HOUSE OF LORDS

Built Environment Committee

Corrected oral evidence: Modern methods of construction—what's gone wrong?

Tuesday 14 November 2023

10.45 am

Watch the meeting

Members present: Lord Moylan (The Chair); Lord Berkeley; Lord Best; Lord Carrington of Fulham; Baroness Cohen of Pimlico; Baroness Eaton; Lord Faulkner of Worcester; Earl Russell.

Evidence Session No. 2 Heard in Public Questions 20 – 34

Witnesses

I: Dr Suzanne Peters, Research Associate, and Professor Jonatan Pinkse, Professor of Strategy, Alliance Manchester Business School, University of Manchester.

Examination of witnesses

Dr Suzanne Peters and Professor Jonatan Pinkse.

Q20 **The Chair:** Welcome to this meeting of the House of Lords Built Environment Committee, which is part of our inquiry into modular and modern methods of construction and whether they are delivering what has been expected of them in the past. Our guests today—to whom we are very grateful—are Dr Suzanne Peters, research associate, and Professor Jonatan Pinkse, professor of strategy, both at the Alliance Manchester Business School at the University of Manchester.

We have a number of pre-prepared questions. My name is Daniel Moylan and I chair the committee, but I am not going to introduce everybody individually now because I will when they ask their question, and in any event, they have a name label in front of them, so you can see who everybody is. Lady Cohen of Pimlico is a member of the committee joining us remotely on the screen you can see here. We will be asking you questions. We would be grateful if both members, but also witnesses, could keep the answers reasonably brisk. Please avoid repetition, unless we are being very dim, because since everything is being recorded and transcribed, it should not be necessary to say it over and over again. With those caveats and encouragements, could I turn to Earl Russell for the first question?

Q21 **Earl Russell:** Hello, good morning. Thank you very much for coming to give us evidence today. The first question from me is: do you agree with TopHat that MMC is vital to delivery of the 300,000 homes per year in the UK? Do you think it is realistic to expect that number in the short to near term?

Professor Jonatan Pinkse: In terms of whether it is necessary, we need variety. Currently, we are not meeting any of the goals like the 300,000. The last time we reached those numbers was in the 1970s. Clearly, something needs to change in the industry. MMC is one of the ways in which you can create that variety. There might be other ways. In our research, we focused on MMC because this is where most initiatives were happening. There were several companies trying this and basically trying to change the industry. We do agree with TopHat that MMC is very likely to be a key part in reaching that goal.

Earl Russell: Do you agree with TopHat that MMC is vital to delivery of 300,000 homes per year in the UK? Do you think it is realistic to expect that number in the short to near term? Is that realisable?

Dr Suzanne Peters: In terms of timelines, the targets have been unmet for decades now. There are mountains of reports all saying largely the same thing over decades, in terms of the issues and the challenges and the recommendations, and yet here we are talking about the same issues today. Is it realistic? Hopefully. I would like to think so—I am generally an optimist—but it will take significant, concerted and sustained effort that we frankly have not seen in this sector. So it is possible but difficult.

The Chair: Who has to make the effort?

Dr Suzanne Peters: Over the years, there have been reports saying, "It's the supply side that needs to do this", and then, "It's the demand side" and, "It's Government". The reality is it is very difficult for the supply side to do this on its own. Industry has been left with a lot of the charge to make the changes. It is difficult: it is a very large industry, it is very complex and it is very fragmented, as a lot of the players are very small with very tight margins. There are also some very big players. To leave them in charge of this type of significant change is a bit unrealistic; it is very difficult. Government has a major role to play and can be the champion to bring forward the sector and to get these houses built that are so desperately needed.

The Chair: Thank you. The next question—or a number of questions wrapped up in one—is from Lord Best.

Q22 **Lord Best:** I am really exploring why things appear to be going wrong on quite a large scale, with several major players falling by the wayside. Looking at the category 1 players and, within that, looking in particular at Ilke as a test case—and one in which the Government have been particularly generous—I would greatly welcome your views on what it was that sunk Ilke Homes. Was it that they were going for a buy and develop, doing the whole operation themselves, when they should have been feeding into one of the big housebuilders instead? Was it that their business plan was flawed from day one and that this was an unworkable proposition? Was it planners who got in the way and delayed things so long that their pipeline became untenable? What was it with Ilke?

If they were just a one-off, and that is an obscure and interesting piece of history, then we will not worry too much about them, but the generalities from that we do worry about. What are the lessons that we can learn for other players? Are we backing up more Ilkes in the pipeline behind? Is there more trouble on the way? Which of you would like to pitch into that lot?

Professor Jonatan Pinkse: Yes, I would like to start. It is a start-up trend. You had different companies trying to enter an industry like this, doing things in a different way. Because of that, they were trying to figure out what the best business model was to do that, and none of the players knew exactly how to do it. They were starting. They were also learning, literally, how to design a modular house and what kind of materials to use. There was a lot of this learning going on. Then they had to make certain decisions such as who to partner with and whether the people they wanted to partner with wanted to partner with them.

The developers are a big player here, for example. You could argue that a category 1 modular builder should maybe just focus on the manufacturing side, but that assumes that you have a developer that does that part of the business for you. If you cannot find a developer who is willing to do that for you, under the conditions that you would like to do your business, then the only way to do it is to start doing it yourself.

That was what Ilke decided to do. It is understandable in a way because you have more control over it: you create your own pipeline, you create your own demand by doing the whole land acquisition and managing it. The downside is that you need a lot of capital for that as well. You already need a lot of capital to build the factory, and now you also need a lot of capital to acquire the land and keep it until you start actually putting the houses on top of the land.

Given that this whole business is built around a high need for upfront capital, you do not then have a lot of liquidity—you do not have a lot of extra cash to do a lot of things. If the market then goes down, there is not that margin that you can play around with, unless you have been in business for a longer time and you are beyond a break-even point and basically you have been making profits for several years. Looking back now, because Ilke went bust, we might say, "See, they got it wrong". That is a bit too easy in a way, because we know that now, but we spoke to them before that happened, when they were still in business, and they were doing very similar things to many other players in the market.

In the end, different start-ups are trying different ways. They try to be different from one another, even on purpose, because you want to be attractive to potential investors. If you propose exactly the same as anyone else, then you might not be attractive. That is a bit of the testing that they are doing. In the end, we can now say, "Okay, the way they did it did not work out. The same thing for L&G". TopHat is still there; did they get it right? We can only know that in a few years. This is to put it in perspective a bit. There are definitely structural issues, but that is the nature of how this works. You need a lot of money to start with—you need to have deep pockets. All the people we interviewed always emphasised that part. You cannot do this without having someone investing a lot of money in you to get started.

***Dr Suzanne Peters*:** Yes, and generally, in terms of the Government putting money into Ilke, it is not our place to say whether that was a good idea or a bad idea and whether they did enough diligence? But the Government were not the only ones putting money into category 1. Over $1 trillion went into the sector from domestic and international investors, from Goldman Sachs to Japan's Sekisui House, Legal & General, Persimmon and Aviva Insurance.

Professor Jonatan Pinkse: $1 billion, not £1 trillion. There is a big difference.

Dr Suzanne Peters: Billion, sorry. There is a very broad list of investors that have put tens and hundreds of millions at a time into the sector. And you make the best decision you can at that time with that information.

Q23 **Lord Best:** Do you have any intelligence on the way in which the Government were supporting Ilke with two lots of loans that have gone sour? We have heard it said that they were not paying enough attention at Homes England to the business case and to what was going on. Have you any insights to offer on this?

Dr Suzanne Peters: No.

Professor Jonatan Pinkse: No, we do not have insight into how that worked. The relationship between Homes England and Ilke did not come out of our research, so we could not say anything about that.

Q24 **The Chair:** In describing this relationship, could you explain for the committee a little about what I am going to call the distribution of the value chain in this? With a traditional housebuilder, you own or have options on the land, but effectively you own the land, and any increase or fall in the value of the land is for your account over time. You purchase the materials, and you hire the labour, and you have exposure again there: materials go up, labour goes up, and you have exposure there, all of which you have normally built in to some extent. Then you produce a building entirely in your control, which has a market value, and you have a target for that sale price and you either achieve it or you do not. You normally do achieve that sale price. The value chain is entirely in your control.

But when somebody comes along and says, "I'm going to build a house, but you do everything else"—which is roughly what not Ilke but others are saying—"so you acquire the land, you put in the ground works, you take all the commercial risk on that", how much of the value chain is the housebuilder taking out? Or are they saying, "We will build the house at a fixed price for you, irrespective of market movements", and the value risk remains entirely with the housebuilder? One of the reasons housebuilders might resist modern methods of construction is if they see the richest part of the value chain vanishing out of their control, so that they just become shells, which are eventually just marketing departments. You know, "This is a Persimmon house. We had nothing to do with it, but we put our name on it and all we get is a fee for selling it". Have you looked into that, and whether that is a driver of the way in which actors are behaving in this?

Dr Suzanne Peters: I can say that the land is where the money is made in housebuilding, and some in the industry will say that the house on it is a rather inconvenient part of trying to realise the value in that land. In terms of percentages, I have heard different figures that I have not checked myself, so I will not quote them. But the building of the house is a very small part in terms of figures in the value chain. For the people that live in the house, it is all they really look at, and how far is the nearest school and hospital and what have you. But in terms of the value chain and also the timeline, the building of the house is a very small part of it.

In terms of the business model and offering to take that off, I do think that is an interesting offer for industry, and I am not sure why the incumbents and the big firms have not taken so much to category 1. Some of them have used it. There was an interesting case just outside of Bristol, where one of the large builders and developers worked on one site. They had category 1, category 2 and traditional methods all happening at the same time. By all accounts, it was actually a very successful endeavour. They were testing it to see how it would work, and I have not heard of anything further. That was fairly recent, if that is helpful.

Professor Jonatan Pinkse: Yes, and now we are talking about how the value chain currently works. The market will change, and this is partly the reason why these start-ups started their business. There is a skills shortage that has been written about extensively, and they are trying to find ways to deal with that. One of the key characteristics of the companies, the MMC builders, was that they were training their own people, so they did not have to rely on people that were no longer available in the market.

The other thing is all-around sustainability—the net zero ambition of the Government in the future homes standard. To reach those goals of making houses way more energy efficient, different ways of building will be required. The airtightness of walls needs to be much better. This is also where there is an expectation that how you build will become far more important than it currently is. There was a reason for these companies to focus on that part. They basically were betting on a future that will be different. That is not just here; that is across the world, of course. We realise that we need to build better because we have very high carbon emissions from our built environment. I would say just looking at how it currently works is not the full story for how they made their decision.

The Chair: Coming back to my very narrow point, do those who provide houses—the TopHats, for example—in your experience generally charge a fixed price per unit, so to speak, or are they participating in the value of the unit when sold?

Dr Suzanne Peters: My impression is that it is a fixed price per unit, which can be negotiated based on the size of the development and such.

The Chair: On the question of labour, the Government have recently added construction trades to the list of people who can easily get visas. Do you think that is inimical to the development of modern methods of construction in housebuilding, because it takes the pressure off the housebuilders?

Dr Suzanne Peters: The labour shortage is a huge part of the problem. That is what you were referring to: it is how we are building today, but it is really how we need to build tomorrow that we should all be thinking about. In terms of the labour shortages, low productivity, sustainability, et cetera, we need more people to come into the country—we need folks coming on these visas. Anecdotally, I do know someone who is trying to come in from overseas, but the only firms that will sponsor him are London-based and he will not be able to afford to live in London. He would like to live further up north, and he cannot get anyone up there to sponsor his visa. That is very anecdotal—it is one case—but it remains to be seen if we get enough folks coming on those visas. It is a massive shortage of labour, compounding year over year.

The Chair: But if part of the pressure towards modern methods of construction is the shortage of labour, that is one of the prompts to innovation. Is it helpful for the Government to be relieving it?

Dr Suzanne Peters: I do not think they will be able to relieve it enough to make a difference.

The Chair: Thank you. Our next question is from Lady Cohen of Pimlico, joining us remotely.

Q25 **Baroness Cohen of Pimlico:** To some extent, we may have asked some of this before, but it is all about business models. I had assumed that where Ilke went well and truly wrong was in trying to finance the ownership of the land as well as finance the building. What do you think actually went wrong for the category 1 MMC companies that have recently closed, like Ilke? What went wrong there?

Professor Jonatan Pinkse: The main thing that went wrong is that they could not fill up their factory fast enough. They had a certain capacity; they could not work to the capacity that they had in place. Their order book was not filled. They started their business based on the narrative that there was unmet demand in the market, so if they supplied more houses, there would be demand for that. For whatever reason, they could not get that going fast enough. If you then have a high initial investment of a factory, and you cannot work up to the capacity of that factory, then this initial investment will be spread over fewer units so you will be more expensive. That basically eats into the profits. There were no profits; there were losses because of that. It will take much longer for you through a learning curve, and if you can do things more efficiently, to get to that break-even point.

That was the main problem: they could not get the customers. As for the reasons for that, there is always a whole combination of factors. The phrase "planning system" is always being dropped the moment we talk about these things, such as the market condition and the currently high interest rates. But the order books were also not full before the interest rates went up. This is where you see that, if you just focus on the upstream part of manufacturing houses, it is not the full part of it; you really need to also drive the demand. But those skills are quite different, so it is quite difficult for a small company to do both: to really get a factory up and running in the most efficient way possible and to do a lot of continuous improvements to bring down the cost, which is necessary, while at the same time compete with existing powerful players that are very good at acquiring the land and getting the best pieces of land where they can make most value. It is really a very difficult task for them to do both, given that they do not have that many employees. Yes, it is a big ask from a challenging company.

Baroness Cohen of Pimlico: Indeed, and they did not have the land either, so they had to finance that.

Professor Jonatan Pinkse: Yes.

Q26 **The Chair:** While Janet is just thinking of a follow-up, may I ask: do the MMC companies not have, to some extent, a captive market in the affordable housing sector?

Dr Suzanne Peters: That is what they were betting on, but, clearly, the orders did not come through. Again, their entire business model is predicated on reaching volumes that deliver to scale to make it work. It is a big question as to why they were not getting the orders.

The Chair: Why did that not come through? Because I thought—and I do not have the details—that there was some sort of condition on government grants that requires 25%. We have heard that the way in which that was measured was so loose and sloppy that you could get by without doing any category 1 MMC and you would still meet your 25% by having a few wooden beams here or there, precut or something like that. Is it because it was applied sloppily?

Dr Suzanne Peters: The 25% is for MMC, broadly speaking, so any of the seven categories. There is such a wide variety within those categories, with category 1 obviously being the most advanced. There was no stipulation, no requirement, for affordable homes money to go to category 1. Yes, there are all sorts of questions around the measurement for that. It is clearly not an effective approach.

Professor Jonatan Pinkse: One useful way of thinking is what we call in marketing terms "doing the customer journey". If you are the local authority trying to build houses, what do you see? You see that you can go for MMC or you can go for regular. The MMC proposition, because they are all still fairly new, will probably be slightly more expensive. They cannot yet do it a cheaper way because that depends on reaching scale, on learning, so over time the costs go down. But the costs are not yet low when they start. They basically buy the same home for slightly more, where they do not necessarily have a different product. Then it would be more that they are supporting this new development, or they are trying to meet certain targets that are part of the Homes England agreement. But if that is not enforced in any kind of way, they will not feel that pressure. Then it is just a short-term decision: "Okay, I buy more or less the same house, either for more money or less money". Most will go for the cheaper option. In that sense, from the customer perspective, it is almost logical that they are not going for the new offer. It does not always happen like that, because there are local authorities that did go with MMC providers, but not enough.

Lord Best: Pressing on the point of what Homes England should require of the social housing providers doing affordable housing, can I ask: should they be saying, "We want 10% category 1 specifically", so that it is not all category 7 stuff that does not make any difference to anything?

Dr Suzanne Peters: That would certainly be one approach. The challenge is that, until category 1 reaches scale, it is a slightly more expensive product. I do not have the exact figures, but I have heard it is 10%. For a local authority to spend 10% more because the Government mandated it, "Where is that money coming from?" is the question they are going to ask. It feels a bit unfair to put the pressure on them unless the Government are also coming in and offering to help offset the cost until category 1 can reach scale. I believe these figures are from Constructing Excellence—they believe that, when category 1 hits scale, the cost will come down by a full third, from £3,000 per metre squared to £2,000. But there needs to be an investment and support to get those factories to the point where they can deliver homes for that much lower cost.

The Chair: Janet, you had a follow-up?

Q27 **Baroness Cohen of Pimlico:** My supplementary question is: we were all a bit surprised to find that the Government had lent £60 million. Had they done any due diligence? Is this a really bad idea? Should we be as censorious as I am?

Dr Suzanne Peters: Yes, again, we do not know the due diligence that they undertook for that, nor what the requirements were for those loans. It is difficult for us to say. But, again, there was not £1 trillion but over £1 billion put into category 1 firms in the last few years. They were not the only ones doing diligence in the sector and choosing to put significant sums there. That is the most we can say about that.

The Chair: But am I right in thinking these are not the only loans and financial subventions which Homes England have given to MMC? An interesting subject, for another inquiry, is the Homes England loan portfolio, which might be worth digging into at some stage. We will have evidence from Homes England, but it seems to me there is nothing egregious about £60 million from Homes England, given their normal pattern of behaviour; this is what they do. Losing £60 million does not seem to be peculiarly egregious either, because they do not get all their loans back. Is your experience otherwise? Am I being too generous to them?

***Dr Suzanne Peters*:** I honestly do not know much about their loans portfolio, so I am not in a position to speak to that.

The Chair: Janet, if you are happy with that, can we move on to Lord Berkeley?

Baroness Cohen of Pimlico: Of course.

Q28 **Lord Berkeley:** Thank you, Chair. Good morning. I would like to ask you a little about whether MMC-delivered homes are facing problems with warranties and insurance. Is there a difference between categories 1 and 2? I can see a problem with inspection—not just standards but inspections of site work—and interfaces between what is done on the site, the foundations and the services, and what comes in on the truck. Another issue is the extent to which any inspection is independent, because it is very easy for the companies to do their own inspection and say it is right. Whether that happened on Grenfell, we can debate, but is there a serious problem with getting warranties and insurance? And what is the solution?

Dr Suzanne Peters: Our understanding is that there were a lot of problems in terms of warranties and insurance and mortgages, but that those have generally all been resolved. There might be some that are still in motion, particularly around home warranties and with the big providers, but our impression is that that has all been dealt with. Our research was primarily to do with category 1. We are looking at category 2 now in more detail, but I do believe that those things are mostly resolved.

In terms of inspections, again I am not an expert in that area—we are not technical experts; we are from a business school—but if you think about inspections and regulations, typically they are looking at the outcome of a process. Category 1 is really about process innovation: it is all about process, and improving the process for a product that at the end looks a lot like the other homes out there that are made with traditional methods—or using category 2 and category 5 or some combination—but the end-product is, by and large, the same in practical terms.

There might be some modifications needed to do those inspections at certain times, but when you think also about the controlled environment of a factory where these category 1 homes are constructed and manufactured, in fact the consistency there and the low number of defects and variation means you are getting a much more consistent, high-quality precise product at the end of that line than you would going from building site to building site, where there is a huge amount of variation. One might say that it should be easier to sign off on these homes, because you can trust the process and precision of that factory environment.

Lord Berkeley: Could I just go back on that, please, Chair? I can just foresee interesting challenges when somebody is putting in the foundations, and then you put in an MMC building on top, whether it is category 1 or 2. The challenge is: if it goes wrong, or there is a bit of settlement or something, who is liable? Is it one contractor you have been dealing with as the owner, or is it two under subcontractor arrangements? Then what happens if the insulation or the watertightness or everything else does not work? Who is responsible? If you are going to get insurance, you need to know all these things, and presumably somebody has to warrant it and repair it.

Professor Jonatan Pinkse: Yes, we did find in our research that the communication between on-site and off-site was still sometimes a challenge, because the level of precision you need for MMC is much higher than it is for traditional. When it is about warranties and how it works legally, I do not know anything about that. I am not a legal scholar, so that is really beyond my remit.

But it is definitely necessary to educate everyone that the level of precision needed to make this work is different—that is both with groundwork but also suppliers. We had, for example, anecdotes about staircases—that they would get staircases and the supplier thought they were offering the same staircase all the time. But no, they do not fit in our house, because it is about millimetres—you cannot just fix that. But that is really where you see a learning process. Suppliers then learn to basically improve and to be able to supply and the groundwork people learn how to work with MMC. This is why certain new industries like this need time. At the same time, you see that existing developers also have problems with groundworks. This is not unique to MMC. Suzanne, you have more evidence on that.

Dr Suzanne Peters: Yes, there was a development recently—I believe it was traditional; it certainly was not category 1—where the entire development had to be bulldozed because of a problem with foundations. It does not only affect category 1. Category 1 does require the more precise tolerances, and, again, the report that we published did speak about this. This inevitable sync-up when on-site and off-site methods come together has been problematic. Those problems should not be insurmountable. There are plenty of cases where it has worked very, very well, including that development I mentioned where they had category 1, category 2 and traditional methods on-site: they started very early in the process, co-ordinating from the category 1 builder and the developer, and it worked very well. I do not think there are insurmountable problems there, but it does need attention.

Lord Berkeley: I am a civil engineer and my experience of doing something small with a small concrete mixer and a couple of paddies trying to get it right is "That will be near enough", but that is not what it needs to be with MMC. Do there need to be standards or better communication, or what?

***Professor Jonatan Pinkse*:** Definitely better communication is needed. The communication between on-site and off-site is crucial. This is sometimes why certain companies prefer vertically integrating and doing it themselves, because then they can control it. If that is then a major pain point, this is why you want to do it yourself and not rely on others to do it. Again, that has financial consequences, because you take on risk there as well. That is where different companies have tried different things to see what works best, and that is the learning journey such companies are on.

Q29 **Lord Faulkner of Worcester:** Good morning, thanks for coming. TopHat told us that there were no specific building regulation issues for MMC homes. Is that your understanding, and, if so, does it matter?

The Chair: This is in the context of some parties saying that there should be specific building regulations related to MMC category 1 homes, which was not TopHat's view.

Professor Jonatan Pinkse: That is not necessarily our perspective, and it was not the major focus of our research. What we have seen is that they really try to build houses very similar to those of traditional builders, so there is no need for different regulations. If the final product is the same in terms of safety, quality and all those things, then it should live up to exactly the same standards. So, from that perspective, I do not see why new, different regulations would be necessary, but I do not know if you have anything to add to that?

Dr Suzanne Peters: I agree.

The Chair: I think there is something in particular about the types of cavities that exist in an MMC building, which obviously is built with services built in, which exist inside spaces that are otherwise void, and the possible spread of fire in those spaces in ways that would not necessarily be true of a traditional house, where your soil-pipe or whatever it might be is embedded in the structure or is external. If you are building in lots of voids to take services, which also allows you easy access to replace them—to renew them, to rewire the house in due course and so on—there may be some potential fire risk in that regard, but that is not something you looked into.

Professor Jonatan Pinkse: No.

The Chair: I may have this completely wrong, but I have heard that argument being made.

Professor Jonatan Pinkse: We had some debate the first month of the project around the whole fire risk, but I forget the details, so I am not going to say anything about that. It would be speculation.

Dr Suzanne Peters: We are not technical experts, but if you think about MMC category 1 as a process innovation with a product at the end that is very similar to traditional—in fact, better in many respects in terms of the quality and the consistency of the work—then I do not see why it should be held to higher or maybe slightly different standards. There may be different ways of assessing the work. But beyond that, I do not have much to say on the matter.

Lord Berkeley: Your answers have been very interesting. Given the problems with Grenfell and the issues that our Chairman raised about voids and things like that, it would seem to me that there needs to be some kind of a standard which can be inspected and imposed on a special MMC—whether for category 1 or 2, I do not know, but probably for both. We have the debate in this place here, whether it is going to catch fire before it burns down or not, et cetera. The fire officers of London and other places are getting very concerned about this, and I am surprised that you do not actually feel that there needs to be some standards which are then monitored.

The Chair: There are standards.

Lord Berkeley: Yes, I know. It is a separate standard. Sorry.

The Chair: No, but there are building regulations. They have been focused on fire standards for 300 years. The other parts of building regulations have only been added in the last 20 years. You could say all sorts of critical things, but that is the principal focus of building regulations.

Dr Suzanne Peters: If I can add as well, if you think of a home going down the line and as they are putting it together, it is about repeatability. It is repetition, repetition, repetition: they do the exact same thing according to standard operating procedures. Ilke had over 400 standard operating procedures for doing things in a very precise manner. You should expect the products that come out of the end of that to be 99.99% identical: every single one, built to spec, built to that standard that has been set, that has considered fire regulations and everything else.

On a traditional site, however, there is absolutely a variation because you do not have that same repetition: you have various trades and services coming in at different times. Every traditionally built home is effectively bespoke, so it is quite a different thing. There is definitely an argument to say that the outcome is much more dependable and precise.

The Chair: When I had my flat rewired, the building regulators, who wanted a certificate, were content to take a certificate from my electrician because he was a registered electrician. Nobody ever came and looked at the wiring, and I have no idea what he did inside the walls.

What I hear being described is like the difference that those of us who remember when Nissan started making cars that worked. We were never used to cars that worked in the UK: when you bought them, they did not work. You had to run them in, drive them at 50 mph for the first six months and so on, while all the iron filings were flushed out of the engine, and then the pistons started to discover which path they could more easily follow because they were not precisely engineered. That is what we used to live with. It is the difference between that and assembling a Morgan, if they still make Morgans. I watched a programme once about Morgans, where there seemed to be no process at all to making a Morgan. There was a bit of it made here and a bit of it made there using traditional coachwork skills that have been used for years.

This makes perfect sense to me. Does it make sense to us? What is being described is the repetition of standard operating procedures producing a 99.9% reliable product, like a Japanese Nissan motor car that actually works out of the box the first time you use it. Should that not be what we expect?

Lord Berkeley: If we are going to have a discussion about this, it is a discussion about whether it is best to have a Morgan that is perfectly made and will go anywhere you like and nothing will break down or to buy something half the price but it might go wrong. Sorry, I am getting off the point.

The Chair: You buy something half the price that is perfectly reliable, or you buy a Morgan, which is absolutely beautiful, enhances your life and increases your social life tremendously but probably breaks down just as you are getting to your next date.

Baroness Eaton: The Triumph Stag used to break every weekend. I had a Triumph Stag when they were new, and it spent most of its life in the garage. Various things were just designed wrongly.

Lord Best: Can we extend this into a question for our colleagues? What happened to the UK motor industry was that we imported much better products from Japan and Germany, and gradually we learned. We are not importing our MMC from, for example, Holland, where it is much more common. Why is it that we are having to depend on companies that are now falling like ninepins?

The Chair: I was, if we got to the end of the questions, going to try and detain Professor Pinkse for a few minutes and ask him specifically about what he could say about his experience in the Netherlands and other countries, which is slightly unfairly taking advantage of his being here.

Professor Jonatan Pinkse: I left the country 12 years ago.

The Chair: Perhaps we will come back to that at the end, Richard, because we might get a little advantage out of that—I do not know. Lady Eaton.

Q30 **Baroness Eaton:** I was very interested in Dr Peters's earlier comment that the Government could be champions. My questions are around that topic. Where challenges are structural to the sector rather than the operational choices of a company, what do you see as the proper role of government in addressing these?

Dr Suzanne Peters: I will start, and Jonatan will probably want to chime in on this one.

The role for the Government as champion is that, effectively, they can have a longer-term vision for the sector and see it enacted. They have various levers obviously at their disposal, in terms of tax schemes and various incentives, but also funding into the sector to support it, because it is difficult. The changes that the sector needs are difficult changes: they are expensive changes that are going to take time, and you need a very patient investor, so who better than the Government to step in and to really put a focus on the sector? Years ago, it was left to the client side and it was left to the supply side, but leaving it to industry has not worked for a lot of very, very good reasons. So it is time to do it differently with the various options available to the Government. That is important work that needs to happen now, because it has to be done differently than it has been done.

Baroness Eaton: So that is both policies that they can have as well as financial support?

Professor Jonatan Pinkse: Yes, but focusing not just on the companies that try to do MMC but also on the existing industry and how it is currently building. It is currently not delivering enough houses. It is currently not delivering homes that are energy efficient enough. It will not meet the future home standards with the way it is currently building.

It is very difficult to change an industry like housebuilding without any support from the existing players, but they are currently not very enthusiastic about MMC, to put it politely. So, can that change? It might change because they realise that they have to change how they are building to meet future regulations. How are the Government enforcing such future home standards? Is it really being done as if there is no other way, or is it being done in a way where there are delays, and it is not clear whether it is going to happen? There is a bit of a tradition of that sometimes, and because of that, companies are then running down the clock to say, "Let's hope that it will not be enforced the way it was in the initial plans". If that is the case, you will not really get the change that you want.

Is there a need? I read this morning that there is a new KPMG report about whether we are reaching net zero. The UK is in a very good position in greening the electricity supply but not in a very good position around transport, housing and big industry. Housing and the built environment is a big factor in this, and how things are currently being done is not sufficient to reach the UK's ambitions.

Baroness Eaton: So it would really mean training in the construction industry as well, which presumably government can influence too.

Dr Suzanne Peters: Yes, that is very important as well, and also transitioning to less labour-intensive ways of building is vital. Again, with the labour shortages we have talked about, that needs to be a big driver here. It is difficult enough to reach these targets today, and it is not going to get easier. With labour shortages—plus productivity has been stagnant for decades as well—and then when you add in the important requirements around transitioning to net zero, these things are difficult now and they are going to get more and more difficult. We need to do things in a radically different way to be able to meet those challenges. That will take time and effort.

Q31 **Lord Berkeley:** You asked the question, "How can the existing traditional industry be made to change?" Could you answer your own question, because it is a fabulous question?

Professor Jonatan Pinkse: By being stricter on demanding that the industry build houses that are of a certain quality, definitely with regard to energy efficiency. We do not have all the evidence as to whether they are currently capable of doing that, but there are many people in the industry who believe that, with the current way of building, they will not be able to meet future standards. They have to change how they are building a house, and there are not really more people coming into this sector, so it seems almost inevitable that you go for further automation.

That is why we are discussing MMC, because it is one of the ways you could do this. This is the reason why we started this research, because we are being funded by the Productivity Institute. This sector is a drag on productivity. It really needs a lot of people. How can we maybe do it in a different way, so that we do not need that many people, because they will simply not be available in the future?

Q32 **Earl Russell:** I was really interested in your reply to the last question from Baroness Eaton. You said leaving it to industry has not worked and it needs to be done differently. I wonder if we could delve down a little more into that, because in the answers you have given us in your evidence so far, I do not hear a lot of hope for industry or for these problems to be resolved. Markets will always have ups and downs, and there will always be a need for massive upfront investment: is this actually something that industry can overcome? Is there a need for a whole different way of doing this? Is there a need for more direct government intervention to get this industry up and running?

The other bit I hear is that it is never getting over this initial hump of getting the funding in place to meet the levels and volumes of production that will generate savings. What needs to be done to make this work?

Dr Suzanne Peters: I will jump in first. I do want to clarify that the industry is doing fantastic work: there are brilliant folks there and they all have ideas. We are outsiders who have come in and studied what they have been doing and gone through all their research and met with them. The right ideas are in the industry. What it needs is power behind it to make these changes happen, and that is very difficult when each of these firms and organisations has its own challenges and priorities. It is just not reasonable to expect the industry as a whole to co-ordinate itself to that extent and to take on the massive amount of change that is required. That is where government can play that role and really make a difference.

Professor Jonatan Pinkse: I would like to draw some parallels. A decade ago, we did not believe that we would have so much green electricity either and the discussion was very much, "Utilities will never change—it is not possible". See where we are now: they did change. The industry directed it in the way it preferred. Offshore wind works much better with the current business model because it is centralised. The first idea was that everyone should have solar panels on their roofs. The industry did not necessarily like that so much and it is not where it is going; it needs to find a way to fit it in with how it works, and then it is possible.

The car industry is similar, although it is a bit up and down, but we are going to drive electric vehicles in the coming decades. The industry has not been very enthusiastic for a very long time. In the end, it was the Government who pushed it, and then a big challenge from Tesla showed that it was possible. That combination, and a lot of other factors, suddenly led to a change in an industry that had been unchanged for a very long time.

So I would not say it is impossible here. The difference is that it is a very place-based industry. In every country, a few local players tend to dominate the market, and that is where it is different. It is not that easy for a foreign builder to just come in and try to disrupt the UK market—you need to know exactly how the system works here and have a deep knowledge of the local environment.

Earl Russell: I do not mean in any way to criticise industry; my direction and my question is what more government should be doing. If I gave you a magic wand and you were in government, what would you do?

Professor Jonatan Pinkse: We need change in the sense that we all agree that the current standards by which we build houses are not good enough. It is in the newspapers all the time: mouldy houses, leaking energy. There is now a general agreement that things need to change, and this is where the Government need to step in. If that is an important ambition, and for all kinds of health and environmental reasons it should be—including affordability, so that people can actually buy a house—that needs to be part of the overall package. How can we get the industry to start achieving those kinds of targets?

Earl Russell: What about the financing side? That also seems to be a major hurdle for industries to overcome and it seems to be the Achilles heel, to my mind, in a lot of the companies' failures.

Professor Jonatan Pinkse: We are not specialists in specific policy instruments, but if, for example, you look at offshore wind, why did it take off? Because of a policy instrument with contracts for difference that somehow worked, at least for a while—now, because of the higher prices in the supply chain, it is a bit more difficult. For government, it is also a bit of an experiment sometimes: how can we provide the right incentives to give some certainty in the market? What did that policy instrument do that meant you could go and invest here and you would have a guaranteed price? That is the thing as well: that you are not taking on all the risk of fluctuations yourself; the Government are basically de-risking the investment. That is how it would work. It depends so much on what your exact goal is, and there would be specialists who know exactly how to do that.

Q33 **Lord Carrington of Fulham:** We have talked a lot—rather too much—about what the Government could do to make this happen. We have talked effectively about push marketing, about building houses and forcing people to live in them, and saying, “We’re going to have all these wonderful constructions, all these wonderful companies are putting these houses in there, and somebody's going to go and live in them”. Actually, that is often what is wrong in our whole housing market in this country; we do not have anybody actually wanting to buy these houses perhaps, or necessarily live in them. It was the whole problem with council estates in the 1950s and 1960s: people did not actually, on the whole, want to live in them.

Now, I am generalising grossly. There are council estates I could take you to where people are very happy living in them, and I could take you to council estates in my old parliamentary constituency in London where people loathed living in them and the only people who lived in them were the people who destroyed them.

We are talking a lot about how the industry and government are going to force these houses to be built. What we are not doing is asking ourselves the question: what happens when we get to a planning situation, which is where most of our housing problems come from? There are lots of other problems—there are skill shortages and everything else—but virtually all our housing problems come down to planning, fundamentally, because we do not release enough land and we do not allow enough density and we do not deal with the people who object to very unpleasant and unattractive developments being put next to where they currently live.

Is there any research which suggests that people say, "I have a choice between a house built by a small builder with local materials—yes, it leaks energy; yes, it is horrible; yes, it needs lots of people to come in and repair things later—or I could buy a house which is built in a factory and put on the same site"? Do we have any research which says that the potential resident in that house will say, "I want the factory-built one, rather than the one built with the local materials by the local builder"? If we do not have that, we are not going to get the acceptance of the factory-built houses, and they will not get planning permission because the local councillors will be under huge pressure to resist them. We will always end up with local resistance to these methods of construction, and no matter what the Government do, no matter what subsidies are given, no matter what directions are given, public opinion will win.

Dr Suzanne Peters: There is research that has come out recently—we can get you access to that report—that effectively says the public actually think these are very good-quality homes, and that there is no stigma associated with them whatsoever.

We also experienced that with our research. Various players in the industry, certainly those building modular homes—category 1 firms—felt that the market liked their homes, and they are entitled to their opinion, but I also heard it from the large housebuilders. People who are moving into one of these homes do not care how it was built. They probably care how it looks, they definitely care where it is and they definitely want to be able to afford it, but they do not care how it was built.

Lord Carrington of Fulham: It does not matter, except of course, if they are built in modular. As we heard in evidence before, they can change the outside with cladding—they can put lipstick on a pig, but it is still a pig. We heard all sorts of wonderful things about how they can do this with laser technology to make the thing look like a film set.

Dr Suzanne Peters: We were in them. I would live in one of them, no problem.

Professor Jonatan Pinkse: We have visited several. I live in a new-build house that was traditionally built, and it is very difficult to see the difference. They are really trying to build them in exactly the same way because that is how people like their houses in this country. What people like is very different across countries. People here like to have a home, which means it is two storeys. In Italy, they like to have an apartment. Those are cultural differences, so that is partly why the land issue is there as well. You need more land. I used to live in Manchester: it is spreading all over because you need all the space for all the houses.

Dr Suzanne Peters: In terms of quality, when you are in these homes, they even have nice wood baseboards. They are quite nice; I definitely do not see that any stigma should be associated with them.

Professor Jonatan Pinkse: No, we are being asked if we could see the difference.

The Chair: I think you are overestimating what is possible with traditional built homes. When I was on the board of the Ebbsfleet Development Corporation, we had land set aside for what we called custom-built homes, and we could not get people to come and build individual custom-built homes.

Eventually, we got a local builder who was quite enthusiastic about building homes that gave people real options as they were built. But the options really came down to the questions, "Do you want the kitchen at the front of the ground floor or the back of the ground floor and the sitting room reversed?" and "How should the bedrooms upstairs be laid out?". There is very little choice available to somebody buying a traditional home.

Lord Carrington of Fulham: That is, if you excuse me, Chairman, exactly the point I am making: that there is very little choice and that the choice is imposed on people, so they start to worry about where the kitchen is located. But actually, the resistance to building in the south-east, classically, because there is a great shortage, comes from people who do not like the new developments coming into them because the new developments detract from the existing quality of the environment. Whether it is true or not I have no idea, but that is the perception. The same thing happens in London.

What I am saying is: is there a way, with modern construction methods, to overcome those objections so that people welcome the developments coming into their locality that are desperately needed?

Professor Jonatan Pinkse: On paper, it is. If you let this market develop, then they will be able to cut costs because that is the whole idea of doing the manufacturing: you will learn over time and reskill, so you can basically start producing the same quality of house at a lower price. Because of that, you can have more affordable houses of a better quality.

But it is also about aesthetics, deciding whether people like the way it looks, and that is still about the architect who is involved. I do not think there is any difference then between the MMC builder and the traditional builder: it depends on who they work with and who does that for them. In our experience, they look very similar, so maybe that is a bad idea; they should maybe look different. But people are quite conservative when it comes to their house—they do not like huge differences, apparently, and that I find very difficult. It is a matter of taste.

Q34 **The Chair:** Before we wrap up, could we come to this question about foreign experience? I appreciate that you said you have not lived in the Netherlands for 12 years.

The impression we have is that there are different types of modular construction because not all homes are built in factories: sometimes parts are built in factories and are assembled on-site in a pre-planned way. Sometimes I have come across builders who are very heavy on concrete for this purpose, whereas there are others who would not be using that much concrete, and so on. I appreciate there is a variety, but we have the impression that this is somehow more successfully delivered in continental Europe. Are we deluding ourselves and thinking something is wonderful over there but that is not the case, or is there real evidence that we could use?

Professor Jonatan Pinkse: I have done limited research on the construction sector in the Netherlands, but what I did led to a variety of the same issues we are discussing here. I still read the Dutch newspapers and they have very similar struggles there. The way of building is different: a typical house there is made of concrete. In my house here in the UK, I find that everything moves and I am not used to that; it is more solid in the Netherlands. But a lot of the perceptions are similar. We have not studied builders from other countries so much. We have, for example, from Sweden, BoKlok—a Swedish name—and they have major investors, IKEA and Skanska. IKEA everyone knows, but Skanska is also a very big company, so they have major backing. They have been in the market for years and they made it work in Sweden. They also have some small developments here in the UK now—they are trying here—but they have the major backing of very big companies, and IKEA has also helped with selling it because it was part of the design ethos. They really worked on that part, and I would say that is where it stands out. I can buy a different house, and that makes it attractive. IKEA did quite a lot of marketing around that in other countries also. It is a different model for them so far. They have been in the business for two decades now or something like that.

The Chair: The product is more bespoke to the customer.

Professor Jonatan Pinkse: In that sense, yes, but that is not always a good thing. Anecdotally, I bought a house here and I bought a house in the Netherlands. In the Netherlands, I buy a house and it is basically just an empty house. The kitchen I get is standard, and I do not want it. They really make sure it is the worst possible kitchen because they want me to splash out and get a better kitchen. There is nothing on the walls. You could say that is because I can do it to my own taste, but it means I have to pay a lot of money to get things on my walls. It works very differently.

When we bought a house here, we were pleasantly surprised that the kitchen that was standard was actually okay. Maybe we are not very demanding, but it was a nice kitchen. The walls were all finished so it was not all bad; it was actually pretty good.

The most important thing was: I started paying for it only when I moved in. In the Netherlands, you start paying once you sign the contract, and then it can take two years until it is finished: every month you are paying for a house you are not even living in. So, it was not all bad here. I liked buying a house here more than in the Netherlands, but the reasons for that are beyond me. I am just being a customer and seeing the difference.

The Chair: We are very, very grateful to you. We have learned a lot and explored a number of important issues, so thank you very much.