B&O

THE QUARTERLY JOURNAL OF THE ECONOMIC RESEARCH COUNCIL

CONTENTS

www.ercouncil.org

ISNN 0045-2866

£10 (plus £2.50 p&p)

SUMMER 2016 ▪ VOL 46 NO 2

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Editorial

Welcome to the Summer 2016 issue of B&O. I'm sad to announce that this will be my last issue as editor, as I am leaving the Economic Research Council over the summer. It has been a great honour to be a small part of the 45 year history of this journal, and I hope it will continue to go from strength to strength.

I'd like to take this opportunity to thank the previous editor, Jim Bourlet, for his help in showing me the ropes and for providing an excellent base to work from. I'd also like to thank Maxamillian John for the meticulous and good-humoured work he has put in as sub-editor, which has made putting together this journal a genuine pleasure. And of course, thank you to everyone who has contributed articles over the years, without which there would be no journal to edit.

Two themes dominate this issue: property and taxation. On the property side, we have the full transcript from our annual summer property discussion, with four different points of view on the current state of the UK residential and commercial property markets. Importantly, this event took place before the EU referendum, but their analysis of the underlying issues with the property market remains relevant despite the unexpected outcome.

On taxation, we have the transcripts from two recent ERC events. The first was with Richard Murphy, who is an author, blogger, and accountant, and who is widely credited as the creator of "Corbynomics", explaining what he sees as "the joy of tax". The second featured John Whiting and Angela Knight from the Office of Tax Simplification speaking about their role in simplifying the UK's tax system.

Last but not least, we have an article from Chris Meakin, who has almost certainly contributed the most articles to B&O during my time as editor, on a possible future for the UK's energy policy.

As always, I hope you enjoy the issue.

Greg Opie, Editor

Your Property: Boom or Bust?

Extracts from the talks given by a panel of property experts at the Economic Research Council's Fourth Annual Property Discussion on 8th June 2016.

ED MEAD, DOUGLAS & GORDON: THE SELLING AGENT'S VIEW

I've been an estate agent for a very long time, and if I had £5 for every time someone said the market is about to fail and we're going to go to hell in a handcart, I would not be an estate agent any longer! But I'm still here, and the market is still active.

What I'm going to say this evening is predicated on the fact that we vote to stay in the European Union on June 23rd. I think all bets are off, frankly, if we vote to leave. I probably have three or four years left of working life, and the last thing that I want to do is spend the next two years in chaos after a Brexit vote. I'm afraid my heart says "out", and my head says "in".

I started doing this in 1979, and the Central London market has always had overseas buyers in it. When I started, it was the Iranians escaping from the Shah. London has always been a magnet, and part of the reason for that is that it is a safe place to live. I don't really see that changing.

We have an interesting research outfit, who I have to say are not in Neal Hudson's class, but they are all ex-macro economists, and they are very good at looking at what is happening in the market. Some of their predictions and what they've been saying over the last couple of years have been pretty good, actually. They forecast in 2008, when everyone thought we were going to hell in a handcart, that prices would bounce back very quickly, and of course they have.

I'd like to talk briefly about why that is, and how unusual that is. A lot of people look at Prime Central London, and in the old days (and I say the old days, going back to pre-2007 really) Prime Central London was always a pretty good guide to what was going to ripple out to the rest of the country. What wealthy Brits were doing tended to spread out. In 2008, someone just lobbed an enormous rock into the Prime Central London pool, and because the currency slumped, that attraction London had for overseas buyers was suddenly magnified a million times, and people just piled in and bought. We saw in Prime Central London a V-shaped recovery that bore no relation whatsoever to what was happening in the rest of the country. That has really continued to be the case.

But what happened, and what I think is the important thing with this, is that when that rock was flung into the pool of Prime Central London, you used to be able to spend £2 million and buy yourself a decent house in Chelsea. Now you need £5 million to buy the same house, and even rich Brits can't afford that. The only people who tend to buy houses in Prime Central London are wealthy foreigners. I lament that, personally. I went to have supper with a friend of mine in Cadogan Gardens recently, and it was just dead! What has happened is that all the people – all the real people – have gone to live in Hammersmith, Fulham, Clapham, these sorts of areas. And what happened about three years ago is that those areas saw a massive increase in value in a very short period of time. They saw a price rise in a year of about 30%. What happened was, obviously all the people who used to buy in Prime Central went to live in areas we call "Emerging Prime" (Fulham, Battersea, etc.). I think it has fully emerged now, and it is quite prime these days.

> "Obviously all the people who used to buy in Prime Central went to live in areas we call 'Emerging Prime'"

What this did was to panic the politicians, who suddenly were getting these headlines saying prices were up 30% in a year. An awful lot of what we've seen, and the uncertainty that we now have, is a product of the political reaction to that single change in the market. And do you know what? I don't see much changing. I was talking to someone before I came out here to talk, and I would gladly trade 30% on value at the moment for three times the transactions. I am an estate agent, so I would happily see prices fall and volumes go up. That's what is killing my business. I know most of you don't care about estate agents, I realise we're not the most popular people, but in terms of the market I don't see much changing, sadly, for the near future.

What used to be looked at was Prime Central London, but you now need to look at what is happening in the Emerging Prime areas. You need to look at places like Hammersmith, Fulham, and Clapham. Prime Central I don't think is going to change. People who own property in Prime Central just don't have to sell. That has been carrying on for a whole generation. You have to bear in mind that one of the differences between British people buying property in Central London and overseas buyers is that overseas buyers keep them for a generation. Douglas & Gordon keeps a very close record of what we call the "itch cycle" – that is the amount of time people live in a property. When I first started, it used to be about three or four years. People used to buy a one bedroom flat in Clapham and then a two bedroom flat in Balham and then a three bedroom house between the commons, then a four bedroom house in Wandsworth, then a five bedroom house in Putney, and then they'd move out to the country. Well stamp duty has put paid to that. People now only have two or three moves. The bottom of the chain is taken up by buy-to-let. Very few people buy a one bedroom flat these days. They can't live in it for more than two or three years before they get married and decide to sell. The stamp duty is a killer in that situation. This change in transactional volumes has been coming for a very long time. People who point to low transactions as being a harbinger of doom have got it wrong I think. That is just the way the market has been going for a very long time. I'd love to see volumes increase, but I don't think they will in the near term.

If you look at the area within London transport zones one and two, councils have the opportunity to build houses, but what are they doing? As soon as a council property becomes free in either zones one or two they sell it and invest the money in zones three and four. I just don't see that much is going to change in the centre and the Emerging Prime areas in the near future.

Buy-to-let has received a hammering, but even with the changes in stamp duty it still seems that people have an appetite for it and I can't see that changing. Where does the government expect all this private rented sector accommodation to come from? I think it is absolutely daft what they are doing, and it amazes me that the whole thing has happened under a Conservative government.

Where else do you put your money at the moment? Property is as safe an asset as anything. If you look at what happened last year to commodities, oil, any of the metals – it has just been a disaster. London property may not have gone up, but it hasn't really gone down much. And of course, if you are an overseas buyer wanting to park some money, you can park £5m quite happily, and if the balloon goes up in your own country you can come and live in it. There aren't really many assets that you can do that with!

CAMILLA DELL, BLACK BRICK PROPERTY SOLUTIONS: THE BUYING AGENT'S VIEW

My view right now is that it is a really funny market. Yes, we've got some challenges, and I hear a lot about Brexit. Quite frankly, I think Brexit is a bit of an excuse sometimes that estate agents use when they haven't sold a house, and for why things are a bit quiet at the moment, but quite frankly I don't think Brexit really is to blame. I think the market fundamentally has changed because of government intervention and taxation and that has really happened since December 2014. We had huge changes to stamp duty, and we had another round of changes to stamp duty in April of this year, not to mention other changes that international buyers have to contend with now.

When I set Black Brick up in 2007, if you were an international buyer (which probably makes up around 60% of our clients) and wanted to buy a property in London you'd normally set up some sort of offshore company to do it. You'd pay stamp duty, I think the top rate then was maybe 5%, and you could shelter the asset from capital gains tax and future inheritance tax. Now, if you are an international buyer, you are paying stamp duty of more like 15% if you're buying above £2m, and you have to pay capital gains tax and inheritance tax. So fundamentally, that has massively changed the market, and with or without Brexit happening on 23rd June, and regardless really of whether we are in or out, that doesn't change. We are in a very different market now because of taxation, and that, sadly, is going to stay with us for some time.

Government intervention is having a profound effect on the market. Yes, transactions are down, but what is happening is we're seeing increased activity at the lower end of the market – so it is very active below £1m. People wrongly assume that buying agents are only for the super-wealthy, but I can tell you that in the last few weeks we've helped a first time buyer purchase something at £370,000. The market below £1m is so active and so competitive because as a result of stamp duty changes you now have investors competing with first time buyers. We're seeing our clients spending the same amount of money but on several transactions; rather than putting £5m on one property, they are still putting £5m into the market but perhaps buying ten or fifteen properties. I'm sure that's not what George Osborne had in mind when he was making changes to stamp duty.

At the same time, we're also funnily enough seeing quite a lot of activity at the super high end of the market (£30m+). We are seeing a lot of activity from the Middle East at the moment. There is a lot of instability there. People from countries like Saudi Arabia for example are coming here and spending a huge amount of money on residential, and also commercial, property. So there are still some significant transactions happening at the very high end, where obviously for the ultra high net worth individuals they are quite happy to pay tax, they can absolutely afford it, and their reasons for buying here are a flight to safety and a diversification of their wealth.

> "With a slower market does come opportunity"

However, that whole middle part of the market – between £1m and £10m – is very flat. There is not much activity happening, and buyers who are in the market are taking much longer to decide and actually need help. We're acting for a number of clients who are looking in that market, and with a slower market does come opportunity. I suppose that is one positive to come out of this. We do see prices falling; I disagree with Ed Mead that every owner of a Prime Central London property doesn't have to sell. We have found situations where people do need to sell and prices are coming down considerably as a result. What we're seeing in Prime Central is the biggest amount of price movements happening in the prime areas. The previous markets which used to go up 10% every year are now coming down significantly. In Knightsbridge we've seen prices come down in the region of 10% over the last 12 months, for example.

However, outside of Prime Central London, in areas like Islington and the City, we're seeing the complete reverse of that trend. Prices are actually going up, and this is the part of the market that is attracting a lot of investment and competition at the moment. We're seeing very different scenarios in London depending on the price that you are looking at buying, and also the location.

I think the wonderful thing about forecasts is that everybody loves them, everybody wants to talk about them, but very rarely are they accurate. In terms of our view on the market – where do we see the market going over the next five years – I think London is impossible to put a figure on. As I've previously touched on, it really depends on what part of the market you're looking at. I think what is interesting is what Knight Frank have done with their forecasts – they've split Central London into two. They've said Prime Central London West, which is all your prime locations like Knightsbridge, Belgravia, Kensington; they don't think that part of the market is going to go up very much in the next five years. They're predicting 10% growth cumulatively. However, Prime Central London East, which is all the funky areas like Shoreditch, Islington, the City, etc., they think that part of the market is going to significantly outperform, and they are predicting prices there will go up 24% over the next five years.

Our view on the future is that we think the market below £1m will continue to go upwards. I don't think that is beneficial for first time buyers, who are the very people that George Osborne is trying to help. I also think that what the government have done in terms of penalising the private landlord and encouraging investment is not helping the first time buyer. I'm reading in the newspapers at the moment about developers selling over 50% of their schemes to institutional buyers. That is taking huge amounts of supply out of the market, and normally supply that is aimed at the first time buyer, that is now going to come on purely as rental and is never going to be for sale. I just can't see how that is helping the first time buyer.

I think one of the reasons why clients engage a buying agent is that they want to know what we think are the hotspots, where you can make the most amount of money, so I thought I'd share a few tips with you this evening. Obviously Crossrail has had a major impact on property prices. We've seen areas like Ealing for example go up massively in the last year or so. Crossrail 2 is the next one to watch. I think as an investor you've got to have a long-term view. It is not likely to come to fruition until about 2033. However, if you look along the line at where Crossrail 2 is going to be, you could argue that Wimbledon (which is already quite expensive) suddenly gets very well connected to the King's Road. But what is more interesting is Tooting Broadway, which has previously been overlooked. There is a case to be made for buying property there.

The Old Kent Road may be the cheapest spot on the monopoly board, however at Black Brick we think that property prices along the Old Kent Road potentially could boom, because of the Bakerloo line extension. At the moment there is a debate going on about where the line is going to run, whether it will go along the Old Kent Road or whether it will go through Camberwell. However, recent reports suggest that it is very likely that it will go through the Old Kent Road, and that will benefit from not one but two new tube stations (one at the top and one at the bottom), along with massive amounts of investment. So there is absolutely the case to be made at the moment for buying property in this area. I think that prices here will massively outperform the market. This is a part of London we're looking at very carefully for some of our investment clients.

I have one "Black Swan" event to look out for: I think government intervention is very dangerous. My black swan is capital gains tax (CGT). At the moment, I think that one of the great things about our CGT regime is that when you sell your main principal residence you don't pay any tax on it, because you live in your home. It is not so farfetched that George Osborne may go after that. In America, you pay capital gains tax – I believe the first $250,000 profit you make on your home is tax-free, but any profit over that is taxed. So George Osborne might look at that and do that in his next Budget. We fear every single Budget with the current Chancellor with regard to the property market. He has been very heavy handed, so I think if that were to happen all bets are off. Nobody is going to sell their homes, and what is currently a stagnant market will become a stinking market.

DAN BAYLEY, BNP PARIBAS REAL ESTATE: THE COMMERCIAL VIEW

I'm your commercial interlude amongst all these residential experts. My expertise is around the London leasing and development market, but I thought in the ten minutes I've got I'd give you a very high level overview, some of it from my learned colleagues at BNP Paribas.

Looking back to the start of this year, what have people been saying about investing in commercial property? Well, the headline news is there is more money going to be going into it, and this is with the awareness that Brexit and other issues are coming up.

You might think that 2016 will have seen more investment into the market than we did in 2015, but actually, we haven't so far. The percentage year on year change of investment into commercial property markets has gone down not just in the UK, but in all the major markets. So sometimes, as previous panellists have already inferred, the referendum debate can be an excuse for other macroeconomic issues which are having an impact on growth.

If you are a "glass half full" person you might say that is a reduction from a peak of strong investment, and if you look at investment in UK and the other two major markets in Europe (France and Germany) so far this year, you can see that the UK has gone up compared to France. But critically London, this great city in which we live, is still top of the pops, and investors are not so short term in our industry that they haven't thought about the issues of the referendum coming around the corner. That suggests that certainly in the medium to long term the commercial world will be ok.

Regarding the "Northern Powerhouse" and the need for the investment community to pay more attention to the country outside London and the South East, we in the commercial sector can certainly deem ourselves "not guilty" for our considerations of markets outside of London. There has been an upward curve in investment activity outside of London. It would be great if the government would show some proactivity towards this issue, but actually the investment market already sees life outside of London and the South East.

How have things changed between 2010 (when we certainly were going to hell in a handcart) and 2015? Banking and finance take-up has dropped dramatically, and media tech has taken over as the darling of the market. Professional services have actually gone up, and serviced offices have become a major part of the engine of growth for the tech companies needing that flexible space to grow in central London.

So what does that mean in terms of deals? Looking around the City, certainly when I started doing City office leasing over twenty years ago, it was very easy. At the core you'd have your prime rents, and then you'd have your discounted rents around the fringes. You would have smaller companies taking offices at the fringes and you'd have the banks and the lawyers at the core. I'm not going to bore you with the details of all the specific deals we're doing at the moment, but a few quick things to note: take, for example, 100 Cheapside, which is a nice Grade A office at the heart of the City. White Collar Factory, up on Old Street where ten years ago people would have said you'd be a lunatic to build a brand new office building, is going for the same rent. Not just that, but it has been rented by Capital One, a financial services organisation. Why? Because it is going to be their digital division full of millennials. They don't want to work in the heart of the City, boring old Cheapside; they want to be up with Derwent (who are another one of our clients) in a more interesting location. Which again mirrors I think what the residential tribe are saying a bit, which is that East London is getting more interesting.

“The fringe is where the interesting stuff happens”

We've analysed take-up over the last five year period compared to the five years before. Funnily enough, in the core, the take-up has barely changed. Why? Because we're a pretty well-developed city, and bar the odd million square foot tower that suddenly pokes up, the stock is not going to change that much, therefore the take-up is not going to change that much. So the fringe is where the interesting stuff happens. That is certainly where I get excited in terms of advice to clients, whether it is landlords or tenants.

We've got more stock coming through this year and next year than we have had over the last couple of years, but boy do we need it if you look at the lack of space that we have on the market at the moment, and of that stock that is coming through this year and next year nearly a third of it is pre-let.

So where is London going to expand in the future? Well, Stratford is the next one that has followed on from King's Cross. White City, with the development that Stanhope is doing out there, is bound to be a huge success, and the TV triangle of White City, Hammersmith, and Chiswick is going to be a hotspot for the commercial markets because it is affordable as well as interesting and mixed-use. Nine Elms and Battersea are key areas for the same reasons: mixed use locations, where there are houses hopefully with people living in them that are going to be going to the bars and restaurants. That is what office occupiers want, to be in vibrant mixed-use locations. People would probably have considered "Croydon" a swear-word a couple of years ago, but the scheme that is being developed there in Ruskin Square has a lot of people looking at it.

And then finally, far off in the future: Brent Cross. Argent got it right at King's Cross. Brent Cross at the moment looks pretty grungy and difficult, but then so did King's Cross. The north needs its own suburban hub of high quality offices.

On the assumption that we're discounting matters to do with the referendum, what has driven my world for the past five years has been the growth of tech companies in London (both big and small), and I think the "Black Swan" event that would have a really detrimental effect on our market is one of those major tech companies getting into serious difficulty, possibly failing. We know we're not getting financial services jobs growth, but we're dependent upon tech and media businesses. If something, God forbid, happened to a Google or an Amazon, then I'm in trouble and I'll have to plan for a job as an EU trade negotiator or something like that.

NEAL HUDSON, SAVILLS RESIDENTIAL RESEARCH: THE RESEARCHER'S VIEW

I thought I would take a bit more of an overview of the whole UK market, not concentrating on that 10% of London that sells for over £1m, and really what is happening in what we refer to as the mainstream market.

At the moment it is great to be a homeowner. Mortgage rates are at record lows, so the cost of servicing your mortgage if you've got one is well below historic levels. For those growing numbers of older people who own their own home outright, there is no actual debt servicing cost.

The problem is if you live in the rented sector. Rents have been rising, both in the social and the private rented sectors, and actually large number of households in those tenures are dependent on either government support through housing benefit, or increasing numbers of private renters are having to live in overcrowded accommodation. It is no longer enough to rent in London with just two incomes. You are dependent on having multiple people to afford the current rents.

So great if you are a homeowner, not so great if you are a renter.

It is cheap to own, but the problem in the market is we have high house price to income multiples, and that inevitably means it is getting access to a deposit or equity that is the big problem. If you look at first time buyer deposits as a percentage of income, through much of the 1980s and 1990s (and even the 2000s) it was around 20% to 40%. Then the credit crunch hit, and higher loan-to-value mortgages, 85%-95% and even higher than that, disappeared from the market, and overnight the deposit requirement rocketed up to around 100%.

Since then, it has improved. We've seen Help to Buy has brought higher loan-to-value mortgages back into the market, particularly in the North East but also across the rest of the UK, and increasing numbers of first time buyers have been able to get into the market, but it still remains elevated compared to previous records. Still there is a massive dependence in the market for first time buyers on the "Bank of Mum and Dad" (or the "Bank of Grandma and Grandpa"). Your ability to access home ownership is increasingly dependent on the luck of previous generations, and which family you were born into.

London is clearly different from the rest of the market. Actually, the deposit requirement hasn't gone down in London, it has increased, as house prices have risen. We are now at a point in the London market, and this is where I'm talking about the medium market where house prices are around £300k-£400k, where the average first time buyer needs around 130% of their annual income. That is because house prices are at such high multiples of income that you couldn't actually afford to service the debt repayments on a 95% mortgage (if the bank would even give you one).

That is the real challenge in the market, and without seeing a decrease in house prices relative to incomes, that is a trend that we expect to continue, and we'll see continued restriction on the number of people that can access the market.

As we're all well aware, there is a problem with supply. Looking back over the past century, there were high delivery periods in the 1930s and 1960s, but it is worth remembering that back then we had a housing crisis, one that was much more visible, and so the actual net effect on stock was much lower because we were demolishing large amounts of poor quality housing. However, population growth then began to slow in the 1970s, so inevitably social housing delivery (which formed a large part of the overall delivery) slowed as well. What we failed to then do was to increase delivery when that population growth picked up again in the 1990s and 2000s, so we're now finding ourselves in a position where we are not only having to rely on new build stock, we're having to use our existing stock more efficiently. So we're seeing office-to-residential conversions, we're seeing empties brought back into use, we're seeing houses split into flats, and various other things. The real challenge going forward is to increase delivery.

Overall we are creating an environment where we're seeing a nation of homeowners continue to decline. If you delve down into the number of homeowners, and look at the age groups, you find that we didn't actually create a nation of homeowners; we only created a generation or two. Those who were born in the 1950s, 1960s, and 1970s benefitted from a compression in interest rates that helped to drive high real returns over the long term. That is not something we can see happening much further from where we are currently. So we expect the number of private renters to continue growing.

> "We didn't actually create a nation of homeowners; we only created a generation or two"

One of the key things that the government is now beginning to notice is that housing is an important issue. Prior to the debate about the referendum picking up, it actually became one of the top five issues that the population were concerned about. As soon as something hits a top five issue politically, they begin to get interested. In the previous coalition government it was an important issue, but it wasn't really in the top five. Politicians are doing much more complex modelling on voter behaviour, but the government will have noticed that the issue is rising in voters' minds, and that actually their existing voting population is in effect dying off. The existing older homeowners are ageing, and there is this need for them to bring in people at the bottom of the market. It is something that they have clearly decided to target.

It is also reflected in attitudes. If you look at the attitudes of people who would support new housing in their local area, in 2010 only 30% or so of local people would support it. We've now reached 50% according to the latest survey data, so there is this changing perception I think that is partly because we're seeing increasing numbers of people being directly affected by the housing crisis. We're also increasingly finding that the baby boomer generation, who benefitted themselves, noticing indirectly through their children who are now struggling, and they are now having to tap into their housing wealth to help their children onto the housing ladder if at all possible.

Clearly, we are in a situation where attitudes are changing, but the key thing is that if you survey people, they overwhelmingly want owner-occupation. Private renting is perceived as a less good tenure, because it offers less security. Certainly I experienced that myself a few years ago when my landlord wouldn't renew my tenancy when I had a six month old baby, and it is surprisingly difficult to find a property to rent if you have a young child. It is on a par with having a dog or being on housing benefit. Owner occupation is the tenure that most people aspire to. Even among social renters, there are still over 50% of people who would like to be private owners.

The great thing for the Conservative government is that this aligns with what they want. Clearly in terms of any net effect it depends on parliamentary constituency boundaries, but overall the bulk of Conservative voters, and in fact even Labour voters as well, are home owners. That is why home ownership is the goal for this government. That is the target that they are trying to reach. They are trying to build younger home owners to ensure they have a future pool of voters in future elections.

They don't actually particularly care about that 1% of the UK market that is in Central London from a political point of view. They don't necessarily care about buy-to-let investors. The private rented sector is something they think they can sacrifice in order to try to raise numbers of first time buyers.

That doesn't necessarily mean they are going about it in the right way. Clearly they are very focussed on increasing housing delivery. They have a target of a million new homes (albeit the exact point of measurement is imprecise and I suspect it will change as we get closer to 2020). But the real difficulty for them is they have focussed on the private house building sector. The problem is, the house building sector effectively build homes as fast as they can sell them. They do it no slower or quicker. They build it according to the house prices they have to achieve that are set within the land market by the wider second hand housing market, and also by the wider economic environment and mortgage availability.

We're beginning to hear rumours about the government imposing various policies on house builders to force them to meet various targets. We've seen it in starter homes, which are a big policy area for them. I've yet to meet someone who can tell me how a starter home will work in practice for a developer on the ground. There is a lack of detail around what various government policies mean in practice. So in reality what they need to begin to look at is increasing the flow of new development sites coming through into the market. That should become easier as those local attitudes to housing development improve. We need to see a wider range of participants in the market, so it is not just private house builders, it is housing associations, it is local authorities, it is development corporations, it is self-build, it is own-build, build to rent; they basically need to maximise the total number of people in the market.

That is across a range of tenures as well; it is not just about home ownership. We're at a point where you could argue that with low mortgage rates, we could see people who are getting into the London market as first time buyers at the moment really struggle with even a small increase in mortgage rates in the future. So we need to increase delivery across all tenures. ■

The Joy of Tax

Extracts from the talk given by *Richard Murphy,* author of "The Joy of Tax", to members of the Economic Research Council on 19th April 2016.

In my opinion tax is the mechanism that we have with the most ability to shape the society that we want. Now we might well want different societies, but the "joy of tax" is about creating the society that we want.

This understanding is based on something that I think is very important. I've spent a long time writing about money, amongst other things, and tax and money in my opinion are intimately related subjects. I don't think we can understand tax until we understand what money is. For decades, roughly 320 years, I don't think the Bank of England understood what money was. Then in April 2014, they admitted that they did know what money was after all. It took them that long to recognise that banks are not intermediaries. Banks create money out of thin air, and all money is just a double entry bookkeeping trick.

When you walk into a bank, nobody in the bank goes and checks whether there are any pound notes in the vault before they lend you some money. They just check whether they think you are credit worthy. If they think you are, the double entry bookkeeping just creates a loan account and a current account. They put the sum that you've asked for, let's say £10,000, as -£10,000 into the loan account, and they put +£10,000 into your current account, and you now think you can spend it.

If you walk out of the bank and give them a phone call half an hour later and say "I don't think I want the loan after all", do you know what they do? They reverse the entry. The money was never there. This understanding took 320 years of banking to establish, from 1694 to 2014. And what the Bank of England said in 2014 was absolutely fundamental. They said that every single economics textbook is wrong on money. What we have to understand about money is actually banks are not intermediaries, they don't wait for somebody to deposit money before they can lend, they can create money whenever they wish. They print it in the form of bank notes. The moment you repay your loan, you cancel the money. It is gone.

Why does that matter when we talk about tax? The fact is, we don't need to tax at all, because the government can print all the money it wants. Any amount can be printed, and you are immediately thinking, "Zimbabwe", or "the Weimar Republic!" So why do we tax? So we don't get inflation. We don't tax to pay for government spending – we don't need to. It is exactly the same process as is used by commercial banks when they make a loan. The Bank of England can do that with the government – debit their loan account, credit their current account, and they can spend it. Why can't that process go on *ad infinitum*? Because otherwise we will have inflation. That is the only reason why we must tax.

Therefore, there is no constraint at all, literally none, between our capacity to tax and government services. They are unrelated events. The only issue is how much inflation we want. We have clearly failed at the moment, because we have no inflation and it would be helpful to have some; therefore we are at present over-taxing. By definition, we must be over-taxing because we do not have enough inflation.

Once you understand that that is how money behaves, and you understand that is how all government spending is funded (by printed money that is then cancelled through taxation to prevent inflation), then we move tax into an entirely different sphere of consideration from where it has been in the past.

I think there are in fact six reasons for tax. The first is, as I've just explained, to reclaim the money that the government has spent into the economy. Think about it – how could you pay tax if they hadn't spent it into the economy first? There'd be nothing to pay it with. It is a chicken and egg question, but if there was no government money in the economy, how could you pay the government back using its money? The spending must have come first. And how did the government do that? We can go back a very long way, to before it had its own bank. In 1066, William the Conqueror turned up on the shores of England. When he arrived in London he did two things: he declared himself King, and he made peace with the City of London. He asked for a loan to pay the troops who had just put him on the throne, and then he wrote the Domesday Book (there was a bit of a time lag, but things weren't quite as quick back then as they are now), and that formed the tax base to repay the loan. The spending came first. It always has. The City of London got its ancient rights because it effectively put every monarch since 1066 on the throne.

We need taxation because we don't want inflation. I personally don't want inflation, not big inflation anyway. I think we could live with 2%-4% inflation very happily. A small amount of inflation is a great thing - it has a wonderful way of passing money between generations. The younger generation are undoubtedly in need of some wealth being passed to them so they can afford to buy a house in the future, or else we're all in trouble when we try to sell ours.

So first of all, we tax to reclaim the money we've spent. Secondly, we do it to ratify the value of money. Money has no value unless you have to pay tax in it. If we didn't have to pay tax using pounds, we'd all be trading using dollars. Why not use the dollar to trade? As you're aware, in half the countries around the world the dollar is used for most trading, because it is considered much more useful than the local currency. The government in all those countries, because in almost every case it has too small a role in the economy, has lost control of its own macro-economy. It can't regulate it because it is not a big enough player, and because it isn't requiring the payment of tax in its own currency. So the government has to be big enough, and demand payment in its own currency, to make sure it can control its own macro-economy. We've seen what happens what happens if a government does not have control of its own macro-economy – just look at the Eurozone.

Paying tax is what proves the value of the currency: because the government accepts that cash in payment of your tax liability, you might as well trade in it, or earn in it, because if you didn't you couldn't pay your tax, and you'd have a foreign exchange risk in the translation every time you came to pay a tax bill.

The third reason for paying tax is another macro reason. I am a great believer in fiscal policy. Fundamentally I believe it is the government's job to intervene in the economy to shape the way in which the economy works, particularly in regard to an industrial policy. I actually think one of the great things we're missing in this country is an industrial policy; a specific and deliberate attempt to bolster certain industries and not just generically hand out capital allowances and R&D grants to anyone who wants to try and fabricate a reason to claim them (fabricating R&D grant claims for tax reasons is an industry in its own right these days). What actually we need is some real industrial policy to do some real R&D, and that is fiscal policy. I believe that is another reason for having tax, so you can use tax (reliefs) to subsidise certain industries.

There are also social reasons for taxing. One is redistributing income and wealth. I am, I admit, politically left of centre. I consider myself a firm believer in the mixed economy. I believe the world works better when society is more equal. What do I mean by more equal, and why do I believe that? I think better access to capital for everybody is fundamental. I believe very strongly in enterprise. I've run real businesses. I want people to have opportunity, and that requires that we distribute capital so people get a chance, and that is why I believe in redistribution. I also believe in the relief of poverty because I don't like the idea of children being brought up in poverty. I believe every child should have that chance to get on in life.

I believe we should use tax to reprice market failure. As an economist I know there is market failure. It is externalities, which have always existed. I'm afraid to say far too much of macroeconomics (in particular) is based upon the assumption that there are no externalities. Most macroeconomic modelling in the UK is based upon "general equilibrium" models, which do not recognise that externalities basically exist, and presume that perfect competition is the basis on which markets operate. As I explain to my students, perfect competition is brilliant if it could work, but to make perfect competition work you have to have perfect knowledge of the future, which is unrealistic.

Externalities need repricing, so we charge extra tax on carbon usage and on alcohol and tobacco, and we under-tax certain things as well – wonderful things like books (which have no VAT, unless you buy them online in the Kindle edition).

Finally, the sixth reason for tax is when people pay income tax, they vote. The evidence is now quite strong from academic research, much of it based admittedly on developing countries, but not entirely. No other tax has this effect. VAT or National Insurance do not make people vote. Carbon taxes don't make people vote. But when people pay income tax, it is as if they are filling in the social contract. That is what I think the role of income tax is. The relationship between the individual and government is somehow reinforced, and people want to have a say in how the government will shape the economy when they pay income tax. This is why I find the idea of taking people out of income tax worrying. The declaration in every budget that "we've taken another half a million people out of tax", always worries me greatly, because actually those people have ceased to count. They don't think the government cares about them anymore, they don't have a relationship with them, and the government also has no way now of providing incentives to them through the tax system to behave.

> "People want to have a say in how the government will shape the economy when they pay income tax"

So those are my six reasons for taxing. Based upon those six reasons, I came up with some new ideas of how to reorganise the economy. Some of them are quite radical, because I think we have a tax system that is heavily out of date. Income tax was created at the beginning of the 19th century with the wonderful and only just abolished scheduler system, which was created so that no one tax inspector would know the total income of a gentleman, because each schedule was dealt with by a separate inspector and so the privacy of the gentleman was respected. We still have a tax system which includes so many of these outdated ideas. We have a tax called "National Insurance" which is well past its use by date. For employers it is absurd, because it is of course an employee tax but we call it an employer tax. For employees it starts at a much lower level and actually becomes quite pernicious, it is part of the poverty trap for so many people. That needs to go.

One of my more radical ideas in my book is to replace National Insurance with a financial transaction tax on your bank accounts, so that every month you would work out the volume of funds flowing through your bank account and you would pay a percentage as a tax. What is the great advantage of this? It is entirely unconcerned about where your income came from. We have the absurd situation in this country where we tax returns to capital vastly lower now than the returns to labour. If you work for a living, you could well end up paying up to 20% extra tax in real terms on your income than if you do not work for a living. Now that is the complete reverse of course of all the logic that existed before 1980, when we had an investment income surcharge, 15% extra on incomes which were from unearned sources. Why should those on low pay be paying much higher rates of tax than those on high pay? This idea that 28% of tax is paid by the wealthiest 1% is nonsense. The wealthiest 1% have the lowest overall tax rate in this country, because the 28% refers to income tax (and is a massive proportion), but they have a very low rate of VAT, because VAT is a regressive tax. The wealthiest save, they don't spend, and VAT is a tax on consumption. They have a lower effective VAT rate. What's more, the things that they buy tend to not have VAT on them – private education, private healthcare, land and buildings. None of those have VAT on them. The poorest in society buy things that always have VAT on them – some of it not very wise spending you may say, but that doesn't matter, it is still their spending.

I would abolish capital gains tax. I'd just charge capital gains to income tax. There would be no planning opportunities between the two as a result. I may allow a couple of thousand pounds of gains a year for free, simply as an administrative convenience at HMRC, but of course Nigel Lawson did this. I'm not being that radical. I would charge it on death. We don't charge capital gains on death now, but I would. As a result, I'd abolish inheritance tax. I would charge capital gains on your household property at death. I would back-date it if you tried to get rid of it in the years beforehand, because otherwise we'd have a market for people getting rid of properties days before death on conditional contracts.

We need to radically reform our tax system. But we need to do that to create a society in which people can afford to take risk. In my opinion, the ultimate way to do that is with a universal basic income in this country. I've written a paper on it with Howard Reed, who was once at the IFS and then at the IPPR and now is an independent economist used quite a lot by the governments of Wales and Scotland. He is very good and we built a model of the economy and the benefits system. We put in all our assumptions about creating a universal basic income: paying people two-thirds of average UK income – about £16,000 a year – just for being alive, to every adult in the UK. There would be an additional allowance for children as well – we modelled that at various levels, as a quarter of the adult rate, and a half of the adult rate.

And we can do it. The total level of taxation required goes up enormously. We'd have to have a tax system that would start taxing people at only £2,000 of income. We would get rid of National Insurance, and we'd need to go to income tax rates of maybe 70% on £100,000. It would of course be progressive – you wouldn't be paying £70,000 of tax on an income of £100,000 – some people forget that. You would hit a rate of 70%. But what would the benefit be? There would be no poverty trap. No child would be locked in poverty. We wouldn't have an old age pension anymore, because everybody would have a basic income. We wouldn't need one. We wouldn't have to means test everybody for the benefits they get, which would represent a massive saving in HMRC's costs. Everybody would be in the tax system, because they'd have to register to receive their income. What would that mean? We'd close down the tax gap, which the government say is £34 billion a year, and which I say is £120 billion a year.

I believe that because we'd collect more tax, we could help balance the equation that way. Because everybody would be in the tax system, if they wanted the basic income, we'd know who they are and we'd know where they had a bank account, because we already have a tax on their bank account through my progressive financial transactions tax.

Some people might object as libertarians because they don't want the government to know where you are banking – by the way, all the information on your banking has been supplied to HMRC since 1946. It is a set precedent.

What we could do as a result of all this is to build a fairer society, in which we could tackle poverty. We would not create the obstacles to working we have now. We would pay people a basic income, and therefore they could afford to take the risk of going out and setting up their own businesses. We'd effectively be providing the seed capital to large numbers of people who want to go out and create their own enterprise. I think that could be so liberating. We would have a genuinely progressive tax system, we would tax excessive consumption, but not necessary consumption. We would fairly distribute income and wealth. If we dealt with some of the issues I haven't talked about on the corporate side and introduced internationally unitary taxation based upon country-by-country reporting (which I created the idea of in 2003, and which is now the global standard for new tax reporting by companies to their tax authorities around the world), we could transform the way our society looks, and the opportunities it provides to the people who live in this country. I would love to achieve that result, and that's what I call the joy of tax. ■

Simplifying the UK's Tax System

Extracts from the talk given by *John Whiting* and *Angela Knight,* Tax Director and Chair respectively of the Office of Tax Simplification, to members of the Economic Research Council on 16th March 2016.

JOHN WHITING, TAX DIRECTOR

You can be forgiven if you haven't heard of the Office of Tax Simplification (OTS), as we're not the biggest organisation, and Angela Knight and I are very much part-timers in it. I helped start it in 2010, we are notionally independent, and we have a mix of people. Before you think this is enormous, until recently our strength was between three and six full-time equivalents – we've got a big increase coming, going up to six to ten full-time equivalents. You'll be glad to know that we're not wasting enormous amounts of your tax-payer's money on the strength of the OTS!

What do we do? Well, in a sense what we do is what it says on the tin. We look at areas of the tax code, we look at legislation and policy, and we try to develop recommendations for ministers. I would stress that we have no power to change the tax system, nor would you expect us to; that is Parliament's job. We base our recommendations very much on evidence. We tour around a lot, we speak and meet widely, and we base our recommendations on evidence of what causes complexity and what causes problems.

Why do we try to simplify the UK tax system? Most people would agree it is getting too complex. Angela Knight will reflect a little bit on whether it is inevitable, but why does one try to simplify? There is a fairly obvious reason I think, which is that if you can get it simpler, it is easier to comply with. There will be less scope for error, and believe it or not (and there is evidence to prove it) a simpler system increases trust and compliance.

So it is worth the investment. Of course, how should you simplify? When we were set up, it was very much thought that we would be in there tearing out pages of the Taxes Act (metaphorically or literally). We still try and do that, but really the emphasis on what we try to do is what you might call admin simplifications, procedures, making tax easier to deal with.

What have we done? If you're interested, we publish all our research on our website, free to the public. I'll say a brief word or two about a couple of our projects in a moment, but we've just finished a report on income tax and NICs alignment, and another one on small companies. So we cover a whole range of topics, looking at things perhaps you might term solidly technical stuff (share schemes, and so on), but equally looking at things of general interest (pension taxation, for example).

Up until the end of last year we've come up with just over 400 recommendations, and 50% have been accepted. We think that 50% acceptance rate is reasonable. There is a bit of me that says, why aren't 100% accepted? I think part of the response to that is that if we had 100% of our recommendations accepted we are probably not being challenging enough.

The best analogy I think is one I picked up from the late Lord Geoffrey Howe, who said our job is like repainting Brighton Pier, while someone else is extending it to France. But what one is trying to do is to get the message over that simplification is worthwhile, and if we can keep simplification in people's minds when they are forming policy, I think we will have achieved something.

I said I'd mention a couple of our projects. We did, as a matter of interest, look at tax reliefs. This was an early one that we looked at: the reliefs and exemptions in the system. And, being perhaps a bit anorak-ish, we counted them. We found 1,042. As a result of our research, 43 ended up being abolished.

Perhaps more significantly there has been a follow-up on this by the National Audit Office's Public Accounts Committee because one of the things we're really pointing out is that although there are a few redundant reliefs, what there isn't in the system is a good mechanism to review and say "are they really still worthwhile? Are they doing the job they were intended for? Are they value for money?"

Of course what you probably want to know, given that we found that number a few years ago, is how many reliefs there are in the system now? The total last time we counted was 1,156. Now, this is only one factor: the point I make is that the system has to keep developing. There are always pressures, and bear that in mind when you hear Angela's thoughts on how life is changing.

Another thing we looked at was employee benefits and expenses. We spent a lot of time looking at that area. A particular area is benefits in kind, and some are I'm sure well aware that if you get a benefit, a company car, for example, you pay tax on it and your employer will fill in this wonderful form – P11d – to tell you and the revenue what you got. There are about 4.5 million of those forms filled in every year. As we started to look at it, you find that about half a million of those forms report benefits worth under £100. If you think about the tax on £100, you start thinking if it is really worth it. How much does it cost to fill in a form, process it, and so on? So we set ourselves a bit of a task, and came up with a whole series of recommendations, with six key ones, many based on IT and digital, which if they are all implemented will essentially lead to the abolition of almost all of those P11d's. Now, four of the six recommendations came in in April, they are in the legislation, and the other two are under consideration. So I'd like to think we are making progress on that. That is a good demonstration of what can be achieved, and the prompt to really take things forward.

We've had two projects finishing very recently: one yesterday, and one last week. The one we did yesterday was on income tax and National Insurance alignment. Of course, it has been a longstanding issue that these are two levies, and why don't we just merge them? We at the OTS have said this a number of times, pointing out that one of the great sources of complexity for business is the difference in these levies and the fact that you have to manage them separately. So we, thankfully, were asked to look at bringing them closer together. Not a merger – a merger wasn't anywhere near the table, because if you start talking about bringing them wholly together, you have to think "does this mean National Insurance on pensions, on savings? Does it mean a Basic Rate tax of 32%?" But can we at least bring them closer together?

We looked at it, and we've spent a lot of time digging around, and these are some of the basic findings we've come up with. Possibly unsurprisingly, you get nearly universal support for bringing them closer together, and equally, almost universal recognition that it is NICs that are the problem. A system that basically charges an amount week-by-week doesn't really work in this day and age, compared with PAYE which operates across the year, cumulatively, etc. When you've got people increasingly doing two or more jobs, the system doesn't work. The famous contributory principle, you contribute through NICs and you get something back, is little understood. It is surprising, or maybe it isn't, to find as you go around some people suggesting that NICs pay for the health service, and what's more you have to have a full contribution record to qualify for NHS treatment. Both of those are myths, and it is quite startling when you find people thinking that is what happens.

But of course, if you bring them closer together, it will affect a lot of people. It will take time. We've got a programme to bring them closer together, but it means that 7 million might pay less, and 6 million might pay more. That's a lot of people affected. What we want to do is more work on the possible impact.

> "When you've got people increasingly doing two or more jobs, the system doesn't work"

So what is the programme? Well, we had a seven stage plan. The first step is to move National Insurance to an annual cumulative basis, like PAYE. The second is to put employer's NICs onto a payroll basis, rather than pretending it is NICs. Thirdly, bring self-employed closer to employed, and possibly start giving the self-employed greater benefits. Generally, we need to improve understanding and transparency, by making sure that people understand what NICs do and don't do. Fifth, we want to bring the definitions together – why are they broadly both on earnings but not quite the same earnings? Sixth, perhaps benefits in kind ought to be taxed in full. And finally, bring the rules and procedures together so you don't have a change to income tax not being immediately matched by a parallel change to National Insurance.

So that has just been published. We'll wait and see what ministers make of it, but we think it is a pretty good programme. We don't in any sense pretend it is easy, nor do we pretend that we have bottomed out all the implications, and we want to do a lot more work on the numbers.

The other one we looked at is small companies' taxation. It is a bit less high profile, but there are clear admin burdens there. What have we suggested? Bringing filing dates together, providing better HMRC support, generally making it such that a small company (and here we are talking of certainly those who employ under ten people) has better support. Get rid of sundry adjustments, make sure the technical tax computation works better.

So there are some thoughts on what we've done so far. What we want to do is to develop those last two certainly a bit more, and see if they really would simplify tax.

ANGELA KNIGHT, CHAIR

The Office for Tax Simplification up until this point was referring internally to being in "Part One". "Part Two" of the OTS is an organisation that gets more ability to do things as some legislation will be going through parliament, and gets put on statutory footing. We've got a wonderful opportunity now to think about what it is that the OTS can do next.

There are 20 million words in the tax code. Even if we actually manage to remove a million words out of the tax code, you've still got 19 million left. This is a vast body of tax code that has been drawn up over many years, but it is not possible to just tear up the tax code and start again. I think we have to have realism here.

So what are the main reasons for complexity? Successive Chancellors of the Exchequer haven't stood up on their budget day and said, "Sorry folks, I'm not going to do anything". They stand up and say "I'm going to do this". And the "this" is often something rather beneficial, which many of you in this room may have enjoyed over time, called tax breaks – some of the tax reliefs which John has referred to. They also talk about changes they are going to make because changing economies mean that people and companies do things in different ways, so they put in legislation. And of course every Chancellor of the Exchequer has their pet saving scheme, and part of their pet saving scheme is usually abolishing somebody else's.

Now somebody sent me an interesting article which said something like, and I remember it slightly imperfectly but I'm sure you'll get the idea, that over the last ten years every budget has had on average 400 pages of legislation. And as you know, we have more or less three budgets every two years these days, so if you think back on the 20 million words, even if we are running absolutely as fast as we can, you've still got something that is accelerating.

But who else gives us complexity? It is Parliament; it is our lovely MPs, of which I was one. Why? Because they have their good ideas or things they don't like, so they amend the legislation, and when it comes to finance, you get amendments to amending legislation as it passes through the parliamentary process, and all that does is add complexity to complexity.

Then my old friends the lawyers are in there. Lawyers always give us complexity, because they look at the detailed textual analysis of a clause, and somebody comes along and says "What does it mean?" Then we all end up in court.

And then we have our other very good friends, the accountants. Of course accountants think up schemes that mean their clients, presented with some new legislative requirements, actually don't pay as much tax as those requirements intended. And they don't just think it up for one client; they then tell their other clients, and they go to those places where accountants go in the evening to have a drink and whatnot, and they tell their fellow accountants. So what started off as something that was intended by legislation gets lots of schemes that go round it, which means that the next time the Finance Bill comes along you've got another whole set of legislation in place in order to make sure (although it never necessarily works) that whatever the original intention was of the proposals is now met.

As you know much better than me, those sorts of avoidance provisions extend the tax code.

Now I think that when you consider a changing world, sometimes looking at how communications have changed can help. The first mobile telephone call was in 1974, emails became readily available in 1992, the launch of Facebook was 2004, and Twitter was 2006. The number of active mobile phones (active, not the ones you've got in the drawer at home that are supposed to go to some fancy recycling) is 6 billion. Regular email users is 2.6 billion. Active on Facebook? 1.4 billion people. There are 340 million Twitter users every day. In a few years there has been a massive, radical change in how we communicate. You can't have a radical change in communication, whether it is everything I've just mentioned, or whether it is the motorcar or the railway or planes, without it also resulting in a radical change in the way that we do business. That feeds through to tax.

So, in a changing world, we've got tax built for history. We've built our tax system around, broadly speaking, big companies employing lots of people. And then we've added changes and whatnot to that, and of course we've got a big cadre of self-employed, and we've also got an even bigger cadre of small companies, but we built our tax system around the big employer. We used to have our tax eventually deducted by our employer, whether it was NICs or income tax or both. The employer paid over the tax to the tax collectors, but if you haven't got that system in place any longer then the government is going to lose tax, because it built it for a shape that is no longer there.

This problem is characterised by "Uberisation", the gig economy, and the sharing economy. With Uber, in previous years they would have been a company who employed drivers and, one way or another, those cars are paid for in a certain way. However, Uber is simply a technology platform. Every Uber driver decides how much they are going to drive, or whether they are going to take up the proposition put up on the platform which says take this person to this place. The Uber driver is not employed by Uber. They are employed by themselves. Previously, they would have been employees of a company that paid tax directly.

The gig economy means that jobs that are wanted come up on a platform, and you as individuals decide whether you want to take that job or not, and contract yourself for those number of hours. It is big for women who are part-time in work. It is growing fantastically across the Western seaboard of the US. The sharing economy is another name for kind of the same thing – if you think about Airbnb, for example. That is saying, "I've got stuff that is available, if anybody wants it". What are we going to do about taxing all this activity? Do people using it know what their tax position is, what they are due to pay tax for? Probably not, although some will (the Uber drivers especially will). Where are the employer's NICs? This is a massively changing economy, and classic employment is either static or shrinking. This business of "I'm going to do it myself", of being self-employed in a variety of ways, is growing.

> "This is a massively changing economy, and classic employment is either static or shrinking"

What can we, as the OTS, do? We can start to roll the ground. So we do detailed reviews, which John has talked about, but we can also have a think about, let's take a decade, and say as we've got these changes taking place, what does sensible taxation in these new economic structures look like ten years out? And by rolling the ground, as I call it, as has happened before in different areas, that means that as the discussion starts taking place, the plusses and the minuses, and the options and choices, the how you do things and so on, gets done outside of government. It means you can start to think about how you do things without it all dropping dead on the day of a budget, and it thinks about the future and allows steps to be put in place that gets to that future.

So that is where we are. As part of what I call the "OTS Modus Operandi", we are pulling together a strategy of what we can do, because in our new format we are not just told by government, "look at this review or that review", or have quiet discussions; we can actually do some work on our own account. We can actually think about things that are important. So we want to consult externally, not just with government and with Parliament, on what tax is. We think we should be placing reviews in the context of that changing world that I mentioned.

Of great importance is our policy of "never hide the downsides". There is an absolute forest of reviews, proposals, and good ideas that have been presented and even tried by the parliamentary process and by government but where nobody has talked about the downsides. They have kind of hidden them behind what happens. But if you actually do talk about them up-front, then you find your options and choices and you make it easy for politicians to accept a way forward, a direction of travel, because you've discussed it properly.

Up until now, the way that the OTS has been required to operate is by presenting its reviews to government, and that is it. We can now pick that up, and say, "There are some things in there which collectively we need to look at again, and build a broad consensus."

My last point is that we need to become an equal partner upstream and downstream. Actually, I don't think we will ever be inside the tent, and nor should we, when any Chancellor is thinking about some of the issues that they are going to announce on budget day. I don't think we should be there, because that would pull us out of independence and into government. But should there be a discussion with us about how general proposals can be made simple, so there is something there that is a high level statement, and before it comes out in that body of legislation, simplicity has been thought through? I would say to you, the answer is yes, that is our equal partner upstream. And downstream, our partnership is with you and with corporates in at least getting our 20 million words to be simple and understandable. ■

Plugging the Electricity Gap

Chris Meakin examines the options for electricity generation facing the new UK government.

It's such a relief not to be writing about Brexiters and Remainiacs for a change; at long last we can all move on. However one sensible thing Theresa May did in her new Cabinet in July was to dispense with all the misguided excitement about climate change.

Green-obsessed governments from both sides of the House have been ducking the electricity generation issue ever since the "Dash for Gas", so we now have a looming crisis of electricity supply in the UK. It could be exacerbated if the fall in Sterling triggers an export-led boom. Britain's margin of reserve-generating capacity is now dangerously close to blackout levels.

Confession time: I am a confirmed advocate of diversity in electricity supply. The French have put seventy per cent of their electrical eggs in the nuclear basket, and that employing a single generation of power station design.

Sadly we are not in the enviable position of Switzerland or Norway – officially the first and second most prosperous countries in the world – with their abundance of hydro-electricity.

However we do have one perpetual free energy supply they lack. The Severn Estuary has, broadly, the shape of a bottle of claret on its side, with a wide opening to the Bristol Channel and the western approaches. Then it suddenly narrows between South Wales and Somerset; that in a part of the world with exceptionally high tides anyway. Not for nothing is the Somerset coastal town known locally as Weston-super-Mud.

The result is to squeeze open water into one of the largest tidal regimes in the world, just about equalling the Bay of Fundy located between Nova Scotia and New Brunswick on the Atlantic seaboard of Canada. At about 45 degrees north, Fundy is the same latitude as the Bay of Biscay.

Further afield there is a broadly similar tidal effect in eastern China on the Qiantang River in Hangzhou, south of Shanghai. Like the River

Severn, its force is so remarkable it too creates a tidal bore.

A tidal barrage across the Severn would generate a huge amount of electricity. Roughly speaking it would be enough to power Britain's entire railway system effectively for free once the – far from extortionate – capital costs have been covered. There is nothing remotely new about the basic technology; France has had a tidal barrage working on the River Rance in Brittany since 1966.

However in the half century since, ideas have moved on somewhat. The Rance barrage works on one direction of the tide only. By including an upstream lagoon, the Severn barrier should function in both directions, so generating electricity for eight, and not just four, hours out of each twelve-hour cycle.

> "A tidal barrage across the Severn would generate a huge amount of electricity"

That time gap in output, and the diurnal shift caused by daily progression of the tides, could be resolved by using a series of pumped storage schemes based on hydro-electricity.

An excellent example is provided by the 2.3 million horsepower Dinorwic installation at Llanberis in North Wales, opened in 1984. Again, the basic concept is very simple. Water turbine-driven electricity generators needed in peak demand transform into electric motors driving pumps at times of surplus capacity, so sending the water back up the mountain to be used again.

The only significant drawback with the Severn barrier project is the time needed for its construction; all the more reason for starting as soon as possible.

Ian Fells, Emeritus Professor of Energy Conversion at Newcastle University, is the nation's leading expert on the subject. He was already advocating a Severn generating barrage in letters to *The Times* published in 1966, and one can imagine he would be more than pleased to head a group working on a Feasibility Study without further delay. The Severn tidal barrier concept has been on the back burner for far too long already.

In the meantime some quick-fix generating capacity may well be required. Again an obvious way forward is presented by the hugely powerful Rolls-Royce Trent engine, designed for large passenger aircraft. Put into pods they can generate something around 60 megawatts. Four of them power the Queen

Elizabeth class aircraft carrier currently under construction for the Royal Navy, and there are two on each of our T45 destroyers.

With a bit of tweaking, the pods could probably be shipped around the country on standard container trains for power station use; plug and play technology at its very best. The "waste" heat pouring from the back of the engine could be used to fuel more generating boilers, and perhaps support very large hothouses for horticultural produce.

Beyond that, the future holds out something rather more exotic. The latest thinking on nuclear energy is to consign those massive steel and concrete power stations to the twentieth century, be they Magnox, CANDU, boiling water, advanced gas-cooled reactor, or anything in between. Instead the same power source could be assembled into much smaller modular units – although larger, broadly the same thinking as the Trent-based jet engine modules. The nuclear technology itself could be derived from the system already used on Britain's "Astute" class of nuclear attack submarines currently being built in Barrow-on-Furness.

Perhaps the most important aspect is that all three concepts use 100% British technology past, present and emerging. All the hard work has already been done. They would all be built in the UK, so benefiting the UK economy instead of those abroad.

Of the three prospects, modular nuclear units would take longest to develop; they currently start with fairly clean drawing board. Since the UK conceived the world's first nuclear power station, it is high time we pulled our technological finger out and did it once again for the 21st century. ■

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