# **A Report on Profitability**

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## **Executive Summary**

#### Background

I have been asked to provide a high level opinion on three questions arising from Ofcom's Pay TV Phase 3 document dated 26 June 2009. My response begins with some generic background comments and emphasises three features.

*Excessive returns:* Economic theory suggests that the return on capital will be equal to the cost of capital if the firm operates in a perfectly competitive market. A perfectly competitive market is one where there is an extremely large number of sellers, all producing homogeneous products, there is an extremely large number of buyers, consumers have perfect information about products, prices and market conditions, resources can flow freely from one area of economic activity to another, there are no barriers to entry, firms can lend and borrow in perfect capital markets and there are no barriers to exit.

This benchmark can be useful for understanding generic responses in markets but it is clear that these conditions are not met in any industry. Imperfections may well manifest themselves in returns on capital above the cost of capital but this does not imply that these markets are not well functioning in any meaningful sense. Therefore, in terms of competition policy it is not helpful to know whether the firm is earning a small return higher than the cost of capital. Given that earning the cost of capital is the minimum consistent with non-exit then in the real world one would expect to see some persistent deviations from the cost of capital. The main interest is whether the difference is sufficiently "excessive" to be useful as an indicator that there may be a problem in a market.

*The internal rate of return:* Similarly, one has to treat the economic theory results underpinning the internal rate of return (IRR) and cost of capital with some caution in a competition policy context. The formal economic theoretical results do not relate to the extent to which the IRR or truncated IRR is above the cost of capital. But, as indicated above, it is this relationship that is central to competition policy.

A major problem with using the IRR to provide a precise number to the extent that a company's profitability is above the cost of capital is that two alternative ways of undertaking a project that give identical value to shareholders and have identical present value cost to customers can have very different IRRs. It is relevant to the current exercise to ask whether it is likely that the type of business which Sky undertakes is sensitive to these problems or not. In this paper I provide a customer based example relating to Sky's business model and it appears that the type of problems I identified in a previous note which I provided to Ofcom are indeed present in Sky's business. The example only deals with one aspect of Sky's business (subscriber installation and related costs); but there are clearly a large number of fixed payments, not least those relating to premium channels. There are many different ways that the financial arrangements between the parties could be struck and these differences will generate differences in IRR even when they yield similar profits to the companies. Hence, there is a problem with calculating the IRR from the current arrangements and assuming that this figure is the sole IRR consistent with the given cost to consumers and value to the firm.

*The cost of capital and the asset base:* Ofcom and Oxera have pointed out that Sky's business has a significant amount of intangible assets and that there are innate difficulties in valuing these. This problem is part of a bigger problem of identifying the true assets that enable a business to earn return. In this context it is important to recognise how the cost of capital is estimated. Typically, the cost of capital is derived from stock market data and normally in the UK the standard approach is to employ the capital asset pricing model. It is not derived from returns on physical assets and it is important to draw the distinction between, on the one hand,

physical and financial assets and, on the other, the full set of assets in the business that shareholders hold by way of share ownership. It is the return on the latter that the CAPM cost of capital applies to.

So we should look to all the things that shareholders value that a company has built up. For example, as time goes on a company learns how to do things more cheaply and this investment through learning by doing will need reward in the future to justify the effort. Income forgone while learning cheaper, cleverer or more effective ways to do something deserves a reward as any other investment. There are many types of experiences, activities and rewards for risks taken that create the successful current architecture of the company, all of which are relevant in this context. We can think of these things as the 'hidden assets' of a business.

The general point is that, even if one makes the unrealistic assumption that the market is perfectly competitive and puts to one side the problem of valuing assets that are clearly identified, it should not be surprising to find that the equilibrium required rate of return on physical and financial assets will be persistently above the CAPM derived cost of capital. Obviously this will be more important in some businesses than others. In dynamic markets where there is changing technology and innovation the problem of 'hidden assets' is likely to be significant.

Implications: The upshot of these introductory comments is that there are significant problems that need to be considered. This note relates to two in particular.

First, it is extremely hard to provide a clear asset value for the problem at hand and hence very hard to capture an accurate rate of return. The truncated IRR approach is likely to be better than the ROCE but large difficulties remain. For this reason it is attractive to look at stock market information and see what insight this can give.

Second, it is desirable to move away from the simple uninformative benchmark of 'returns greater than the cost of capital' to some indication of what might be deemed more appropriate. I should add that, as far as I understand it in this context, we are not simply looking for a figure that might be deemed a benchmark to represent a possible cause for concern but a benchmark that plays a significant part in justifying substantial restructuring of a market and the introduction of direct price regulation of a company. In this paper I look at almost the sole consistent data set that relates to this issue.

## **Share Price Evidence**

It has been recognised by Ofcom that calculation of Sky's asset base is difficult because of the presence of significant intangible assets. Ofcom's claim is that Sky has consistently earned a return significantly in excess of the cost of capital but it is difficult to know to what extent these returns are genuine and to what extent they are a consequence of incorrect estimation. If Sky is earning excessive returns then one would expect that this would be reflected in the returns to shareholders. For this reason it is useful to look at share price data to see what insight can be added using this approach.

In December 1994 17% of BSkyB was floated on the London Stock Exchange and NYSE. The total return to shareholders to date and the return to FTSE 100, 250 and All Share index are shown below. It is clear that the performance of Sky has been slightly worse than the FTSE 100 and FTSE All Share but significantly worse than the FTSE 250. Sky is part of the FTSE 250. So there is nothing in this data to suggest that Sky has been earning the high returns indicated by Ofcom during this period.

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BSKYB	FTSE 100	FTSE 250	FTSE All Share
156.34%	157.30%	283.72%	162.69%

Of course, looking from the flotation to the current date is only one period that could be considered. There are many events since flotation where new information has arisen. I take three of these to provide three distinct sub-periods. Analysis of these shows that Sky also achieved less than the market in these sub-periods.

Of com has recognised the apparent inconsistency between share price returns and their claims as to the profitability of Sky based on accounting data and suggested the following explanation:

'It is also important to note that this analysis only measures total shareholder returns in the post flotation period. In the event that at or before flotation Sky was, or was expected in the future to be, in a position to make super-normal returns in excess of its cost of capital, the returns generated from this position would have been incorporated into its valuation at the time of the float. Under these circumstances, capital appreciation since flotation would reflect only *changes* in shareholder expectations of such super-normal returns and would not identify any such expectations that were already incorporated into the value at flotation.'

It is true that the relative performance of any company reflects, in part, what shareholders expected at the time that the shares were purchased. However, it is difficult to imagine that if the company has returns of 28% (as suggested by Ofcom) since flotation that shareholders in 1994 would have foreseen this subsequent success so clearly that the company's return over the next 15 years would be almost the same as the FTSE 100 index.

To address this issue I undertake a detailed investigation of Sky's performance relative to the performance of other companies. I start with every company in the FTSE All Share (602) and use daily data from Sky's flotation (approximately 3828 observations per company). I look at Sky's position relative to all companies in the FTSE All Share index, the FTSE 100, and a sample that eliminates thinly traded companies. I also present results adjusted for risk using three different approaches. The general picture is similar in all these scenarios. Here I present the most basic which gives Sky's return since flotation and shows the distribution of returns of the FTSE All Share companies over the same period. The results are given in the figure below.



The box which includes Sky's return is marked in red, showing that most companies have returns greater than Sky's and most of these significantly higher. As indicated the figure presented above is very similar to all the others in the paper.

There are two clear messages that emerge from all this analysis.

First, Sky's return to shareholders from flotation (and over three shorter example periods) has been below the FTSE ALL Share, the FTSE 250 and the FTSE 100. Furthermore, when we look at the distribution of returns to companies in the FTSE All Share we see that Sky could have returned a far larger amount to shareholders and would still have been comfortably in the middle range of returns. This is also true if we look at the FTSE 250 and FTSE 100 and if we adjust for risk in various ways and eliminate thinly traded companies.

The second message relates to the Ofcom suggestion that it may be the case that at flotation 'Sky was, or was expected in the future to be, in a position to make super-normal returns in excess of its cost of capital'. If the Ofcom conjecture with regard to shareholders expectations is to some extent correct then the stock market evidence alone would not appear to suggest that Sky's profits are extremely high. One can see this visually simply by looking at the figure above (or any other in the paper). Sky would need a very significant uplift to move its return up towards the top of the distribution. For example, if Sky's return had been:

- double it would still have been below the average of the sample
- three times higher it would have just been in the top 25% of companies
- five times higher it would still not have been in the top 10% of companies.

Overall, the evidence from this detailed analysis of the distribution of returns of companies shows that an extremely significant uplift in the existing stock market returns to Sky shareholders would not have produced a return that looks particularly high relative to other companies in the market. So approaching Sky's profitability through this stock market evidence does not support a case that Sky is abnormally profitable.

#### Empirical evidence on rates of return in competition policy

There is very little systematic empirical evidence of a competition authority's view of 'acceptable rates of return' based on accounting data and what little detailed data exists derives from the UK. Indeed, the point that the UK competition authorities have been more concerned with measuring profitability than any jurisdiction has been made in a report prepared by OXERA for the Office of Fair Trading. The sole data provided by the CC in sufficient quantity to make meaningful comparisons covers ROCE based on historical, as opposed to replacement, cost basis. There is a clear attraction in looking at this dataset since it gives some sensible benchmark for numbers that might be associated with cause for concern. I use the results of all monopoly situations investigated by the CC from 1970 until the introduction of the new 1998 Competition Act (which came into force in 2000) where ROCE figures are given in the final report (there are over one hundred companies where ROCE figures are available).

	Average
Firm level	30.6%
Case level	
(Average of cases where no	42.3%
company found against the	
public interest)	
Average of maximum ROCE	
per case of those firms not	63.9%
acting against public interest	

ROCE for firms/cases when found not to be against the public interest

There are several tables given in the paper but for summary purposes the above numbers are the most useful. These provide the average figures for companies or cases where there was no finding of behaviour against the public interest. The first two are simple averages. The first provides the average for all the firms which where found not to be engaging in activities against the public interest. The second is the average of the average per case. This figure differs from the former because of over representation of firms in some cases with lower than average profitability. For this reason the case level data is probably more representative than the former.

The last figure is slightly different and is quite useful in the context of the current Ofcom investigation since it gives an insight into the profitability of the high ROCE performers who have not been judged to operate against the public interest. I do this by taking for each case the highest ROCE amongst firms who have been found not to be operating against the public interest and then averaging these.

The main point is that these figures are extremely large relative to what Ofcom believes Sky's to be. The case average is 42.3% and what we could crudely call 'the high innocent earners' average out at 63.9%. Certainly, whether correct or not, Oxera's estimates of Sky's ROCE based on book value of 26% for the period 1995 to 2008 and 29% for the shorter period 2004 to 2008 appear comparatively small when compared to the figures in any of the tables provided in the paper. Finally, it is worth reiterating that in the current context concerning Sky we are not simply looking for a figure that might be deemed a benchmark to represent a possible cause for concern but a benchmark that plays a significant part in justifying substantial restructuring of a market and the introduction of direct price regulation of a company. The evidence presented in this paper does not support the view that Sky's profitability is at this level.

## 1. Introduction

## 1.1 Background

I have been asked to provide a high level opinion on the following questions arising from Ofcom's Pay TV Phase 3 document dated 26 June 2009:

1. Consider whether an analysis based on sharemarket returns of Sky and any other relevant entities might contribute to an analysis of Sky's profitability and if so, to provide such an analysis.

2. Review and comment on the estimates of Sky's profitability produced by Oxera in the context of examination of firms' profitability under competition law.

3. Provide any views on the reliability of the methodology used by Oxera to estimate Sky's internal rate of return (IRR).

I am the Professor of Political Economy and Head of the Department of Economics at the University of Bristol. Both as an academic and in the broader public policy environment I have made significant contributions in the area of regulation and competition policy (including on matters concerning the assessment and use of profitability).

I have published extensively in the area of competition law and regulation in leading economics and law journals, the American Bar Association, and chapter contributions in leading academic volumes. I was the founding director (currently a co-director) of the Leverhulme Trust/ESRC Centre for Market and Public Organisation at the University of Bristol. The centre studies delivery of public services, regulation, and competition policy and in the 10 years since it was formed it has won over £10m of research grants from UK research council and leading charities. Outside of the university other academic duties include a research fellowship at Encore (University of Amsterdam), membership of the Council and the Executive Committee of the Royal Economic Society, external assessor positions at the University of Oxford and the LSE, Economic Advisor to the House of Lords Economic Affairs Committee, and I recently completed a two year position as the inaugural Jan Tinbergen Fellow at the Netherlands Bureau of Economic Affairs).

I have regularly advised government agencies and private companies in the UK and elsewhere on competition law and regulatory issues for over twenty five years. I have also undertaken research projects for many government agencies and public bodies. Recent examples include research projects for the UK Competition Commission, OFT, Ofgem, Swedish Competition Commission, European Commission, Ministry of Justice, HM Revenue and Customs, BBC, BERR, European Investment Bank, and the European Bank of Reconstruction and Development.

Section 2 of this note responds to request 1, Section 3 responds to request 2 and a short response to request 3 is given in 1.4 below. However, before engaging in the

detailed data I begin with some generic background comments that are relevant as a context for my responses.

Basic economic theory provides a simple relationship between markets and profitability but for the purposes of competition policy this still leaves many issues open. There are three features that I wish to emphasise in the subsections 1.2 to 1.4.

# 1.2 Excessive returns

Economic theory suggests that the return on capital will be equal to the cost of capital if the firm operates in a perfectly competitive market, i.e., when there are no market imperfections. A perfectly competitive market is one where:

- there is an extremely large number of sellers, all producing homogeneous products
- there is an extremely large number of buyers
- consumers have perfect information about products, prices and market conditions
- resources can flow freely from one area of economic activity to another
- there are no barriers to entry
- firms can lend and borrow in perfect capital markets
- there are no barriers to exit

This construct is designed to provide an extreme theoretical model of how equilibrium will arise, in a frictionless market, with an infinite number of small firms but it is clear that these conditions are not met in any industry. This degree of 'perfection' is universally absent. Imperfections may well manifest themselves in returns on capital above the cost of capital but this does not imply that these markets are not well functioning in any meaningful sense. They are simply not equivalent to the textbook notion of perfect competition.

Therefore, in terms of competition policy (whether one looking at profitability as evidence of a potential abuse or as an indication that there may be too much monopoly power) it is not helpful to know whether the firm is earning a small return higher than the cost of capital. Given that earning the cost of capital is the minimum consistent with non-exit then in the real world one would expect to see some persistent deviations from the cost of capital. The main interest is whether the difference is sufficiently "excessive" to be useful, for example, as an indicator that there may be a problem in a market or, in a jurisdiction where excessive pricing itself is considered an abuse, that profitability indicates that the pricing levels may themselves be excessive. Thus perfect competition does not help very much in answering what is excessive.

# 1.3 The internal rate of return

Similarly, one has to treat the economic theory results underpinning the internal rate of return (IRR) and cost of capital with some caution in a competition policy context.

I elaborated on this in detail in an earlier note which was provided to Ofcom<sup>1</sup> and will only deal with the issue here to the extent that it helps to give a response to the third request.

The formal economic theoretical results concerning the IRR and the cost of capital relate to whether a particular activity increases shareholder value. Specifically, if the IRR for an activity, suitably calculated, is above the cost of capital then the activity increases shareholder value relative to the situation where the activity is not undertaken. In the context of the truncated IRR, the formal result is that if for a specified period of time and a specific activity the truncated IRR, suitably calculated, is above the cost of capital then the activity has positive present value during this period. The central point is that these results relate only to whether the IRR or truncated IRR is above the cost of capital. In particular, they do not relate to the extent to which the IRR is above the cost of capital. But, as indicated above, it is this latter relationship that is central to competition policy. Knowing how far the IRR is above the cost of capital is necessary if profitability data is to help decision making.

A major problem with using the IRR to provide a precise measure of the extent to which a company's profitability is above the cost of capital is that two alternative ways of undertaking a project that give identical value to shareholders and have identical present value cost to customers can have very different IRRs. It is very easy to construct examples where a company's IRR changes dramatically when it does business in a different way even though customers' costs do not change and the present value to profit is constant. So IRR numbers need to be treated with great caution when they are used in the context of competition policy. In the previous note I provided hypothetical examples where IRRs of 17.9% and 32.5% were both consistent with the same present value project and in an extreme version where IRRs of 18.1% and 68% were both consistent with the same present value project.

Of course, these were hypothetical examples, albeit chosen in a manner that had a plausible underlying structure. It is relevant to the current exercise to ask whether it is likely that the type of business which Sky undertakes is sensitive to these problems or not. It appears that the type of problems I identified in the previous note are indeed present in Sky's business and so Oxera's figures are very likely to be susceptible to these problems and so need reading with great care.

To see this, consider a simple customer based example. In 07/08 a Sky+ customer could have paid approximately £152 in up front contribution and Sky's upfront per subscriber costs were approximately £157 for the box and installation costs and an additional £151 for other costs. Assume that the customer stays with the company for eight years. If we allocate roughly £41 per year of the subscribers fee for these eight years towards meeting these costs then, in conjunction to the upfront customer contribution, this yields a per customer IRR of approximately 20%. However, an alternative model could have been one where the customer pays no upfront charge but contributes annually to contribute to the upfront costs. If the customer pays £29 per year for eight years, in addition to the £41 paid, then the present value is identical if

<sup>&</sup>lt;sup>1</sup> A brief note on the use of the truncated IRR methodology for assessing profitability, Paul A. Grout, 11 May 2009.

discounted at 10.3% whether the customer pays £29 per year or £152 up front.<sup>2</sup> So in terms of profitability to Sky and cost to the customer these two alternatives are identical. However, the IRR for this customer in the second scenario is no longer 20% but falls to 15.4%.

Thus the above examples shows how susceptible this customer based IRR is to alternative business strategies that in present value terms cost the customer the same amount of money and raise identical profits for the firm. However, this example only deals with one aspects of Sky's business. There are clearly a large number of fixed payments, not least those relating to premium channels. There are several different ways that the financial arrangements between the parties could be struck and these differences will generate differences in IRR even when they yield similar profits to the companies. Thus it is likely that there are many aspects of Sky's business that will impact on the IRR and so there is a problem with calculating the IRR from the current arrangements and assuming that this figure is the sole IRR consistent with the given cost to consumers and value to the firm.

## 1.4 The cost of capital and the asset base

Ofcom and Oxera have pointed out that Sky's business has a significant amount of intangible assets and that there are innate difficulties to valuing these. Clearly, it is important to have a good estimate of assets for return on capital employed (ROCE) calculations, but choosing to use the IRR does not sidestep the difficulties associated with valuing assets if one uses a truncated IRR, since the truncated IRR approach faces the problem of valuing the opening and closing assets. Indeed, Oxera's own calculations show the sensitivity of truncated IRR calculations to the asset base.

The problem of attaching values to the intangible assets that have been specifically identified by Ofcom and Oxera is part of a bigger problem of identifying the true assets that enable a business to earn return. In this context it is important to recognise how the cost of capital is estimated. Typically, the cost of capital is derived from stock market data and normally in the UK the standard approach is to employ the capital asset pricing model (CAPM). It is not derived from returns on physical assets and it is important to draw the distinction between, on the one hand, physical and financial assets and, on the other, the full set of assets in the business that shareholders hold by way of share ownership. It is the return on the latter that the CAPM cost of capital applies to. So we should look to all the things that shareholders value that a company has built up. For example, companies do not learn how to do things most efficiently without cost and effort. As time goes on the company learns how to do things more cheaply and this investment through learning by doing will need reward in the future to justify the effort. Income forgone while learning cheaper, cleverer or more effective ways to do something deserves a reward as does any other investment. There are many types of experiences, activities and rewards for risks taken that create the successful current architecture of the company, all of which are relevant in this context. We can think of these things as the 'hidden assets' of a business.

<sup>&</sup>lt;sup>2</sup> I have used 10.3% to discount the cash flows since this is Ofcom's estimate of Sky's cost of capital (Ofcom: Sky's Cost of Capital, Annex 10 to the pay TV phase three document).

The general point is that, even if one makes the unrealistic assumption that the market is perfectly competitive and puts to one side the problem of valuing assets that are clearly identified, it should not be surprising to find that the equilibrium required rate of return on physical and financial assets will be persistently above the CAPM derived cost of capital. Obviously this will be more important in some businesses than others. In dynamic markets where there is changing technology and innovation the problem of 'hidden assets' is likely to be significant. In contrast, for example, a company that consists of a bridge and earns its return by charging each vehicle may have no intangible and very limited 'hidden assets' assets.

## 1.5 Implications

The upshot of these introductory comments is that there are significant problems that need to be considered. This note relates to two in particular.

First, it is extremely hard to provide a clear asset value for the problem at hand and hence very hard to capture an accurate rate of return.<sup>3</sup> The truncated IRR approach is likely to be better than the ROCE but large difficulties remain. For this reason it is attractive to look at stock market information and see what insight this can give. I do this in Section 2. Stock market data sidesteps many of the problems I have mentioned here although different problems can arise, notably what is present in the opening share price which I address in Section 2.

Second, it is desirable to move away from the simple uninformative benchmark of 'returns greater than the cost of capital' to some indication of what might be deemed more appropriate. I should add that, as far as I understand it in this context, we are not simply looking for a figure that might be deemed a benchmark to represent a possible cause for concern but a benchmark that plays a significant part in justifying substantial restructuring of a market and the introduction of direct price regulation of a company. Section 3 seeks to throw light on this by looking at almost the sole consistent data that relates to this issue.

<sup>&</sup>lt;sup>3</sup> For example, it does not make much sense to estimate assets in cases such as the notional premium channel business, apply a cost of capital to this figure and view this as a measure of a reasonable return. Ofcom have adopted this approach to the notional premium channel business even though they consider it to be an asset-light business (see paragraph 1.13 of Annex 6 to the Second Pay TV Consultation Document).

## 2. Share Price Evidence

It has been recognised by Ofcom that calculation of Sky's asset base is difficult because of the presence of significant intangible assets. This makes the estimation of Sky's profitability through the approaches employed by Oxera, such as truncated IRR and ROCE, extremely unreliable. Ofcom's claim is that Sky has consistently earned a return significantly in excess of the cost of capital but it is difficult to know to what extent these returns are genuine and to what extent they are a consequence of incorrect estimation. If Sky is earning excessive returns then one would expect that this would be reflected in the returns to shareholders.<sup>4</sup> For this reason it is useful to look at share price data to see what insight can be added using this approach.

An attraction of share price data is that it sidesteps the estimation difficulties that have been faced by Oxera. Stock market values include the market's evaluation of all of Sky's assets and future return and so one does not have to worry about whether assets are missing or undervalued. Of course, share price data also faces difficulties so this is not an all win situation. In particular the shareholder obtains a return on the asset purchased. If this includes an element of expected monopoly profit then the absence of an excess return to shareholders may not exactly coincide with an absence of excess return on all assets once any implicit monopoly power has been removed. However, in cases where assets are hard to value, such as when intangibles are significant, and when it is argued that the company has been earning significant abnormal returns for a very long period then looking at the return to shareholders provides a test of how plausible the case for large abnormal return is.

In December 1994 17% of BSkyB was floated on the London Stock Exchange and NYSE. Figure 1, row 1 gives the total return to shareholders to date and the return to FTSE 100, 250 and All Share index. It is clear that the performance of Sky has been slightly worse than the FTSE 100 and FTSE All Share but significantly worse than the FTSE 250. Sky is part of the FTSE 250. Row 1 of Figure 2 repeats this exercise but gives the ranking according to annual geometric returns. Again Sky's return is marginally worse that the FTSE 100 and All Share but again significantly worse than the FTSE 250. So there is nothing in this data to suggest that Sky has been earning the high returns indicated by Ofcom during this period.

Of course, looking from the flotation to the current date is only one period that could be considered.<sup>5</sup> I have chosen three start dates which give sufficiently diverse subperiods (there are, of course, many others that could have been chosen). The three start dates that I have chosen are March 1996, October 1998 and December 2002.

The total returns for shareholders from each of these three dates to now and the total returns for the associated indexes are given in Table 1 and the annual geometric means in Table 2. It is clear that Sky's performance against these three indexes for the shorter periods is comparatively worse than for the full period.

<sup>&</sup>lt;sup>4</sup> Returns to shareholders are defined as reinvested dividends plus capital growth. This definition is used for all companies and indices in this note.

<sup>&</sup>lt;sup>5</sup> Note, in this context the terminology 'current date' actually means August 10<sup>th</sup>. This date has no significance in terms of Sky's returns. It is simply the (random) date when data was downloaded for the analysis in the paper.

			UK market Indices				
	BSKYB	FTSE 100	FTSE 250	FTSE All Share			
07-Dec-94 – 10-Aug-09	156.34%	157.30%	283.72%	162.69%			
16-Mar-96 – 10-Aug-09	49.99%	99.00%	192.78%	103.43%			
01-Oct-98 – 10-Aug-09	25.28%	36.23%	156.92%	49.39%			
04-Dec-02 – 10-Aug-09	-1.68%	49.03%	127.41%	57.22%			

Table 1Total return calculated over the specified period.

	Table 2.			
Annual geometric return	calculated	over the	specified	period.

		UK market Indices				
	BSKYB	FTSE 100 FTSE 250		FTSE All Share		
07-Dec-94 – 10-Aug-09	6.62%	6.64%	9.58%	6.79%		
16-Mar-96 – 10-Aug-09	3.15%	5.61%	8.86%	5.78%		
01-Oct-98 – 10-Aug-09	2.10%	2.89%	9.07%	3.76%		
04-Dec-02 – 10-Aug-09	-0.25%	6.16%	13.10%	7.02%		

There is nothing in any of this evidence to suggest that Sky has earned a large abnormal return during any of these periods.

Ofcom has recognised the apparent inconsistency between share price returns and their claims as to the profitability of Sky based on accounting data and suggested the following explanation:

'It is also important to note that this analysis only measures total shareholder returns in the post flotation period. In the event that at or before flotation Sky was, or was expected in the future to be, in a position to make super-normal returns in excess of its cost of capital, the returns generated from this position would have been incorporated into its valuation at the time of the float. Under these circumstances, capital appreciation since flotation would reflect only *changes* in shareholder expectations of such super-normal returns and would not identify any such expectations that were already incorporated into the value at flotation.<sup>6</sup>

It is true that the relative performance of any company reflects, in part, what shareholders expected at the time that the shares were purchased. However, it is difficult to imagine that if the company has returns of 28% (as suggested by Ofcom) since flotation that shareholders in 1994 would have foreseen this subsequent success so clearly that the company's annual geometric return over the next 15 years would be only 0.02% different from the FTSE 100 index. Furthermore, given that successes are associated with lower performance against the index from that point on this would appear to suggest that shareholders expected the company to have a more successful position in the market than what occurred.

To further develop the stock market analysis and to address this issue I undertake a detailed investigation of Sky's performance relative to the performance of other companies. One can think of the exercise in two ways.

One way of thinking of the exercise is that it shows the spread of returns across companies and hence identifies how high a company's return has to be to start to move away from the middle range towards the top end of the distribution of returns. In this sense it contributes to answering the question identified in the first section, namely how high would Sky's return have to be to look excessive relative to other companies.

An alternative way of thinking of the exercise is to assume that the Ofcom conjecture with regard to shareholders expectations is to some extent correct and ask whether this is likely to be significant. That is, assume that expectations of success at the time of flotation were present in the flotation price and hence have depressed shareholder gains since flotation. How large would this uplift have had to be in order for Sky's return in the absence of the uplift to be placed above the middle range towards the top end of the distribution of returns?

To answer this question there is no point in comparing Sky's actual return to the FTSE 100 index. For example, it is clear that Sky has earned almost exactly the same as the FTSE 100 (ignoring all kinds of adjustments that I make later) since flotation. So if shareholders had built in some element of expectation of abnormal return at flotation then almost any level of this 'built in' abnormal return would suggest that Sky would probably have earned more than the FTSE 100 if this expectation of abnormal returns had been stripped out. But that is not the relevant point for several reasons. The main one is that, for the question in hand, knowing that a firm had earned more than the FTSE 100 is not informative since we want to know if the amount that would have been earned is in some sense very high. A second reason is that the results will be very different for the FTSE 250 (which Sky belongs to), so rather than worry about the index it is better to see the distribution of returns across companies.

<sup>&</sup>lt;sup>6</sup> Ofcom: Pay TV Market Investigation Consultation, Annex 12 (Analysis of Profitability and Investor Returns) 3.10.

Note that to obtain a view as to what may be reasonable return it is useful to look across a wide array of firms rather than restrict interest to companies that are in the same sector as Sky so here I look at a wide array of companies and make a series of adjustments to make comparisons. I will present all the analysis and then comment on the results.

I begin with the FTSE All Share index. This is actually not all the shares on the London Stock exchange. In the sample of FTSE All Shares as of 10 August 2009 there are 606 companies of which 361 companies that have been traded since December 7, 1994 and 244 companies that have been listed for a shorter period of time.

Figure 1 calculates the total returns (from 7 December 1994 to 10 August 2009) for each of the 361 companies in the FTSE All Share that have been on the market since December 1994. Companies are allocated to each group and Sky's position is marked in red.

An important point to notice is that the visual picture understates the spread of the higher returns. Because of the huge returns for many companies it is not helpful to use a linear scale for the horizontal axis. For example, in Figure 1 below the scale for the middle range rises 50% per block, but then this moves to 75% per block and eventually 500% per block. The upshot is that many firms in the top half of the distribution of profits are earning returns that are many times greater that what appears to be the case when eyeballing the graphs. This is true for all the results in this subsection.

Figure 1 Distribution of the total returns for 361 companies of FTSE All Share index for the period 7 December 1994 – 10 August 2009



Figure 2 provides the same distribution for the period 16<sup>th</sup> March 1996 to 10<sup>th</sup> August 2009, Figure 3 for 1st October 1998 to 10<sup>th</sup> August 2009 and Figure 4 for 4<sup>th</sup> December 2002 to 10<sup>th</sup> August 2009

Figure 2 Distribution of the total returns for 361 companies of FTSE All Share index for the period 16 March 1996 – 10 August 2009



Figure 3. Distribution of the total returns for 361 companies of FTSE All Share index for the period 1 October 1998 – 10 August 2009



Figure 4





Many of the firms in the FTSE All Share index are small so it is useful to repeat the exercise on the largest firms only. So Figures 5 to 8 repeat the analysis underlying Figures 1 to 4 but now attention is limited to the FTSE 100. In the sample of FTSE 100 as of 10 August 2009 there are 102 companies of which 72 companies have been traded since December 7, 1994 and 30 companies have been listed for a shorter period of time.

Figure 5 Distribution of the total returns for 72 companies of FTSE 100 index for the period 7 December 1994 – 10 August 2009



Figure 6 Distribution of the total returns for 72 companies of FTSE 100 index for the period 16 March 1996 – 10 August 2009



Figure 7 Distribution of the total returns for 72 companies of FTSE 100 index for the period 1 October 1998 – 10 August 2009



Figure 8





The figures presented so far make no effort to introduce risk to explain the relative differences in return. I therefore look at a series of possibilities. I look at the specific risk adjustment that is consistent with the capital asset pricing model (CAPM) but before that, in order to show that the results are very similar regardless of risk adjustment, I adopt two very basic risk adjustments (a simple market model adjustment and the Sharpe Ratio).

The first of the simple adjustments uses beta as the measure of risk. Formally, beta is the covariance of the returns on the asset and the market divided by the variance of the market. It is the measure of risk in the market model and CAPM, the latter being the approach used by Ofcom to calculate Sky's cost of capital. It is also the most basic definition of risk that is consistent with an equilibrium model of returns. A higher number implies more risk.

For each of the 361 companies a beta (derived from the market model) is calculated using daily data for the relevant period. That is, there are four betas per company (one covering 7 December 1994 – 10 August 2009, another covering 16 March 1996 – 10 August 2009, etc.). Each company's return for a period is then adjusted by dividing by its relevant beta for that period. This particular simple risk adjustment is consistent with the market model and for this reason is the most basic adjustment that ensures that comparative returns reflect differences in risk.

The following shows why a risk adjustment is useful. If three firms have the same return but one has a beta of 0.5, another of 1 and another of 2 then, relative to the risk that the firms are bearing, the firm with the lowest risk is really making a higher risk adjusted return than the others. Similarly the firm with the highest risk is earning the least risk adjusted return. Figures 9 to 12 give the relevant results for the four time periods.





Figure 10 Distribution of the market risk adjusted annualised average daily returns calculated for the sample of 361 companies of FTSE All Share index for the period 16 March 1996 – 10 August 2009



Figure 11 Distribution of the market risk adjusted annualised average daily returns calculated for the sample of 361 companies of FTSE All Share index for the period 1 October 1998 – 10 August 2009



Figure 12 Distribution of the market risk adjusted annualised average daily returns calculated for the sample of 361 companies of FTSE All Share index for the period 4 December 2002 – 10 August 2009



One potential concern with the above risk adjustment is that several of the 361 companies may be infrequently traded. This will depress the beta and so the risk adjusted returns for these companies may appear too high. To avoid this problem I eliminate the companies that are thinly traded. There are various ways to do this although all will tend to remove the same companies. Here I use an objective rule that eliminates companies that have more than one third of the daily returns at zero. The intuition is that on daily data there will be some days when the share price ends the same as the previous day simply by accident. If the share is thinly traded this is far

more likely to happen than for thickly traded shares since the amount of daily activity is less in thinly traded shares. My rule eliminates almost one third (113) of the 361 companies. To ensure that the sample remains as large as possible, I add to the 361 companies those additional companies that have been quoted for the shorter time frame but not for the full period. The net effect of these two changes is given in Table 3. Table 3 also gives the nominal risk free rate (redemption yield on 5 yr gilts) that will be used for later adjustments.

	Full period	16/3/96 on	1/10/98 on	4/12/02 on
Number of companies in				
sample	361	+24 = 385	+75 = 436	+128 = 489
Number of observations				
per company	3705	3384	2742	1688
Excluded thinly traded	113	97 (6)	80 (12)	20 (10)
companies, i.e., more				
than 1/3 returns are				
zeros. (brackets give				
eliminated companies				
added from shorter time				
frame)				
Included companies	248	288 (18)	356 (63)	469 (10)
Risk free rate	5.388%	5.159%	4.750%	4.471%

Table 3 Expanding the sample and dealing with thin trading

Figure 13 gives the total returns for the whole period for the liquid companies within the FTSE All Share that survive for the full period and Figure 14 gives the market adjusted return for the full period.





Figure 14 Distribution of the market risk adjusted annualised average daily returns calculated for 248 liquid companies of FTSE All Share index for the period 7 December 1994 – 10 August 2009.



The risk adjustment made above is consistent with the market model, which is one of the most basic models of risk adjusted return. However, as I indicated, there are other ways of adjusting for risk. One can ignore the beta and simply focus on the total risk of the asset or one can choose to be more precise than the market model.

The total risk of an asset is usually measured by the variance or standard deviation of the returns of that asset.<sup>7</sup> The idea is that the greater the variance of returns of an asset then the less attractive that asset is. As with the previous risk adjustment, this is usually thought of as a relatively simple approach to risk since the correlation with the return on other assets is thought to be very important and clearly focusing solely on the variance of an asset ignores this.

The adjustment process to take account of total risk is referred to as the Sharpe Ratio:

Sharpe Ratio = (Return minus risk free rate) / standard deviation.

Alternatively one can adopt a more precise adjustment by choosing an adjustment that is consistent with a formal theory of risk. If a precise adjustment is to be made then for the purposes here it makes sense to adjust according to the CAPM since this is the approach that Ofcom have used to estimate Sky's cost of capital. The Treynor Ratio adjusts the excess return for risk in the manner that reflects the CAPM, i.e.,

Treynor Ratio = (Return minus risk free rate) /  $\beta$ .

<sup>&</sup>lt;sup>7</sup> The standard deviation is the square root of the variance.

Note that the Treynor ratio is similar to the risk adjustment undertaken in Figures 9 - 12 and 14 except that in the Treynor ratio one only adjusts the return that is in excess of the risk free rate.

Figures 15 to 23 give Sharpe and Treynor Ratios for the relevant periods. I provide more Treynor adjustment examples because it is the more theoretically sound adjustment.

Figure 15. Distribution of the Sharpe ratios calculated for 248 liquid companies of FTSE All Share index for the period 7 December 1994 – 10 August 2009.



Figure 16. Distribution of the Treynor ratios calculated for 248 liquid companies of FTSE All Share index for the period 7 December 1994 – 10 August 2009.





Figure 17. Distribution of the Treynor ratios calculated for 288 liquid companies of FTSE All Share index for the period 16 March 1996 – 10 August 2009.

Figure 18. Distribution of the Treynor ratios calculated for 356 liquid companies of FTSE All Share index for the period 1 October 1998 – 10 August 2009.





Figure 19. Distribution of the Treynor ratios calculated for 469 liquid companies of FTSE All Share index for the period 4 December 2002 – 10 August 2009.

Figure 20 Distribution of the Treynor ratios calculated for 72 companies of FTSE 100 index for the period 7 December 1994 – 10 August 2009.



Figure 21 Distribution of the Treynor ratios calculated for 75 (72+3) companies of FTSE 100 index for the period 16 March 1996 – 10 August 2009



Figure 22. Distribution of the Treynor ratios calculated for 80 (72+8) companies of FTSE 100 index for the period 1 October 1998 – 10 August 2009







## Summary of the stock market evidence

In this section I have approached the problem of Sky's stock market return from many angles using a series of risk adjustments, different samples of companies, different time periods, etc. However, the picture in terms of the distribution of returns across companies and Sky's position within that distribution is basically unchanged whichever samples are used.

Two clear messages emerge from this analysis.

First, Sky's return to shareholders from flotation (and over three shorter example periods) has been below the FTSE All Share, the FTSE 250 and the FTSE 100. Furthermore, when we look at the distribution of returns to companies in the FTSE All Share we see that Sky could have returned a far larger amount to shareholders and would still have been comfortably in the middle range of returns. This is also true if we look at the FTSE 250 and FTSE 100 and if we adjust for risk in various ways and eliminate thinly traded companies.

The second message relates to Ofcom suggestion that it may be the case that at flotation 'Sky was, or was expected in the future to be, in a position to make supernormal returns in excess of its cost of capital'. If true this would have been built-in to the flotation price. It is to address this question that I have produced the distribution of returns under so many scenarios. The second message from the analysis is that if the Ofcom conjecture with regard to shareholders expectations is to some extent correct then this evidence alone would not appear to suggest that Sky's profits are extremely high. One can see this visually across a wide array of approaches simply by looking at all the figures provided. Sky would need a very significant uplift to move its return up towards the top of the distribution.

To provide a feel for this effect consider the evidence underlying Figure 1. This is the simple return over the full period and shows the distribution of returns of the FTSE All Share Companies. The following three comparisons provide a feel for the relative position of Sky using this data:

- If Sky's return over the period had been twice as large it would still be below the average of the sample
- If Sky's return over the period had been three times as large it would just be in the top quarter of companies (there would be 22% of the sample above them).
- If Sky's return over the period had been five times larger it would still not be in the top ten (11% of the sample would earn more)

Overall, the evidence from this detailed analysis of the distribution of returns of companies shows that an extremely significant uplift in the existing stock market returns to Sky shareholders would not have produced a return that looks particularly high relative to other companies in the market. So approaching Sky's profitability through this stock market evidence does not support a case that Sky is abnormally profitable.

Of course, Ofcom's focus has been on Sky's accounting data and its relationship to the cost of capital. The next section addresses what evidence there is on a competition authority's view of 'acceptable rates of return' based on accounting data and suggests that the evidence appears consistent with what I have found in this section.

## 3. Empirical evidence on rates of return in competition policy

## 3.1 Background

There is very little systematic empirical evidence of a competition authority's view of 'acceptable rates of return' based on accounting data and what little detailed data exists derives from the UK. This is in part because of differences in legal structure and part hysteresis.

Prior to the Second World War there were only two countries with established competition law (US and Canada) hence the US has had a significant effect on its development. As the law in the US (Sherman Act, 1890, and Federal Trade Commission Act, 1914) has been interpreted it is not illegal for a company to have a monopoly, to charge "high prices," or to try to achieve a monopoly position by what might be viewed by some as aggressive methods. The law is violated only if the company tries to maintain or acquire a monopoly through unreasonable methods. For the courts, a key factor in determining what is unreasonable is whether the practice has a legitimate business justification.

This attitude to prices, profitability and monopoly was clear in the Standard Oil case of 1911:

"...by the omission of any direct prohibition against monopoly in the concrete, [the Sherman Act] indicates a consciousness that the freedom of the individual right to contract when not unduly or improperly exercised was the most efficient means for the prevention of monopoly, since the operation of the centrifugal and centripetal forces resulting from the right to freely contract was the means by which monopoly would be inevitably prevented if no extraneous or sovereign power imposed it and no right to make unlawful contracts having a monopolistic tendency were permitted."<sup>8</sup>

and captured most vividly in the famous quote of Judge Learned Hand:

"a strong argument can be made that, although the result may expose the public to the evils of monopoly, the Act does not mean to condemn the resultant of those very forces which it is its prime object to foster: *finis opus coronat*. The successful competitor, having been urged to compete, must not be turned upon when he wins." <sup>9</sup>

Against this backdrop there has been limited interest in formally and accurately investigating profitability in the US.

Excessive pricing is an abuse in its own right under EU law, where case law provides the statement "charging a price which is excessive because it has no reasonable relation to the economic value of the product would be an abuse [of a dominant position.]"<sup>10</sup> However, there are few cases under EU law condemning pure excessive pricing standing alone. The European Commission has made clear that "the Commission in its decision making practice does not normally control or condemn high prices as such. Rather it examines the behaviour of the dominant company designed to preserve its dominance, usually directed against competitors or new

<sup>&</sup>lt;sup>8</sup> Standard Oil Co. v. United States, 221 U.S. 1 (1911).

<sup>&</sup>lt;sup>9</sup> Judge Learned Hand (United States v. ALCOA, 148 F. 2d 416 (2nd Cir., 1945).

<sup>&</sup>lt;sup>10</sup> Case 27/76, United Brands v. Comm'n 1978 E.C.R. 207, 250.

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entrants who would normally bring about effective competition and the price level associated with it."<sup>11</sup> So again EC evidence is limited. However, in the UK, it has been standard to use profitability as a component in the identification of abuse and it is common for the UK Competition Commission (CC) to present rates of profitability in its reports and decisions.<sup>12</sup> An expertise has been developed within the Competition Commission over many decades and the procedure of assessing profitability from accounting data has as a result become common.

# 3.2 The UK Competition Commission

The point that the UK competition authorities have been more concerned with measuring profitability than any jurisdiction has been made in a report prepared by OXERA for the Office of Fair Trading: "The UK seems to be one of the few jurisdictions where the usefulness of profitability assessment has been explicitly recognized, and where it is regularly applied in investigations".<sup>13</sup> The CC cases are investigated in detail; reports of several hundred pages are not unknown and a final report in the public domain will typically be over 100 pages. The profitability figures that are quoted are the result of analysis by teams of CC accountants. These are designed to give where possible a reflection of the profitability of the part of the business that is under investigation, which is not usually the case with publicly available data.

The sole data provided by the CC in sufficient quantity to make meaningful comparisons covers ROCE based on historical, as opposed to replacement, cost basis. There is a clear attraction in looking at this dataset since it gives some sensible benchmark for numbers that might be associated with cause for concern. I use the results of all monopoly situations investigated by the CC from 1970 until the introduction of the new 1998 Competition Act (which came into force in 2000) where ROCE figures are given.

The data set used in this section includes over one hundred companies where ROCE figures are available. The data uses the ROCE figure from the year before investigation since there is evidence that investigation affects a company's ROCE. The test during this period was whether the activity under investigation operated against the public interest or not. Each company is investigated by the CC and there is either an adverse finding (against the public interest) or not for each company. The finding for each company is stated explicitly in the final report. The results for this data set are given in Tables 4 to 6. Note that data has not been used for more recent periods because it is based on a different legal structure. Including this new data would either require merging with the large data set and jettisoning legal consistency or presenting a small separate small data set but this faces the problem of being insufficiently representative.

<sup>&</sup>lt;sup>11</sup> EUROPEAN COMM'N, XXIV REPORT ON COMPETITION POLICY (1995).

<sup>&</sup>lt;sup>12</sup> For convenience I will use the term Competition Commission to refer to both the former Monopolies and Mergers Commission and the current Competition Commission.

<sup>&</sup>lt;sup>13</sup> OXERA, Assessing Profitability in Competition Policy Analysis (July 2003) (published by the Office of Fair Trading).

## *3.3 The ROCE data.*

Table 4 provides details of CC profitability findings for every company investigated (whether against the public interest or not) and then the average for every case (the profitability per case is simply the mean across all the companies under investigation in that case). The difference in the results stems from the variance in the number of firms under investigation in cases. A case which has a very large number of firms under investigation and where profitability is lower than that on other cases skews the data downwards, which is exactly what happens here. So the average ROCE across cases is over 45% whereas averaged across firms the number falls to just over 37%.

	Average	Median	Standard Deviation	Maximum Value	Minimum value
Firm level	37.3%	26.8%	54.8%	368.7%	-94.4 %
Per case (average per case)	45 7%	29.7%	55 3%	315.1%	3%

 Table 4

 ROCE for firms/cases whether found against the public interest or not

A discussion of the ROCE relative to the cost of capital does not seem to bear much relevance to these cases. The average ROCE figures are several times higher than the cost of capital. Indeed it is of interest that the Competition Commission has not published or, one suspects, calculated a cost of capital in almost all of these cases. Furthermore, the evidence also shows that the variance across firms and cases is very large so there are many firms and cases where profitability appears to be significantly higher than the average. This immediately raises the question as to whether the cases that are judged to be against the public interest have much higher profitability than those that are not.

Table 5 gives the data for firms and cases where the activity under investigation was found to operate against the public interest. There is a complication when defining a case against the public interest because in some cases there will be firms judged to engage in activities that operate against the public interest and other firms that are not judged to operate against the public interest. I take two different approaches. One is to define a case as being against the public interest if at least one firm is judged to operate against the public interest and a case as not against otherwise. The other approach is to define a case as against the public interest only if all firms are judged to be engaging in activities that operate against the public interest.

	Average	Median	Standard Deviation	Maximum value	Minimum value
Firm level	43.6%	29.0%	51.4%	315.1%	-2.5%
Cases: defined against the public interest if one firm against	47.9%	27.9%	65.6%	315.1%	3.8%
Cases: defined against the public interest if all firms against	49.1%	29.0%	67.9%	315.1%	3.8%

 Table 5

 ROCE for firms/cases when there was a finding against the public interest

What is immediately clear from Table 5 is that the averages are not enormously higher than those in Table 4 nor is the standard deviation much different. This suggests that any relationship between ROCE and operating against public interest may be small.

 Table 6

 ROCE for firms/cases when found not to be against the public interest

	Average	Median	Standard	Maximum	Minimum
			Deviation	value	value
Firm level	30.6%	19%	57.9%	368.7%	-94.4%
Cases: defined					
against the public	42.3%	33.2%	33.9%	123.1%	9.4%
interest if one firm					
against					
Cases: defined					
against the public	41.1%	30.1%	32.3%	123.1%	9.4%
interest if all firms					
against					
Maximum ROCE					
per case of the firms	63.9%	38.6%	81.2%	368.7%	10%
not acting against					
public interest					

The results for cases and firms that do not operate against the public interest are given in Table 6. The definitions for the first three rows replicate Table 5. One interesting feature of all these tables is that there is no average in any of the groups that is below 30% and if one focuses in cases alone there are no figures below 40%.

Finally it is interesting to identify the profitability of the high ROCE performers who have not been judged to operate against the public interest. I do this by taking for each case the highest ROCE amongst firms who have been found not to be operating

against the public interest and then averaging these. This is the last row of Table 6. Note, that this average is 63.9%. While this is only one way of assessing what a reasonable ROCE level may be it appears to imply that ROCE (and hence IRR) may have to be extremely high relative to the cost of capital to signal a cause for intervention.

Certainly, whether correct or not, Oxera's estimates of Sky's ROCE based on book value of 26% for the period 1995 to 2008 and 29% for the shorter period 2004 to 2008 appear comparatively small when compared to the figures in any of the tables provided above. Finally, it is worth reiterating that in the current context concerning Sky we are not simply looking for a figure that might be deemed a benchmark to represent a possible cause for concern but a benchmark that plays a significant part in justifying substantial restructuring of a market and the introduction of direct price regulation of a company. The evidence presented in this paper does not support the view that Sky's profitability is at this level.

## Professor Paul A Grout Brief curriculum vitae

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## **Current Positions**:

- Professor of Political Economy, University of Bristol
- Head of Department of Economics, University of Bristol
- Co-Director of ESRC/Leverhulme Trust's Centre for Market and Public Organisation.
- Royal Economic Society member of the Council, Executive Committee and Trustee.
- Ofgem competition advisor
- Member of the Committee of the Gas and Electricity Authority overseeing Distributional Price Control Review 5.
- Research Associate of ENCORE, University of Amsterdam
- LSE internal promotion assessor
- University of Oxford current external examiner
- House of Lords Economic Affairs Committee Economic Advisor

## Career:

University of Manchester: Lecturer 1975-1978 University of Birmingham: Lecturer then Senior Lecturer 1978-1986 University of Bristol: Professor 1986-

## **Qualifications**:

BA Economics, University of Newcastle-upon-Tyne 1972
MSc Economics, University of London, 1973
PhD Economics, University of Essex, 1979
supervisor: Professor Sir Anthony Atkinson (University of Oxford), examiner: Professor Sir Partha Dasgupta (University of Cambridge))

## **Research Topics**

My main research areas are regulation, delivery of public services, privatisation, finance, industrial organisation, competition law, and risk.

## **Recent Academic Publications**

I have published extensively in major academic journals on a broad range of topics in economics. For example, publications in major international journals and relevant

chapters in books on competition policy, regulation, delivery of public services, and related legal matters in the last few years include:

- *'Private delivery of public services'*, CMPO Research Monograph (2009) based loosely on my keynote address at the EU Eurosocial Conference on PPPs, Mexico, November 2008.
- 'Measuring the Rate of Return for Competition Law', *Journal of Competition Law and Economics*, Forensic Economics in Competition Law Enforcement (with A Zalewska), (2008)
- 'Profitability Measures and Competition Law' in W.D.Collins (ed.) *Issues in Competition Law and Policy*, American Bar Association, (with A. Zalewska) (2008).
- 'Simple money-based tests for choosing between private and public delivery: a discussion of the issues', *Review of Industrial Organization*, (with S. Sonderegger), (2007).
- 'Governance Reform in Legal Service Markets', *Economic Journal* (2007) (with I. Jewitt and S. Sonderegger)
- The Impact of Regulation on Market Risk, *Journal of Financial Economics* (2006) (with Ania Zalewska)
- 'Promoting Competition in the Presence of Essential Facilities', *International Journal of Industrial Organisation* (2005) (with I Park)
- 'The Undervaluation of Privatised Companies', (2005) *Economic Letters*, (joint with A. Zalewska)
- Value-for-money measurement in public private partnerships, *European Investment Bank Papers*, (2005)
- 'Privatisation of Utilities and the Asset Value Problem' *European Economic Review*, (2004) (with A. Jenkins and A. Zalewska)
- 'Business Regulation' in Compston (ed.) *Handbook of Public Policy in Europe* (Palgrave) (with C. Flockton and L. Garside) 2004.
- 'Financial Regulation and Supervision', in Compston (ed.) *Handbook of Public Policy in Europe* (Palgrave) joint with C. Flockton and M. Yong, 2004.
- 'Defining a Prize Squeeze in Competition Law', in E. Hope (ed) *The Pros and Cons of Low Prices* (Swedish Competition Authority), 2004.
- 'Public and private sector discount rates in public-private partnerships' *Economic Journal*, (2003) Reprinted:

'The International Library of Critical Writings in Economics: The Economics of Public Private Partnerships' Grimsey and Lewis (eds) Edward Elgar (2005) and

'Public-Private Partnerships: An Introduction' ICFAI Books (forthcoming)

- Editor of special issue of *Oxford Review of Economic Policy* on Financing and Managing Public Services 2003
- 'Financing and Managing Public Services An Assessment' *Oxford Review of Economic Policy* (2003 in above issue) joint with M. Stevens.

## Selected Consultancy experience:

## **Public bodies:**

Recent advisory positions and/or research conducted for public bodies include:

- BBC
- BERR
- Competition Commission
- EBRD
- European Investment Bank
- National Audit Office
- Nirex (UK)
- Office of Fair Trading
- Ofgem
- Swedish Competition Authority

## Private companies:

I have provided advice to many leading UK, European and US companies on issues of regulation and competition policy for many years. This includes many important policy issues such as the telecommunications duopoly review (for BT); most price control reviews in telecommunications, energy and water; several regulatory landmark merger/takeover cases, corporate responses during the development of the Competition Act and Enterprise Act. I was also a leading advisor on the influential Water UK's and Electricity Association's cost of capital documents in the early 1990s.