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# Planning Curses

How to deliver long-term investment  
in infrastructure

Bridget Rosewell

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## About the Author

**Bridget Rosewell** is one of the UK's most influential economists, with a twenty year track record in advising public and private sector clients on key strategic issues. Her specialist expertise includes economic development, transport and agglomeration economics, development, evaluation, infrastructure, forecasting, industry dynamics and competition as well as policy analysis related to these areas.

She was responsible for developing innovative arguments for transport infrastructure in London and for analysing the process of innovation in Manchester. She is currently advising on London's prospects over the next 30 years as part of the forthcoming London Plan.

Bridget is one of the founding directors and Chairman of Volterra Consulting, established in 1998 to apply leading-edge mathematical and statistical techniques to solve economic and business problems.

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She was one of the so-called Seven Wise Men who advised Ken Clarke.

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# Acknowledgements

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## Executive Summary

Why does the UK seem perennially unable to take long-term decisions on infrastructure investment? This is a hugely important question, especially in times of financial constraint when the pressure to make cuts is intense. Notoriously, it is easier to cut investment than current spending, since the risks in doing this always seem smaller than the risks and political difficulties in facing up to current vested interests. Although a variety of efforts have been made over the past few decades to try to take politics out of long-term decision making and investment decisions, none of them have yet worked.

The Coalition government's National Infrastructure Plan is the latest attempt to improve the planning, prioritisation and implementation of infrastructure investment and development. But this is only one small step. Without clearer structures to decide the detail, execution and financing of long-term infrastructure projects, we will be back to the same round of delays and hesitations which have blighted decision making for decades.

This paper outlines how and why this failure to invest has occurred and suggests changes to the planning and policy environment that could make a difference. It draws on examples of recent infrastructure projects, large developments and regional economic and spatial plans to illustrate the problem and its roots. Fundamentally these lie in the way in which **an edifice of technocratic analysis based on complicated economic models bearing little relation to the real life impact of infrastructure investment has undermined the ability to debate decisions and build consensus around contentious projects.** The vested interests of experts have obscured debate around practical issues and trade-offs by couching decisions in inaccessible, bureaucratic language which

has singularly failed to engage local communities or interest groups, in particular around the potential benefits of such investment.

There are four main elements to the problems currently faced:

First, economists have persuaded us to give too much credence to their forecasts and forecasting models. In spite of a poor track record, complicated, arcane models are still used to underpin crucial planning decisions. Economists present their models as accurate descriptions of how the world works, or at times as accurate descriptions of how the world ought to work. Yet modern developments and actual experience of the impact of previous infrastructure decisions are increasingly showing that such models are much more imperfect than previously thought. Advances in understanding economic psychology, growth, herd behaviour and innovation have all combined to undermine previous certainties about the assumptions that underlie such models.

Current assumptions, based on models of rational decision making, undermine the role of investment, growth and change in decisions. Instead, such activities become automatically assumed and bureaucratically calculated rather than being understood as a consequence of the projects and decisions. When all opportunities are always taken as a given, nothing can ever be additional ~~so it~~ becomes impossible to prove the value that a new railway, road, bridge or development, ~~for instance~~, can provide.

Project after project has faced this problem. In the case of the Crossrail evaluation model for instance, no additional journeys were presumed to be generated by the new line at all – something in practical terms we know is nonsense. With the failed Thames Gateway Bridge project, the interdependence between the investment in the Bridge and the ability to achieve desired growth stood outside the approved guidance on assessments so was never considered as part of the case for the development. Where a project has been allowed to go ahead it has often done so in spite of the forecasts rather than thanks to them – the existence of Canary Wharf, for

instance, is owed to the vision and imagination of some developers and the then Prime Minister, Mrs Thatcher. No economic forecasts backed its development and its transport infrastructure failed the forecasting tests, yet the reality is that it has been hugely successful.

A second consequence of the current approach to evaluating new infrastructure developments is that **economists and experts couch the conclusions of their modelling in terms which make little sense outside their rarefied world.** Economists talk in terms of welfare analysis and cost-benefit calculations. Returns on investment thus become based on welfare benefits (an invented valuation) which have been given a notional monetary value and frankly mean nothing to anyone, rather than on actual returns – be they financial or practical improvements to quality of living etc – which can be understood by businesses, investors and consumers. The benefits of transport projects, for example, are based entirely on time savings – that is, the number of minutes saved on a journey as a result of the new infrastructure investment – which is then turned through some complicated calculation into a monetary value in order to establish the worth of the scheme. It is little wonder that people, perhaps sceptical about new investment and how it will impact them, are not convinced when the benefits are presented to them in such a convoluted matter.

The debate on Crossrail, for instance, turned on the treatment of the benefits of people working near each other and the extent to which transport benefits based on the value of time captured them. Such arguments were complex, academic and yet hugely important in terms of the debate around whether the line should be built. The simple case that Crossrail was being proposed to make it easier for people to get into central London which is busy, productive and essential to the economy of the UK, yet has a gridlocked transport system which is harming its competitiveness and the quality of life of its residents and commuters, was never addressed in the technical models. Similarly, the debate on the Thames Gateway Bridge became

dominated by the interpretation of official guidance and the need for ever more complex modelling to prove the unprovable and to set out in ever more detail a 'do nothing' picture of increasing complexity.

Thirdly, the way in which models, forecasts and their assumptions are presented has had the consequence, perhaps paradoxically, of focusing attention on the short term. Under the assumptions of these models it seems that so much is going to happen anyway that it becomes easy to take the long-term for granted. Short term expediency rules as political considerations come to the fore.

The most notorious short term, politically motivated decision about a major investment related to the Humber Bridge. The decision to ensure that the local people would, as Barbara Castle promised, 'have your Humber Bridge' was announced just before the Hull North by-election of 1966, which was subsequently won by Labour and ensured they hung on to their small Commons majority. The abandonment of Crossrail in the early 1990s was regretted within just a few years when overcrowding on the Underground system once more became a significant problem. Despite the fact that a long-term vision for East London which requires more connectivity and Thames crossings had been developed and accepted by the local planning authorities which gave permission for the Thames Gateway Bridge, the imminent ~~2010~~ general election meant that the project was put on ice by the calling of an Inquiry – an expensive and lengthy process which has eventually meant the abandonment of the project, at least for the time being.

Fourthly, the current short term focus leads in turn to inadequate decision mechanisms. The technocratic process provides an apparently objective analysis but one which is outside the understanding of the participants and which does not create any

“ It is little wonder that people, perhaps sceptical about new investment and how it will impact them, are not convinced when the benefits are presented to them in such a convoluted matter ”

mechanisms to debate and resolve differences of opinion or differences of interest.

As a result differences are fought out in the political arena, the cockpit of Inquiries or sometimes in court. All of these forums entrench positions and encourage adversarial attitudes and confrontation. The analysis gets in the way of rational debate because of the way in which the experts are given control of the underlying assumptions.

Crossrail finally got permission because of a concerted campaign by a collection of organisations which worked together to articulate a clear and shared vision of the benefits of Crossrail and the role it would play in delivering more workers to highly productive central London locations. The size of the project and its importance to such a range of businesses, communities and stakeholders, meant that time and energy was spent getting across the technical issues to the wider public and politicians in a clear way. But this is very unusual. In the Thames Gateway Bridge Inquiry, positions of opposition in principle were translated into technical language with models presented as generating firmer conclusions than they could really support, causing confusion, resentment and ultimately leading to the abandonment of the project. This was in contrast to the successful Jubilee Line Extension decision which was made outside all the formal decision rules and in spite of the modelled analysis.

An inevitable consequence of inadequate decision making mechanisms is a reliance on regulation and central dictat as a substitute for debate and decision. The man from Whitehall becomes the expert who knows what level of investment is right and who enforces more and more onerous requirements to ensure proper standards of behaviour.

This report sets out four suggestions for improving the system. They are not panaceas – creating a new way of thinking about the future takes time and adjustment. The new government, like many of its predecessors, recognises the importance of infrastructure but without embedding a new attitude to deciding on individual projects,

we will simply end up with yet more plans but with just as little implementation. A new approach will require the following elements:

- **Pursue projects on the basis of their contribution to the economy, not their contribution to ‘welfare’.** This will produce measures of output which can be easily understood and which can create a payback in financial terms which will pay back the debt.
- **Start with business cases which engage business.** Measuring the outputs in money terms is one way of doing this but another important element is to devise project descriptions which can be understood and invested by the private sector. This is more revolutionary than it sounds. What is called a business case in public projects would not be recognised as a business case anywhere else. From the description of project objectives to the consideration of value for money, a fundamental bottom up reworking is required.
- **Use long-term frameworks and forget about plans. All activities take place within frameworks for decisions.** From families to markets, from cabinets to boardrooms there are rules for thinking about next steps, trade-offs and managing preferences. Of course activities also get planned – for anticipation, for implementation. However, the kind of plans which get incorporated into public decision making are like creating blueprints before the purpose of the building has been decided. We know the world is ever changing and yet behave as if we know what is going to happen in 20 years time. What we need is a framework for how we want to shape that future and how we will react to the buffeting of reality, not a set of inflexible instructions.
- **Let local areas keep local taxes which are used to finance investment.** The complexities of the world and how it changes cannot be dealt with at national level. Moreover, innovation requires variety and experiment. Creating a real localism can help to free areas to make such experiments and to work with innovators to invest and to create new business cases.

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# 1. The Issues

Policy Exchange has ~~previously~~ stated that there is a shortfall in infrastructure investment in the UK of some £500 billion.<sup>1</sup> This comprises a need for more transport infrastructure, energy generation, water supply and waste management just for starters.

Yet developers continually complain that the planning system for any kind of development is complicated, arcane and hard to manage, adding substantially to the costs of any investment.

The UK public decision system is thus geared against making a positive decision, particularly those which have long-term consequences, both when they are privately financed and when public money is involved. However, when public money is involved, the hurdles are more complicated and more likely to lead to delay or even failure to act.

The previous government attempted to deal with this by setting up more institutions and targets which were to overcome the hurdles but not to dismantle them. The present government has kept some of these institutions and is trying to develop a longer term plan. But this will not remove the hurdles to action. There must be a better and more effective way.

To find it, we first need to identify the nature of the hurdles if they are to be swept away. Some case studies can help.

1. D Helm, J Wardlaw,  
Delivering a 21st  
Infrastructure for Britain,  
Policy Exchange, 2009

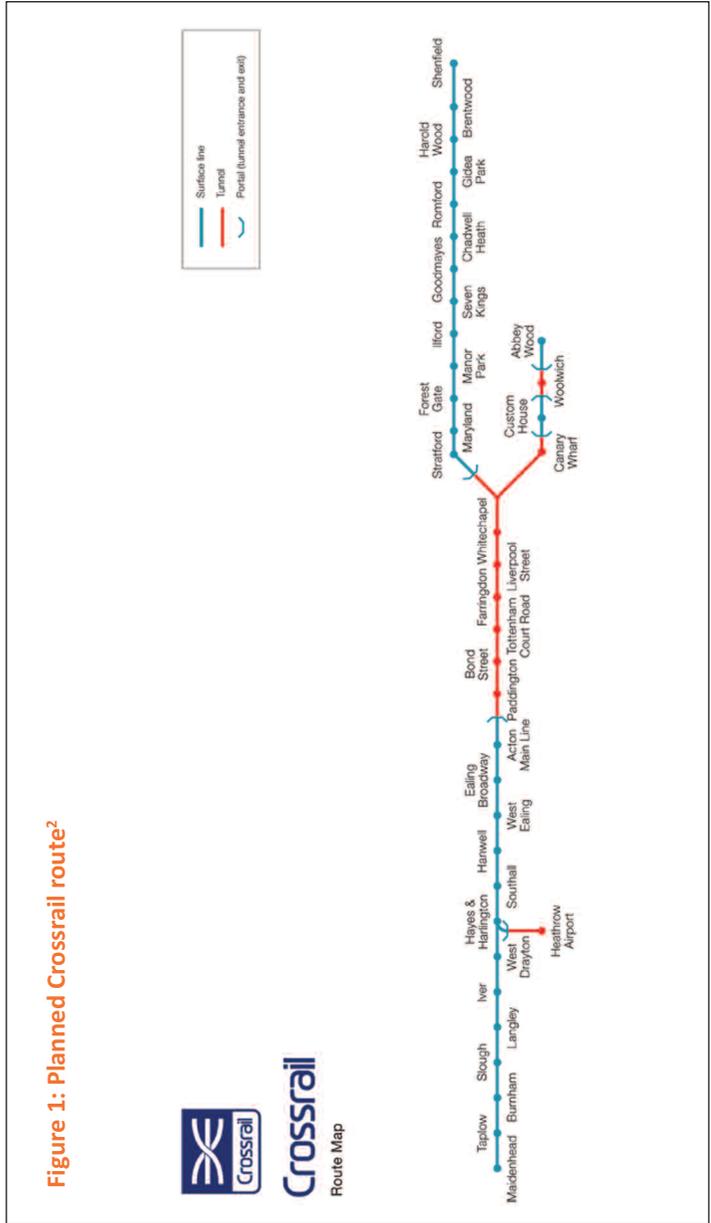
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## 2. Examples

### Crossrail

Crossrail is the name that has been given to a railway to provide additional capacity across London from east to west. The link between Paddington and Liverpool Street is a key element but so too is how the railway connects outside the central area. The current scheme connects Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east. It reduces the travel time from Canary Wharf to Paddington to 17 minutes and provides additional access to the busy central business districts with large trains similar to those on overground networks. Parliamentary consent to the plan was given in 2008 (a process which took three years), and works started in 2009, based on a plan finalised in 2004. It is now planned to open in 2018 and the finances seem to have finally been signed off by the Coalition government.

The first plans for Crossrail were formulated nearly 50 years ago and the current route was identified in a review in 1989 entitled the Central London Rail Study. The project was agreed and went for permission via a hybrid bill in Parliament in 1991. However, this did not get government support to allow it parliamentary time and by 1994 it had been withdrawn. By this time both the route for Crossrail and Crossrail 2 (otherwise known as the 'Chelsea Hackney line') had been safeguarded. Safeguarding puts limits on the ability to put in place other developments which require special permission and generally deter investors. It has taken a further 20 years from the time the routes were decided for construction to begin. Even now, there is no timescale for when Crossrail 2 is likely to be decided. In the meantime, the planning blight along the proposed route remains in place.



<sup>2</sup> [http://www.crossrail.co.uk/assets/library/document/r/original/routelinearmapmay2009\\_1\\_.pdf](http://www.crossrail.co.uk/assets/library/document/r/original/routelinearmapmay2009_1_.pdf)

Not only do delays such as these blight areas and slow down regeneration, but at the same time costs escalate. In 1980 an equivalent scheme to Crossrail (but Victoria to Euston) was costed at £330 million (1980 prices). By the time of the Central London Rail Study the cost had increased to £1.4 billion (1990 prices). In 1994 the cost had risen to £1.55 billion, and by 2004 had risen again to about £10 billion (including a large allowance for “optimism bias”). The current budget is £16 billion in cash over the construction life of the project. Changing standards and requirements, re-engineering of old designs and general increases in construction costs all add to the expense.<sup>3</sup>

Between 1992 and 1994 there were no less than three technical reviews, by Bechtel, by Bovis and Sir Alexander Gibb and Partners, and by Ove Arup. Although their briefs were slightly different, they all reached similar conclusions. Each cost several million pounds. They seem largely to have been commissioned to support a process rather than a decision.<sup>4</sup>

**Government has not generally recognised that re-engineering can cost more money than it saves.** Delays of implementation of more than a year would require a major re-engineering exercise potentially costing in excess of £100 million. To get some idea of the scale here, it has been estimated that there are some 800,000 square metres of development space currently being delayed by Crossrail. That space could reasonably accommodate some 50,000 jobs, and its value might be in excess of £8 billion (assuming an average value of £10,000 per square metre) with an annual rental income of £400 million (assuming a 5% yield).<sup>5</sup>

It is not just development schemes that are affected by delays to the implementation of Crossrail; there are also a number of transport projects that need to be fitted around it such as the redevelopment of Tottenham Court Road station, works at Whitechapel and around the former East London Line, and other station and signalling works which will need to be carefully integrated into the improvements to

3 Crossrail, Costs of Delay, Colin Buchanan and Volterra Consulting, Feb 2007

4 House of Commons, RESEARCH PAPER 05/38, Crossrail Bill, 1 JUNE 2005

5 Crossrail, Costs of Delay, Colin Buchanan and Volterra Consulting, Feb 2007

the London Underground system. Uncertainties about programmes and timetables can badly affect the costs of these schemes and ability to deliver them. In a crowded and busy network decisions have knock on effects – for example if Crossrail were not to go ahead, then other schemes would have different costs and benefits from those that accrue in its presence.

Here we have a significant and complicated project, which has been promoted for many years as a necessary investment. It is instructive to understand why getting to a decision on it has taken so long, even though leading figures in the transport, business and planning worlds have supported it.

Of course, it is 'large', which always makes for hesitation. On the other hand it is by no means enormous. The largest spend is estimated to be £5 billion in 2013 which is associated with the major tunnelling works. Other large costs are associated with particular stations at depth, which can cost up to half a billion apiece partly because of regulatory standards. The abandonment of the project in 1994 was partly in response to a sense that London had ceased to grow – the recession of the early 1990s was still live in people's minds. **By 2000 it was apparent that it was still business as usual on the crowded and ageing Underground.**

A fear of making the wrong investment is certainly behind some of these worries. So it must be important to have a clear, comprehensive and comprehensible evaluation of such a project, and its risks.

However, the evaluation of transport projects is an arcane art conducted with large and complicated models by a priesthood of experts skilled in their use. Outsiders can find it hard to judge the results and unable to penetrate the conclusions.

Here are some parameters. In order to judge a transport project it is of course necessary to assess how many will use it. Over the last 30 years London has developed a model to produce these results. The model takes as inputs pre-existing forecasts of employment and

population changes which have been allocated to a large number of transport zones (1,700 at the latest count). These zones are very small in the centre and tend to get larger as you move outwards and indeed include commuter zones outside London. These forecasts are used to predict the use of the network of roads, rail, bus and underground, given the costs of this use. Costs include the time taken as well as money spent and include adjustments for difficulties such as having to make a change of train. The model is solved on the assumption that people will minimise the cost of making the trips they need given the distribution of where they work and where they live.

In order then to understand the effects of new transport investment, we create a new solution of the model having made the changes to the cost of the network that new linkages imply. We still have the same number of trips, but now they are being made more easily as a result of the new investment, which means crowding can go down and trips take less time. This is the key measured benefit of any transport scheme.

Of course time savings are made in minutes, while the cost of the scheme is in money. So time savings need to be turned into money in order to establish the value of the scheme. The establishment of a value for time is a non-trivial question, as some introspection should quickly show. It will vary by person, by income, by kind of trip and so on. The most recent review of this question was undertaken in 2003,<sup>6</sup> and its conclusions are the basis for the current levels which have been set by the Department for Transport.

An hour of leisure time is currently valued at £4.46 per hour, and an hour of work at an average of £26.73.<sup>7</sup> The studies on which these values are based are not uncontroversial. Much of it used experimental studies which give people options of various trips. Answers can be inconsistent but this can be ignored because rational economics suggests that they 'ought' to be. Such values are therefore part of the whole edifice of rational, expert, cost-benefit analysis which rests on an intellectual construct which is increasingly under

6 Values of Travel Time Saving in the UK, ITS, Leeds University, 2003

7 WebTAG, Unit 3.5.6, <http://www.dft.gov.uk/webtag/documents/expert/pdf/unit3.5.6.pdf>

challenge. The value of working time is perhaps less controversial as it essentially rests on wage rates – these are at least directly observable. However, for most studies they provide a relatively small proportion of benefits. Even in the Crossrail case, where a value of work time of £55 per hour was applied for trips to Heathrow, the contribution was only 30% of the total time savings.

“Central London is busy and productive, but the transport system is too crowded and such expansion could cause gridlock on stations and the trains. Where was this addressed in the models? It simply wasn't”

These basic calculations are used to compare all UK road and rail projects where there is public investment. The approach is based on wanting to capture all the benefits of improving people's welfare when considering the costs.

These are the calculations that have been at the heart of an assessment of whether Crossrail is good value for money yet it seemed not only difficult to understand but also not really to address why we wanted Crossrail. This railway is designed to make it easier for people to get into central London. Central London is busy and productive and more people could work there, but the transport system is too crowded and such expansion could cause gridlock on stations and the trains. Where was this addressed in the models? It simply wasn't. The models assume that trips will be made according to the external forecast, and so they will always happen. No-one gets crowded off, even though the numbers suggested we would need Japanese style pushers to get everyone on and maybe not even then.

Maps of where crowding could appear suggested that there might well be stations which had to have queuing systems to get people onto the platform most of the time or where the length of time taken to get people on and off the train meant that there would have to be fewer trains.

Investment in Crossrail could prevent these problems emerging. Although these issues could well be illustrated by the transport

models, the existing models could not really deal with these crunch problems nor did they estimate how many people might simply choose not to travel and go somewhere else.

Indeed this seems to be the nub of the problem. London was growing and could continue to grow, creating more jobs and more activity. These jobs had value, but the modelling took no account of such value. All of these points were put before the Treasury to show that we needed to think seriously about the value of Crossrail and not just look at some notional time savings.

Thus was the Wider Benefits Working Group born, and delving further into the research papers and the rules governing the priesthood, it was discovered that such issues had been addressed before in the context of roads and the concern that new roads seemed to fill up in due course and negate the time savings that the models had predicted.

Readers will be pleased to know that in economic theory it is possible to argue that time savings are the same thing as new users – it all depends on the relative benefit of higher wages and time saved. However, there are some stringent assumptions surrounding this conclusion and the most important one in this context was that it ignores agglomeration.

Agglomeration is the reason we choose to live in cities. Things work better there: there are larger sources of jobs, more effective competition, spillover effects of knowledge and networks. We can show that London is more productive and hence allowing people to work in London would permit the expansion of employment which is going to create more value (and more tax revenues) than elsewhere. Moreover, this larger size can also create additional output from the people already there.

This was a challenge to the traditional methodology but was one which could be supported by everyone as adding to the existing analysis – hence the ‘Wider Benefits’ title. The remaining calculations still used the standard analysis and values of time retained their hold

on decision making. The process of reaching this conclusion was lengthy and painful. It required considerable analysis and argument and lots of meetings.

Even when the principle of ‘wider benefit’ was accepted, there were still hurdles of method and measurement. What exactly is the extra productivity? If people with high skill levels didn’t work in London, would they still be more productive than others? Where would they work? How should we capture any such effects? Officials needed to produce their own research and definitions, rather than relying on those created by the Crossrail team.

And the point here is that the answer is not trivial. The benefits of Crossrail, even on the most cautious assumption, were doubled by our research which took account of this effect. This means that we have been underestimating the benefits of new transportation schemes in cities by a phenomenal amount and therefore under-investing. And the assumptions are cautious. If we take the view that over 50 years or so, the rest of the system will still be as busy as it is today, while Crossrail is also full, we will be delivering around 80,000 more people to this highly productive place. That additional productivity is worth around £70 billion in today’s prices. Crossrail will be good value even if the costs over-run.

### Values of time the value of the economy

Saving time can be considered the welfare benefit of an investment. It can be defined as the willingness of an individual to pay for something – in this case for an extra minute of time. The approach is described in the official guidance as follows:

“The basic strategy of the willingness-to-pay (WTP) calculus is to arrive at a money measure of the net welfare change for each individual that is brought about by the project under consideration, and then to sum these. The welfare

change for any individual is measured by the *compensating variation*, i.e. the individual's WTP for benefits or the negative of his/her willingness to accept compensation for disbenefits. The principle behind this calculus is the Kaldor-Hicks *compensation test*: a move from one state of affairs to another passes this test if, in principle, those who benefits from the move could fully compensate those who lose (without themselves becoming losers). When the cost-benefit accounts are presented in this way, there often are items which appear as benefits for one person and equally-valued costs for someone else: such items are *transfer payments* or *pecuniary externalities*. Items which do not cancel out in this way are *social costs* or benefits (sometimes called *resource* or *real resource* costs or benefits). The word 'social' is used to signify that these are costs or benefits which fall on 'society as a whole', understood as the aggregate of all individuals.

“The calculus of social costs and benefits seeks to measure the value of the 'resources' used by, and the benefits created by, a project. This approach distinguishes between social costs/benefits and transfer payments at the outset, and takes account only of the former. For example, consider a straightforward market transaction: a person buys and consumes a can of beer. In the calculation of social costs and benefits, the marginal cost of producing the beer is a social cost, while the consumer's enjoyment of the beer is a social benefit; the actual payment made for the beer' is a transfer payment, and is ignored. (In contrast, the calculus of WTP would record a benefit to the consumer equal to the consumer's surplus on the beer, i.e. the excess of WTP over the price paid, and it would record a benefit to the producer

of the beer equal to the producer's surplus, i.e. the excess of price received over marginal cost.) Because the calculus of social costs and benefits nets out transfer payments, this approach does not allow the net social benefit of a project to be disaggregated into impacts on different economic interest groups.”<sup>8</sup>

This willingness to pay is clearly an individual matter based on the enjoyment of individual benefits. It takes no account of broader economic benefits or indeed the impact of one individual's enjoyment on another.

A major study of the analysis of road schemes investigated the relationship between time savings and economic benefits, published in 1999. The report showed that economic theory suggested that time savings and economic benefits were two sides of the same coin. In principle, and in a competitive economy, time savings could be converted into economic activity as trips increased and time savings were competed away. As the Standing Advisory Committee for Trunk Road Assessment (SACTRA) concluded: “If these conditions hold, we concur that the value of the estimated costs and benefits to transport users (notably time savings, operating costs and accident reduction), and to nonusers (notably environmental impacts – provided that they have all been identified and a money value attributed to them) would give a full and unbiased estimate of the value of the overall economic impact. This is equivalent to the statement that no 'additional' economic value exists.”<sup>9</sup>

Of course, there are many reasons why these conditions will not hold. First, there is the question of whether all costs and benefits have been correctly valued. Second, there is the question of whether the assumptions of perfect competition hold.

8 WebTAG, Unit 3.5.4, Box 2, <http://www.dft.gov.uk/webtag/documents/expert/pdf/unit3.5.4.pdf>

9 SACTRA Final Report, para 24, 1991

The SACTRA committee investigated both of these. It concluded that further work was justified on the measurement issues and that some adjustment for imperfect competition should be made. This was set at 10% in subsequent guidance, although the report itself recommended a more case by case approach.

At that time, however, the general approach which had been established was given continued support. More recently, this has come under more scrutiny.

First, SACTRA took no account of agglomeration effects. These operate outside the conditions for perfect competition which require that no firm has interactions with other firms outside the price system. Agglomeration means that one firm's productivity is supported by the existence of other firms nearby and thus undermines these assumptions.

Recently, the Royal Town Planning Institute and the Transport Planning Institute's evidence to the Transport Select Committee said, "We conclude that current methods are not a reliable means of directing the very limited transport resources now available towards economic purposes, particularly regarding the balance between road and rail, and between large-scale capital schemes and the smaller kinds of scheme often financed by revenue".<sup>10</sup>

A further report from Network Rail, prepared by KPMG and supported by the CBI is summarised as follows: "This paper argues that a new methodology is needed to help prioritise investment decisions and that this approach should focus on assessing the impact of investment on the economy. It does not advocate doing away with welfare based appraisal altogether, but instead that the current approach should be run in parallel to one that focuses exclusively on the real economy and that facilitates level playing field assessments across closely related strategies such as regeneration and housing."<sup>11</sup>

<sup>10</sup> Transport and the Economy, RTPi and TPS evidence to the House of Commons Transport Select Committee Inquiry, 22nd September 2010

<sup>11</sup> Prioritising investment to support our economy, Network Rail, 2010

There is a much simpler way to consider the benefits of an investment such as Crossrail than a focus on valuing time or some extra productivity. It is possible to use the transport models in a different way to ask what fare revenue can be generated and how that might grow over time. The extent of constraints on that growth can be assessed and whether people will move over from other forms of transport or other train lines. That is one source on investment support. A second source is the tax revenues generated as the economy is enabled to grow. Both of these were estimates that were produced as part of the case for Crossrail and which made sense to ordinary decision makers. But they were not part of the 'official' business case. Moreover, the use of the value of time raises some questions too. It is taken as a constant everywhere on the grounds that this makes comparisons fair across the country. All projects are judged by the same standard. But of course the value of time is almost certainly not the same. If this is the case how these values translate into changes in the real economy which ultimately needs to pay for the investment will also differ so there is no reason to think that we are capturing the real benefits.

Finally it needs to be mentioned that all of the models used in determining time savings are based on people choosing efficient solutions and an equilibrium emerging. In practice of course this is not reality, and indeed the transport systems themselves contribute to that changing reality with all the messy responses over time that reality engenders.

The lessons of the campaign to get the Crossrail project approved are not just about the analytical framework that is used. It is also about how many forces had to be mobilised to generate the ability to make this decision, how long it took and how many attempts.

In part the need to make so many attempts reflects an inability to see the importance of the benefits in terms of the official

decision machine. In part it also reflects a risk-averse culture in the decision environment which required the agreement to a special levy on business, and contributions from developers along the route.

The battle to make the case for Crossrail illustrates the reliance on arcane models, on equilibrium approaches, and a decision process which inevitably became highly politicised.

### Thames Gateway Bridge

This proposal for a bridge across the Thames in East London only costs around £500 million rather than the £16 billion of Crossrail. Nonetheless it faced even stiffer hurdles on both the political and policy fronts. In part this was because this project was a road bridge which drew opposition across a variety of interest groups, many of which had no local connections or interests.

Rather like Crossrail, for many people a project to improve river crossings to the east of London is a no-brainer. The river is a huge barrier and there are no bridges between Tower Bridge and the Dartford Crossing. Lorries use the Woolwich Ferry with long queues. However, a previous attempt to solve this problem and link the North and South Circulars, known as the East London River Crossing, had generated huge opposition, focused particularly on the loss of some ancient woodland, and was subsequently cancelled. Thus the Thames Gateway Bridge needed to provide a more local service and did not link the North and South Circular. However, the policy on which it was based in the London Plan of 2004 imposed significant constraints on road schemes. Any scheme which increased net traffic capacity could only go ahead if “benefits in other areas very substantially outweigh any disbenefits”.<sup>12</sup> A contribution to regeneration and development was also required. The definitions of ‘substantial’ and a ‘contribution’ can clearly be disputed.

Such a question was not something that the transport models could answer, and so a new way of thinking about the change in accessibility that the bridge offered and what effect this could have was needed. Looking at London data, obviously **many factors generate changes in where people live and work, and so innovative techniques to try and separate out the effect of changing accessibility were needed.** It also turned out that in outer areas the major regeneration effect was on housing rather than employment. In other words, increased accessibility had a bigger impact on people's willingness to live in an area than on their willingness to invest in new workplaces. Regeneration based on improving an area as a residential location had not previously been part of the standard tool kit. In official guidance regeneration is thought of largely as job related.

However, the analysis and the political support was sufficient to persuade the Transport for London board to support the project, albeit only on the **casting** vote of the Mayor and with some opposition, apparently based on the proposition that the economy of Richmond had been damaged by having a bridge. The local authorities on both sides of the river, Greenwich and Newham gave permission and everything was set in early 2005.

Then national politics got in the way. So far as it is possible to judge, there were concerns that the bridge might affect some voting behaviour in the general election. The project was therefore called in by the Secretary of State to be determined at a Public Inquiry. The elections also changed the complexion of the London Assembly and in order to get his Budget approved, Mayor Livingstone had to promise funding to those opposing the Bridge.

The Inquiry opened in June 2005 with the case for the Bridge, but then adjourned until the autumn so that those opposing it could spend their funds on additional research. The resulting Inquiry lasted over a year, with heated exchanges on several occasions, particularly from those who saw roads as intrinsically

evil. Some of this centred around using tolls to reduce the use of the bridge and hence congestion. However, of course reducing use also reduced the benefit and increase in accessibility. Moreover the argument was made that the congestion problems were largely focused on Bexley, rather than Greenwich, where the bridge itself was to be sited.

However, the biggest difficulty was to meet the apparent requirements of the policy alongside changing guidance. The original evidence on which the decision had been based used new techniques of analysis in order to capture the accessibility effect for

“The biggest difficulty was to meet the apparent requirements of the policy alongside changing guidance”

London. Critics wanted to be able to make comparisons with other locations – both in the UK (the Humber) and internationally (in Sweden) – where they said bridges had not created economic development. These seemed to be wholly different but this was also hard to ‘prove’ in any formal sense.

Critics also raised concerns about the extent to which a road could suck development out of an area, about how increased traffic would reduce time savings, and about the extent of public transport use of the bridge. In addition, changing guidance made the task of meeting the policy requirement still harder for those who were arguing for the construction of the bridge. As outlined earlier transport guidance is encapsulated in WebTAG – web based transport assessment guidance.<sup>13</sup> This huge compendium of ‘how we do things around here’ sets standards for models and lays out the tests that must be met in particular areas. Guidance on regeneration tests was published during the interregnum between work being done and the Inquiry kicking off.

The guidance had two aspects which were impossible to meet. First, it stated that regeneration could only be focused on the employment of currently unemployed people. Second, it suggests that the best evidence of additional jobs for such people is the

<sup>13</sup> The WebTAG guidance can be found here: <http://www.dft.gov.uk/webtag/>

commitment of current employers to take them on, followed by survey evidence and with statistical evidence as a poor third. While in draft these narrow views were challenged, but this had no impact at all.

For the Thames Gateway Bridge, this guidance meant that the impact on improving residential use (and the potential for supporting employment) carried no weight. Moreover, since the bridge was not planned to open until 2016 at the earliest, finding employers prepared to commit to increasing job numbers some ten years hence was impossible. And finally, if statistical evidence was to be admitted, the Department for Transport had become keen on a particular approach – so called Land Use Transport Interaction Models. At that time, none existed.

#### **Land Use Transport Interaction Models (LUTI)**

LUTI are transport models in which a given set of trips is allocated across the transport system using a least cost approach to the distribution of trips have already been described. These solutions are known as doubly constrained if they take both the origins and the destinations of the trips as given.

Most transport models can also be run in a singly constrained mode, in which the origins are given but destinations can be changed. Thus a new transport investment can increase the numbers of trips to a destination which has become quicker to access, within the constraint of a given set of origins and number of trips in total.

In singly constrained mode, this suggests that economic activity could follow the re-allocation of trips to new destinations since such trips are now relatively cheaper than they were before. For example, a singly constrained use of the London transport model suggested that 35,000 more trips into central London in peak hours would be made once Crossrail was in place.

Of course, the origins of trips, or where people live if we think of origins and destinations as the travel to work trip, remain fixed. The earliest models of land use interaction therefore focused on residential choice. Indeed, the implementation of models such as LASER held employment fixed and looked at the costs of residential choice, allowing people to move to reduce their travel costs subject to residential costs.<sup>14</sup> Subsequent developments added in a local employment creation mechanism to reflect the impact of changed residential choice.

A further development, named DELTA, has included step by step change to try and escape the equilibrium analysis of previous strategies.

All of these extensions include the transport models as a starting point however. They therefore have fiendish amounts of detail and require heroic assumptions about the behaviour of very local economies for which there is no data available on which to base a calibration. Once again we rest on assumptions about how economic man (and woman) behaves by making rational trade-offs across many variables.

What had started as a scientific hurdle – how to provide a sensible assessment of the likelihood and likely scale of economic improvements in Greenwich, Newham and other nearby boroughs – had become an administrative nightmare of legalistic guidance and debate over the appropriateness of tests. One of the Inspectors, an engineer, was hopelessly befuddled by the various statistical battles. He asked where the certainties were in social science to match those he was used to in engineering in deciding whether the bridge would stand and how many times a piece of metal could be hit before breaking. The honest answer was that no such certainties exist in social science. It is a judgement of

<sup>14</sup> Modelling Transport and the Economy in London Framework and Literature Review, October 2007, Volterra Consulting and Colin Buchanan for TfL.

probabilities informed by statistical analysis and buttressed by some imperfect theories.

Policy guidance however is couched in a way which makes it look as if such certainties are there if only the tests are properly executed.

It is perhaps no surprise that the Inspectors concluded that the case had not been made with sufficient force to meet the policy test that the bridge could only be built if regeneration were sufficiently large. They left the door open however for reopening the Inquiry and preparations were made for this.

In particular, it was decided to go down the expensive route of trying to construct a LUTI model for London. Such a model starts with the transport models outlined earlier and adds on top of them further models at the same level of geographical detail. To do this, it is necessary to estimate how businesses trade with one another and the effect of changes in accessibility; the extent to which housing developers are attracted to sites with different levels of accessibility; the extent to which population is attracted to the houses; the extent to which commercial property is developed as transport changes; and the extent to which the population will have skills and attributes to take jobs. This is all incredibly complicated. Moreover, it is necessary to track these decisions through time as different kinds of change will operate to different time scales and respond to different factors.

Both a steering group and a peer review group oversaw this process, and both essentially concluded that the modelling was interesting but that it was impossible to know whether it properly captured what had happened in the past, let alone that it could show what would happen if changes were made. The process of validating a model to see whether it captures the key features of reality is clearly an important test. No-one could see how to properly undertake this. Moreover, there were many areas where there was no real data that could be used to make such a test. For example, there is no data to speak of on how businesses trade with

each other across regions, let alone across smaller areas. And there is little information on the speed with which people react to different changes. The transport models assume that people will always find and use the least costly methods; in practice they almost certainly do not if only because the time involved in experimentation is too costly.

It was my conclusion that the policy test that had been devised was simply too hard to meet. It would never be possible to 'prove' that the Thames Gateway Bridge would create 'sufficient' jobs. Since moreover the concerns about congestion at the southern end of the Bridge put on continued pressure to raise tolls and reduce the number of people using it, it became apparent that it would be necessary to think again about how to solve the lack of connection between the north and south parts of East London.

This process is still ongoing, with proposals for swing bridges, ferries and cable cars being made for various parts of the river.

### Regional spatial plans and forecasts

The edifice of regional spatial planning has begun to be unpicked. Yet there are many who still have faith in such plans and the necessity of taking a rational view on what is needed in their region or community. It is clear that planning control leads to wanting to take a view on how things 'should' develop. To this end, there is a huge reliance on the views of experts. There are several specialist firms who will prepare a forecast for employment and output, and will identify growth sectors to help guide policy.<sup>15</sup>

But there is a big problem. Such forecasts are inherently uncertain and become more difficult at smaller areas of geography. They may be interesting but cannot be a sure guide for many reasons. First, the only guide we have to the future is the past. Clearly the future will not be like the past, but it is a judgement call, not a scientific exercise, to decide in what ways the future may be

<sup>15</sup> I formed one of these myself back in the late 1980s.

different. Thus the most rational view of the long-term future is to examine the past trends. This is what underlies, for example, the London Plan. Incidentally this also requires long-term data – a plan for the next ten years should be based ideally on at least 30 years of past data.

Such data is not generally available in anything like a truly reliable form. We now have 40 years of London data, but this has been constructed from a number of sources and surveys which do not use the same method of data collection. Moreover some years are interpolated between years in which data was actually collected to provide an estimate. It is unknowable what the scale of errors is here, but this data is the best we have.

This data must be used to construct a forecast on which to base a plan. This is of course essential for any activity. Businesses as well as spatial planners need to take a view of the future in order to make decisions. The trick is to create the right framework and to have an idea of the robustness of your views and the risks of being wrong. A top down planning system lacks these controls because there is never any bottom up check. As more detail is added the scope for error is buried under detail.

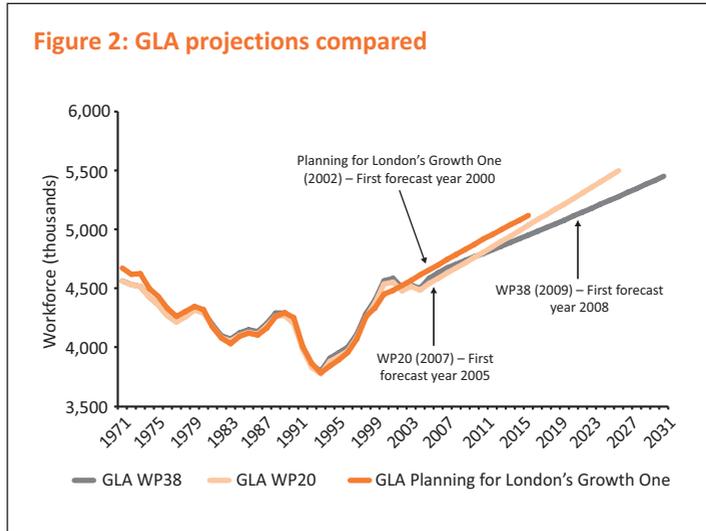
The process generally works as follows. The most common way of thinking about the prospects for a local economy is to take a national view, sector by sector, and break this down into a regional view – say for the South East. The South East will then acquire its share of UK growth, probably adjusted for its past changes in share. This is known as shift share. Many models will have more local drivers, but generally the adding up process will moderate such local effects. For more local economies, where often the data has a lot of noise which makes for big variations, a straight share will be taken.

There are two significant problems here. First, any forecast based on a model implies that what we are interested in – for example output – is driven by some underlying factors. So to provide the forecast, we need first to forecast these drivers. By a process of

recursion, we arrive at the drivers that the model does not forecast. These become the assumptions which create the drivers to create the variable of interest. These assumptions are both crucial and a matter of judgement – clearly since they are outside the model. What they are and how they are made is the most important aspect of the forecast and yet these assumptions are normally hidden or unclear and lack transparency. Even when they are clearly set out, it is a moot point who is best placed to make them and what the range of potential assumptions ought to be.

Moreover, this whole process equally relies on the correct interpretation of ‘drivers’. In any forecasting model there are errors. Not all the history of the variable we are interested in is explained by those drivers we have managed to identify. So even if we have a reliable forecast of the drivers, there is still something – and potentially quite a lot – missing. Indeed in many cases, exchange rates are a notable example, the best forecast of tomorrow’s exchange rate is simply today’s. On occasion this will be blindingly wrong, but it still the most reliable best guess. In other words, it is the history of the variable itself which provides the best method of thinking where it might be going, regardless of worrying about what drives it and how to forecast the drivers of the drivers and so on.

This approach has been used for the past eight years in London, by identifying long-term productivity trends and using these to identify likely employment growth, in spite of the big swings in total employment. This procedure has abstracted from the cyclical impacts and has therefore both under and over predicted for particular years. However, it has provided a stable base for forecasting which has moved in only a narrow band as the London economy has evolved over the last eight years. In the first incarnation of the analysis, data was only available for 2000; it is now available for 2008. Note that detailed data for 2009 will only become available at the end of 2010.



Even so this is still only a high level top down view with some uncertainties and ranges within it. For planning purposes and to control planning permissions a more local view is needed. Yet of course that local situation is in turn affected by the planning and other decisions that have been or are being made. Site availability and transport constraints may play an important role in governing the outcomes. In London we have tried to address this by developing a process of triangulation. This looks at the growth in a local borough which could be permitted by the site capacity for development that has been identified and by the transport plans which are currently in place.

The idea is that this process allows some debate about the capacity of the more local areas within the top down picture and the extent to which individual areas have the capacity to grow faster than their history suggests or might be constrained to grow more slowly. The process has generated some rules for making adjustments up or down and in some individual boroughs the differences can be substantial.

For example, the trend in employment in Croydon has been downward for some years. But it has transport capacity and site availability. The overall judgement is that this should make it possible for Croydon to reverse its past trend over the next 20 years. The rules which bring the three pictures together however are exactly that – and we do not really know whether it will be possible for Croydon to buck its past trend and whether the investment to make it happen will actually come forward.

This makes it particularly worrying when such analysis can be taken down to even more local level. An arithmetical exercise can be used to produce a share for any local area. It requires only a small step to say this is the ‘need’ for employment in this area. Such analysis can be used to refuse a planning permission or to restrict future development. This is what often happens once the projections have been prepared.

At one sub-regional Planning Inquiry the challenge to the projections being used to restrict local plans was met by the defence that the projections were the best available as there had been a competitive tender to provide them. At another, the defence of the projections was that they had been reviewed at a previous Inquiry. The process clearly becomes entirely circular. The outcomes for growth in any area will depend on investment by developers, employers and others. But when such investors come forward for planning permission they are quite likely to be told that the planning process has not identified demand for investment in this area and so such growth cannot be permitted. If not exactly a Catch-22, it can certainly feel Kafkaesque.

Even the attempt to open up the local projection process to triangulation does not always help to open up the discussion – the developers for Earls Court are concerned that the London numbers apparently suggest that there is only a ‘need’ for 7,000 jobs there, based on the projections for financial and business services and the local triangulation process. This illustrates how hard it is to escape the belief that we can correctly plan.

### Only the best will do – cement production

The protection of the Green Belt comes pretty high on most people's list of priorities. The desire to prevent urban sprawl is one aspect and so too is a focus on the need for 'green space'. Of course, the protection is not absolute. Though the Green Belt was designed to limit the suburban spread and the intrusion of individual gardens into the general greenness, there are permitted activities. A racecourse is fine, though a visitor stand is not. Extraction of minerals is fine, so long as it fits in with a previous plan, but building in a worked out quarry is not.

This gives rise to some dilemmas. The Bluewater shopping centre in North Kent is built in a worked out chalk quarry – Western Quarry – while Eastern Quarry next door is to become a new residential settlement. Next door to that is Ebbsfleet, now a station on the Channel Tunnel Rail Link to the continent and where you can catch a commuter train to St Pancras which takes 20 minutes. All of these sites are in the general area of the Green Belt. Indeed the entire M25 runs in and around the Metropolitan Green Belt, since this provided an unbuilt up area in which to build it. Purists argue that it should be sacrosanct, but the areas on the edge of cities are not virgin forest but need continued management and to be economically supported. The worked out quarries in Kent have been able to support replacement activity and new opportunities. The difficulty was not just what to do with the worked out quarries but also how to ensure that there was a continuing supply of the raw material being mined there.

Planners did identify this requirement and had designated areas for extraction of chalk somewhat further east on the Medway. All fine, as such extraction is permitted, and indeed there were further proposals for how the quarry could be reinstated as green space once it had been worked out.

“We argued at the Inquiry that without this plant, cement would probably be imported from Greece. That is now what happens”

But the raw material is only part of the story. A plan for this is no use without a plan for how to use the raw material which is the main element in cement production. North Kent has been a traditional source of Portland cement for the South East and London because of its chalk supply. The company, Blue Circle, proposed to close the Northfleet plant which used the Eastern Quarry chalk once it had been exhausted and to build a new, state of the art, plant near the new permitted supplies on the Medway.

While extraction is permitted, however, a cement plant is a different matter. Extensive plans were drawn up in the mid 1990s for a cement plant which would take minimum space, which could be removed at the end of its life and which would minimise its impact. Alongside this, proposals for the redevelopment of Northfleet – a large, crumbling, old Thameside location – were drawn up.

The company tried to focus on the best potential use of its assets for the whole of North Kent and established partnerships with local councils and community groups. This was the wrong approach in planning terms. The Inquiry into this proposal required that the production of cement should be reviewed on a regional basis and the plant in this location could only be permitted if it could show it was superior to all other potential locations in the region. This was to apply regardless of ownership of the sites, or whether the mineral resources had been given permission for extraction.

Those who had been working on this project were devastated. They had been thinking both for the region and the communities in which they operated and in the context of the regional need for the product. Now the rules gave a different slant and produced a test that was hard to meet. There is lots of chalk in the South East. Its geological description and potential for access had to be mapped; likely sites for cement production identified and transport routes assessed. Inevitably this could only be done at a relatively high level and there was a continuous risk that more analysis would be required or that the policy test that the development had to pass would be changed again.

Eventually, after a process that took some seven years, permission was finally granted. But by this time, the company had been taken over. The new owners could probably see how difficult production in the UK is. We argued at the Inquiry that without this plant, cement would probably be imported from Greece. That is now what happens, as the new owners did not proceed with the previous owners plans.

### Canary Wharf

London's Docklands started to decline after the Second World War, when the Dock Labour Scheme designed to keep workers in the docks turned into a set of practices which made it hard for London's docks to compete with unregistered ports. The advent of containerisation and the need to house larger ships provided the kiss of death; most of London's docks had closed by 1970. The Isle of Dogs was particularly hard hit as its communities lay on a spur between the Indies' docks and the river. Proposals for regeneration and redevelopment were the subject of as many rows as plans. Finally in 1981 the London Docklands Development Commission was given planning powers and tax breaks to make possible redevelopment across the dock areas. The original plan for the Isle of Dogs was for light industrial use, supported by a small scale light railway – the Docklands Light Railway (DLR).

This was a low-rise plan at low density – with the aim of generating lower skill level jobs. In other words, it was to continue the Docklands in industrial use. Some of the buildings erected in pursuit of this plan are in still in existence.

So the implementation of a completely different scheme rested on the vision of private sector developers. Canadian developers came along with a high tech, high density, high value scheme to create a business district on a North American model. Now we are all used to the existence of Canary Wharf, and indeed its sibling buildings in

the City, it is hard to remember just how shocking this idea was and how revolutionary. Even as the buildings went up, it remained hard to believe that this was actually in London, it seemed so alien.

Construction work started in 1988 on Canada Square and Canary Wharf, even as negotiations continued about how to get people in and out. The DLR was not going to be adequate and the developers, Olympia and York, proposed a railway from Waterloo to Canary Wharf and Greenwich via London Bridge which they would finance at a cost of £400 million. However, London Transport wanted something more ambitious and proposals for extensions to the Jubilee line had been floating around for some while. The compromise was that O&Y would still contribute £400 million to a much more expensive railway which would extend west from Waterloo to Green Park and east to Stratford from Greenwich at a cost of £2 billion. This was agreed in 1990, even though the project passed no cost benefit tests. The official models suggested that the spend would generate fewer benefits than its costs and it was only the intervention of the Prime Minister, Margaret Thatcher that pushed it through.

The rest is history. The recession of the early 1990s bankrupted O&Y and the state bought in the project, privatising it again later. The Jubilee line's access to Greenwich became part of the Millennium Dome project which gave it a deadline which it struggled to meet alongside massive cost overruns which nearly doubled the budget to £3.5 billion. O&Y paid less than half of their agreed financial contribution.

Nevertheless **this chapter of accidents, mismanagement and poor benefit ratios is a great success.** More recent reworking of the numbers, with what we know about the costs, and know about the uses shows that it would now pass the official tests – which require benefits to be at least twice the costs. London has gained a new business centre, generating incomes, profits and tax revenues. Many also think it shook up the City of London itself to be more flexible in allowing the kind of buildings that occupiers want.

Banks, lawyers, accountants, regulators have all occupied this new business district. Like railways, the occupiers have seen greater benefit than the investors. Most investors in the railways lost their money. But the creation of the infrastructure and the network made possible the boom in trade that fostered the first industrial nation. The intense competition meant it was consumers – railways travellers and occupiers of business space – who benefited. Real rents in the City have barely risen over the last two decades and from being more expensive than Westminster are now beneath it. This has helped support the growth of London’s employment and UK GDP. None of it would have happened unless the Prime Minister of the day had been prepared to break the rules and allow the transport infrastructure needed to support the investment.

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## 3. Themes

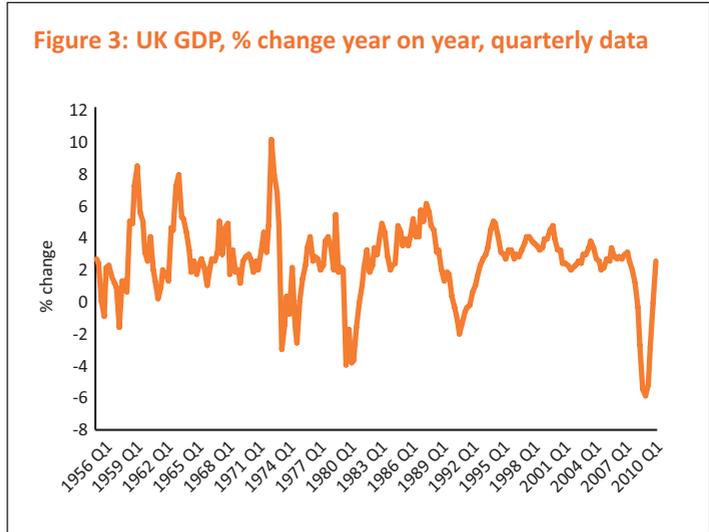
There are a variety of common problems which underpin these examples. They include an over-reliance on the ‘truth’ of forecasts, an unwillingness to engage in long-term spending plans compared to long-term spatial plans, models which rest on welfare analysis assumptions which do not reflect the real world, inadequate decision mechanisms and over-regulation.

### The truth of forecasts

A forecast is likely to be right when the variable in question is not too random and where its causation is likely to be stable and direct. Merely stating this shows how unlikely this outcome is. Where there is any circularity of causation – your forecast leads me to take a different decision – there is already a problem, and any structural changes which are going on also interfere with the model. In the short run, output of the economy has a large random element and the noise overwhelms the signal.

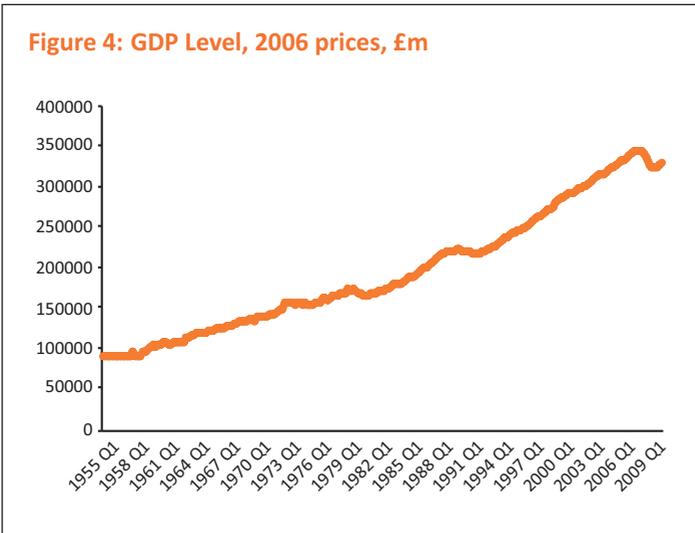
There is far too little active consideration of what we might call ‘forecastability’ and far too much reliance on the need simply to have a set of numbers. The chart shows the percentage change in UK GDP from 1956 with each quarter as the percentage growth on the same quarter the previous year. Two things jump out – the volatility in growth, and perhaps the unusual stability of the period between 1994 and 2008. If we want to examine ‘the business cycle’ it isn’t really obvious where we should look for it.

“There is far too little active consideration of what we might call ‘forecastability’ and far too much reliance on the need simply to have a set of numbers”



Looking at a chart like this, it is hardly surprising that forecasters struggle to get the following year right and often disagree. Precisely when and why each turning point occurs can be established in hindsight but their timing looks pretty random. Signal is dominated by noise.

On the other hand there is some underlying stability exhibited by the same data when we look at levels of GDP. This certainly illustrates how unusual the last couple of years have been in historical terms compared to previous slow downs, but also how the general path of growth has continued to march upward. Thus it becomes an important judgement to consider whether recent and unprecedentedly sharp falls herald a completely different path for the economy – a break with the whole of post-war history – or if growth will eventually return. In planning it is important to rise above the short term and the mood of the moment to consider the whole sweep of relevant history.

**Figure 4: GDP Level, 2006 prices, £m**

It is equally important to consider the level of aggregation. Employment or output may be fairly stable over the long-term at a regional or national level. They may be quite variable and unpredictable further down. There is often a demand for consistent forecasts, where views taken at one level are the same as those taken at another. But the actuality may not be consistent at all. Individual areas may buck a trend. For example, funding in Hull for housing renewal was being put at risk by forecasts which showed employment and output plummeting. Yet this was inconsistent with what was actually being observed in the city where the trajectory seemed more stable. The forecast was based on a national and regional prediction of falls in manufacturing, which indeed was the case more generally. But Hull had been hanging on to its manufacturing in despite of the trend elsewhere. Should the forecast therefore capture Hull's own history or show a break with the past and capture the patterns of the rest of the country? Either position is equally viable. The size of forecasts and planning are difficult to calibrate correctly.

Another example is Hounslow, which lost 40,000 jobs between the late 1980s and the mid 1990s and then gained 30,000 back again by the turn of the century. Should this strong variability be part of a future projection, or should we try and abstract from this over the longer term? There is no right answer – planning for variability is extremely hard to do in spatial terms, but on the other hand its existence would lead you to foreground a need for flexibility.

Calculating the benefits of any scheme where such variability exists becomes quite problematic. How fast a development fills up is crucial to the finances of a scheme, and it was the recession of the early 1990s which created large scale bankruptcies as developers who had counted on early occupation found themselves with no cash. The public sector runs out of cash with more difficulty, but equally deals struck on affordable housing with developers suffered a similar fate over the last few years as developers simply did not have the cash.

### Welfare analysis assumptions

Public investment criteria are based on the principles of economic welfare analysis. This method of analysis is not to be confused with welfare as it might more normally be thought of as helping people out. The concept here is more subtle. **In economics, your welfare is the benefit that you get from consuming something over and above what you paid for it.** Of course, for you it might be marginal – you are only just willing to pay £1 for an ice cream. £1.01 would put you off altogether. So the benefit to you of the ice cream is exactly the price. But there might be many people who would have been willing to pay £1.01, or even as much as £2. But they only had to pay £1. The difference is a welfare benefit which comes from paying less than you would actually have been prepared to pay.

It is clear that if the ice cream seller could identify the different prices that different customers were willing to pay, his profits might be a lot higher, and the consumer benefit would be less. The total amount of benefit would still be the same but it would be distributed differently. The next time you check out an airline web site, remember that this is what they are trying to do. They have an aeroplane making a particular flight but many reasons why individual passengers want to fly and prices they are willing to fly at. Most aeroplanes end up flying a group of people who have all paid different prices for their flight. However, the welfare might be larger still. It is entirely possible that those who have paid a lot would have paid more, while those who paid hardly anything could have been very easily put off with even a small price rise. It is not necessarily unfair that some pay more than others.

This concept of a welfare benefit obviously comes into its own when we consider products for which there is no price but which nonetheless cost something to provide. It is not surprising that this approach gained currency in considering road usage when people wanted a way of judging whether a project was valuable or not. They used the concept of welfare or consumer surplus to form such judgements, trying to estimate the price people would be willing to pay to use the road. This is where the value of time comes in. The willingness to pay reflects the value that you might put on being able to use the new road compared to an existing one.

A private sector investor could only afford the investment if they could be sure of a monetary return. The public sector investor needs no such requirement. Instead they can work on the implied benefit of the consumer surplus without worrying about the cash. We are investing our funds to improve the quality of life.

So here is the justification of the methodologies which we observed earlier in which we compare equilibrium outcomes of different situations – do nothing versus do something – and ask who

will be better off and by how much. In transport terms this is based on time savings, with trips given by the underlying forecasts. Time savings are ascribed a value with no consideration of whether these trips will actually be made and what their value to the economy in monetary terms might be. This applies whether or not there is an actual price to be paid.

And there is always a price. To use the roads one must have a vehicle, must maintain, fuel and insure it, and pay probably to park it as well. To use the trains or buses, one must buy a ticket and also get to the station or bus stop. Of course in the first instance, the costs do not get passed onto the provider of roads – except there is road tax, fuel duty and sales tax on vehicles. Bizarrely, one rule of appraisal has until very recently stated that investment in rail projects must account for the loss of tax revenue on fuel duty if it results in a shift away from the car to rail. The idea that the rail investment might generate new jobs, and hence new taxes, was absent however.

The assumptions required to define the ‘do nothing’ case are quite onerous and it is exceptionally hard to prove that any investment is actually ‘needed’. The role of agglomeration and other processes that happen over time are easily ignored, while the equilibrium assumptions imply that the status quo is somehow desirable.

Feedbacks, time steps and the disequilibrium of the real world are all ignored, while analysis rests on ‘funny money’ rather than the real stuff which will pay for the investments. These criticisms particularly apply to transport assessments but also to all the principles of judging ‘need’.

### Unwillingness to spend long-term

It is often said that government is able to take a longer term view than individuals or businesses. The Treasury Green Book is the bible

for those assessing public sector projects. It takes a 60 year view of projects and has a correspondingly low discount rate. The discount rate measures how much less valuable the future is than the present. In one sense it can measure how we value future generations compared to those alive now. One of the major criticisms of the Stern report on Climate Change is that it took such a low discount rate that future generations, who would be richer, were given more weight than poor people now. This is a result of setting a discount rate lower than the long-term average growth rate and it means that poor people need to pay now to prevent damage to rich people in future generations.

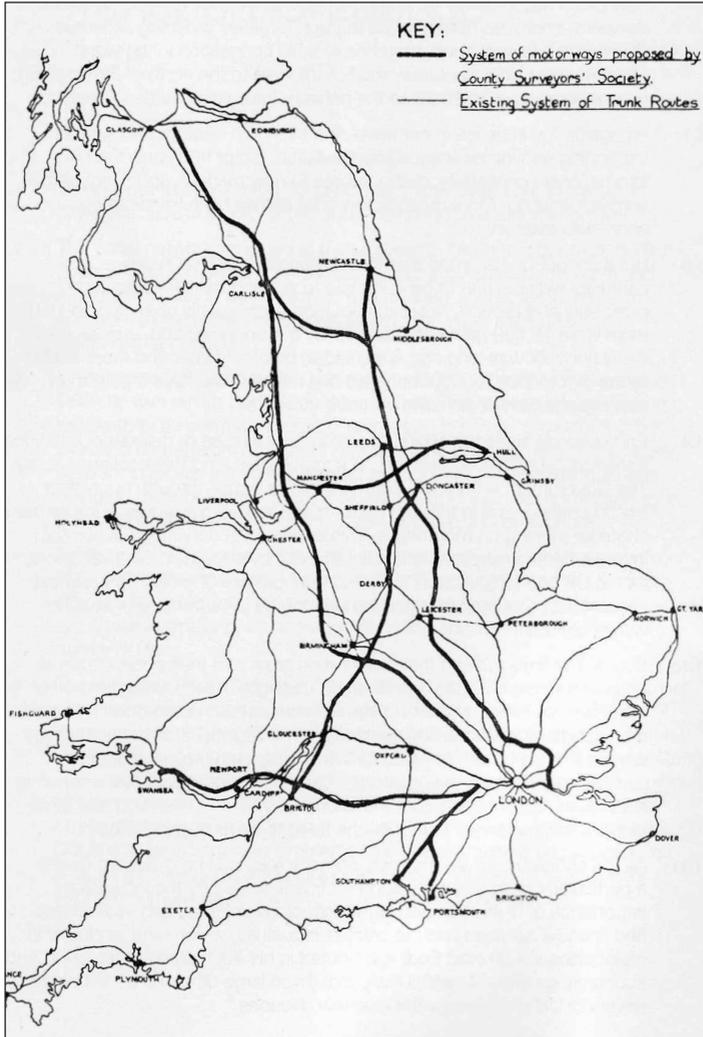
A 60 year view is certainly rare among businesses when they are doing investment appraisal. Generally the discount rate for a business will reflect its cost of funds which are higher than those in government. The Treasury has set a discount rate of 3.5% falling to 3% after 30 years. A business is unlikely to go below 10%. At 3.5%, £100 has lost half its value in 20 years. At 7.5%, it only takes ten. If this is the cost of finance, then payback needs to happen over the first ten years – this is not short termism, it is just how private finance operates.

However, considerations of payback are only part of thinking about investment. **Although the state is permanent, governments are not and mostly they do not expect to be.** Businesses on the other hand work to ensure their continuous existence. However it is true that most of the giant companies at the beginning of the 20<sup>th</sup> century no longer exist. Even if their names still resonate – like General Electric for example – what they do has completely changed. The rail companies and the steel companies have long gone. The oil companies have survived so far but again they depend for their continued long-term existence on the ability to invest. While individual projects may be assessed to pay back in the short term, they are part of a plan to help guarantee continued existence of the business in the longer term. Government on the

other hand does not often have to fight for its actual existence. The states of the developed world have got used to their guaranteed existence and their ability to tax and spend. This is of course in turn why their cost of finance is low and their credit ratings high. Lenders too expect states to continue to exist and to pay their bills.

Governments on the other hand have a much shorter horizon and find it hard to make long-term decisions where part of the payback generating incomes and taxes will occur after the political careers of the protagonists are long gone. Short term considerations can particularly dominate when you are spending other people's money. Notoriously, the decision to build the Humber Bridge was taken in order to support a by-election Labour candidate in 1966. The decision to ensure that the local people would, as Barbara Castle promised, 'have your Humber Bridge' was announced just before the Hull North by-election of 1966, which was subsequently won by Labour and ensured they clung on to their small Commons majority. Crossrail too has been bedevilled by different political cross currents and the recent change of government has meant that the numbers are being looked at yet again. It seems impossible to take a decision and then stick to it amidst the political cut and thrust. Yet it is not inevitable that politics imposes short term decision making. It seems to be partly the result of the particular political process in the UK, because other countries appear to be able to take a longer term view which survives changes in government. Even in the UK, the plan to construct the motorway network managed to survive changes in government, even if details were redefined as the process went along. The recent report on High Speed 2 – the proposed railway line from London to Birmingham – reprinted the hand drawn map of the motorway network a group prepared back in the 1940s. On the other hand, it certainly took decades to deliver and is still incomplete.

Figure 5: Proposed UK motorway network, 1943



In Hong Kong, a 30 year transportation plan to support the economy was put in place some 20 years ago and is still on track. In France, long-term plans have supported the nuclear energy industry

and high speed networks. In the UK, spending priorities have been based more squarely on a narrowly defined definition of 'need' with faster growing areas squeezed for cash and deprived of the investment which can help grow the tax base. Crossrail has been recommended by numerous strategic studies over the years, but is still to be implemented. It remains to be seen whether the same issues will bedevil the High Speed Network.

### Inadequate decision mechanisms

Investment decisions by the public sector are generally taken in an ad-hoc fashion. This seems to be the result of the tension between technocratic processes and political pressure. **The existence of technical models which purport to give priorities to projects but which need a priesthood to understand means that in reality decisions become political.** A good example is the decision to build the Jubilee line extension, which was taken despite of the technocracy and on the basis of a judgement of economic prospects which had no place in the formal modelling.

On the other hand the politics can get in the way of any economic rationality. Crossrail has required a huge coalition of partners in order to generate the necessary political support. This has been both very costly and time consuming. The Thames Gateway Bridge on the other hand had a more mixed set of supporters and opponents and so a Public Inquiry was required to resolve the decision to have such a crossing. Arcane models battled with technocrats arguing the case on both sides, while the political process had only a tangential role in creating the parameters which set up the whole Inquiry.

The Inquiry process itself creates an atmosphere of confrontation, with lawyers, cross-examinations and oppositional tactics which can last a long time. That for the Thames Gateway Bridge lasted a year; the Heathrow Terminal 5 Inquiry five years. Often by the time the

Inquiry is over, circumstances have changed and opportunities lost, as happened with the cement plant in North Kent.

Between political negotiation and technocratic decision making there is a big gap. If the models were only seen as exploratory and partial, it would be much easier to use them as tools to play with rather than tools for answers and this would give much more potential for processes to help create consensus rather than processes to create divisions which can only be resolved by direct intervention.

A case in point is the current debate over High Speed Rail. The case for High Speed Rail rests on some interesting assertions. One is that the UK must have such railways, since we must keep up with the Joneses – everyone else already does. Another is that we are running out of capacity on the existing network so that more is essential, and it should therefore also be high speed. A third is that reducing the effective distance between cities will increase economic growth. These arguments are all different and create different bases for both cases and their routes. We have not yet really tested the third argument. The existing guidance on agglomeration for example is essentially based on increasing commuter networks. It is not at all obvious you can apply it to bringing cities closer together.

If we are running out of capacity, then more is clearly an option, but then there is the question of speed. High speed trains do not stop often. If they do, they cannot get up to speed. A high speed train to Scotland should not stop more than twice on the way if it is really to maximise the advantage of speed. This means that places now getting intercity services would only remain on the older network. What are the advantages and disadvantages of this? Maintaining more connections is more expensive of course, and this still needs debate. However, this debate is not very visible or clear. Instead it has focused simply on whether or not we can afford it.

This is risible. The UK is one of the largest economies in the world, but often behaves as if it were quite small. While of course investments should be carefully appraised, the scale of such investments is small in comparison to much of government spending. The maximum investment in Crossrail for example is around £5 billion in a single year. This is less than 1% of government spending and moreover generates a financial payback. Of course we should be able to afford it.

“Splitting large projects into component parts enables a much more effective debate about what the country wants”

The issue at stake is much more about why we might want to do something and therefore what it achieves. A comprehensible decision process operates in stages, from decisions in principle to decisions about methods and of detail. By contrast, the technocratic method delivers a take it or leave it package in which all of the options have been resolved inside the expert bureaucratic machine. This is generally confusing for ordinary mortals whose lives will be affected as they cannot easily separate out the levels of decision making. Yet it is perfectly possible to unpack these elements if we are prepared to present more strategic analysis.

An example is the way in which high speed rail has been presented, where the only choice on offer is whether to build a railway to Birmingham or not, and some detail on the route. The options of how near this should go to city centres, or whether other cities are equally important is outside the scope of discussion. The project is presented as a single package, even though different principles apply to different segments. For example, sending a railway line to the outskirts of a city is relatively straightforward. The benefits are distributed across the whole economy, so the public sector should pay. Sending lines into the centre of a city is a much more complicated proposition. This is why London's mainline stations were placed on the edge of the central city of the day. It was much too expensive to pull down valuable real estate.

Each city centre access, to Birmingham, Manchester, or anywhere else should therefore be separately evaluated rather than part of a take it or leave it package. Trains of course pay for themselves – people buy tickets. The private sector can bid for franchises, and buy or lease the rolling stock. Splitting large projects into component parts enables a much more effective debate about what the country wants. It creates projects which make it much clearer who should pay for them.

A further example of an area where debate is badly served by the technocracy is aviation. The assessment of future demand is surrounded by hard to understand assumptions while the role of aviation in the economy is nowhere evaluated. When communities understandably set their face against new runways at either Heathrow or Gatwick airports, there is no place where a debate about the trade-offs between noise, congestion and pollution, leisure and business need to fly, and the cost of associated infrastructure can take place.

### Over-regulation

There is great reliance in the UK system on the ability of the man from Whitehall (or some quango) to know best. He or she will have models, expert knowledge and will believe that the public's or business' preferences are somehow imperfect and shortsighted. I frequently hear that information should not be given to the public because they might draw the wrong conclusions. If people knew how much they got back for the taxes they pay, they might be less willing to pay it, goes the argument. This is not only antidemocratic but also rather demeaning.

If the only route by which people can be persuaded to support the poor and needy is by lying to them about how much it costs, this is not a good basis for social cohesion. It also privileges the role of the expert. **This is not to say that nothing should be confidential, but it is also to say that citizens do have the capacity to engage in the**

strategic debate. The duty to present such debate potentially lies with all of us, but especially with those who have access to the data.

However, a system that believes in experts and their ability to know best has a strong incentive to create small groups which focus on setting closer and closer supervisory rules to reflect their expert knowledge and understanding. At one level this produces an over-reliance on models, largely because experts like models. In some regulatory areas, this creates disbelief and even despair. For example, in most privatised industries there is a regular review at which price controls are set. These reviews are based on the regulator's views of what the industry ought to charge and these in turn are based on economic models of rates of return. Often these can bear little relation to the industry as it appears to the practitioner. At one level we have created a whole new industry here. There are several consultancies which have been created entirely around the need to develop models for both the regulator and the business to enable this negotiation to take place. But the battle of the models is not a transparent or accessible way to debate.

The battle of the models also creates a desire to produce the perfect answer – even when this is entirely impracticable or impossibly expensive. In the Crossrail case, larger and larger benefits could in theory be created with larger and larger projects. The likelihood of these being agreed to was close to infinitesimal but much time was spent nonetheless.

A possibility of a perfect answer implies the possibility of a perfect world. Perfect worlds are static because risk and uncertainty have disappeared. These are not the worlds we live in and indeed risk and change are essential to improvement and growth. Regulation is always searching for the answer that will remove risk and prevent mistakes. Yet if risk is to be managed rather than removed, regulation has to allow risks to be taken. When risks are apparently the concern of the regulator they are no longer the concern of the practitioner. Saying no is much easier than taking responsibility for

saying yes. Moreover, once something is permitted, it has then to be managed on the ground and in real time. All of this becomes more difficult when regulations get in the way. Northern Rock went bust, but its regulator had looked at all its policies and processes and declared them sound. Their models for measuring risk had been signed off at an early stage. But the strategic risk required a more strategic management and it was this that was missing.

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## 4. How to Improve Things

A perennial problem does not have a silver bullet answer. There is no wand that can be waved to change the British system from one of centralised bureaucracy and technocratic decision making to a more nuanced and effective one.

However, there are a number of changes in process that would help us along the way. Underlying all these suggestions is a bigger plea – to liberate us from the expert. I am an expert. I give expert witness statements at Planning Inquiries, I have represented businesses in competition cases and I have been making forecasts for many years. I have learnt that experts can only know part of the story and the challenge is to include everybody's expertise.

It is heartening that louder criticisms are being heard of the appraisal mechanisms that are currently used. Network Rail has published a very helpful study which also outlines some of the same issues as outlined in this report. However, their recommendation for a new framework has some of same weaknesses as its predecessors in terms of creating a different global framework as reliant on outdated modelling approaches.

We have to learn to get more flexible – and here are four suggestions for how to do this:

### Ask the right question

A focus on the real and monetary benefits which projects bring will produce business cases which make sense to more people, particularly in business. Starting with the real money benefits will allow investors, voters and decision makers to be clear about what the investment is intended to achieve and how it will or will not pay

back on the investment. Business cases would then reflect good private sector practice and ask what output and taxes will (probably) be generated. Cases prepared in this way will be more familiar to more people who will then be able to debate them more sensibly.

The same applies to plans for development and for zoning. An understanding of the fiscal benefits of allowing for growth – and who gets them – will enable a much more reasoned debate on housing, employment and other forms of development.

Of course there are other benefits apart from monetary ones. These too need to be identified and to be assigned to the groups that will likely receive them. We already have plenty of tools to do such studies – but we must accept that they will be more strategic and probabilistic than the current cases.

### Engage business and business concepts

The introduction of PFI, PPP and their various relatives was of course intended to engage business. However, they have recently got a bad name and are presented as continuing and unnecessary calls on the public purse. So commentators write of the revenues from the M6 Toll Road as if they were money for old rope. Of course, now the project is up and running it can seem like that. But at the beginning the risks of planning and implementation were huge. Even now the rate of return is not high but it has the benefit of being stable and certain and a good long-term investment for a pension fund. There should be nothing wrong with this. The return at the outset was uncertain and is even now only OK.

Although using these mechanisms as a version of sleight of hand to move assets to someone else's balance sheet is not a good basis for decision making, the identification of sensible projects with manageable finance streams offers real opportunities for better project management and delivery. This means that project design, implementation and output delivery can be well defined and carried

out if there is clear understanding of where the boundary between public and private is set. For example, Canary Wharf Group is undertaking the construction of the new Canary Wharf Crossrail station, offering a lower fixed price than the general contractors and building on the group's experience in building in disused docks. Breaking up contracts into constituent parts and allowing value-based engineering to refine project requirements can all improve value for money.

**Project delivery and management are massively important in cost control and investment management.** There is no reason why private investors cannot own trains and run train services. Private investors already run major activities of all kinds. They sometimes do it better than at other times, but certainly do so no less reliably than the public sector and private sector operators actually are subject to far more controls.

Developing partnerships which operate from the inception of infrastructure and other developments can deliver better design, cheaper projects and outputs which are closer to consumer needs.

### Create long-term frameworks rather than plans

Eisenhower apparently said that planning was indispensable but plans were useless. A planning framework recognises this. This is not the same as creating endless complex scenarios but about creating a vision and direction of travel into which individual projects can fit over time. It is more about the abolition of structure plans, economic development strategies and local development frameworks.

It is also about the fear of over-capacity which dogs planners. Competition requires over-capacity to work. It is additional capacity which drives innovation and improvement as investors and operators search for return. We can only get capacity spot on in a static world – a world in which we know how many boots are required of what colour and kind. A world in which preferences are known and

knowable. In fact all we know is that such a world does not work and reduces not just the welfare but also the freedoms of its citizens.

At the same time, freedom is not unlimited. All markets and developments require frameworks in which to act. Outer limits need to be imposed but at a quite general level and should not be frequently revised. **A framework would set priorities for a local area but need not be specific about sites or zoning.** Individual proposals would then only need to fit into the priorities. No longer would it be necessary to argue whether the capacity of a site fulfilled a 'need' identified in an unreliable forecasting exercise. Rather projects could respond to local desire – whether for high quality houses, for regeneration, or for environmental improvements. This should lead to fewer appeals and Inquiries, which are hugely expensive in resources on all sides.

### Allow local areas to keep local taxes

Nimbyism will always exist but can be minimised by allowing local areas to hang on to the revenues raised by new development and indeed potentially capturing more of them. The proposal to implement Tax Increment Financing is a step in this direction in allowing localities to borrow against future additional revenue to implement the infrastructure which can make such revenues possible. At present this is limited to capturing stamp duty and business rates, but could be widened.

On residential property the inflexibility of council tax and the political barriers to re-rating limit the scope to reflect the benefits of improvements which raise house prices in local taxes. Instead these have rested on specific negotiations to deliver community facilities, schools, surgeries and so on. The links between development and the provision of desirable facilities including their running costs needs to be made much clearer to existing residents than they are now and community decision making should also be encouraged.

Increasing the degree of self help in which communities can engage is a key element in the long-term reduction of public sector dependency. A climate which understands that allowing investment is essential to continued growth, and that the benefits can be shared, is one in which innovation can flourish.<sup>16</sup>

This is both the riskiest and the most important recommendation. It will need to be a direction of travel rather than a one-off change and negotiating a successful path to devolution will be tricky. Nevertheless it is at a local level and a city level that planning, infrastructure and regeneration all come together. It is here that it is sensible to make trade-offs between development, the revenues gained and the infrastructure that can be paid for. It is here that the case for some subsidy from other parts of the country can be made on a case by case basis.

<sup>16</sup> Some similar points about the negative consequences of current attitudes to new development are made in: A Morton, 'Making Housing Affordable: A new vision for housing policy', Policy Exchange, 2010

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## 5. Conclusion

Twenty years of experience in planning and infrastructure has convinced me that the UK has a poor record in getting things going. The models used to inform planning and infrastructure development have failed to think about how the economy develops and is affected by investment. It is often almost impossible to show how an investment would improve the situation because so much is captured by an underlying growth assumption. Because we always live in the best of all possible worlds there is no need for further additional investment to ensure that this growth actually materialises.

Investment then rests on a welfare analysis of the willingness to pay more than you actually did rather than an analysis of the real revenues and tax benefits that can be generated. In many countries, transport investments are paid for with a mixture of fares paid by passengers and the development of air rights above stations. In Hong Kong for example, this has usually been sufficient to pay for development of new lines – and fares there are not high. Where this would be insufficient then it is the government's right to make a judgement about the additional cost which is not covered.

Such a decision then clearly becomes a political judgement and is not part of the business case. The business case can be recognised as such by private sector partners, while the government case can take into account any other benefits that are important to it. These can then escape the technocratic stranglehold and be seen and debated for what they are. Thus it is quite clear what a normal business responsibility is and what is not.

In the UK we pride ourselves on our capacity to set priorities in a clear analytical framework. Unfortunately, only a few actually understand how this framework operates or the weaknesses and

strengths of its assumptions. Its guardians tend to see themselves as a priesthood of analysts but this means that actual decisions, particularly when important, become dominated by political considerations and the analysis becomes more like a set of incantations.

Of course analysis is important, not to say crucial. It would be much better if we concentrated analysis on those aspects which are most amenable to such treatment. This means those where we are clear about the assumptions and can present the risks most clearly. It means downgrading analysis by mechanisms where we cannot sensibly judge the correct assumptions – for example when we assess the value of time.

Moreover, we should not expect criteria to be globally relevant. For many projects, the financial return is very relevant and there may well be a concentration on output generated and taxes that can be used to pay back investment. But these do not have to be the only criteria. What is important is that case by case we know why investments are being made or planning frameworks set.

We will also know who is expected to benefit and why and whether those who are funding the investment or seeing their village expand will get the revenues and the benefits. This is the foundation for good decision making.