

Summary: Intervention & Options

Department /Agency:	Title: Retail Water Competition 3: Impact Assessment of the legal separation of water companies retail operations	
Stage: Draft for Consultation	Version: 7	Date: 16 September 2009
Related Publications: Consultation on the Cave Review of competition and innovation in water markets		

Available to view or download at:

<http://www.defra.gov.uk/corporate/consult/cave-review>

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What is the problem under consideration? Why is government intervention necessary?

The water and sewerage industry in England and Wales consists of vertically integrated regional monopolies. This is a market failure which has been addressed through price cap regulation by Ofwat. Regulation has been successful in reducing costs and facilitating investment but the challenges facing the sector are changing. The Secretary of State for Environment, Food and Rural Affairs, the Chancellor and Welsh Ministers commissioned an independent review of competition in the water and sewerage sectors from Professor Martin Cave which has now reported. A recommendation of the report was that legal separation of the retail section should be mandatory (subject to an Ofwat assessment of whether there would be unacceptably large bill increases caused by the separation of smaller companies) and in Budget 2009 it was decided to consult on the implementation of this recommendation.

What are the policy objectives and the intended effects?

The policy objectives are to put a framework in place which enables business customers to choose their water or sewerage retailer. The intended effect is that businesses will have the opportunity to switch supplier, and that the actual or potential competition will improve efficiency, reduce costs and prices, improve the service culture of water retailers and bring about the introduction of new water services.

What policy options have been considered? Please justify any preferred option.

Option 1: No change - a baseline eligibility threshold for choosing supplier of 5 MI annual consumption (threshold reduce through secondary legislation) and a package of facilitating measures (see Retail Water Competition IAs 1 and 2).

Option 2: A requirement for water companies to legally separate the retail arm of the business from the wholesale side.

Option 3. As Option 2 but a reduction in the eligibility threshold for choosing supplier of zero MI for businesses.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects? Ofwat will be under a statutory duty to report on the competitive market at 5 yearly intervals. This will include an assessment of how the market is working.

Ministerial Sign-off For consultation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

.....Date:

Summary: Analysis & Evidence

Policy Option: 2	Description: Retail separation and competition for business customers consuming ≥ 5MI
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COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' Large up-front costs of retail separation to water companies and retailer and ongoing costs, cost to regulator of developing market codes and administering process, setting up and administration of a central market authority.
	One-off (Transition)	Yrs	
	£147m	30	
	Average Annual Cost (excluding one-off)		
	£ 50m		Total Cost (PV) £ 1,115m
Other key non-monetised costs by 'main affected groups' Transaction costs of customer search and switching.			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' Benefits of retail separation are cost reductions due to efficiency gains derived from a)productive and dynamic (one-off and ongoing) changes in efficiency in retail (13%) and b) one-off changes in network/wholesale (10%), c) learning transfer for dynamic and productive efficiency to household customers held within retail business(77%).
	One-off	Yrs	
	£ 0	30	
	Average Annual Benefit (excluding one-off)		
	£ 95m		Total Benefit (PV) £1,608m
Other key non-monetised benefits by 'main affected groups' Market pressure on retailers may provide incentives to offer customers a higher level of customer service and innovate in areas such as billing and tariffs.			

Key Assumptions/Sensitivities/Risks Key assumption, customer switching will take place, and the threat of, or actual competition, will provide incentives to reduce costs and improve service levels. Possible risks are that the benefits due to a)productive efficiency in retail and network/wholesale , b) dynamic efficiency in business retail and c) learning transfer from the retail business to the non-competitive part , businesses ≥5MI and households (who cannot change retailer), are not as high as anticipated, or the policy takes an unacceptable amount of time to deliver positive benefits.

Price Base Year 2007	Time Period Years 30	Net Benefit Range (NPV) £ -	NET BENEFIT (NPV Best estimate) £493m ¹
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What is the geographic coverage of the policy/option?		England and Wales			
On what date will the policy be implemented?		1 April 2012			
Which organisation(s) will enforce the policy?		Ofwat			
What is the total annual cost of enforcement for these organisations?		£ n/a			
Does enforcement comply with Hampton principles?		Yes			
Will implementation go beyond minimum EU requirements?		No			
What is the value of the proposed offsetting measure per year?		£ n/a			
What is the value of changes in greenhouse gas emissions?		£ n/a			
Will the proposal have a significant impact on competition?		Yes			
Annual cost (£-£) per organisation		Micro	Small	Medium	Large
Are any of these organisations exempt?		No	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices)		(Increase - Decrease)		
Increase of	£ N/A	Decrease of	£ N/A	Net Impact £ N/A

Key: Annual costs and (Net)

¹ Cave central estimate (Scenario 2)

Summary: Analysis & Evidence

Policy Option: 3	Description: Retail separation and competition for all business customers
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COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' Large up-front costs of retail separation to water companies and retailer and ongoing costs, cost to regulator of developing market codes and administering process, setting up and administration of a central market authority.
	One-off (Transition)	Yrs	
	£ 152m	30	
	Average Annual Cost (excluding one-off)		
	£ 52m		Total Cost (PV) £ 1,159m
Other key non-monetised costs by 'main affected groups' Transaction costs of customer search and switching.			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' Benefits of retail separation are cost reductions due to efficiency gains derived from a)productive and dynamic (one-off and ongoing) changes in efficiency in retail (17%) and b) one-off changes in network/wholesale (13%), c) learning transfer for dynamic and productive efficiency to household customers held within retail business(68%), d) bundling savings (1%).
	One-off	Yrs	
	£ 0	30	
	Average Annual Benefit (excluding one-off)		
	£ 105m		Total Benefit (PV) £ 1,776m
Other key non-monetised benefits by 'main affected groups' Market pressure on retailers may provide incentives to offer customers a higher level of customer service and innovate in areas such as billing and tariffs.			

Key Assumptions/Sensitivities/Risks Key assumption, customer switching will take place, and the threat of, or actual competition, will provide incentives to reduce costs and improve service levels. Possible risks are that the benefits due to a)productive efficiency in retail and network/wholesale , b) dynamic efficiency in business retail and c) learning transfer from business to household retail (who cannot change retailer), are not as high as anticipated, or the policy takes an unacceptable amount of time to deliver positive benefits.

Price Base Year 2007	Time Period Years 30	Net Benefit Range (NPV) £ -	NET BENEFIT (NPV Best estimate) £ 617m ²
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What is the geographic coverage of the policy/option?		England and Wales		
On what date will the policy be implemented?		1 April 2012		
Which organisation(s) will enforce the policy?		Ofwat		
What is the total annual cost of enforcement for these organisations?		£ n/a		
Does enforcement comply with Hampton principles?		Yes		
Will implementation go beyond minimum EU requirements?		No		
What is the value of the proposed offsetting measure per year?		£ n/a		
What is the value of changes in greenhouse gas emissions?		£ n/a		
Will the proposal have a significant impact on competition?		Yes		
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	No	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices)		(Increase - Decrease)	
Increase of	£ N/A	Decrease of	£ N/A
Net Impact		£ N/A	

Key: Annual costs and (Net)

² Cave central estimate (Scenario 4)

Evidence Base (for summary sheets)

Introduction

This impact assessment (IA) forms the first part of a complementary group of three which relate to the work and recommendations in relation to retail competition from the Cave review of competition and innovation in the water sector.³ One of the Cave Review's key recommendations was that there should be an effective market for retail water competition. Creating such a market and scaling it requires a range of different reforms to be implemented, the review has recommended that the implementation of these reforms should be phased and this is reflected in three incremental retail competition impact assessments, which are:

Retail Water Competition 1: Impact Assessment on reducing the threshold for water competition from 50MI to 5MI, which incorporates Cave's recommendation to reduce the water usage threshold which non-household customers are able to choose their water supplier from 50MI to 5MI.

This effectively increases the market in England from 2,180 non-household customers, to approximately 26,000 customers at 5MI, (a later variant also potentially considers a 0MI threshold which would effectively widen the market to 1.1m non-household customers). This IA will consider two options:

- Option 1: Base case- This assumes that there have been no changes to the existing regime at all.
- Option 2: Reform scenario 1- This scenario assumes that there have been no other changes to the existing regime, but that the eligibility threshold for a business to choose its supplier is reduced to 5 MI annual consumption in the areas served by companies wholly or mainly in England.

Retail Water Competition 2: Impact Assessment of introducing measures to increase retail competition in the water and sewerage sectors in England and Wales, which incorporates a number of changes to the existing legislation necessary to set an appropriate market framework.

This IA includes Cave's recommendations relating to a) the reform of the costs principle, b) extending the WSL regime to include retail sewerage as well as water, c) creating 'regulated access' to the market through a set of common market codes, d) removing the current 'in area trading' rules and e) unbundling the combined supply licence. The review suggests that these reforms collectively will provide the appropriate framework to facilitate effective retail competition. This IA considers two options:

- Option 1: Base case (Retail Water competition 1, option 2 has been implemented)- This assumes that there have been no changes to the existing regime, but that the eligibility threshold for a business to choose its supplier is reduced to 5 MI annual consumption in a year for England and 50 MI in the company areas wholly or mainly in Wales.
- Option 2: This assumes that the eligibility threshold reductions under the previous option have been made and that the package of reforms highlighted above will be introduced.

Retail Water Competition 3: Impact Assessment of the legal separation of water companies retail operations, which incorporates the competition options in Retail Water Competition 1 and 2, and also includes the legal separation of water companies retail functions.

This IA includes Cave's recommendations relating to the legal separation of water companies retail functions. It considers two options:

³ Independent Review of Competition and Innovation in Water Markets. HMSO. November 2008.
<http://www.defra.gov.uk/environment/water/industry/cavereview/>

- Option 1: Base case. This assumes that the eligibility threshold has been reduced to 5MI for England and 50 MI in the company areas wholly or mainly in Wales and that the package of reforms have been introduced but companies retail functions have not been legally separated (as described in Retail Water Competition IAs 1 and 2).
- Option 2: All of the reforms highlighted under the base case above are introduced and in addition companies based wholly or mainly in England are mandated to legally separate their retail functions.
- Option 3: All of the reforms highlighted under the base case above are introduced and in addition companies based wholly or mainly in England are mandated to legally separate their retail functions and there is a further reduction in the threshold for business customers to 0MI.

Structure of this Impact Assessment

- Section 1. Explains the policy objective and its intended effect and the future challenges that provide the impetus for examining the current regime.
- Section 2. Outlines the individual changes proposed in Option 2 and 3, with an overview of the costs and benefits of each element.
- Section 3. Discusses and quantifies where possible the costs and benefits of options 2 and 3.

Section 1 – Policy objective and intended effect

Objective

The policy objective is retail competition in the water and sewerage retail sector for business customers, achieved through implementing recommendations from the Cave Review. The intended outcome is that this will deliver benefits by increasing efficiencies in water and wastewater markets, with the aim of lowering prices, improving customer service and delivering environmental benefits.

There are a number of potential challenges that the water and sewerage sectors will face in the future, which will need to be addressed and these were reflected in the Cave Review's terms of reference (Annex B). These include:

- The impact of climate change;
- Rising household numbers;
- The challenging environmental standards laid down in the Water Framework Directive; and
- Economic pressures on businesses to maintain and improve their efficiency.

These challenges place particular pressures on the long-term sustainability of our water resources and on the ability of the water and sewerage sectors to meet economic, social and environmental goals. They could mean a substantial investment over the next few decades, with a larger proportion of that investment driven by the need to match supply and demand. At the same time, the challenges mean that alternative means of delivering policy objectives need to be examined.

In February 2008, the Government commissioned the 'Independent Review of Innovation in Water Markets' to assess the potential to increase efficiencies in water and wastewater markets, with the aim of lowering prices, improving customer service and delivering environmental benefits. The Review was led by Professor Martin Cave and published its Interim Report in

November 2008 and its final report in April 2009⁴. In the 2009 budget, the Government welcomed the review's recommendations and proposed consulting on implementation of the measures out-lined in the three Retail Water Competition IAs (subject to further work by Ofwat on a threshold size of small company retail separation).

Section 2 – Implementing the legal separation of companies retail functions.

Option 1: Base case- introducing the package of reforms outlined in the Retail 1 and 2 impact assessments for England only but not implementing the legal separation of companies retail functions.

Option 2 of the Retail Water Competition 2 impact assessment is assumed to be implemented and the additional costs and benefits can be seen within that document. However due to the uncertainty of predicting the outcome of implementing the measures in IAs 1 and 2 and of disaggregating the Cave costs and benefits across the three IAs, for the purposes of the analysis in this IA the baseline will be assumed to be the same as in IA 1, no reforms having been implemented.

Option 2: The same package of reforms as under option 1 and also legally separating the retail functions of companies based wholly or mainly in England through legislation.

Current situation

Since privatisation of the English and Welsh water industry, all of the activities of the water and sewerage and water-only undertakers currently provide are included in one vertically-integrated company. To facilitate effective retail competition for business customers legal separation of companies may be required. There are precedents for this in the gas, electricity and telecommunications markets and also the Scottish Water market.

Objective

Each water company would allocate its retail activities and assets to a separate legal entity, so there will exist two companies where there currently exists one. For ease of reference, each retail activity company will be called a retailer. The retailer may be owned by the same parent company that owns the rest of the business. What is left of the company that does not perform retail activities will be called an undertaker. Ofwat defines retail activities as all customer-facing activities that a water company undertakes. Some of the activities that could be included in the retail function are:

- customer liaison;
- billing;
- meter related activities;
- debt recovery;
- disconnection for non-households;
- customer enquiries relating to tariff matters and charging/billing;
- network related customer enquiries;
- complaints handling;
- assisting vulnerable groups;
- water efficiency initiatives; and
- routine inspections for void properties.

⁴ Independent Review of Competition and Innovation in Water Markets. Final Report HMSO. November 2009.
<http://www.defra.gov.uk/environment/water/industry/cavereview/>

Where the costs of legal separation outweigh expected savings (e.g. where there is a very small customer-base), ministers will be able to exempt certain companies from this requirement following advice from Ofwat. Furthermore, for the purposes of this impact assessment, we have assumed that only those water companies based wholly or mainly in England will be legally mandated to separate their retail functions. Companies based wholly or mainly in Wales will not be asked to separate their retail functions.

Benefits of this proposal

It is possible that a separated retail arm, whose sole business is interacting with customers, will be more customer-focussed and responsive to customers' needs than a large vertically-integrated company that undertakes a range of activities. There will also be a greater incentive to reduce the high level of debt, which adds an average of £11 to customers' bills, because the retailer will need to recover its wholesale charges. This will benefit household customers that cross-subsidise those that do not pay their bills.

The process of allocating activities to separate retail arms may help to reveal areas of inefficient operation. Eliminating or reducing these will provide an immediate benefit of separation that will not only benefit business customers, but will also produce savings that can be passed onto the entire customer base, including those that are not able to switch suppliers under the reformed regime.

Retail separation would also be a major step towards increasing the scope for water companies to extend incumbents' focus from being providers of basic water and sewerage services to becoming "water service companies" – providers of water efficiency goods and services. Retailers, free of some of the constraints placed on undertakers, will be better placed to work with customers on the services they will need to become more water efficient and also in a stronger position to negotiate with undertaker's to facilitate higher levels of water efficiency (e.g. green tariffs, smarter billing, etc). Such an outcome would be consistent with what the Government seeks in its water strategy, 'Future Water'⁵, where it challenges incumbent water companies to offer water efficiency services.

A key benefit of legal separation is that it will give entrants confidence that they will be treated no differently to undertakers' retail arms. If entrants are not confident that this will be the case, then the likelihood of effective entry is significantly reduced.

Costs of this proposal

The costs of implementing retail separation will vary from company to company. It will include costs in identifying and separating those parts of the business that should fall into the retail entity, setting up new governance structures, and initiating the arms-length arrangements between the two businesses (e.g. billing arrangements between the two businesses).

Option 3: The above Option 2 changes and also a reduction in the usage threshold above which customers can switch suppliers to 0MI (effectively removing this threshold) in England only.

This option would encompass all the reforms outlined in option 2 above (see Retail Water Competition IAs 1 and 2 and the section above on legal separation). It also encompasses a lowering of the customer threshold, in England only, to 0MI. It is envisaged that the threshold in Wales will remain at 50MI.

⁵ <http://www.defra.gov.uk/Environment/water/strategy/>

Switching threshold

Objectives

The objectives of the reform are to increase the size of the retail market for water, allowing all non-household customers to choose their water supplier. A reduction in the switching threshold from 50 MI to 0MI for England only would increase the size of the market from 26,000 customers to 1.1m customers. The Cave review advocates a switch to 5MI first as it is considered that the current switching and customer transfer arrangements would struggle to manage the number of transfers that we would expect to see at markets which were much larger than this.

Table 1. Non-household water customers and revenue at different consumptions levels.

Water consumed (Megalitres per year)	No. of customers in England	No. of customers in Wales	Total no. of customers	Total consumption (Megalitres per year)	Total revenue (£m)
Non-domestic ≥50	2,180	20	2,200	530,000	280
Non-domestic ≥20	5,400	300	5,700	605,000	370
Non-domestic ≥10	11,100	800	11,900	669,000	440
Non-domestic ≥5	26,000	1600	27,600	749,000	540
Non-domestic ≥1	151,100	11100	162,200	951,000	780
All non-domestic	1,146,200	99300	1,245,500	1,105,000	1,000

Benefits

Lowering the threshold for customer switching is part of a package of reforms related to retail competition, collectively the Cave review suggests that the benefits will be:

- **Productive efficiencies**, particularly in the short term, as retail companies work to market retail water and wastewater services at the lowest possible cost with existing technology. This could involve renegotiating contracts, streamlining processes and identifying inefficiencies.
- **Dynamic efficiencies**, particularly in the longer term, as companies developed new ways of working to deliver services at a lower cost. This could involve developing new billing systems, introducing smart meters, or changes in market share as more efficient companies replace less efficient ones. These savings could be dependent or independent of the volume of water used.
- **Multi-utility savings**. Further savings might also be realised if water and wastewater became part of a multi-utility bundle.
- **Quality of service**. Cave also suggests that there would be a range of improvements in service. These would include a greater customer focus as retailers would be dealing entirely with customers, not the network and upstream elements. They would also include a broader offering of services and also complementary services, as well as a wider range of billing options and tariffs as has been the experience in Scotland.
- **Environmental Benefits**. In terms of the environment, Cave notes that there could emerge a Water service company model which offers demand reduction services encouraging greater water efficiency amongst customers in order to reduce their bills, thus decreasing water abstraction with potential benefit to the environment.

Costs

Cave identifies the costs of introducing retail competition as being:

- **Undertaker's costs** – The set-up and ongoing costs of separation and competition for the new retailers and the wholesale business, new billing and accounting systems etc.
- **Regulatory costs** - The costs of creating and sustaining the market for retail companies, including updating the switching arrangements, market codes and development costs, if the threshold was to be reduced further beyond 5MI and operating the market itself.
- **Central Market Authority** - The costs associated with lowering the threshold to 0MI in addition to other changes could be substantial due to the need to upgrade the customer transfer arrangements and the required data cleansing exercises. In Scotland, where there has been retail non household competition since April 2008 and there is no threshold (effectively the same as a 0MI threshold) a 'Central Market Authority' has been set up which formally holds customers water supply point data and is able to transfer that data efficiently and effectively between different retailers.
- **Cost of capital** - A possible impact on the costs of finance for companies of retail competition, which Cave concludes would have a 'limited impact on the cost of capital for the incumbent'.
- **Quality of service** - The potential deterioration in quality standards if companies, reflecting customer preferences, chose to compete on price only.

Section 3. Costs and Benefits of retail separation.

Below are set out the costs and benefits of the proposals set out above for the baseline Option 1 and retail separation options 2 and 3. The 2008 PBR suggested that the Government is strongly minded to mandate the legal separation of the retail arm of a company from the rest of its operations and this possibility forms the consultation for Options 2 and 3.⁶ The 2009 Budget report then proposed consultation on implementation. The Interim Report of the Cave Review included a cost-benefit analysis of retail competition (Annex A) for England in Wales⁷, and that analysis is discussed in this IA.⁸

Estimates of costs based on retail separation for business customers in the water industry in Scotland are taken forward from the Interim report. It has though been felt necessary to explore further the benefits and the potential for efficiency gains, to take account of risks and extend the sensitivity analysis. Costs and benefits are discounted over a 30 year period.⁹ This is longer than the IA recommendation of 10 years, and there are no long-lived assets but it is considered that once legal separation has taken place, and retailers are separate companies, this will be for all practical purposes irrevocable and that costs and benefits will continue to accrue. The sensitivity analysis examines the effect of shorter time periods in that it determines the number of years it takes for benefits to exceed costs.

Option 1 – The Baseline

This is the baseline scenario which the costs and benefits of retail separation are measured against. For the purposes of the analysis in this IA the baseline will be assumed to be the same as in Retail Water competition IA 1, no reforms having been implemented. This is due to the uncertainty of predicting the outcome of implementing the measures in IAs 1 and 2 and of disaggregating the Cave costs and benefits across the three IAs. The numbers thus presented are from the Cave retail competition CBA which assumes that all measures from IAs 1, 2 and 3 are implemented at the same time.

The baseline assumption about the efficiency of the retail component of the water industry would be then that it continues to be determined by regulation as part of the price cap for the industry as a whole. If the costs and benefits of separation are being measured against the status quo then it is relevant to ask whether further gains would have been made so that the benefits of Options 2 and 3 are incremental to these. It is though, very difficult to assess the future potential for efficiency gains in the water retail segment due to regulation. There is no separate price cap for retail, and taken as a whole, efficiency improvements have to be disentangled from changes in costs due to changes in obligations and outputs, the quantity of capital inputs and the relative price of inputs. The Cave Review assumes that there are no further gains to be made from regulation for retail, a flat profile for operating costs.

A consultancy report commissioned by Ofwat from Stone and Webster attempted to identify the historical trends in opex productivity growth for the water and sewerage companies (Wascs) and the water only companies (Wocs), for their operations as a whole, for the period 1992-93 to 2002-03.¹⁰ Whilst the estimated rate of opex productivity growth for Wascs has been in the range of 1.7-1.9%, the drivers of that growth were diminishing and for the Wocs the decline is much clearer, being 1.09% in the final year of the study. It is concluded that for water, a key driver of opex efficiency gains has been the substitution of capital inputs for opex, and for

⁶ Pre-Budget Report. HM Treasury. November 2008. Cm 7484

⁷ Wales is not likely to implement retail separation, but as the legislation makes this option available to Wales this IA must include the possibility.

⁸ See Tables 7 to 9 for a summary of assumptions and Cave results.

⁹ At HM Treasury Green Book rate of 3.5%

¹⁰ [http://www.ofwat.gov.uk/legacy/aptrix/ofwat/publish.nsf/AttachmentsByTitle/stone_webster_100604.pdf/\\$FILE/stone_webster_100604.pdf](http://www.ofwat.gov.uk/legacy/aptrix/ofwat/publish.nsf/AttachmentsByTitle/stone_webster_100604.pdf/$FILE/stone_webster_100604.pdf)

sewerage, after an initial increase in costs due to introduction of secondary treatment, by the end of the sample period, increased experience was a driver of productivity growth.

What this might tell us about the retail operations of the water industry is inconclusive, it is clear though that the overall trend for the rate of change of reduction in operating costs has been declining. Given that retail, as distinct from water company operations as a whole, consists of low technology, customer-facing labour-intensive operations, the potential opportunities for technical change and substitution of capital for labour are relatively limited. It might be reasonable to conclude that the potential for further efficiency gains in the retail component of water companies within the incentive structure of the current regulatory framework will be diminishing and limited by the end of the next price review period.

Is it prudent to assumed that regulation will deliver no further efficiency gains in the retail segment of water businesses?

Costs and Benefits of Options 2 and 3

Costs of legal separation and retail competition

Table 2 gives the estimated set-up costs and annual additional costs of the new framework which have been allowed for in Scotland.¹¹ Competition was introduced in Scotland's water and sewerage industry on 1 April 2008. All business customers can now be supplied by any water and sewerage retail services supplier. Following the Water Services etc. (Scotland) Act 2005, the Water Industry Commission for Scotland (WICS, the Scottish equivalent of Ofwat) separated Scottish Water's business retail activities into a separate company called Business Stream. The remainder of Scottish Water provides wholesale water to Business Stream and its competitors at regulated non-discriminatory prices. So far, three other companies have been awarded licences to compete with Business Stream, including a subsidiary of one of the large appointed water companies in England. The costs in Scotland provide a useful starting point in trying to assess the likely costs of the proposed reforms.

Table 2: Estimated set-up costs and annual additional costs of new market framework in Scotland.

Organisation	Estimated set-up costs now required £m	Annual additional costs of new market framework £m
Scottish Water	10.7	2.3
Business Stream	1.8	4.6
Water Industry Commission for Scotland	5	0

Source: Cave interim report and WICS:

It is assumed that the costs incurred in Scotland can be generalised to England and this is set out as follows:

- *Market Codes and Development Costs:* The costs for introducing competition in Scotland can be split into the cost of devising market codes (£1.5m) and for market development (£3.5m). On the one hand, since market codes and the undertaker's wholesale master

¹¹ Both Customers and the environment will benefit from competition from competition in water services: the initial evidence from Scotland, 2008. Stirling: Water Industry Commission for Scotland.
www.watercommissioner.co.uk/UserFiles/Documents/WICS%20%20benefits.pdf

agreement have been drafted, this could help reduce the costs of implementation in England and Wales. On the other hand, costs could be higher given the different circumstances and larger number of companies in England and Wales. Market development could be more complex in England and Wales than in Scotland. However since the Water Supply Licensing regime is already in place, some of these costs have been incurred. Therefore, the costs of designing market codes and other costs of market development are assumed to be roughly twice as great as those in Scotland.

- *Central Market Authority Costs:* If the Water Supply License threshold is below five megalitres of water a year, improved customer switching processes will be needed. A Central Market Agency (CMA) will be needed to administer the market for water and waste water retail services. The CMA will keep a record of which customers are served by each retail licensee. It will also calculate how much money each licensee owes undertakers. In Scotland the set-up costs of the CMA were around £2.5m. Similar costs are likely to apply to setting up infrastructure in England and Wales and £1.2m a year is appropriate for on-going costs. For a 5MI threshold it is assumed that 80 per cent of the above central market authority costs will apply, whilst for a 0MI threshold, the costs are doubled.
- *Regulatory Costs:* Ofwat has suggested that costs in the region of £2m per annum are judged to be a plausible estimate of additional regulatory costs.
- *Undertakers' Costs:* The set-up costs faced by each of the Wascs is assumed to be the same as that for Scottish Water (£8.2m) and Scottish Water Business Stream (£1.8m) in their wholesale and retail segments respectively. The costs for each of the Wocs are judged to be around one third of these costs. Likewise, on-going costs for each Wasc are judged to be similar to those in Scotland, and costs for each Woc are assumed to be one-third of this.

Tables 3a and 3b illustrate the expected set-up and ongoing costs of the changes set out above. The Cave Review interim report estimates the net present value of the set-up and ongoing costs over 30 years of retail separation as £1.115 billion for a 5MI competition threshold and £1.159 billion for a 0MI business only retail threshold. As these costs have been scaled from the Scottish case there are a number of reasons why higher or lower in England and Wales. For example, the retail separation in Scotland did not include households which may indicate higher costs, but in specific cases in England there is a degree of separation that has already taken place.

Are the estimates of set-up and annual additional costs of retail separation reasonable?

Table 3a: Set-up costs, £ million (rounded)

	Option 1 Baseline	≥5MI Threshold	Option 3 0MI Threshold
Undertakers	0	112	112
Retailers	0	25	25
Ofwat	0	10	10
CMA	0	0	5
Total	0	147	152

Source: Cave review team

Table 3b: Ongoing costs, £ million (rounded)

	Option 1 Baseline	Option 2 ≥5MI Threshold	Option 3 0MI Threshold
Undertakers	0	22	23
Retailers	0	40	40
Ofwat	0	2	2
CMA	0	1	2
Total	0	65	68

Source: Cave review team.

Benefits

Potential for retail competition and customer switching

A key determinant of incentives for customers to change supplier might be differences in the retail margin between retailers. Analysis by consultants on behalf of Ofwat suggests that average retail costs for water across all business and household customers are likely to be in the range of 10.6 per cent and 11.8 per cent of the total value chain, and 11.5 per cent and 13.5 per cent for wastewater.¹²

The figures above are averages which include households, the retail margin for businesses will vary according to the size of the businesses consumption, as there will be a fixed cost associated with providing retail services, for example maintaining account information and providing call centre customer services. Table 4. shows the potential retail margin for water customers at different consumption levels. For those with lower consumption the retail margin by value is consequently small and if a supplier was able to reduce the retail margin, savings will be small in monetary terms. In addition, not all of the savings will be passed on to the customer as the retailers profit will be derived from these. For example, a customer in the 1 to 5MI range will have an average water and sewerage bill of £3,700, reducing the retail margin by 10% will reduce their bill by £11.10- £25.90. Likewise for the smaller customers with consumption of less than 1MI with an average bill of £421, reducing the retail margin by 10% will reduce the price by £3.40-£3.80.

Table 4. Number of non-domestic customers and retail margin by consumption level.

Annual water Consumption MI	Number of customers	Water Revenue £m	Sewerage Revenue £m	Average Bill £	Size of retail margin % (Cave estimate)		Size of retail margin £	
					Lower	Upper	Lower	Upper
≥50	2,200	280	301	264,091	5%	16%	13205	42255
20 to 50	3,500	90	96	53,143	2%	7%	1063	3720
10 to 20	6,200	70	76	23,548	3%	8%	706	1884
5 to 10	15,700	100	107	13,185	2%	7%	264	923
1 to 5	134,600	240	258	3,700	3%	7%	111	259
0 to 1	1,083,300	220	236	421	8%	9%	34	38

Source: Adapted from data in the Cave Interim Report

¹² Ofwat's review of competition in the water and sewerage industries: Part II, 2008. Birmingham: Ofwat. [www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/AttachmentsByTitle/pap_rsh_reviewmrktcomp.pdf/\\$FILE/pap_rsh_revie_wmrktcomp.pdf](http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/AttachmentsByTitle/pap_rsh_reviewmrktcomp.pdf/$FILE/pap_rsh_revie_wmrktcomp.pdf) However, it is noted that Dwr Cymru (Welsh Water) and Yorkshire Water estimate the retail margin at around four per cent.

Research undertaken by Ofwat and CCwater asked household customers how likely they would be to switch at different levels of price saving.¹³ Whilst those being questioned are not business customers they will have consumption and bills of a similar order and average size to businesses who consume less than 1Ml. The research found that 18% of customers would switch if they could expect to save £20, though lower figures aren't explored. Customers appear to be aware of the transaction costs in terms of search and effort to switch as the report states,

'From the qualitative focus groups it was also clear that participants felt that the savings would have to be reasonably significant for them to consider switching water and sewerage supplier'.

The incentive for companies to compete for customers will depend on the acquisition and retention costs. In the energy sector, Ofgem's market probe identified these as being approximately £30 per household customer.¹⁴ The Cave CBA concludes that for customers consuming less than 1Ml that the scope for competition is uncertain and that:

'These customers may be more expensive to successfully acquire when compared to the cost-reflective margin available to an entrant, and are more likely to face significant search and switching costs' (Para A.29)

The possible costs of acquisition suggest that water companies will need to pursue low cost forms of advertising rather than the high profile advertising and door-step techniques used by energy companies.

The incentive to switch for customers may not necessarily be determined by price, competition may provide new service and tariff innovations that are attractive, for example:

- Bill aggregation may be a benefit for chain businesses that have branches across England and Wales. A single retailer would be able to provide billing for all branches on one bill, facilitating easier monitoring of consumption, leakage and water efficiency measures.
- Customers of water only companies can choose a water and sewerage retailer and receive one bill instead of two;
- If water retail businesses are acquired by energy utilities there is the scope to provide multi-utility packages. This may also reduce some costs through the bundling of services by, for example, combined meter reading.

There are risks to the success of competition in that it is not known in practise how customers will weigh their own transaction costs against the price and service benefit they receive from switching. The Ofwat/CCwater research suggests that the smaller the saving the less likely customers are to switch. Customer switching provides the competitive pressure which incentivises company to decrease costs and prices and service.

Are there likely to be sufficient incentives for customer switching and effective retail competition?
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Productive efficiency

The Water Industry Commission for Scotland has estimated large cost reductions from legal separation of Scottish Water's retail entity and the introduction of retail competition in Scotland.¹⁵ Overall, the suggested savings amount to twenty-five per cent of the default retail margin, a reduction from £38m to £28m. In addition, one million pounds (0.5% of operating costs) is said to have been saved from the wholesale business.

¹³ Ofwat/Consumer Council for Water, Research into household customers' views on competition in the water and sewerage industry – Final Report. October, 2008. http://www.ccwater.org.uk/upload/pdf/r7508_final_report.pdf

¹⁴ Energy Supply Probe – Initial Findings Report, 2008. London: Ofgem.

¹⁵ Op Cit.

On this basis the Cave Review assumed:

- a) A 0.5% fall in operating expenditure for the whole of the non-retail network business (reduced as a proportion of customer turnover to 0.34% for option 2);
- b) An estimate of the one-off gains from retail separation in a sensitivity range of 5%, 10% (central estimate), 20%.

The evidence cited by WICs for the wholesale network saving, on the basis that £1m increase in operating costs was allowed in price limits for the whole network and that Business Stream reports falling costs, WICS concludes that a minimum of £1m has been saved. The source of these savings needs to be fully explored to determine whether they are relevant to the situation in England and Wales.

A source of the savings in the retail business are a £2m reduction in financing costs due to reducing customer debt, but this may not be replicable in England and Wales due to the differing collection and legal arrangements. Reductions in operating costs and depreciation identified in the WICS report will also need further exploration. Scottish Water was until relatively recently, very inefficient and still does not have the incentive of being privately owned, which suggests the scope for a one-off reduction in costs may not be as great in England and Wales.

Academic Evidence

There are difficulties in applying the experience of Scotland to get a measure of the impact in setting up a similar retail market in England and Wales. The market in England and Wales is much larger and is split between 21 appointed water companies, they have been subject to economic regulation for nearly twenty years and so may have fewer inefficiencies to drive out. Some water companies have expressed doubt that similar gains would be possible in England and Wales, for example arguing that many of the service improvements that competition has driven in Scotland have already been realised in England and Wales. It has been suggested by some companies that retail separation could increase costs due to such factors as having separate and parallel accounting systems and having to liaise with a separate wholesale entity.

It is possible that the efficiency gains outside Scotland may be different to those in England and Wales, academic evidence of the efficiency of water and wastewater companies. For example, Saal and Parker (2007) find that the average level of inefficiency in 2000 was 5.1 per cent.¹⁶ Erbetta and Cave (2007) suggests that for the price review period 2000-2005 that average technical inefficiency was 6 per cent (the average technical efficiency DEA score was 0.940).¹⁷ These are company level figures but these results could indicate that scope for efficiency gains in retail in England and Wales could be lower than those experienced in Scotland. In addition, the time periods for these studies was the previous price review period, and it is likely that efficiency improvements due to regulation are likely to be ongoing and absolute levels of efficiency lower since the studies took place.

Wessex and Bristol Water billing operation

An interesting example of how a legally separated business would function is provided by a joint venture that was set up as a free-standing business by Bristol Water and Wessex Water in 2002, Bristol Wessex Billing Services Ltd. This provides billing, customer services, debt collection,

¹⁶ Saal, D. S., Parker, D., Weyman-Jones, T. (2007) Determining the contribution of technical change, efficiency change and scale change to productivity growth in the privatised English and Welsh water and sewerage industry: 1985-2000. *Journal of Productivity Analysis*. **28(1-2)**. pp 127-139

¹⁷ Erbetta, F. and Cave, M. (2007) Regulation and Efficiency Incentives: Evidence from the England and Wales Water and Sewerage Industry. *Review of Network Economics*. **Vol. 6(4)**. pp 425-452
www.rnejournal.com/artman2/uploads/1/erbetta_et_al_RNE_dec07.pdf

and meter reading services to the customers of the two parent companies, for operational needs they are contacted directly. The venture was primarily set up because of the geographical overlap between Bristol's water only company and Wessex's sewerage business and the opportunity to make savings through reducing duplication for services such as billing. The joint venture company has the lowest cost to serve, for serving both companies customers, compared to the operations of other Water and Sewerage companies and has consistently high service levels and customer satisfaction. It is not clear though that this is a direct consequence of separation, as Wessex had low costs to serve at separation, though of course there has been ongoing improvement. There are also a number of variables to take into account when evaluating these costs, that are additional to managerial skill, such as the level of debt that is outstanding and needs collection, the socio-economic make-up of customers and the effect of economies of scale for different sizes of operations. What is clear in this case though, is that separation does appear to have provided a clarity of focus, such that there is greater incentive to make improvement, particularly on service. The ability to make comparisons between the operational practise of two different companies would also appear to facilitate bench-marking and motivate the seeking out of change.¹⁸

It could be the case that efficiency gains in Scotland are likely to be specific to their circumstances and that the same scope for efficiencies does not exist in Scotland and Wales. Information from the Bristol/Wessex joint venture suggests that through separating retail, managerial focus can be increased and service levels improved, though the level of efficiency gains is less clear.

Is there sufficient evidence on the potential for retail separation to increase productive efficiency and one-off reductions in network and retail costs?

Dynamic efficiency

Dynamic efficiency describes the process of increasing efficiency over time, sources of dynamic efficiency in competitive markets are:

- a) product competition and gaining market share;
- b) technical innovation due to competition;
- c) internal restructuring and;
- d) external restructuring as successful firms expand and others fail.

Both Ofwat¹⁹ and the Cave Review have reviewed and drawn conclusions about dynamic efficiency in the retail part of the water industry for the industry as a whole by reviewing academic studies of Total Factor Productivity (TFP) across different industry sectors. TFP measures the output that is produced for, a given quantity of labour and capital inputs. Research into different sectors where competition has been introduced has attempted to measure its effect on TFP growth.

Ofwat has examined studies, for example of Japanese and world telecoms sectors, which suggest that competition increased the rate of change of TFP growth by 33% to 87%. They also cite Saal et al (2007)²⁰ and Saal and Parker (2005)²¹ estimate productivity growth in the water and sewerage industries in England and Wales for the periods 1985-2000 and 1994-2003 respectively, suggesting average TFP growth of between 1.68% and 2.29%. Whilst emphasising that these are crude estimates and need to be treated with caution, Ofwat makes a positive conclusion about the order of magnitude of productivity improvements and that if this

¹⁸ Source: Bristol Wessex Billing Services Ltd

¹⁹ Op. cit.

²⁰ Saal, D. S., Parker, D., Weyman-Jones, T. (2007) Determining the contribution of technical change, efficiency change and scale change to productivity growth in the privatised English and Welsh water and sewerage industry: 1985-2000. *Journal of Productivity Analysis*. 28(1-2). pp 127-139

²¹ Saal, D.S. Parler, D. (2005) Assessing the performance of water operations in the English and Welsh water industry: a panel input distance function approach.

were applied to the water and sewerage industries it would suggest that competition would increase water and sewerage industries productivity each year by between 0.55 and 2 percentage points

Nickell examined the performance of 147 UK companies between 1972 and 1986.²² The results indicate that growth in total factor productivity increases by between 2.6 and 7.1 percentage points per annum, when firms face more than five competitors compared to firms that face fewer than five competitors. Disney *et al* examine the impact of restructuring on productivity growth.²³ They categorise restructuring as either due to changes within enterprises, such as the introduction of a new technology or organisational change (so called 'internal restructuring'), and market selection, whereby low productivity firms exit an industry and are replaced by higher productivity entrants, or higher productivity incumbents that gain market share (so called 'external restructuring'). The research finds that over the period 1980 to 1992, external restructuring accounts for around 50 per cent of labour productivity growth and 80 - 90 per cent of total factor productivity growth. It also found that market competition raises both the level and growth of productivity.

These studies highlight the importance of product market competition, and its importance to driving productivity but the Cave interim report CBA concludes that:

However, whilst such studies highlight the potential dynamic efficiencies improvements competition can drive, it may not be appropriate to apply estimates from studies of other sectors to the retail component of the present water industry. (Para A.38)

This conclusion is reasonable as the core of the retail business is customer service, billing and metering and even under a legally separated competitive retail regime potential for large increases in efficiency are likely to be lower than the above estimates given that:

- a) Many of the examples are for industries with high levels of technological innovation and change and the potential for this in retail is low in general, (although there may be some scope for some gains from innovation in billing) ;
- b) Given the customer facing nature of retail and the need to maintain service levels, scope for further substituting labour with capital is low;
- c) Retailers will face a single wholesale price in each water company area, there is thus no incentive to put pressure on the rest of the value chain to reduce costs and price.²⁴

Licensed retailers will not be subject to the special mergers regime and will have the ability to merge, thus there will be scope to realise efficiency gains from restructuring. As Disney highlights, external restructuring is a major source of productivity growth. For some water companies, aspects of their retail operation may not be operating at their optimal scale. Stone and Webster Consultants identified mergers between companies as being a one-off source (though not on-going) source of efficiency gain.²⁵ Though this possibility will not be available immediately as initially Ofwat will still need to regulate for a maximum price and mergers will not take place until the market is deemed to sufficiently competitive.

The Cave Review makes an assumption about dynamic efficiencies and undertakes sensitivity analysis through reducing costs by 1%, 1.5% and 2% per annum.

What is the potential for and likely sources of dynamic efficiency gains for separated competitive water retail businesses over the next thirty years?

²² Nickell (1996) Competition and Corporate Performance. The Journal of Political Economy.

²³ Disney, Haskel, and Heden (2003) Restructuring and Productivity Growth in UK Manufacturing. Economic Journal.

²⁴ This differs to product competition other regulated sectors, in the electricity sector suppliers are able to buy from a competitive wholesale market and enter into contracts with generators.

²⁵ Op.cit.

Additional Cave review analysis assumptions

The Cave Review analysis also assumed that:

- **There is efficiency transfer to non-contestable customers** - Increased efficiency in the part of the retail business subject to competition will have spin-off efficiency gains for the part of the retail business where customers cannot change supplier. The retail business will contain households (and if the threshold is 5MI, businesses whose consumption is <5MI) and these will not be subject to competition. How much more efficiency transfer takes place is difficult to determine but the Cave Review analysis assumed that non-contestable retail will benefit by receiving a quarter of the productive and dynamic efficiency reductions that the contestable part receives.

The results are very sensitive to this parameter because the non-contestable part of retail is very much bigger than the contestable part, due to the fact that it serves households. For example, if the threshold is 5MI then retail businesses will serve 27,600 businesses but also 22m households (see Table 5). This assumed efficiency transfer to the non-competitive part of the business is also driving much larger benefits than the contestable part. In the Cave scenarios 2 and 4 it contributes 77% and 68% of the total central estimate benefits respectively (see Table 6). This is illustrated below and will be explored further in the sensitivity analysis.

What will be the likely extent of the transfer of best-practise on efficiency from the competitive to non competitive parts of the retail business?

Table 5. Customer numbers and revenue for competitive and non-competitive retail (Cave central estimate).

	Retail subject to competition - opex in base year £m	Number of customers	Retail not subject to competition - opex in base year £m	Number of customers
≥5ml threshold (Cave scenario 2)	44	27,600	931	23,290,803
0 threshold (Cave scenario 4)	65	1,245,500	911	22,072,903

Table 6. Sources of efficiency benefits (Cave central estimate)

Benefits	≥5MI	0MI
Productive and dynamic efficiency from business retail - direct Benefits (one-off 10% cut in retail costs, annual ongoing 1.5%)	13%	17%
Productivity Benefits from household retail - indirect Benefits (0.25 of the above efficiency assumptions)	77%	68%
Savings from Network (one-off 0.34 and 0.5% cut in opex)	10%	13%
Utility bundling savings	0%	1%

- **Efficiency assumption for increased wholesale costs** - The increased costs to the wholesale business from retail separation are subject to the price cap of the regulated business and will decrease at a rate of 2% per year.
- **Bundling benefits** – A fraction of customers may benefit from having their service bundled in with other utility bills if they have switched to multi-utility suppliers. The

benefits are phased in over several years, and will only apply for Cave Scenario 4, due to the expansion of the market from 5MI to 0MI threshold. This amounts to a benefit of £1.6m per annum, on an assumption of £15 per customer per year and also on the assumption that 10% of the 5MI to 0MI customers will switch retailers and that these will be multi-utility suppliers.

- **Customer acquisition costs** – Acquisition and retention costs will be incurred by companies in acquiring and keeping new customers. The Cave review assumed that this would be 5% of the retail margin. This will vary by customer size and other characteristics for the < 5MI to 1MI customer group this gives a switching cost of £5.55 to £12.95. and for the <1MI to zero group a switching cost of £1.70 to £1.90.

Is there evidence available on the likely size and source of cost reduction benefits through bundling a business water service with other utilities?

Is there evidence available on the likely acquisition and retention costs of business customers in a competitive retail market?

Cave retail competition cost-benefit analysis results

The major assumptions and sensitivities of the Cave CBA are summarised in Table 7. The results are given in Tables 8 and 9 for a 5MI and 0MI retail threshold for business customers. Taking an NPV of the costs and benefits of the Cave central estimate over thirty years gives a net benefit of 493m and 617m for options 2 and 3. Due to the large up-front costs and the gradual accumulation of benefits, it takes 17 and 15 years respectively for the NPV of benefits to exceed costs.

The assumptions and results for the Cave Review retail CBA.

Table 7. Cave Review efficiency assumptions

Sensitivity estimate	Productive efficiency gain from legal retail separation			Dynamic efficiency gains	
	Retail - competitive	Retail – non-competitive (0.25 of competitive)	Network /Wholesale Business for 0MI and 5MI threshold	Retail - competitive	Retail – non-competitive (a quarter of competitive)
Cave high	20%	5%	0.34% and 0.5% of operating costs	2% for 30 years	0.5%
Cave central	10%	2.5%	0.34% and 0.5% of operating costs	1.5% for 30 years	0.38%
Cave low	5%	1.3%	0.34% and 0.5% of operating costs	1% for 30 years	0.25%

Table 8. For each of the sets of assumptions above the, costs, benefits and net-benefits are given below for retail separation and 5MI threshold.

Sensitivity estimate	Costs ²⁶	Benefits	Net benefits	Number of years for benefits to exceed costs
Cave high	1,115	2,384	1,269	6
Cave central	1,115	1,608	493	17
Cave low	1,115	1,059	-56	>30

Table 9. For each of the sets of assumptions above the, costs, benefits and net-benefits are given below for retail separation and 0MI threshold.

Sensitivity estimate	Costs	Benefits	Net benefits	Number of years for benefits to exceed costs
Cave high	1,159	2,585	1,426	5
Cave central	1,159	1,776	617	15
Cave low	1,159	1,203	44	29

²⁶ NPV of Tables 3a and 3b

Sensitivity analysis and sensitivity scenarios

The Treasury Green Book requires appraisals to explicitly take into account optimism bias, as there is a systematic tendency for appraisers to be over-optimistic about key project parameters.²⁷ This is undertaken by testing assumptions, exploring risk and uncertainty about outcomes through sensitivity analysis. In addition to exploring the impact of changing individual variables, it is required to explore them in combination. It is also recommended as part of an appraisal to undertake switching analysis to vary key inputs to determine the values that would be necessary to make an option not worthwhile. The analysis below is undertaken on the key parameters of benefits rather than costs as this is considered where the most uncertainty lies.

Sensitivity analysis of individual risks

There may be a number of risks to the policy outcome, and those relating to benefits realisation are explored below. Each of these risks is considered in isolation, in combination, as can be seen from the sensitivity scenario, benefits would be lower. Assumptions are made about the scale of possible risks, but it is not possible to assign probabilities to these.

- a) **Productive efficiency in retail** – changes in operating costs from legal separation are i) zero or ii) cause an increase in costs (illustrative 5%);
- b) **Productive efficiency in the wholesale network** – there is no one-off decrease in costs in the wholesale business;
- c) **Dynamic efficiency** a) Mergers or restructuring do not take place, b) competitive pressure does not decrease operating costs;
- d) **Productive and dynamic efficiency in non-competitive retail (household)** - The increased efficiency in the competitive part of the retail business does not lead to as much transferred best-practise to the non-competitive part as expected (illustrative 50% less than expected);
- e) **The policy takes an unacceptable amount of time to deliver positive benefits** - To take this possibility into account the number of whole years it takes for benefits to exceed costs is calculated.

It can be seen from Tables 10 and 11 for the two legal separation options, that if any of the key benefits are not realised that net benefits can take up to thirty years or greater to be realised. The exception being up-front savings to the wholesale network, which whilst still taking up to twenty-one years to move into net benefit has least impact if not realised, due to the fact that it is a one-off up-front gain.

Sensitivity scenarios, combinations of risks

In addition to examining the effect of varying assumptions individually for the down-side risk to benefits, one illustrative scenario is explored which combines some of the medium to high risks to benefits. There are a number of combinations which could be chosen but just for illustration a scenario has been constructed which explores what would happen if the up-front benefits were not as high as anticipated. This includes the following assumptions:

- a) Productive efficiency one-off change in retailers is 5% (Cave low);
- b) There is a zero efficiency benefit to the network/wholesale business;
- c) Dynamic efficiency is 1.5% per annum (Cave central)

Altering the productive efficiency assumptions for competitive retail will have the consequence

²⁷ Chapter 5. Appraising the Options. The Green Book. Appraisal and Evaluation in Central Government. Treasury Guidance. London. TSO. http://www.hm-treasury.gov.uk/d/green_book_complete.pdf

of also altering the efficiency gain in non-competitive (household) retail. This is due to the fact that the non-competitive efficiency gain is assumed to be a fixed 25% of the competitive sector. The results in Table 12 shows, for a relatively small change in some of the parameters, when combined they can make a significant impact on the cost-benefit case.

Switching Values

The calculation of switching values shows by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worthwhile undertaking an option. Switching values are thus calculated for the key benefits assumptions:

- a) Opex decreases in retail segment from legal separation;
- b) One-off savings to wholesale network from legal separation;
- c) Dynamic efficiency gains;
- d) Gain in efficiency in the non-competitive (household) part of the business.

This is undertaken over the full assumed period of the Cave analysis and the switching value is calculated where costs exceeds benefits in the thirtieth year of the policy. Due to this long time-frame the switching value is more an indicator of the relative importance of the assumptions rather than a true test of the robustness of the policy options, as it would be hoped that net benefits would be realised considerably before thirty years has passed.

Thus the results in Tables 13 and 14 probably aren't very helpful in assisting the decision criteria but show that up-front cost reductions to the retail and network business have much less influence on realising net benefits than those which contribute to benefits realisation over time. That is, the analysis is most sensitive to assumptions on dynamic efficiency and the assumed transfer of best-practise from the competitive retail business to the much larger non-competitive household retail business.²⁸

Results of sensitivity analysis.

Table 10. Sensitivity analysis of risks to benefits - 5ML threshold (Cave Scenario 2)

Scenarios	a)i Zero one-off opex decreases in retail segment from legal separation		a)ii 5% opex increase in retail segment from legal separation		b) No one-off savings to network from legal separation		c) Dynamic efficiency gains are lower than expected (assumed 0.5% per annum decrease in opex)		d) The gain in efficiency in the non-competitive (household) part of the business is only half of that assumed.	
	NPV £m	Years b>c	NPV £m	Years b>c	NPV £m	Years b>c	NPV £m	Years b>c	NPV £m	Years b>c
<i>Cave central assumptions</i>	-10%		-10%		0.34% of opex of network		1.5% 30 yrs		25% of the efficiency gains of competitive retail	
Cave – High	283	24	36	30	1,106	8	424	11	341	18
Cave – Central	-10	>30²⁹	-262	>30	329	21	-101	>30	-107	>30
Cave – Low	-313	>30	-570	>30	-220	>30	-364	>30	-432	>30

²⁸ Zero values in the tables indicate that even when the value of the parameter has been reduced to this level there is no switching value and there is still net benefit at the end of the thirty year period.

²⁹ If net benefits are negative over a thirty year appraisal period then it will take longer than thirty years for benefits to exceed costs, what this time period will be exactly hasn't been calculated (in some instances there may never be positive benefit.).

Table 11. Sensitivity analysis of risks to benefits- 0ML threshold (Cave scenario 4)

Scenarios	a)i Zero one-off opex decreases in retail segment from legal separation	a)ii 5% opex increase in retail segment from legal separation	b) No one-off savings to network from legal separation	c) Dynamic efficiency gains are lower than expected (assumed 0.5% per annum decrease in opex)	d) The gain in efficiency in the non-competitive (household) part of the business is only half of that assumed.					
<i>Cave central assumptions</i>	-10%	-10%	0.5% of opex of network	1.5% 30 yrs	25% of the efficiency gains of competitive retail					
	NPV £m	Years b>c	NPV £m	Years b>c	NPV £m	Years b>c	NPV £m	Years b>c	NPV £m	Years b>c
Cave – High	395	22	138	27	1,188	5	551	8	517	14
Cave – Central	90	28	-173	>30	379	15	-2	>30	25	29
Cave – Low	-226	>30	-496	>30	-194	29	-278	>30	-324	730

Table 12. A sensitivity scenario.

a) Assumptions

	Productive efficiency gain from legal retail separation			Dynamic efficiency gains	
Sensitivity estimate	Retail – competitive, business	Retail – non-competitive, household (0.25 of competitive)	Network /Wholesale business	Retail – competitive, business	Retail – non-competitive, household (0.25 of competitive)
	5%	1.25%	Zero	1.5% for 30 years	0.38% for 30 years

b) Results

Sensitivity estimate	Costs	Benefits	Net benefits	Number of years for benefits to exceed costs
5MI Threshold	1,115	895	-220	>30
0MI Threshold	1,159	965	-194	>30

Table 13. Switching values, benefit assumptions 5ML threshold (Cave Central sensitivity)

	a) opex decreases in retail segment from legal separation	b) One-off savings to wholesale network from legal separation	c) Dynamic efficiency gains	d) Gain in efficiency in the non-competitive (household) part of the business i
<i>Cave central assumptions</i>	-10%	0.34% of opex of network	1.5% 30 yrs	25% of the efficiency gains of competitive retail
	%	%	%	%
Switching value	0.20	0.00	0.66	14.78

Table 14. Switching values, benefit assumptions 0ML threshold (Cave Central sensitivity)

	a) opex decreases in retail segment from legal separation	b) One-off savings to wholesale network from legal separation	c) Dynamic efficiency gains	d) Gain in efficiency in the non-competitive (household) part of the business i
<i>Cave central assumptions</i>	-10%	0.5% of opex of network	1.5% 30 yrs	25% of the efficiency gains of competitive retail
	%	%	%	%
Switching value	0.00	0.00	0.50	11.97

CONCLUSION

A cost-benefit analysis of this nature, analysing the introduction of a competitive regime which in many ways will be the first of its kind, is inherently difficult, and the Cave Review has achieved a great deal in attempting to quantify the benefits. The Cave central case suggests a net benefit of £493m and £617m for a 5Ml and 0Ml business retail threshold respectively. However the cost embodied in the net benefit is £1.1bn, and whilst the order of magnitude of the costs is reasonably certain there is a great deal more uncertainty about whether the benefits are realisable.

Professor Cave's analysis is an expert view on the evidence and provides an important contribution to an otherwise limited evidence base. The Cave analysis indicates that there may potentially be significant benefits from retail separation. However, it is important to bear in mind the uncertainty around the benefit numbers and the inherent difficulties around quantifying the benefits of competition. Significant benefits are suggested, however small changes in the key assumptions can quickly erode these benefits. There are large up-front costs and a slow accumulation of benefits so that there is a significant pay-back period, up to seventeen years for benefits to exceed costs. This highlights the need, as Cave suggests of proceeding incrementally and in least cost ways.

Specific impact tests

Competition test

The package does not limit the number or range of suppliers, nor does it reduce ability or incentives to compete. Instead the package encourages and has a positive impact on competition. Both changes will help to facilitate greater competition, legal separation will help to facilitate greater market entry and lowering the threshold to OMI will increase the market size substantially.

Small Firms Impact Test

Aside from the five inset appointees created since privatisation, Cholderton Water is the smallest undertaker in England and Wales. It is classed as a small firm as defined by section 382 of the Companies Act 2006 as it employs fewer than fifty people and its annual turnover is under £6.5 million.

There are five inset appointees in England and Wales (Albion Water, Independent Water Networks Limited, Scottish and Southern Energy Water, Peel and Veolia Water Projects). Each of these firms also meets the small firm qualifying criteria.

Albion Water currently has one customer that demands more than five megalitres of water a year. The reforms we propose will lead to its customer being able to choose to leave Albion Water. This is currently the case, however, as its customer could seek to change supplier under the large user inset criterion or under the WSL regime.

Independent Water Networks Limited and Scottish and Southern Energy Water, Peel and Veolia Water Projects do not have a non-domestic customer using over five MI of water a year so they are unlikely to be impacted by this measure, unless they choose to try and compete for another company's customers.

There are currently six companies that have been granted a licence under the Water Supply Licensing Regime. These companies currently have no customers and each had annual turnover of below £6.5m, they also employed fewer than fifty staff each. Therefore, these companies qualify as small companies as defined by section 382 of the Companies Act 2006. The changes we outline above will impact upon these companies in that the threshold reduction will increase the number of customers they can approach for those companies based in England.

Legal Aid

These reforms are unlikely to place any significant burden on the courts or the Legal Aid system.

Sustainable Development

Retail competition is unlikely to be detrimental to sustainable development. Environmental impacts are unlikely because retail competition is not expected to increase the consumption of water. Indeed, there might be an increase in water efficiency advice which could decrease consumption with possible environmental benefits from decreased abstraction.

Carbon Assessment

The use of electricity in water pumping and treatment are a source of carbon emissions. Retail competition is not considered to be likely to increase carbon emissions because it is not expected to increase the consumption of water. Indeed, there might be an increase in water efficiency advice which could decrease consumption.

Health Impact Assessment

The policy proposal does not have any impact on health.

Race Equality

The policy proposal does not have any race equality impacts

Disability Equality

There is no impact on disability equality as a result of this policy intervention.

Gender Equality

The policy proposal does not have any gender equality impacts

Human Rights

No final decision on the implementation of the Cave Review's recommendations on legal separation have been made. However, any proposal to legally separate the retail businesses of undertakers' retail businesses will raise human rights issues under Article 1 of Protocol 1 of the European Convention on Human Rights. The nature of this interference will depend on how the Government decides to implement this proposal. However, the Government intends to ensure that any such proposal will be compatible with the Human Rights Act 1998

Rural Proofing

Although all eligible customers will have equal access to switching their licensee, competition may develop at different paces in different regions. However, no region should be worse off than their current position.

Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No

Annexes

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