK GDP was materially lower than we had expected at the time of the Bank's May 2010 Inflation Report, with the euro-area crisis likely to account for much of this demand shortfall¹. As an example, around two-thirds of the unexpected weakness in UK-weighted world trade between 2010 and the middle of 2013 can be directly accounted for by developments in the euro area.

Within this broad context, the FPC concluded at its most recent policy meeting that the threats stemming from the forthcoming referendum are "the most significant near-term domestic risk to financial stability". In particular, the Committee noted that the pressures associated with the referendum have the potential to reinforce existing vulnerabilities in relation to financial stability, including risks emanating from the very high current account deficit, from property markets, from market liquidity and from possible negative spillovers to the rest of the EU.

Some elements of these risks may be beginning to manifest. Since November, the trade-weighted value of sterling has fallen 10%, with more than half of that occurring since the MPC's last forecast in February. The cost of buying protection against a marked depreciation of sterling has risen notably, with sterling risk reversals falling to their lowest level in over a decade. UK short-term interest rates have fallen by around 60 basis points since November. The equity prices of UK-focused firms have underperformed those with a more global orientation by about 10% since the middle of February. The Bank's indicator of uncertainty has increased by 1.5 standard deviations, which on past relationships would be associated with a marked reduction of the rate of GDP growth. Commercial real estate transactions

have fallen by around 40% in the first quarter across the country and by around 60% in London.

Such developments reflect a growing uncertainty about the UK's macroeconomic outlook. As the MPC has observed, there might be some softening in growth during the first half of 2016 as a result, but, given referendum effects, "the Committee is likely to react more cautiously to data news over this period than would normally be the case". A vote to leave might result in an extended period of uncertainty about the economic outlook, including about the prospects for export growth. This uncertainty would be likely to push down on demand in the short run. Uncertainty regarding the supply side of the economy might also increase, reflecting any alterations to product or labour market regulation, adjustments in labour flows or changes in the rate of technology adoption as a result of different arrangements governing foreign trade and capital flows.

A vote to leave could also have significant implications for asset prices. In addition to affecting the exchange rate, a rise in uncertainty could weigh on other asset prices, tightening financial conditions. A rise in risk premia, all else being equal, would depress activity.

Any positive impact of a depreciation on activity would need to be set against net negative impacts—whether on investment, consumption, exports or potential supply—stemming from its underlying cause. There is a range of plausible scenarios, including ones where the combined effects of the exchange rate move and its drivers on aggregate demand, aggregate supply and exchange rate pass-through lead to a lower path for growth and a higher path for inflation.

The MPC would have to make careful judgments about the net effects of these potential influences on demand, supply and inflation. Ultimately, monetary policy would be set in order to meet the inflation target while also ensuring that inflation expectations remained anchored. Whatever the outcome of the referendum, the MPC would use its tools to achieve its inflation remit and, more broadly, the Bank's policy committees would work in concert, as one bank, to promote monetary and financial stability. I thank you, Chair, for that opportunity and I look forward to your questions.

Q2 The Chairman: Thank you very much, Governor. The Committee would like to have your view on the analysis that was published yesterday by the Treasury, which concluded that the

UK would be permanently poorer if it left the European Union. Do you agree with that assessment?

Dr Mark Carney: If I may begin with a general comment, I would not conflate an analysis such as this with an economic forecast. There is a difference between a forecast such as those performed by the Bank's Monetary Policy Committee or the OBR for the purposes of fiscal policy, which forecast the economy over the course of the next several years. A variety of factors can influence those forecasts and a variety of shocks will inevitably hit the economy and change actual outcomes relative to the forecasts. The analysis that was published yesterday and similar analyses published by different groups look at the implications of a specific policy change—in this case, a big structural policy choice that could be made. It is valuable only for giving a sense of the direction of the impact and the order of magnitude of the impact.

That is a general comment, although I would add that that type of analysis is the type that is performed—and I think your Lordships see this type of analysis very frequently—on issues of tax, social policy or other types of policy that come through in terms of cost-benefit analysis. This just happens to be a macroeconomic variant of that—a shock minus control assessment.

The report came out yesterday and I read it last evening, so this is based on that. I did not audit the report and we did not participate in its development. Let me be absolutely clear about that. It is for the Treasury to answer for the assumptions and the analytic detail of the report. So the only other comment that I would make is that the analytic framework that was used, using a series of gravity models and then layering them through the NiGEM model, which is a model that we and other international organisations use to get the overall macroeconomic impacts, is to my eye a sound analytic process. The underlying economics of that analysis are consistent not just with our assessment in general of the impact of openness on the UK economy but, I would suggest, with the broad economic strategy that the United Kingdom has pursued effectively since the repeal of the Corn Laws. I will leave the details to the Treasury, but to me the broad approach makes sense.

Q3 The Chairman: Have you had an opportunity to look into the assumptions, and are you in a position to say whether you agree with the broad assumptions that underlie this model? In particular, the Treasury modelling assumes that a British exit would reduce the UK's

openness to trade and investment. Do you agree with those assumptions, which have been included in this modelling?

Dr Mark Carney: The issue with assessing the broad economics of a change in the UK's relationship with the European Union is that by definition one has to develop a counterfactual. There is a bit of a continuum, but the reasonable counterfactuals that have been discussed are: being a member effectively of the European Economic Area, as you know; having some form of bilateral trade deal, which one can base off existing ones, although one can make assumptions that it could be better or worse than existing ones; or reverting to WTO rules, which is the default if no other agreement can be made.

I think it is safe to say—in fact, it is virtually impossible to refute—that the degree of integration with the rest of the European Union will be reduced as a consequence of a renegotiation of the relationship. The question is the orders of magnitude. Obviously, that is a choice not just of the United Kingdom but also, in this hypothetical, of the remaining 27 countries, which would determine what is required in exchange for maintaining something approximating the degree of openness that currently exists. I will leave it there.

The Chairman: When you have had an opportunity to review the assumptions, will the Bank of England publish a commentary on those assumptions, particularly in so far as they refer to and have a bearing on challenges that the Bank may face in managing the outcome of the referendum?

Dr Mark Carney: We have no intention to provide a commentary on that report or other macroeconomic reports. We would have to address the consequences of whatever vote is taken, just as in the short term we have to assess and respond to some of the ramifications of the natural uncertainty around the outcome of the vote. But we do not have that intention, and I do not think that it would be consistent with our remit to provide a comprehensive commentary on this or another report, because in effect we would be making a judgment or providing a variant of our comprehensive assessment of the economic impact of the decision. The overall economic impacts in the medium term—and we should all be clear about this—go beyond the direct responsibilities of the Bank of England. So in the medium term, 10 years out, the Bank has the tools, the clear mandate and the independence—I am sure that it will have the personnel, although I will not be here 10 years out—to ensure that we hit the inflation target, if that is still the will of Parliament and the objective for monetary stability, promote financial stability in the United Kingdom, and

ensure the appropriate level of safety and soundness in the banking system. All those things can be delivered in very different, broader economic circumstances—different levels of employment, different levels of overall GDP, different incomes et cetera. We will just assess of the specific aspects related to our remit, which are pretty substantial but not comprehensive in terms of the broader economic judgments.

Q4 The Chairman: But in the months leading up to the Scottish referendum, the Bank made some very telling and important comments about the consequences of the independence vote, which had some considerable salience in the debate. In an area in which you have commented already, using the rather effective expression about the kindness of strangers on whom we rely to fund our trade deficit, is it not the case—as the FPC has said—that the outcome of the referendum could significantly increase the level of challenge for funding that deficit? What tools do you have to address that, what would you do to address that, and do you propose to continue to comment on that as you have already done?

Dr Mark Carney: This holds for the Scottish referendum and for this referendum. We will comment with respect to the most important issues affecting financial and monetary stability. In the case of the Scottish referendum, the uncertainty—confusion is probably a better way of putting it—about the ability of an independent Scotland to retain sterling and a very large financial system headquartered in Scotland was a financial stability risk and one for which we put in very considerable contingency plans, which were subsequently publicly disclosed. Those contingency plans included a significant amount of sterling cash being prepositioned in case there was a sharp spike in demand following a different outcome of that vote, and potential other emergency liquidity provision and steps to try to facilitate not just short-term liquidity but rapid redomicile of some Scottish institutions. There was a very clear financial stability issue there in our judgment, which, both with foresight but also very much in hindsight, was entirely legitimate.

So on the challenge that we face as a public institution charged with delivering financial and monetary stability, there are financial stability risks raised by this vote. There is the possibility that this will reinforce existing vulnerabilities in the economy. All economies have vulnerabilities. One of them in the UK, as you rightly note, is the current account deficit, which is at a historic high—at least as measured most recently by the ONS, at more than 7%. I think it is safe to say that it is running probably at a rate of around 5%, if you strip various things out and have a sort of smooth level. That is remarkably high for a large advanced

economy. That is the challenge, and I will get to the risk around the challenge, which is that the financing terms change on that current account, with increased costs to the economy and as a consequence of that is a sharp slowing of the economy. We are reliant on those who want to finance the spending and investment associated with that.

There are some positives related to our current situation, though. The current account deficit is not associated with a sharp build-up of private debt. That is one of the big warning signs of reinforcement, and that is not the case. Secondly, our liabilities are almost exclusively denominated in sterling, so we have right-way risk, if you will; if the pound depreciates, that reduces the liabilities. With respect to the structure of the Government's liabilities, the debt structure, as you are well aware, is long-duration, so there is not the rollover risk that is sometimes associated with sharp current account adjustments.

Suffice it to say that, related to that, part of the financing and a lot of the FDI in recent years has been into plant and equipment, but a notable amount has gone into commercial real estate. We recognise in the figures that I quoted that that has stopped in effect in the last quarter, which I would say with a great deal of confidence is not unrelated to the uncertainty around the referendum, until there is resolution to that. So the financing in the very short term has shifted from more foreign direct investment and longer-term investment to more of a drawdown of external assets, of which the UK has a considerable amount. That increases the risk profile of that situation.

So the short answer to your question, although it is too late to give a short answer to your question, is that we will comment on these risks when we have policy meetings, when they come up, but we will not make a comment during the official purdah period of the campaign.

The Chairman: In your fairly long answer, you did not indicate whether you thought that the risk to funding the deficit would increase dependent on the outcome of the referendum. Is that your view?

Dr Mark Carney: These are balances of probability, but the likelihood is that it would become more expensive to fund that deficit. As a consequence of that, and with a shift in the structure of it, the UK economy may for a period not be able to run as large a current account deficit, which means that there would be less activity in the economy: less growth.

The Chairman: But an increase in interest rates at such a time when the economy is slowing down anyway would be quite dangerous, would it not?

Dr Mark Carney: It would be unhelpful. It would be procyclical; it would reinforce the slowdown.

Lord Griffiths of Fforestfach: Governor, may I just come back to your answer to the first question? You very helpfully distinguished between a forecasting approach and what you described as a much broader cost-benefit approach. I have not read the document, but I have read comments on it, and one thing that rather surprised me—because you said that the broad approach made sense—was the key assumption that Brexit involves no benefits. The model simply looks at the costs but does not assess the benefits. Just from the comments from small business people that there is too much bureaucratic red tape, and so on, and excessive regulation, it would seem, when you say that the broad approach makes sense, that making the assumption that there are no benefits from Brexit is a pretty strong assumption to make.

Dr Mark Carney: I have three quick comments. First, it is for the Treasury to defend its analysis. Secondly, the assessment of those deregulatory benefits, because the UK is a total master of its regulatory construct, can be made—and I would suggest that people would set those against the parameters that have been shown in the Treasury report. Certainly, the Bank of England is not going to do that.

However, there are two considerations in doing that. First, despite being a member of the European Union, the actual regulatory burden in the United Kingdom is remarkably low for an advanced economy. I say that as an outsider coming here—and do not take my word for it, as it is detailed in our report. Product market regulation, ease of starting a business, degree of competition and ease of foreign investment are all best-in-class measures, or second with the United States, and markedly superior to the levels in the rest of the continent. The only exception in the OECD, interestingly, is the Netherlands. So there is quite a span in terms of regulatory burden in the single market. So the starting point is different. This is one of the great advantages of the United Kingdom, obviously, and there are many other advantages. The reasons for the dynamism are of course much broader than just being a member of the European Union, but you are not starting from a sclerotic, overburdened economy. That is not to say that there are not advantages that could be had.

The last point that I would make is that the judgment has to be made about those advantages, relative to what might be required to retain certain degrees of access to the European Union market—and that is a choice, because as the distance increases from the

current status quo to whatever regulatory framework one would want, market access may be affected. It has implications for trade deals and others. That is particularly relevant in financial services.

Q5 Lord Lamont of Lerwick: Governor, I am sure you would agree that, when there is political debate of this kind going on, it is extremely important that officials and spokesmen for institutions are very careful with their words. I am a bit worried that there is a danger of a self-fulfilling crisis being created by some of the language that is being used, not by you but by spokesmen for different institutions. In the study that the Government produced yesterday, which portrayed a 6% fall in GDP, it is in fact the difference between two increases in GDP over 14 years—the difference between 37% and just over 31%, which is a 0.3% or 0.4% per annum difference. If that is the likelihood, and you have said that you agree that that is the order of magnitude, could I put it to you that words such as “shock” or “severe damage to the UK and the world economy” are utterly inappropriate and exaggerated?

Dr Mark Carney: I have two points. First, you are absolutely right in your characterisation of the study. It gives a difference between two growth rates, a level difference of where the economy would be in 2030—I think that is the terminal year. So the value of it is that it gives a sense of direction and whether there is a difference, and some sense of order of magnitude. To go to your question, that has accumulated over time, it is not a shock, and the question is what else could be done that would mitigate that increase.

There is a short-term challenge, which I do not believe is assessed in that report, at least not in my reading, which is the initial path of the economy during the period of renegotiation, before it gets to this steady-state level of growth. I shall use the 6% difference in the level of growth, because it is the one used. What happens post-vote, until the negotiation is settled, and what the path of the economy is, will be influenced by a number of things, including potentially the point the Chairman raised about financing costs.

To get to your broader starting point about the message, the Bank of England, by grace of Parliament, has considerable tools. We have clear remits, and one of those remits is financial stability. We are undertaking contingency plans, as you would rightfully expect. We have a liquidity facility put in place, and we have announced additional auctions, both in sterling and foreign currency. We are going through them with all our banks to make sure that their contingency plans are appropriate, as best as one can tell, and we have stress-tested those

institutions over the past few years, not against this shock per se but against elements of a related shock. So I can sit here and say, as well as one can, that we think that the capital position of these institutions is resilient to quite large shocks, whether they are domestic or external. Make no mistake: this is a resilient economy and resilient financial system. There could be various macroeconomic outcomes, but we are looking and will continue to work to ensure that the financial system does not amplify an underlying economic trend.

Q6 Lord Lamont of Lerwick: I will take that as agreement that the phrases “severe damage” and “shock” are inappropriate—those were the words used by the IMF.

I wonder whether I could ask you about immigration, and the effect on the economy, which is also relevant to the EU debate. On the “Today” programme in May last year, you said that you wanted to dampen down the idea that net migration was a negative force on wage growth, and you referred to net immigration being 50,000 a year. I think that was just a slip, because as you know it was more like 300,000. But that was what you said—that you wanted to dampen down that idea. That seemed to contrast with what Andy Haldane said when he came before the Treasury Select Committee and quoted studies by Dustmann, Frattini, and Preston, showing that a 1% increase in the share of the working population taken by immigrants led to a 0.6% decline in the pay of the 5% lowest paid. Were you seeking to argue that the supply of labour had no effect on the price?

Dr Mark Carney: I have three points. First, I shall double-check the transcript, as I do not recall saying 50,000, but I am well aware of what the net migration figures are in the country.

Secondly, part of the point in that interview, as I recall, was dimensioning the scale of net migration at that time relative to what was really happening. The biggest thing in the labour market since the crash has been a huge positive labour supply shock, because older workers, particularly women, have stayed in the workforce longer. That has absolutely swamped the impact of net migration.

Lord Lamont of Lerwick: I think it was 500,000 compared with 300,000.

Dr Mark Carney: No. Well, I am happy to provide the Committee with the relevant figures. To get to the core of your question, as we move forward the effect of the increased participation of older female workers has been exhausted, and net migration becomes more important. On the issue of the overall impact on wages of an increase in net migration, the MPC’s view, which was supplied in the Inflation Report of, I believe, May last year—I can

double-check that and provide it—with an increase in the labour force of 150,000, which is roughly, given participation rates of net migrants, 200,000 to 210,000, the impact of further increases in net migration on both wages and the inflation rate is around 0.1% percentage point out to year three. The reason is that the overall macroeconomic impact of that is that these workers are employed, and by and large to a higher proportion than domestic workers, and they tend to spend all their wages, largely in the United Kingdom, so there is a net multiplier impact. There are effects in certain cohorts of the market, but as a whole the effects, from the perspective of the Bank and monetary policy, are not material.

Lord Lamont of Lerwick: You referred in your remarks to trade intensity and market access. Is it not a fact, however, that Switzerland, for example, is more integrated with the European economy than the British economy is, despite being outside the EU? It exports five times per capita more to the EU than we do, and even if you discount Switzerland as being geographically close, if there is so much difficulty with market access how do you account for the fact that the United States, thousands of miles away, sells more goods to the EU than we do, and even in services is very near to selling the same as the UK?

Dr Mark Carney: The obvious point is the scale of the US economy.

Lord Lamont of Lerwick: But, still, to sell more—

Dr Mark Carney: The orders of magnitude are entirely different. The evidence is in the scale of exports, controlling for the size of the economy and controlling for distance—it is true around the world that you tend to trade more with your neighbours because of historic ties, things build up, the ease of doing business—whether or not you have a trade arrangement. If you control for those factors, which is what these gravity models produce—

Lord Lamont of Lerwick: Yes, I know.

Dr Mark Carney: Exactly. The scale of the trade is much higher within the EU, and that very much holds for the United Kingdom.

Lord Lamont of Lerwick: This is the last part of the question. Taking services, where it is supposed to be all about regulation, and regulation, unless you get co-ordination, is so difficult, it is none the less quite a striking fact, which I do not think can be explained away just by the scale of the US economy, that in services they export almost as much as we do.

Dr Mark Carney: I personally do not find it surprising that an economy that is more than five times our scale and that is joint with the UK in financial services but financial services that

are very much in technological data, IT and creative services, exports in sterling value something approximating to what we do. I am afraid that I do not find that surprising.

The Chairman: Lord May, you had a supplementary on this.

Lord May of Oxford: It is not supplementary; it is complementary, and slightly narcissistic in a way. I have a question about complexity in banking financial systems, and it derives from my background. I started as a physicist and became an ecologist. When I first encountered ecology there was a conventional wisdom that complex systems are more robust. That struck me as unlikely, and I showed that it was exactly the contrary. When 2008 came along, I thought that there were some parallels between the complexity in financial systems and complexity in ecological systems. I had got to know your predecessor, Mervyn King, while I was the Chief Scientific Adviser to the Government, and I asked him who would be a good person to talk with about these ideas. He sent me to Andy Haldane, and we wrote a paper on stability and complexity in model financial systems, which leads me to my question, because I think that having complicated financial systems invites problems, yet it seems to me that that is not a particularly active principle in the banking system. Am I right or wrong?

Dr Mark Carney: Meaning that it is not an active principle to reduce complexity in the banking system? It has been. I recall the paper and am certainly familiar with Andy's and Mervyn's thinking—

Lord May of Oxford: Super bloke.

Dr Mark Carney: Both are, and well worth listening to on a huge range of subjects; we just had another example from Lord Lamont.

In terms of regulatory reform, there are a series of reforms that have looked to reduce complexity in the system. Ring-fenced banking is an example of something that reduces the complexity—and this Committee influenced it heavily—of the provision of traditional banking services to households and businesses in the United Kingdom. There is some complexity in executing that, but the core ring-fenced banks that are being created are much simpler institutions.

Central counterparties are an example. We pushed their development to reduce what were incredibly complex bilateral trading relationships between financial institutions; there was this web of bilateral exposures. That is why Bear Stearns was relevant, and even Lehman Brothers was relevant; it was not that they were big per se but that they were connected to a bunch of other institutions and people did not know exactly what those connections were.

By having trade settled through central counterparties, which is what we pushed, you can detach somebody from the node. You have to make sure that that central counterparty is robust; I will not go into detail.

Another thing that has come out of the type of work that you discussed—Andy and Mervyn were very much proponents of this, and we had stumbled on this in Canada—is the leverage ratio, which is a very simple cross-check of a complex system and is the Basel risk-weighted approach. Those are three examples.

I will finish by noting the progress. Since 2008, interbank exposures in the system—the exposures of banks to each other—have come down by two-thirds. So that sort of complexity is being pulled out. It is still valuable for banks to trade with each other but not in an over-reliant way.

Lastly, and I defer to your expertise, I would make a distinction between complex systems and diverse systems. The value in the financial system is to have greater diversity, so we are trying to build up true, resilient market-based finance using asset managers, even—and it is very early days—in the world of FinTech, peer-to-peer lending and other things, as examples of different channels of finance, so that if you lose part of the system you do not lose the system as a whole.

Lord May of Oxford: Thank you very much.

Q7 Lord Forsyth of Drumlean: Governor, I have a couple of questions, which you can probably deal with in yes/no answers, I guess. You told the Commons Treasury Select Committee that the threat of the Chinese slowdown was a greater risk to the economy than the EU referendum. Do you still stand by that?

Dr Mark Carney: Yes. In the medium term, the issues in China are considerable, and it very much depends on how they are handled by the Chinese authorities. In other words, if we get a sharp adjustment, a sharp shock, a sharp change in policy, the amplification channels would be considerable.

Lord Forsyth of Drumlean: Do you agree that the Prime Minister's renegotiation in Europe failed to secure the powers for national regulators and supervisors that you called for last year?

Dr Mark Carney: No, I do not agree with that. I believe that the relevant bits of the economic governance text of the so-called new settlement address the issues that we raised.

Lord Forsyth of Drumlean: Okay. The Bank of England said last year: “the need for national regulators and supervisors to have the flexibility in applying EU rules to address the particular risks they face has, in the main, been respected”.

Dr Mark Carney: Yes, that is one of its conclusions.

Lord Forsyth of Drumlean: The renegotiation agreement states: “The single rulebook is to be applied by all credit institutions and other financial institutions in order to ensure the level-playing field within the internal market”. It further states that the UK’s ability to regulate its own banks is “subject to requirements of group and consolidated supervision and resolution” and is “without prejudice to the development of the single rulebook and to Union mechanisms of macro-prudential oversight for the prevention and mitigation of systemic financial risks in the Union and to the existing powers of the Union to take action that is necessary to respond to threats to financial stability”. So how can you say that that is consistent?

Dr Mark Carney: Because under the single rulebook we have flexibilities in the application of banking regulations. For example, we have a leverage ratio; there is no leverage ratio on the continent. We have a different form of what is called AT1—alternative tier 1—capital, which in our judgment is a more robust and resilient form. It has a higher trigger and is triggered more rapidly. That would be another example. An issue that is still subject to negotiation in Europe but is very important is the approach to so-called structural reform, which effectively means for our purposes that the ring-fencing of banks is different.

Lord Forsyth of Drumlean: Okay. Do you agree with the Chancellor when he said that Brexit would result in higher mortgages? Did he consult you before making that assertion?

Dr Mark Carney: He did not. He is not a member of the MPC—I should reinforce that.

Lord Forsyth of Drumlean: I thought that was your job.

Dr Mark Carney: I notice that he appointed someone to the MPC last week, but he did not appoint himself.

In terms of the path of mortgage rates, there are two variants, as you well know. The first is the path of the bank rate. There are scenarios, as I said in my opening remarks, where we could have lower GDP and higher inflation—a combination of a variety of factors—and we can get into that if you wish. That could have implications for the path of the bank rate—in other words, a higher bank rate. The second factor, of course, is bank funding costs, which ultimately are passed on to borrowers, including mortgage owners. To the extent to which

risk premia increase following the vote, bank lending costs would likely increase—there would likely be a pass-through of that. So there are two potential factors that work in the direction of potentially higher mortgage rates, but I do not need to make that judgment at this stage, so I will not.

Lord Forsyth of Drumlean: One final question: do you agree with your predecessor, Lord King of Lothbury, who warned that the eurozone might explode? What would you forecast would be the consequences of a failure of the eurozone for the UK economy if we were in and if we were out?

Dr Mark Carney: I would not quite use that expression, which will not surprise you, to go back to Lord Lamont's comments earlier, but I would agree with the thrust of that, and I would agree with Mario Draghi in saying that the euro area is unfinished business.

On the question of the implications for the United Kingdom, whether in or out, I just make the following observation. At present, almost half—to the best of my knowledge, 46%—of UK foreign direct investment is in the euro area, and 44% to 45% of UK trade is with the euro area. We all know that the UK is not a member of the euro and never will be. The exposure is the direct channel, the investment channel and the channel through global financial markets. In order to reduce that exposure, there needs to be a substantial diversification away from the euro area. That will likely take some time. The resolution of the euro's prospects—in other words, the determination of whether it is going to be a resilient currency area—will likely be determined before there is sufficient rediversification, if you will, or reorientation of the UK economy. I went back to check the stats on UK trade with the euro area since 1840, which is as far back as reliable statistics go. The average is about 35%. So there is diversification, but the ability to insulate this economy as a major economy and as a neighbour of the euro area will be somewhat challenged.

Lord Forsyth of Drumlean: But surely you agree that London would remain a premier financial centre outside the EU.

Dr Mark Carney: I am not sure that follows from what I just said. The prospects for the City of London are based on a variety of factors. Unquestionably, this is the greatest pool of human capital, in my opinion, in financial services. There are tremendous advantages to that. Its position as the leading international financial centre is undoubtedly reinforced by the UK's membership of the European Union and the ease of access to the euro area that is afforded, but it is not solely based on that, so it will continue, in a different form and

potentially to a different order of magnitude—in other words, smaller—to retain a position of great importance. But I am not sure that the adjective “pre-eminent” would necessarily apply.

Baroness Blackstone: Can I just push you on that? Are you saying that, if we were to leave the European Union, London would become a less significant, important and dominating financial centre than if we stayed in it?

Dr Mark Carney: It would depend on the relationship that was negotiated. It makes it less likely that London would retain its current position. As in many of these things, it would very much depend on the negotiations. If there were a negotiation that, at one extreme, effectively accepted rules that would henceforth be set solely in Europe, without the influence of the United Kingdom at the table—if we just accepted how the single rulebook evolved both in banking and capital markets—then arguably we would retain it. But that is an extreme and simplistic assumption. Those who did the negotiations would have different views and obviously could put them forth, but the position is unlikely to be enhanced.

Q8 Lord Griffiths of Fforestfach: Governor, in connection with Lord Forsyth’s question, you said that you had sympathy with Lord King’s views and that, even though “explosion” might be a colourful word, nevertheless there were problems. But you also said that you agreed with Mario Draghi’s statement that there was unfinished business in the monetary union. What do you think the unfinished business is that would not lead to greater difficulties or, in Mervyn’s word, an explosion?

Dr Mark Carney: There are two major elements. The first is to increase the degree of private risk sharing. You basically have to have risk sharing across a currency area in order for it to be resilient, and there is inadequate risk sharing in the euro area at present, so there is a series of national pockets of risk. The extreme of that was at the trough in 2010-11, when the banking union fell apart and pulled back the national boundaries. It has now been rebuilt. A series of institutional measures have helped to do that. Those are measures that are helpful and in effect work with the UK banking system in parallel. That is the “in the main” comment.

There is no true capital markets union within Europe. That needs to be built. It starts from securitisation and includes a proper private placement market akin to, say, a 144A debt market in the US. A series of other measures need to be put in place, which could include things like a European Companies Act and ideally would have an element of a common

bankruptcy code or consistency across bankruptcy, so that you could seamlessly trade and you would effectively be making company fundamental valuations as opposed to institutional or legal judgments layered on top of those fundamental valuations. That is a project that Lord Hill is leading at the Commission. Importantly, it is a project at the European Union level. It is necessary for the euro area, in my judgment, for this to be successful and to be built over time. It will benefit the United Kingdom, given London's position as the pre-eminent financial centre if it comes to pass, so it is in our interests as well as the interests of the euro area—there is a synergy or alignment of interests there. That is the easier of the two elements, even though it is technical and difficult and takes time.

The second element is the harder, which is that there needs to be a greater element—in my judgment, in Mervyn's judgment and I think in Mario Draghi's judgment—of fiscal risk sharing, that's the public risk sharing, within the euro area. There are various ways to do it and there are big political judgments that are necessary, but in my view it needs to come to pass.

Q9 Lord Sharkey: I would like to ask a couple of questions about financial stability, following on from some of what you have been saying.

First, what challenges to the financial stability of the United Kingdom do you see from the further integration of the euro area?

Secondly, you talked a moment ago about the fact that the Bank has the tools to ensure that you hit the inflation target, provide financial stability and ensure appropriate levels of safety and stability in the banking system. Andy Haldane has spoken quite a lot about life after the zero lower bound and the kind of tools that central banks might need to ensure stability after that, and we have already seen several large economies running negative interest rates. What is your assessment of the effects of that kind of policy so far? Do other new tools need to be made available to ensure the kind of stability that you are talking about? For example, you will know that Deutsche Bank published a very helpful pamphlet last week on helicopter money. Could we have your views on that as well?

Dr Mark Carney: We have touched on a few of the risks of remaining and the euro area, so let me try to draw them together. The first is that we are exposed to shocks from the euro area itself, and that because the euro is “unfinished business”, to use that phrase, the likelihood of a shock there is higher than it otherwise would be. All economies suffer shocks, but the fact is that work needs to be done to finish the banking union, to make progress on

capital markets union, and ultimately to provide some element of fiscal risk sharing. The risk—this goes to some of Lord Forsyth's questions, and was identified in our report of October and, in our view, addressed by the economic governance bit of the new settlement—is that the process of deepening integration that is necessary for the euro area is also applied to the United Kingdom in ways that restrict our ability—looking at it from the narrow perspective of the Bank, although that is wide enough—to do our job of delivering financial stability and having the flexibility that Lord Forsyth raised.

It is absolutely crucial, in our view, to recognise that this is a multi-currency union not just for the moment but in perpetuity, that financial stability is a national responsibility, that there will be different degrees of integration—or harmonisation, to use the language that is used—particularly for those who are members of the single currency versus those who are not, and that national authorities must have the appropriate flexibility in the discharging of their tools. So the two risks relate to the shocks and the tools, and I will not repeat my comments on our ability to diversify away from the former.

Abstracting from whether the risk comes from Europe or China or wherever, if some risk hits us that has an implication for the path of inflation, for the need for additional monetary stimulus and the Bank's options—I preface this, for the avoidance of doubt, by saying that we are talking absolutely in the hypothetical, so this is not in any way presaging any contemplated policy action by the Bank; I say that not for your benefit but for other people's benefit—the Bank has made it clear that we think that we have conventional monetary policy room. In other words, the Bank rate is at 50 basis points, and we think that it could be moved closer to zero. That was not the case during Lord King's time, partly because the building society sector was not adequately capitalised then—the nature of their mortgages—but things have changed there so we think that we can move it to approaching zero.

We have not indicated that we have an appetite for negative interest rates. I note that we have conventional unconventional policy options—in other words, asset purchases of gilts and potentially of other assets, if that were to be appropriate. If we were to do the latter, we would structure things in a way that we were not making the credit allocation decision, because obviously you do not want your central bank making those determinations, but we would be buying assets in order to provide ultimate stimulus to the economy.

On the last element of your question, on helicopter money, I am not a believer in the concept. I could give a series of reasons, but I will stick to a purely economic one. In effect, what is being asked is that a central bank cancels the debt that is purchased from the Government in order to make this truly, if you will, helicopter money. In doing so, the bank puts a hole in its balance sheet and moves into negative equity. In order for that stimulus to be there in perpetuity, it has to hold negative equity for ever. In other words, the Government never have to recapitalise the central bank, even though banks cannot run with negative equity. Secondly, we would create a fundamental problem with the outstanding reserves that we have in the banking system. We have reserves of £375 billion sterling in the banking system, on which we must pay interest. That is not a problem at present because the Bank rate is so low, and it would not be a problem at the time of helicopter money because rates would be as low as they could go when you would go for that option, but it would become a problem when you started to take away the stimulus, the economy recovered and the policy actually succeeded. We would not have an asset on the other side to meet that liability, and the only way we could meet that liability would be by creating more of that liability, and so you would end up in a compounding Ponzi scheme, which exacerbates things. There is no way of structuring around that.

Q10 Lord Griffiths of Fforestfach: Governor, it has been suggested that the real problem is not, as we heard in the crisis, that the banks are “too big to fail” but that they are “too complex to manage”. I must say that I was very surprised at the language used by your predecessor, in reading his book *The End of Alchemy*, where he talks about regulation. He says that, despite their extraordinary efforts, the regulators “are in danger of failing to see the wood for the trees. Regulation has become extraordinarily complex and in ways that do not go to the heart of the problem”. He continues: “Not many people can easily absorb and retain the totality of current financial regulation, and those who try are not left with the impression that it is common sense”. I found it surprising for a former Governor of the Bank of England to be so categorical—and I know a little about the complexity of regulation—but, from what he says, the complexity has become enormous, given the pages and pages of regulation, whether in the US or in the UK. I just wonder what your view is on this.

Dr Mark Carney: I will not comment on that specific passage but will keep my remarks to the higher question, which goes in part to Lord May’s question about how we are reducing complexity in the system. The United Kingdom is one of the most advanced economies in the

world—if not the most advanced economy in the world, depending on whether you measure on productivity or other factors—and is a highly complex economy. The tech industry is complex, the pharmaceutical industry is complex, the transportation industry is complex, government is complex, and the financial services industry is complex. These are complex systems. This is not a simple world of barter in agrarian economies, and I do not think that we should be moving back. Banks and the financial system need to perform multiple functions that create the need for complexity, and some of the solutions that are suggested would strip out the core functions of banks. So banks need to undertake maturity transformation and they need to provide credit allocation—both domestically and internationally, because this is one of the most open and international economies in the world, and they serve business and individuals who have and need that orientation—and they need to manage payment systems that are also not just domestic and simplistic but international and complex.

The question with regulation is whether we blend necessary, complex and detailed regulation with two things. With simpler cross-checks by taking out complexity where we can—I gave a few examples, such as on CCPs, leverage ratios and other things—and also whether we blend it with judgment. That is where the PRA, under Andrew Bailey's leadership, has made great strides. A new regulatory framework has been put in place, and he has built a team that actually layers judgment on top, not by box-ticking but by providing judgment in terms of understanding firms' business strategies and—this is one of the reforms that came from this table or through the PCBS—clarifying senior managers' responsibilities. That gets to the question of complexity and whether institutions are too big to manage and whether the senior managers are actually managing the institutions or whether they are parked there just hoping that things turn out okay under their watch and nothing comes to pass. That has changed now that the SMR—the senior managers regime—has come into place and there are direct lines of responsibilities and responsibility maps.

The last thing I will say on complexity and regulation is that this process of addressing “too big to fail” to “too complex to fail” is not just about capital, even though we have increased capital a lot, and it is not just about bail-inable debt or TLAC or MREL—three words for the same thing—but about making sure that the institution itself is resolvable. Ring-fencing is one example of that, but it is much more than that, for example creating these independent service companies so that core functions can continue and wholesale activities can be

wound down. That process strips out a lot of unnecessary complexity in these institutions, and that is a live process that is under way.

Lord Griffiths of Fforestfach: So, to conclude, you would say that the regulation at present is not too complex and that it does make common sense?

Dr Mark Carney: The common-sense elements of the regulation are the decisive elements of the regulation. I agree that there are some unnecessary and unhelpful complexities in regulation—without question. There always will be, and we have a responsibility to strip those out. A very quick, headline example is this process that is under way in Basel to take the risk-weighted approach and determine which types of activities justify having an internal model and which other types of activities should have standard risk weights. A simple example is sovereign risk in foreign currency. No one is particularly expert in it, but there is a reasonable history there: you can tell what your loss, given default, is likely going to be—if a country default in foreign currency. There is no value, except in terms of unnecessary complexity, in allowing banks to have internal-ratings based approaches there. In our judgment, it is entirely different with respect to the mortgage market and to lending to small and medium-sized enterprises, where that should be a core competency of these institutions and they can differentiate themselves on that basis. They are entitled, if they have the expertise, to use more complex approaches in order to discharge those core banking functions. You strip out complexity where it is unhelpful—sovereign risk, large corporates, likely some types of securitisations—but you retain it where it relates to the real competencies of the institutions.

Q11 Baroness Wheatcroft: Before the crash, banks were issuing very complex financial instruments, built of mortgages, credit default swaps and so on—so complex that people really did not realise what was going on. Are you in the least concerned about the fact that many trillions of dollars' worth of very similar instruments, backed by corporate loans, have been issued in the last few years?

Dr Mark Carney: The instruments that were most problematic pre-crisis were the securitisations of securitisations—the CDO-squareds that you are alluding to. A single securitisation and tranching of loans on standardised terms in general is, in my judgment, a reasonable financial structure. It converts something that is not tradeable to make it tradeable and broadens the investor base at a time when we have had challenges in the provision of credit to corporates. That said, any time in finance when you see something

grow rapidly you should be concerned—somebody in my position should be concerned. At its simplest level, the reason to look at buy to let for example is that it is growing rapidly, it is really important and it is dominating the strategies of a number of financial institutions. At a very minimum, one should open the hood, look underneath and see whether standards are being maintained. That absolutely applies to the CLO market now. As you are no doubt aware, from a UK perspective it is not a big market—it is a big dollar market. We can do something but we cannot be decisive.

Baroness Wheatcroft: But are you confident that this is not a repeat of the securitised loans upon securitised loans?

Dr Mark Carney: The issues around that market are more likely to relate to the underlying creditworthiness of the entities and the fact that there has been, speaking in the broadest terms, a fairly substantial releveraging of corporate America—for the purposes of a releveraging as opposed to a releveraging for the purposes of accelerating capital investment.

It is an attempt to have a more efficient balance sheet—again, in the broadest possible terms—as opposed to building more productive assets to then pay back the loans. It is not unrelated to an understandable view that yield is hard to get and that this is the simplest mechanism to try to enhance value. The credit is more than the structuring, I would say.

Lord Lamont of Lerwick: On buy to let, are you not chasing the consequences of your own actions? It is quantitative easing and very low interest rates that have created successive bubbles, first in the bond market and then in buy to let. Now you are having to take action on buy to let. Surely there is the danger that you will just move these bubbles elsewhere. What you are trying to do is slam the lid down on the kettle, having turned up the gas.

Dr Mark Carney: I will make three points. There is the general point that this economy has needed monetary stimulus for some time since the crisis. The degree of actual monetary stimulus has quite often been much less than it appeared. In other words, having interest rates at historic lows and quantitative easing might seem like a tremendous amount of monetary stimulus, but relative to where interest rates needed to go, if they could, the stimulus has been modest. One can say that with some confidence because the actual economic outcomes have been quite modest and the underlying inflation pressures are quite modest even today in the UK economy. We have big deflation coming from abroad,

but if you strip that out, underlying core inflation is running at less than 1.5%, on a variety of measures.

There has been a need for that. But without question a period of very low interest rates, which in the past was supplemented by quantitative easing, coupled with the understandable expectations of individuals, businesses and financial practitioners or banks in the country that interest rates will stay relatively low for some period of time, is an environment in which risk can build—you used the term “bubble”, I will use the term “risk”—in the housing market or in the financial markets.

Lord Lamont of Lerwick: Or infrastructure.

Dr Mark Carney: Exactly. So we have a responsibility to take out, to the extent that we can, the tail risks that develop. For example, we got concerned that the proportion of lending in the owner-occupied housing market that was going to very high loan-to-value mortgages was ramping up very rapidly and likely outstripping the ability of the economy to withstand that debt over the medium term. We all know that first-time buyers need to stretch, but not everyone should be stretching, and if everyone does it has a big macro impact on the economy, so that is why we put in a portfolio limit there.

Buy to let is a very different market from owner-occupied, as we recognise, because there are multiple credits here: there is the renter, there is the owner, and there is a much lower loan to value on the underlying property. So the buy-to-let macroprudential risk, the financial stability risk, from buy to let is in the tail risk—as a former Chancellor, you will understand that—the point being that it happens, it is likely to happen if there is a big shock to house prices and there is a pro-cyclical selling of underlying properties by single buy-to-let landlords who had been counting on capital appreciation as well as income. That exacerbates it. So that is the background to it.

As the Financial Policy Committee, we decided not to take additional action on buy to let, because we are aware of two things, the most important of which has been that the tax changes—not just the move on stamp duty but the move to reduce the proportion of mortgage deductibility—are considerable, and we want to see how that plays out on this market.

On top of that, it is always appropriate, particularly when credit is growing rapidly, to make sure that we do our basic day job, which, as the PRA, is to make sure that underwriting

standards are not slipping. They have not been slipping that much, but we have caught the first signs of it, which is why the PRA should guide them.

I accept your basic point: we are in environment where, because of low interest rates—which have to be there, in our judgment as the MPC, in order to achieve the inflation target—risks will build up. We have to be nimble around them in order to take out the extremes, but it goes to the basic structure of the institution that at least we have the ability to try to address these risks, and on top of anything else there is an open communication between the various policy committees so that we understand what we are trying to achieve so that we can try to hit multiple targets with multiple tools.

Lord Turnbull: I have a question about the financial architecture, but first I want to take Baroness Blackstone's question one stage further. Are you assuming, in the case of Brexit, that financial institutions would lose the rights of passporting?

Dr Mark Carney: That would be a question for the negotiation. It would likely require the acceptance of European regulation, for both conduct and prudential standards, without the influence on those regulations. That is a reasonable expectation, and different jurisdictions have made different judgments about the desirability of that.

Q12 Lord Turnbull: As Governor and chairman of the FSB, you have been the principal architect of the new architecture. You have had increases in contingent capital, stress testing, leverage, liquidity, resolution and so on. Would you say that we are more or less there when it comes to what the construction is to be called—that there is practical completion—or are there still other things to be done?

Dr Mark Carney: I think we are there on fixing the fault-lines of the problems that caused the last crisis and on agreement on the steps to take. We are not yet there on implementing all those steps. We can go into detail, if you would like. We are not yet there on the future work, which is particularly in London's and the UK's interests and is about what the new system is. It is one thing to close the proverbial door, if you will, but we must make sure that we do not have the same challenges that we have had in the past and that we have a system that can be characterised by sustainable cross-border capital flows that are not principally intermediated by the banking system but are directly the product of pension funds, insurance companies and a series of asset managers. How do we have that system structured in a way that is not stop/start, boom/bust? So elements of the FSB's G20 agenda this year go directly to that, the most important of which we will consult on in the summer,

and are measures on asset-management activities relating to the liquidity policies of asset managers, the leverage embedded in asset managers, including—this was part of Baroness Wheatcroft’s question—the synthetic leverage that can exist in these asset managers and the securities financing transactions of asset managers; those types of issues. Given that, since the crisis, virtually all the net capital provided in the advanced economies has been from the asset management complex, and that asset management flows to emerging markets have tripled over the course of the last five years, this is the core of the system now and where we need to focus our attention.

Lord Turnbull: In this country we based the regime on the recommendations of the Vickers Independent Commission on Banking, rejecting on one side separate Glass-Steagall/Volcker rules. But there were also people on the other side saying that we did not really need this ring-fencing, because the effect of raising capital meant that banks were for the first time putting up the capital commensurate with the risks they were actually taking, and we are seeing large numbers of players, not just in this country—UBS, Deutsche Bank, Credit Suisse—pulling out of an awful lot of trading activity. Could it have been done without the complexities of ring-fencing, provided that you had a proper resolution facility?

Dr Mark Carney: Other jurisdictions are attempting to do it without ring-fencing, so they think it is possible, but this is the law of the land and we are absolutely implementing it. By definition, it has the advantage of ring-fencing core banking activities for the people of the United Kingdom, which is arguably more important here than in the United States, for example, given the scale of the financial services sector relative to the size of the economy, as you are familiar with. So the ability to detach core banking services—high-street banking, if I can call it that—from the wholesale activities that could get into trouble is particularly important if you have a banking system that is, as at present, four and a half times GDP but that on reasonable assumptions could end up being seven or eight times GDP in 20 years’ time.

Lord Turnbull: I am going to an event tomorrow evening with Mervyn King in conversation with, I think, Will Hutton, no doubt as part of his book launch, and I am sure we will hear his views on simple banking. He is not quite as hard over as John Kay, but he is pretty nearly there. What do you think of the view that core banking should be a lot simpler and related simply to deposits, and that we are still allowing basic retail banking to be too complicated and too risky?

Dr Mark Carney: I enjoyed reading Lord King's book and discussing it a bit with him. I have not had extensive discussions with him; perhaps I should come along to this event and learn something. As always with Lord King, the ideas are big and bold and thought-provoking. I think he would say that he has very much a medium-term orientation: let us not move here overnight, let us move here 25 years from now. I take what he says seriously. At the same time, I think it is important that banks are actually banks and not just warehouses for our deposits. The structure of narrow banking focuses in effect only on liquidity and the ability absolutely and without question to meet liquidity on demand. So there is no maturity transformation, which is absolutely fundamentally a social good, or the credit allocation activity, because all you have done is backed the deposits with risk-free assets at the central bank. In Mervyn's case, his pawnbroker of last resort is a little broader than that. You buy other assets, but those are in effect prepositioned at the central bank. They are not a bunch of loans and other things; they are effectively relatively low-risk assets.

There are a couple of challenges with that. One is that in effect the central bank is making a judgment about the price of this, because we are the ones who set the haircuts on all these assets. We have tremendous power at the Bank of England, and I am not sure that you would want to give us even more to make these basic decisions about the overall allocation there.

Secondly, what would happen with that system, to the extent that individuals want mortgages and companies want to borrow for projects, is that they would have to borrow from the wholesale market and effectively a shadow banking system would have to build up to satisfy that. I would rather have that principal banking function in the regulated banking sector.

I will make one final point. We have come a long way in moving from a system where banks were borrowing in the extreme in the short term, effectively with no liquidity back-up or liquidity planning. That helped to exacerbate the crisis. We are in a situation today where the short-term borrowings of the UK banks are effectively backed, as they pre-position a bunch of assets with the Bank of England. That was not the case in Mervyn's time; it is a new system. The combination of that and the fact that they have had to quadruple the amount of liquidity they carry, because of liquidity standards, means that they are about 80%-backed for their short-term liabilities. Then they have short-term deposits that are backed by the FSCS. A lot of this risk has been taken out, and they are still able to function as banks.

Lord Turnbull: I have one last question. I had an interest, as a director of the Pru, in insurance—I was interested in it, although I do not have an interest, if you see what I mean. The Bank has apparently said: “Solvency II follows a maximum-harmonised approach in most areas, however, including for establishing capital requirements and disclosure. Given the structural differences in the insurance industries across EU member states, this could in future reduce the ability of regulators to account for country- or firm-specific risks”. Are you happy with the way Solvency II has turned out?

Dr Mark Carney: We look forward to the review of Solvency II.

Lord Turnbull: Are you saying yes?

Dr Mark Carney: I was not involved in the tortuous process of developing Solvency II. At the core, it is a porting of a UK insurance regulatory approach Europe-wide. It is much more similar to the way the UK authorities have been regulating insurance than to the way the continental authorities have been regulating insurance. Some of its elements could definitely be improved and should be improved. A review process is just beginning, and we intend to be very active in that.

Baroness Wheatcroft: A quick question, if I may. Peer-to-peer lending is currently outside the regulatory framework, but it has grown hugely. Adair Turner recently said that when it blows up, some of the lending decisions taken by the peer-to-peer lenders would make Fred Goodwin look conservative. Do you think we are being a bit cavalier about it?

Dr Mark Carney: I think one needs to distinguish between conduct and prudential. Do the participants—the lenders, if you will, or the individuals who are involved in it—properly understand the risk they are taking on? In some cases, they may well do and in other cases they may not. From a prudential perspective, we are obviously focused on whether there is maturity transformation or leverage in the case. If it is a conduit, we have less of a focus, although I would not say that full stop. The FPC could take an interest, even if there is no leverage, if there is a boom from an economically relevant perspective in peer-to-peer lending that was exacerbating some existing vulnerability, whether it is in commercial real estate, the housing market or some other area.

Baroness Wheatcroft: But it is not on that scale.

Dr Mark Carney: We are not seeing it on that scale, so from our perspective it is something that we watch out of the corner of our eye, but in the hierarchy of risk it is not there. The FCA, from its perspective, is quite focused on the suitability aspect of it.

Baroness Wheatcroft: Do you think then that there ought to be some oversight of what is going on, or is it caveat emptor?

Dr Mark Carney: That is really a question for the FCA, but generally if provision of a financial product is not well understood in scale, there needs to be some oversight. Now that I have said all that, I do not want to suggest that I think there is a big problem with peer-to-peer lending. In fact, I would go as far as to suggest that there are some attractive elements of peer-to-peer lending. It goes back to the diversity point and the ability to service areas, in some cases quite justifiably, that conventional banks do not. I know that sometimes this sort of algorithmic allocation of credit can be unhelpful, but some of it is quite innovative and could be quite effective, particularly in the factoring side of the equation.

Q13 Lord Forsyth of Drumlean: Terrier-like, I want to come back to the point that was raised about Solvency II and the question that I asked about the extent to which EU laws have damaged the City of London and the extent to which the renegotiation carried out by the Prime Minister has changed this. In October of last year, the Bank said: “Solvency II follows a maximum-harmonised approach in most areas, however, including for establishing capital requirements and disclosure. Given the structural differences in the insurance industries across EU member states, this could in future reduce the ability of regulators to account for country- or firm-specific risks”. I am not sure how this ties in with your view about the renegotiation. I can give you other examples from what was said in 2015; the Solvency II one was brought up by Lord Turnbull.

Dr Mark Carney: You are quoting from our report of October 2015, which I wrote. I am not unfamiliar with it and you do not need to give me other examples.

Lord Forsyth of Drumlean: But it does not seem to be consistent with what you are saying now.

Dr Mark Carney: It is consistent in this respect. The Solvency II agreement was a negotiated agreement. It was negotiated by the Treasury, informed by the Bank, the PRA and before that the FSA. We are comfortable with that agreement, because it establishes a more level playing field, among other things. It is broadly consistent with the approach that we had taken and establishes a more level playing field for the provision of insurance services in the single market—a playing field that was quite unlevel before. It is not perfect, and there are elements of maximum harmonisation that we do not like. There is a review opportunity, which we are going to take advantage of.

By the way, there is no element in Solvency II of missing macroprudential flexibility at this stage. A prospective example, which we have discussed at the European level, is the treatment of capital for long-tail infrastructure investment in the insurance sector. Because we have had a discussion at the European level through the European Systemic Risk Board, and because we are having discussions through the review of Solvency II, it is likely that there will be an adjustment to the capital requirements there that will advantage lending to infrastructure. There is a positive macroprudential feedback of greater insurance company participation infrastructure underlying economic outcomes with the likelihood of low interest rates for a very long period. That is in there.

To get to your terrier-like focus—your words—on where we were and what the new settlement said, we said that, in the main, national flexibility has been respected thus far. I absolutely hold to that; it is absolutely clear. There are a few examples where we would have liked more flexibility, but it does not fully come through. But even in that example a practical solution is coming, in my view. The question about the new settlement is what happens going forward, and whether the protections that were secured with respect to economic governance in that international law decision—a legally binding document—preserved national flexibility. In our judgment, the document that was agreed by 28 Heads of State and Government addresses these issues. So all those comments are consistent.

Lord Forsyth of Drumlean: Yes, except that they are not legally binding.

Dr Mark Carney: You can take issue with the advice that has been given to the House of Commons on that.

Q14 Lord Teverson: I apologise for being late; I was involved in a Bill when the evidence session started. You mentioned how sophisticated, complex and successful the UK economy is. One of the areas where we are not so successful is the balance of trade, which we have already dealt with. Another perhaps is productivity. The other one, which we have been looking at as a Committee, is the housing market, where we do not perform as many Governments have wanted us to. One of the reasons why that was put before us, particularly by small builders that have effectively removed themselves from the market, was lack of finance from the financial institutions—primarily banks, obviously—which relatively small organisations deal with. Has this come up on your own radar? Do you feel that it can be solved, or is it an issue? I would be interested in the Bank's view on its policy, which, as we have seen between government and various other measures, has been quite

mixed, and how we can move forward and solve this problem, which has been endemic in the economy for some considerable time.

Dr Mark Carney: I will say a couple of things. One is that, post the crisis, one of the associated fall-outs was the big impact on commercial real estate. The secondary and tertiary segments of commercial real estate were under pressure for much longer than prime central London, which began to recover much more quickly. There has been a gradual thawing of that and a steady improvement in credit conditions for commercial real estate. I recognise that builders go to residential as well, but there has been a steady improvement in that, which has likely begun to shift now in this momentary period of broader uncertainty.

The second thing by way of context is that there has been—and it has continued up to the most recent figures, whether in our credit condition surveys or in Federation of Small Businesses surveys—a steady improvement in credit conditions for small and medium-sized enterprises as a whole. In fact, with the turn of the year, we have for the first time since the crisis seen positive growth in SME lending. Terms and conditions have improved and volumes have gone up. I will get to builders, but in general the situation has been one of lack of demand. There are various ways to measure that. It is not my favourite classification, but there is a term in credit conditions surveys, “happy non-seekers of credit”, which is people who do not want the credit or do not want to talk to a bank. The problem is distinguishing between the two, but it is not about the fear of not getting a loan. The most recent figure is precisely 78% of SMEs surveyed, so it is more a demand issue than a supply issue.

In the building sector, we have seen that with small builders, but in the last couple of quarters the self-identified constraints on activity, particularly in residential, have been planning—which is no surprise, as it has always been at the top of the list—and labour. Project finance has come right down, consistently with the overall improvement in credit conditions. There has been a shift. Interestingly enough, land is not a big constraint at the moment: it is more about planning with the existing land. That is the current situation, which on the whole has improved in the sector. The issue is how you ensure that it is more sustainable over the medium term. It is part of the work that we are doing around the capital requirements for lending to SMEs in general and into the real estate sector as a whole, which is principally being dealt with through Basel. One of the things that we are looking for out of Basel and ultimately out of Europe—this is one of our major recommendations to Lord Hill’s review of regulation—is that Basel III is applied to the larger

institutions across Europe but that there is a different capital regime for smaller banks, which would obviously promote competition but also address some of these issues. There are three parts of the response to that.

Lord Teverson: Perhaps I could just come back to your comments on SMEs. From my own observation, some of the issues are not so much about the lack of lending to SMEs. As I think you were saying, almost a cash mountain has built up not just in the corporate sector but in the medium business sector. Because of a lack of potential lending from banks, people hang on to their liquid reserves. Is that still an issue? Is that something that we can liberate more through confidence? Might that then start to bring up British productivity?

Dr Mark Carney: We have a responsibility to continue to ensure that the banking system is not just resilient but sufficiently competitive—that is a secondary objective of the PRA—so that if you are an unhappy non-obtainer of credit, which I assume is the complement of happy non-seeker of credit, you can find an institution that will lend to you. I think that has, in the main, improved. I think you have put your finger on it; finance was a huge drag on productivity from 2009 through to 2012. That started to dissipate in 2013 or 2014, and it is much less now. It can always get better, but it is much less now. This is not unique to the United Kingdom—indeed, confidence is probably higher here—but the bigger drag on productivity is the degree of confidence in the overall rate of growth of the domestic and global economy and therefore the urgency of making an investment and putting money to work. As a consequence, we see in a number of advanced economies that cash has piled up on corporate balance sheets. As every day goes by, it is less and less about liquidity insurance—there is no concern that the banks will not be there if things go wrong; it is about that confidence. There is a positive feedback loop from having an effective productivity plan—structural reforms and other aspects—which then unleashes that confidence. It makes monetary policy have a lot more traction as well and starts to move us out of this very low-interest world, where we have a series of vulnerabilities.

Lord Teverson: As one last point on that, do you feel that bad productivity is endemic to the UK economy, or can we, through the confidence you are talking about, pull out of it and start to meet our competitor economies?

Dr Mark Carney: Our base forecast as the MPC for February had productivity growth picking up to just under 2% by years 2 and 3, which is respectable if one adjusts for two things that we will have lost. The first is the productivity gains from North Sea oil, given not just the

depletion but the adjustment in the oil price. The second is some of the productivity measured in the financial sector that was ephemeral. If the UK was running at 2.25% productivity growth prior to the crisis, some of that was North Sea and some of that was financial services. There was productivity growth in financial services, but some of it was just the sheer throughput of lending growth. Since Andy Haldane has been quoted a number of times, I will note that he wrote quite a good analysis four or five years ago of the measurement of productivity. Obviously there is still a large-level gap between the UK and the US, which is the most productive economy by more than 25 percentage points, so there is much more that could be done.

Lord Teverson: So we are overestimating even where we are, by the sounds of it.

Q15 Baroness Blackstone: You have referred more than once this afternoon to the growing complexity of the British economy. In that context, do you think that economic statistics are fit for purpose?

Dr Mark Carney: I commend Sir Charlie Bean's review at the ONS on a number of levels. It addresses a number of everyday issues for statistics as we know them on which the ONS could improve, and the Bank works closely with the ONS on things that we care about; we second people, take people, and provide knowledge and technical advice. But the most interesting thing in Charlie's review, in my reading—if I can call him Charlie—was to draw attention to the under-measurement of the digital economy. Because supply chains are so complex and because of the growing importance of services, the challenge is drawing the line between domestic activity and international activity and therefore GDP. From memory, he pegs this on orders of magnitude of 30 to 75 basis points of growth per year, which could be missed because of mis-measurement. It is a big task to try to capture that, but that should be the ambition, and I think he has laid it out clearly for everybody.

One of the components of that, which we as the Bank of England are very happy to participate in, is to give the ONS greater access to the data that we as an institution have, for example. Charlie's recommendation was with respect to the overall public sector, and it is important, subject to appropriate confidentiality—we have some firm-level data, or individual data, that we could not provide—that we work with the ONS to provide as much as we can, because this will maximise its prospects of capturing not just a better picture of the normal economy, if you will, but the new economy.

Baroness Blackstone: So is the consumer prices index any longer an accurate reflection of inflation?

Dr Mark Carney: We had concerns about the potential move to CPIH—the housing move—because we had concerns about the quality of the rental estimate, which, in working with the ONS, it began to share; and, as I think you know, it removed it as a national statistic pending revisions, which it is working on. One has to update the representative basket, but in terms of what is actually consumed and paid for we do have confidence that the CPI is representative of the inflation that is facing British households. If you survey British households, they, like Canadian households, are more affected by certain prominent prices in terms where they see inflation—food and energy being the most obvious examples.

Baroness Wheatcroft: When you came to this Committee just over a year ago, you cited the housing market as one of the potential dangers featuring in your outlook. You have talked about buy to let. I know that there have been rules to tighten up mortgage lending, but in evidence to our inquiry into the housing market I think some of us were quite surprised to hear that lenders were edging up towards a much higher loan-to-value ratio again. Are you still concerned about the housing market?

Dr Mark Carney: Given its importance to the economy, to personal finances and to bank balance sheets, and the fact that the indebtedness of British households has gone down considerably, it is still relatively high at 135% of income. Therefore, it is one of the major risks and major vulnerabilities that we watch as the FPC. Not surprisingly, given that we have put this portfolio restriction in place, we also watch what is happening to higher loan-to-value lending, and, as you would you know but just so that everyone is on the same page, the restriction is no more than 15% of a portfolio above four and a half times loan to income. Overall, it is about 10% right now, but the flow in the most recent quarter has been 15% of overall lending, so the flow has gone up and obviously the average will go up. So we are watching that closely. The supervisory expectation has to be respected, and institutions have to manage it accordingly.

I want to say for any member of the general public who is watching—I feel sorry for them if they are—that one of the dynamics of this is that the most pressure for very high loan-to-income mortgages is in London, given the price of housing relative to the incomes of people who actually work here, not just those who buy houses. The restriction means that there is more lending to the rest of the country to balance out the lending that has to take place in

London, so it is not a restriction that has been put on the rest of the country because of elevated house prices in London. That is an important dynamic. It helps to spread access to bank balance sheets across the United Kingdom.

Baroness Wheatcroft: And what do you judge to be the risk of house prices coming down in London?

Dr Mark Carney: We do not target house prices because we are concerned about indebtedness, because that is ultimately what flows through to financial stability. Consistent with my comments earlier about a number of variables moving during this period of uncertainty, certainly at the higher end of the housing market in London there has been quite a sharp move in interest and in buyer inquiries. There is a reduction in buyer inquiries, which is normally followed by some price adjustment.

We have been talking more about financial stability, but if I can take us back up to monetary policy as a whole, the MPC, as it said in its last minutes, is very conscious that we are in a relatively extraordinary—we did not use that term, but I will use it—period. This is an important decision for the British people; it has major consequences, there is obviously a degree of uncertainty around it, and a variety of economic variables are affected during this period in the run-up to the actual vote. It creates a much higher bar for us in taking monetary policy action when things are moving that may move in an opposite direction following the vote on the 23rd. We will continue to communicate that, but we said that in effect in our last monetary policy statement.

Baroness Wheatcroft: And given what you have said about the level of household indebtedness, how far do you think the interest rate could rise before causing real problems?

Dr Mark Carney: We look at this, and one of the ways in which we do this is conduct an annual survey with NMG of 6,000-plus households, and we look to changes in interest rates of 2 to 3 percentage points. The good news about the indebtedness position of British households is that they have paid down debt in aggregate, and the number of cohorts of more highly-indebted households, the most vulnerable households, has decreased, so there is greater resilience there. It would have an impact not just on cash flows but on expectations; we are well aware of that. It has been a long time since interest rates were moved up, so people are not used to it. We are certainly conscious of that, but the position has undoubtedly improved.

The last point I will make on this is that, both for owner-occupied and for buy to let with the new PRA guidance, when banks are making the mortgage decision they have to conduct an affordability test, which, in the case of owner-occupied, includes interest rates of 3 percentage points higher, and, in the case of buy to let—given the different interest coverage ratio—at least 2 percentage points, or 5.5%, higher. It is being tested in the ability of the individual to service the loan that helps to mitigate that risk, which is not something that we had two years ago in our case.

Baroness Wheatcroft: Could you give us any forward guidance on when you think we might hit a 2% increase?

Dr Mark Carney: No. How is that?

Q16 Lord Layard: We have a housing crisis in terms of affordability, and the most obvious thing that is lacking is any local authority building. Yet with interest rates as low as they are and are forecast to remain, there are dozens of local authorities that would love to borrow money and build houses. Can you see any problem with letting them do it?

Dr Mark Carney: That sounds suspiciously like a question for the Chancellor. At 30,000 feet, no, but to my way of thinking the question goes to broader fiscal arrangements and subsidiarity decisions of the Government, so it is not necessarily for me to say. But at the highest level, no, none.

Lord Layard: Perhaps I could ask a bigger, related question. There are different ways of forming a target for the government deficit, one of which includes capital and one of which does not. We know that it is not possible in the public arena to have a complete set of government accounts—you can do it as an academic exercise but you cannot do it in the public arena. Would it not just be more informative for the public if the main target related to the current rather than total deficit?

Dr Mark Carney: Again, that is a decision for the Government. My experience, having managed deficits and budgets as a civil servant in Canada for a number of years, is that there is value in very simple metrics of fiscal stance and overall balance as a starting point. One can adjust from that to identify capital spending and current, but in some cases, certainly from a public perspective, in general it becomes more difficult to follow sensibly derived fiscal rules that are just for where we are in the cycle or in terms of capital versus current spending. Your question was about going to the public, and it tends to be more difficult for

the public to follow those things than a simple, “Are you positive or negative?”, and, “If you are negative, by how much?”

Q17 Lord Layard: I would like to ask one last accounting question. The Bank of England is owned by the Government, so when it comes to the public debt, the public are encouraged to believe that the authorities owe a lot more money than they do. If you take the combined authorities—government including the Bank of England—the debt is very much less. Ought there not to be a headline figure, published as frequently as the existing figures are published, for the consolidated debt?

Dr Mark Carney: There is value in publishing the net financial position of the government, which offsets assets against debt. The Government’s asset in the Bank of England is the value of its equity in the Bank, not the value of the balance sheet of the Bank of England. The value of that equity—which is arguably greater than the book value of the equity, although in public accounting one tends to take book value—is, very importantly, determined by whether or not the Government are going to pay back the debt that they owe to the Bank of England. If they do not, we will be in a position of quite grave negative equity—negative equity is a fancy term for debt in the case of the Government—which would then be consolidated up into the Government. So I would not net off the debt that the Government owe the Bank of England. I would not do it for monetary purposes either—referring to an earlier exchange about helicopter money and the need to retain an ability to pull reserves back that the Bank of England put out from 2008 to 2012 during the quantitative easing programme. We ultimately need an ability to pull much of that back in order to avoid, not tomorrow but in the fullness of time, higher and volatile inflation.

Q18 Lord Teverson: Could I just pursue financial stability again quickly? Last September, at Lloyd’s, you made a well-reported speech about the risks of climate change and financial stability. I wondered whether you felt that the outcome of Paris helped that and, in particular, how the Bank of England, including you in your role as Governor, is going to pursue that agenda, if you feel it is as important as you made it clear that it was in September.

Dr Mark Carney: Let me start from the Bank of England and work out to the Financial Stability Board, because this is most relevant at that higher level. In terms of climate change and the Bank of England, the most important aspect today for the Bank is that we are the regulator, per the earlier exchange, of the third-largest insurance sector in the world. The

property and casualty sections and the reinsurance sections know that climate change is one of the major risks that they have to manage. They are very good at it. I would say that UK insurers and Lloyd's of London are at the absolute forefront of managing climate risk, because they have to be. They manage those risks by adjusting pricing and coverage terms, which they have done considerably. We, as their regulator, have to make sure that they are on top of it. That is the first thing.

The next looming risk for the insurance industry is the potential liability risk of directors and officers of companies—think akin to asbestos. Ultimately, the bigger risk for the financial system in relation to climate change is the transition of the regulatory environment—not the capital or financial regulatory environment but the overall one—and the technology and other factors involved in moving to a lower-carbon environment.

The question is whether that transition from where we are today is smooth or abrupt. The very basic point that I want to emphasise is that this risk of an abrupt adjustment is beyond the horizon of the Financial Policy Committee or the regulator of the banks. In other words, we are not going to tell banks that they have to hold more capital if they are lending to a major emitter as opposed to somebody who is zero-carbon. The consequences of that decision for their business model are beyond our horizon and that of the lending. We are not going to substitute ourselves for government policy; putting a price on carbon or putting regulations in place is somebody else's role. But if there is a prospect of meeting the objectives of COP21—the Paris agreement—there will be more stringent policies in these areas and there will be an adjustment of business strategies and of quality of credit, and some possibility of stranded assets. There will be financial consequences.

The basic point that we made at the Financial Stability Board, which was endorsed by all the G20 leaders and has been kick-started from COP21, is that there needs to be a market in transition. What is necessary for a market is that there is appropriate disclosure by companies of their carbon footprint and their strategy to manage it down. Investors, creditors and others can then make judgments about whether that is a looming risk or an opportunity. The way I would always put it is that you can be a cynic about government action or a true believer, you can be a pessimist about technology or an optimist, and you can have a view that climate change is made up or the greatest threat to mankind. You can be on any of those poles—we are agnostic on that—but what you cannot do is properly express those views across the broader financial system, because the disclosure is not there.

The decision of the G20 leaders, based on the advice of the FSB, was to set up not a public but a private industry-led group, led by Michael Bloomberg, which has all the major insurers, major pension fund investors, major issuers of debt—for example the CFO of Unilever is on that entity—accountants, rating agencies et cetera to come up with clear, comprehensive and efficient disclosure recommendations, which would be voluntary. Those will come towards the end of this year, and I would think that by the German presidency of the G20, there would be a judgment on whether or not it is worth while.

The last point is that their first report—again, this is the private sector doing this—came out for consultation at the start of April, so it is available.

The Chairman: That brings the session to an end. I thank you very much for your clear and detailed responses for just over two hours.

Dr Mark Carney: Thank you very much for your questions.