Review of Ofgem's Impact Assessment for CPM and SPV models

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Executive summary

In its September 2018 document on applying the Special Purpose Vehicle model (SPV) and Competition Proxy model (CPM) to future new, separable and high-value projects,[1] Ofgem has set out its Impact Assessment (IA). The IA highlights the benefits and costs to consumers and other industry parties. In light of this document, SHE Transmission commissioned Oxera to review Ofgem's analysis.

Our review is split into three sections:

- the IA methodology;
- issues specific to the SPV IA;
- issues common to the IAs of the CPM and SPV model.

The IA methodology

The IA focuses on the assumed financial costs and benefits stemming from the introduction of the CPM and the SPV model. It is based on three scenarios of sample projects costing between £100m and £1,000m, and therefore does not include important features of actual projects (e.g. differences in timing, risks, and the relevant counterfactuals).

The risk assessment undertaken by Ofgem of the SPV and CPM is purely qualitative and requires more extensive analysis of scenarios before concluding on the materiality of these risks. While many of the savings hinge on efficiently managed SPVs, robust evidence is required to make assumptions on the likelihood of those SPVs being more efficiently managed relative to the RIIO counterfactual.

Ofgem does not recognise any additional risk to consumers in the IA for CPM and the SPV model. The risks of the projects undertaken under the CPM or the SPV model are the same regardless of the regulatory regime. However, the regime can change the allocation of the risks between investors and customers. If the CPM or SPV transfer to customers some of the risks that would under RIIO be faced by investors, this could reduce the cost of capital of the project. Customers would need to be compensated for bearing the additional risks. As Ofgem has not recognised any additional risk to consumers, it is not clear how the risk and the cost of capital of the project have been reduced from the perspective of investors.

Overall, the finding in the IA that the SPV model and CPM model create net benefits for consumers[2] is driven by a few key assumptions, primarily around the cost of capital and to a lesser extent around the potential for CAPEX and OPEX savings. In sections 3 and 4 of this report we provide preliminary analysis that suggests there are net costs for consumers from implementing the CPM or SPV model for projects that could be undertaken by SHE Transmission under the RIIO strategic wider works (SWW) regime.

Issues specific to the SPV impact assessment

The main factors quantified by Ofgem in the SPV IA that are incremental to the CPM IA are the potential for savings on CAPEX and OPEX.

[1] Ofgem (2018), 'Impact assessment', September.
[2] Compared to the counterfactual of the RIIO price control framework.

No evidence is provided to support the assumed scale of potential CAPEX and OPEX savings. Furthermore, there is a lack of detail on the mechanisms that might generate the CAPEX and OPEX savings. For example, there is no discussion or evidence presented on how the supply chain would be expanded to involve a wider set of contractors.

Implicitly, the assumptions around potential CAPEX and OPEX savings appear to be based on an expectation that inefficiencies exist in the RIIO counterfactual, without explaining what the source of these inefficiencies could be. Although there is a recognition that, in some scenarios, there will be higher OPEX and CAPEX under the SPV relative to the RIIO counterfactual, there is no analysis of the likelihood of such a scenario occuring.

Comparing the SPV model to the CPM, under the analysis presented by Ofgem, the SPV model has incremental costs associated with the pre-tender and tender stages. In the central case this makes the SPV model more costly to consumers than the CPM. However, the IA assumes that the incremental costs and risks associated with introducing a new contractual and operational interface between the SPV owner and the existing transmission operators will be negligible. These are included only as a £3m sensitivity in the IA, and are excluded from the base-case scenario. A more thorough investigation of the interface costs and risks is appropriate.

Overall, the central-case finding of the IA is that the SPV is more costly to consumers than the CPM, which is contrary to the policy intent to use competition as a means to generate benefits for consumers. The IA recognises that there are scenarios where the SPV could be more expensive for customers than the RIIO counterfactual where out-turn CAPEX and OPEX are higher than they would have been under RIIO. The IA does not consider scenarios where the risks of introducing a new contractual and operational interface produce costs for consumers (e.g. in the case of a contractual dispute leading to non-availability of the asset).

Issues common to the impact assessments of the CPM and SPV

Ofgem’s estimates of benefits under CPM (and benefits under the central case of SPV) compared with the counterfactual model for regulation (RIIO) appear to be largely driven by two factors.

- the difference between current (spot) interest rates and the forecast 10-year trailing average cost of debt index (assumed under RIIO as the basis for the allowed cost of debt);
- the higher gearing assumption under CPM and SPV.

The RIIO cost of debt index is a ten-year trailing average of the spot cost of debt. Since the RIIO index was introduced in 2013, the spot cost of debt has consistently been lower than the index. While the spot cost of debt initially fell, it has actually increased over the last two years. Based on forward curves, it is forecast to increase further and rise above the ten-year trailing average. At this point, the claimed cost of debt benefit of the CPM would turn into a cost to customers relative to the RIIO counterfactual.

There are three specific reasons to expect that the claimed cost of debt benefit is significantly overstated in the IA.

- Ofgem’s estimate for the cost of debt in the operations phase of CPM and the SPV model—which is assumed to be raised in 2024 at a rate locked-in

for the duration of the 25 year operations phase—is based on spot rates on iBoxx A and BBB indices from September 2017.[3] Spot rates have already increased since September 2017 and based on Bank of England forward rate data are forecast to increase further by 2024, at which point they would be higher than the 10-year trailing average cost of debt calculated from the same forward rate data;

- under a number of reasonable scenarios, between 2024 and 2039 the 10-year trailing average will on average be lower than the spot cost of debt in 2024, with consumers paying more for the cost of debt under CPM or the SPV model than they would under RIIO;
- furthermore, Ofgem's cost of debt index in the counterfactual scenario of the IA is not relevant for SHE Transmission—in the RIIO counterfactual, the relevant cost of debt is the weighted average trailing index for SHE Transmission, which is currently over 70 basis points (bp) lower than the unweighted trailing average.[4]

Oxera has conducted preliminary sensitivity analysis on the cost of debt savings over the life of projects subject to CPM ('mid' CPM versus 'mid' RIIO).[5] This analysis suggests lower benefits to consumers than presented in Ofgem's IA. It also illustrates that the cost of debt savings are a function of the capital market conditions prevailing at the inception of a particular project, and are not inherently related to the design of the CPM or SPV model or due to benefits achieved from replication of competition.

How these sensitivity analyses affect the IA is shown below.

Sensitivity analysis of the cost of debt modelled in the IA CPM ('mid' CPM versus 'mid' RIIO)

	Project value		
	£100m	**£500m**	**£1bn**
Ofgem's IA savings estimate (%)	10.9%	11.5%	12.4%
Preliminary replication of Ofgem IA (%)[1]	8%	9%	12%
Sensitivity checks to Ofgem's assumptions (£m)			
Impact of switching from NGET/SPT trailing average cost of debt index to SHE Transmission weighted average cost of debt index in the counterfactual[2]	-6	-30	-57
Substituting Ofgem's operations phase cost of debt in the actual scenario with updated forecast based on Bank of England forward curves analysis[3]	-7	-34	-64
Cumulative impact of changes (£m)	-14	-71	-136
Indicative revised benefits analysis	**-7**	**-33**	**-41**

Note: [1] Ofgem did not make their cost benefit analysis available so it has not been possible to reconcile these estimates with the results presented by Ofgem. The preliminary analysis developed by Oxera based on the methodology published by Ofgem suggests lower net benefits. [2] Around 70bp lower based on current observed differential. [3] Operations phase cost of debt estimate increases from -0.07% to 0.76%. The -0.07% estimate is based on Ofgem's midpoint estimate for the HSB operations phase cost of debt.

Source: Oxera analysis based on data from Thomson Reuters, Bank of England and Ofgem.

[3] CEPA (2018), 'Review of cost of capital ranges for new assets for Ofgem's networks division', 23 January.
[4] Ofgem (2017), 'Cost of debt indexation AIP 2017'.
[5] The 'mid' SPV versus 'mid' RIIO scenario is expected to deliver lower benefits to consumers than CPM according to Ofgem's analysis. Hence, and by extension, the overall findings from Oxera's preliminary analysis hold for SPV.

Another aspect of Ofgem's benefits analysis is that, under CPM and SPV, it uses a cost of debt estimate based on yields for firms with low to medium levels of gearing, but then proceeds to assume a notional level of gearing well above that informing its cost of debt estimate. This apparent inconsistency between Ofgem's cost of debt and gearing potentially breaches the Modigliani–Miller[6] principle that higher gearing increases required returns on debt, and thus merits a review.

Ofgem does not recognise any additional risk to consumers in the IA for CPM. The risks of the projects undertaken under the CPM or SPV models are the same regardless of the regulatory regime. However, the regime can change the allocation of the risks between investors and customers. If the CPM or SPV transfer to customers some of the risks that would under RIIO be faced by investors, this could reduce the cost of capital of the project. Customers would need to be compensated for bearing the additional risks. As Ofgem has not recognised any additional risk to consumers, it is not clear how the risk and the cost of capital of the project have been reduced from the perspective of investors. Absent a clear exposition of this risk transfer, the potential for a cost of capital benefit relative to RIIO rests largely on favourable capital market conditions.

There are several additional features of the methodology to estimate the cost of capital for CPM (also applicable to the IA of the SPV model). In our assessment, these features lead to an estimate that is too low and not reflective of what might be achieved under a true competitive bid process.

Lastly, the IA does not consider the potential for the introduction of CPM and/or SPV to create regulatory uncertainty in the wider GB energy networks market and any potential associated costs. This contrasts with the consideration of such costs by Ofgem when evaluating whether to undertake a wide-scope mid-period price review of the RIIO-ED1 price controls.

Conclusion

Ofgem has not provided a robust case for why the CPM or the SPV would be expected to generate net benefits for customers relative to the RIIO counterfactual. The IA also omits or understates the significance of a range of incremental costs and risks that are introduced by the CPM/ SPV model.

At its core, the IA rests on a possibility that fixing the cost of debt for the lifetime of a project may turn out to be cheaper for customers than applying the relevant RIIO cost of debt indices. This possibility is entirely contingent on capital market conditions and is not a robust basis for introducing a new regulatory model and exposing customers to the risk of significantly higher bills.

[6] Modigliani, F. and Miller, M. (1958), 'The Cost of Capital, Corporation Finance and the Theory of Investment', *The American Economic Review*, **48**:3, pp. 261–97.

1 Introduction

In its September 2018 document on applying the Special Purpose Vehicle (SPV) model and Competition Proxy model (CPM) to future new, separable and high-value projects,[7] Ofgem set out its Impact Assessment (IA). In this IA, it highlights the benefits and costs to consumers and other industry parties relative to the counterfactual of delivery through the prevailing price control by the incumbent transmission operator (TO).

This follows from Ofgem's January 2018 Competition Update, in which it set out its intention to consider the SPV model and CPM for all future Strategic Wider Works (SWW) projects that are subject to a needs case assessment during RIIO-T1 and that meet the criteria for competition.[8]

Ofgem's fundamental hypothesis for introducing the CPM model and SPV for SWW projects appears to be that it considers that increasing competition or aiming to replicate the outcome of a competitive tendering process would lower the overall costs of delivering the project and provide benefits to consumers. These benefits are summarised in the tables below.

Table 1.1 Ofgem's estimated benefits from the CPM (%)

Scenario	Project size		
	£100m	£500m	£1bn
'Low' CPM versus 'Low' RIIO	10.3	11.3	13.1
'Mid' CPM versus 'Mid' RIIO	10.9	11.5	12.4
'High' CPM versus 'High' RIIO	12.3	12.4	12.4

Source: 'Impact Assessment on applying the Special Purpose Vehicle model and Competition Proxy Model to future new, separable and high value projects', September, Table 9. Henceforth referred to as Ofgem (2018), 'Impact assessment', September.

Table 1.2 Ofgem's estimated benefits from the SPV model (%)

Scenario	Project size		
	£100m	£500m	£1bn
Efficient implementation: 'Low' SPV versus 'Low' RIIO	13.0	17.9	19.9
Efficient implementation: 'Mid' SPV versus 'Mid' RIIO	13.0	17.5	18.7
'Mid' SPV versus 'Mid' RIIO	4.1	8.7	10.0
Inefficient implementation: 'Mid' SPV versus 'Mid' RIIO	-4.7	-0.1	1.2
Inefficient implementation: 'High' SPV versus 'High' RIIO	-3.5	0.5	0.9

Source: Ofgem (2018), 'Impact assessment', September, Table 8.

In light of Ofgem's impact assessment, SHE Transmission commissioned Oxera to examine and comment on Ofgem's analysis.

This report is structured as follows.

- Section 2 reviews Ofgem's overall methodology for estimating the IA.
- Section 3 reviews issues specific to the IA of the SPV model.
- Section 4 reviews issues common to the CPM and the SPV model IAs.

[7] Ofgem (2018), 'Impact assessment', September.
[8] Ofgem (2018), 'Update on competition in onshore electricity transmission', 23 January.

2 Review of the IA methodology

2.1 Overview

This section provides a review of the methodology used by Ofgem in its IA and compares the methodology to Ofgem's IA guidance and to previous IAs produced for similar regimes.

The discussion in this section focuses on the SPV. This is because the CPM is not hypothesised to affect the investment and operational costs—its benefits are therefore limited to the benefits derived from the lower cost of debt and higher gearing. These benefits are common to the SPV and are discussed in section 4 of this report.

2.2 Comparison with best practice and other IAs

2.2.1 Overall approach

Ofgem's IA focuses on the financial costs and benefits stemming from the introduction of the CPM and the SPV model CPM. The IA does not fully assess, for example, the impact of the policy options on existing and future consumers,[9] or the strategic and sustainability considerations associated with the introduction of the SPV model and the CPM;[10] nor does it develop a significant argument regarding the risk to security of supply.[11]

The Ofgem IA guidance makes a number of comments on this type of impact that are not addressed in the IA at hand. Specifically:

- that an IA will explore the circumstances under which these benefits would arise;[12]
- the IA will conduct sensitivity analysis on the break-even point;[13]
- the IA will discuss whether non-monetised benefits are pivotal to the overall assessment of value for money.[14]

Furthermore, the SPV IA is based on three scenarios of sample projects costing between £100m and £1,000m, and therefore does not include important features of actual projects, such as differences in timing, risk allocation and the relevant counterfactuals.

2.2.2 Option development

According to Ofgem's IA guidance,[15] one of the aims of an IA is to identify options to deliver against the policy objective consistent with the HMT Green Book.[16] There is no evidence that the process for option selection described in the Green Book has been followed; namely, the generation of a long list, assessment against strategic priorities and resulting shortlist of options). The IA includes only a do-minimum option and two preferred options.

[9] Ofgem (2016), 'IA Guidance', 4 October, paras 3.40 and 3.41.
[10] Ibid., paras 3.30–3.32.
[11] Ibid., paras 3.35(1).
[12] Ibid.
[13] Ibid., para. 3.21.
[14] Ibid., para. 3.22.
[15] Ibid., para. 3.16.
[16] HM Treasury (2018), 'The Green Book: appraisal and evaluation in central government', 2018 update, 6 March.

Additionally, the risk assessment of the options, recommended by Ofgem in its guidance,[17] is minimal and purely qualitative. While many of the savings hinge on efficiently managed SPVs, no concrete step appears to have been taken to assess or make assumptions about the likelihood of these SPVs being efficiently managed relative to the RIIO counterfactual.

2.2.3 Difficulty in quantifying the impact of increased competition

As regards its previous IA on the CATO model, we note that Ofgem refrained from making assumptions on OPEX and CAPEX savings stemming from the introduction of competitive tendering of onshore transmission assets. Similarly, the UK Department of Energy and Climate Change (DECC) did not make an assumption on CAPEX savings in its own IA for CATO, recognising that:[18]

> While competitive pressures might result in more innovation**, it is possible that opportunities for innovation and construction efficiencies are fewer for onshore assets**. [emphasis added]

We note that the CATO model was intended for Ofgem to competitively award licences through tenders, whereas in the SPV model the TO would tender out eligible projects under its own licence. Therefore, the transmission assets built under the SPV model would not be regulated directly by Ofgem; rather, they would be linked to the TO through a contractual arrangement. As such the potential for OPEX savings under SPV compared with CATO seems questionable, given the weaker regulatory oversight under SPV.

As for the cost of capital, we note that, again, neither DECC nor Ofgem modelled savings stemming from a potential reduction of the cost of capital between the do-minimum and the CATO regime. However, both IAs discussed qualitatively factors that could drive the cost of capital of CATO up or down in both IAs. As DECC noted: [19]

> While new entrants are likely to incur a lower capital expenditure than incumbent TOs, **new entrants also face higher cost of capital due to taking on higher risk than an incumbent TO**, which can spread the cost of the project over its entire asset base. [emphasis added]

However, in the IAs of the SPV model and the CPM, Ofgem makes key assumptions regarding cost of capital reduction and OPEX and CAPEX savings. This is a significant difference with the two IAs of the CATO regime made by Ofgem and DECC, which drives much of the analysis and the conclusion of the IA of the SPV model and the CPM.

[17] Ofgem (2016), 'IA Guidance', 4 October, para. 3.13.
[18] Department of Energy and Climate Change (2016), 'Extending competitive tendering in the GB electricity transmission network', 21 January, para. 84.
[19] Department of Energy and Climate Change (2016), 'Extending competitive tendering in the GB electricity transmission network', 21 January, para. 106.b.

3 Issues specific to the SPV impact assessment

In its consultation document, Ofgem suggested that the SPV model would open up to a wider range of bidders the activities under the delivery agreement (i.e. works, O&M, minor planning consents).[20] The bidding process would be designed by the TO but with approval required from Ofgem.

The assumption made throughout the SPV IA analysis is that the SPV structure would increase competition and competitive pressures across the supply chain, and that this increase in competition might drive down costs. In this context, we note that Ofgem's IA guidance cites the opening up of markets to competition as a complex and inherently difficult impact to model quantitatively.[21]

3.1 No assessment of how tendering could affect competition

In section 3 of Ofgem's report it is assumed that the SPV model would open up delivery of the capital programme to a wider pool of contractors. It is further assumed that this has potential to reduce costs to consumers. However, the mechanism through which this could occur is not explored; for instance, there is no discussion or evidence presented on the supply chain(s) involved or the incremental impact of SPV over the do-minimum. We would expect that an examination of the competitive dynamics of the relevant supply chains would be at the centre of such an assessment.

It is not clear why, under SPV, there would be a different set of companies invited to bid for delivering the capital programme compared with those currently involved in the market.

From the contractor's perspective they will face a similar set of risks inherent to the delivery of the asset regardless of whether the ownership of the asset sits with an SPV or an established TO. It is not clear why contractors would be prepared to offer lower prices for the same work when contracting with an SPV rather than an established TO.

3.2 Pass-on of cost savings is assumed, not assessed

Ofgem makes the assumption that all costs savings will be passed on to the customers through the TO's transmission licence. We would expect such an assumption to be supported by evidence.

Notwithstanding these shortcomings, Ofgem presents the results of the cost–benefit analysis under several scenarios.[22] The IA concludes that significant cost savings may be available,[23] but does not go so far as to provide any suggestion on the likelihood of these scenarios. Given that the preferred options would create cost increases in some cases, such analysis would have been especially useful.

In that respect, assumptions regarding the CAPEX and OPEX savings under the SPV model appear to be critical.[24] An inefficiently implemented SPV model opens up the possibility of a negative impact overall, especially for smaller levels of investment. We provide below a critical review of these assumptions.

[20] Ofgem (2018), 'Extending competition in electricity transmission: commercial and regulatory framework for the SPV model', 14 September, pp. 4–6.
[21] Ofgem (2016), 'Impact Assessment Guidance', 4 October, para. 3.19.
[22] Ofgem (2018), 'Impact Assessment', September, Tables 8–10.
[23] Ibid., para. 5.5.
[24] Ibid., Table 4.

3.3 CAPEX savings assumptions

Ofgem's SPV IA assumes a symmetric range of ±10% CAPEX savings. This recognises as a central case that no CAPEX savings are expected. Ofgem does not justify further the use of this range in its SPV IA. There are reasons to believe that this range overstates the potential for CAPEX savings.

Competitive pressure under the counterfactual. Under the RIIO SWW framework used as a counterfactual in this IA, incumbent TOs are obliged to ensure that the design of new infrastructure is cost-efficient and this is assessed and monitored by Ofgem.[25] Furthermore, TOs are required to tender out parts of the design and construction under the Utilities Contracts Regulations. It is therefore not clear what would be the source of additional CAPEX savings from the implementation of the SPV model.

Cost savings in the counterfactual. Ofgem assumes that the cost advantage of the SPV over the counterfactual remains constant. This does not allow for cost savings that could be achieved over time under incentive regulation in the RIIO counterfactual and be passed to customers at each successive price control review.

3.4 OPEX savings assumptions

Ofgem uses the same range for its OPEX savings assumption of ±10%. However, we have been unable to locate any evidence supporting this range in the CEPA economic analysis of the first three tender rounds of the OFTO.[26] As with the CAPEX savings assumptions, this range recognises as a central case that no OPEX savings are expected. Ofgem does not justify further the use of this range in its SPV IA. There are reasons to believe that this range overstates the potential for OPEX savings.

Cost savings in the counterfactual. As with CAPEX, Ofgem assumes that the cost advantage of the SPV over the counterfactual remains constant. Again, this does not allow for cost savings that could be made over time under incentive regulation in the RIIO counterfactual and be passed to customers at each successive price control review.

Price control pressure on OPEX. The tendering model would move the assets within the SPV out of the RIIO price review process. To maintain cost savings over and above a regulated regime, the competition for the market during the tendering process would need to replace fully the sustained price control pressure on OPEX over the lifetime of the asset (i.e. OPEX efficiencies over multiple price control periods).

No allowance for a risk premium for long-term cost uncertainty. Successful bidders would commit to undertake O&M activities for the operational life of the assets with a fixed revenue stream.[27] The introduction of the SPV model would expose the SPV to long-term cost risk compared to the status quo. This could increase costs to the extent that bidders require a risk premium to compensate them for this.

[25] See, for example, Ofgem (2017), 'Guidance on the Strategic Wider Works arrangements in the electricity transmission price control', 24 November, paras 3.42 and 4.9.
[26] CEPA (2016), 'Evaluation of OFTO Tender Round 2 and 3 Benefits', March.
[27] Ofgem (2018), 'Impact assessment', September, paras 1.4 and 1.5.

3.5 Cost of implementing the SPV model

Additional tender costs. Ofgem states that the TO would incur tender costs under the counterfactual, so no additional TO tender costs are included in the 'low' case.[28] If all the activities included under the SPV are currently tendered, this assumption is correct. However, if any of the activities are currently performed in-house by the incumbent, additional tendering costs would be involved. Moreover, from a conceptual perspective, it is the tendering process that drives competitive pressure and efficiency savings, which means that if there is no new tendering activity or if the tendering process is under-resourced, there would be no incremental competitive pressure.

Monitoring costs. The IA does not account for any ongoing costs of running or monitoring the SPV, while we note that the consultation document included annual reporting requirements during the operational period.[29] However, in the context of the overall project cost, we understand that these costs are likely to be minor.

3.6 Interface costs and risks

The IA assumes that the incremental costs and risks associated with introducing a new contractual and operational interface between the SPV owner and the existing TOs will be negligible. These are included only as a £3m sensitivity in the IA and are excluded from the base-case scenario.

The SPV will not have a separate licence and therefore the residual liability for risks (e.g. licence obligations in relation to security of supply) will rest with the licensed TO. Where possible the TO would seek to allocate these risks contractually to the SPV, which would result in these being priced into the winning bid for the SPV. Any residual risks that sit with the TO will require compensation through the RIIO price controls.

A more thorough investigation of the interface costs and risks and their impact on the returns required by the SPV and by the related TO is appropriate.

3.7 Conclusion

Overall, the central case finding of the IA is that the SPV is more costly to consumers than the CPM, which is contrary to the policy intent to use competition as a means to generate benefits for consumers. The IA also recognises that there are scenarios where the SPV could be more expensive for customers than the RIIO counterfactual where out-turn capital and operational costs are higher than they would have been under RIIO. Lastly, the IA does not consider scenarios where the risks of introducing a new contractual and operational interface produce costs for consumers (e.g. a contractual dispute leading to non-availability of the asset).

[28] Ofgem (2018), 'Impact assessment', September, para. 4.9.
[29] Ofgem (2018), 'Extending competition in electricity transmission: commercial and regulatory framework for the SPV model', 14 September, para. 4.5.

4 Issues common to the impact assessments of the CPM and SPV

4.1 Overview

Ofgem's estimates of benefits under CPM (and benefits under the central case of SPV) compared with the counterfactual model for regulation (RIIO) appear to be largely driven by two factors.

- the difference between current interest rates and the forecast 10-year trailing average cost of debt index (assumed under RIIO as the basis for the allowed cost of debt);
- the higher gearing assumption under CPM and SPV.

Ofgem does not recognise any additional risk to consumers in the IA for CPM. The risks of the projects undertaken under the CPM or SPV models are the same regardless of the regulatory regime. Absent a clear exposition of how the CPM or SPV transfer risks to customers, the potential for a cost of capital benefit relative to RIIO rests largely on favourable capital market conditions.

There are several additional features of the methodology to estimate the cost of capital for CPM (also applicable to the IA of the SPV model). In our assessment, these features lead to an estimate that is too low and not reflective of what might be achieved under a true competitive bid process.

Lastly, the IA does not consider the potential for the introduction of CPM and/or SPV to create regulatory uncertainty in the wider GB energy networks market and any associated costs. This contrasts with the consideration of such costs by Ofgem when evaluating whether to undertake a wide scope mid-period price review of the RIIO-ED1 price controls.

4.2 Cost of debt

4.2.1 The cost of debt benefits appear to be overstated

The RIIO cost of debt index is a ten-year trailing average of the spot cost of debt. Since the RIIO index was introduced in 2013, the spot cost of debt has consistently been lower than the index. While the spot cost of debt initially fell, it has actually increased over the last two years. Based on forward curves, it is forecast to increase further and rise above the ten-year trailing average. At this point, the claimed cost-of-debt benefit of the CPM would turn into a cost to customers relative to the RIIO counterfactual.

There are two specific reasons related to market data on yields which suggest that the claimed cost of debt benefit is significantly overstated in the IA.

- Ofgem's estimate for the cost of debt in the operations phase of CPM and the SPV model—which is assumed to be raised in 2024 at a rate locked-in for the duration of the 25 year operations phase—is based on spot rates on iBoxx A and BBB indices from September 2017.[30] Spot rates have already increased since September 2017 and based on Bank of England forward rate data are forecast to increase further by 2024, at which point they would be higher than the 10-year trailing average cost of debt calculated from the same forward rate data;

[30] CEPA (2018), 'Review of cost of capital ranges for new assets for Ofgem's networks division', 23 January.

- under a number of reasonable scenarios, between 2024 and 2039 the 10-year trailing average will on average be lower than the spot cost of debt in 2024, with consumers paying more for the cost of debt under CPM or the SPV model than they would under RIIO.

This also illustrates that the cost of debt savings are a function of the capital market conditions prevailing at the inception of a particular project, and are not inherently related to the design of the CPM or SPV framework.

Oxera has conducted preliminary sensitivity analysis on the cost of debt savings over the life of projects subject to CPM or SPV. This analysis is presented in section 4.2.3.

4.2.2 The counterfactual cost of debt analysis is not relevant for SHE Transmission

A second important error in Ofgem's IA relates to the cost of debt index adopted in the counterfactual scenario. In considering the impact of implementing the CPM, Ofgem used the counterfactual scenario of delivery through the prevailing price control by the incumbent TO under the existing SWW arrangements.

In modelling the cost of debt in the counterfactual scenario, Ofgem's modelling uses the cost of debt structures in place for National Grid TO (Electricity) and Scottish Power Transmission (SPT).

The counterfactual cost of debt analysis is not relevant for SHE Transmission as it does not consider the weighted average cost of debt index, which is different from that used for National Grid and Scottish Power. Relative to the National Grid and Scottish Power trailing average cost of debt index, the weighted average index relevant to SHE Transmission is currently more than 70bp lower.[31]

Assuming that the current differential in the two indices was to hold in the future, adjusting the counterfactual scenario in Ofgem's IA with the relevant cost of debt index for SHE Transmission would lower Ofgem's benefits estimate. This sensitivity is presented in section 4.2.3.

4.2.3 Sensitivity of the cost–benefit analysis to cost of debt assumptions

Oxera has not been provided with the analysis underpinning Ofgem's IA. Hence, we have attempted a preliminary replication of Ofgem's IA based on a counterfactual scenario developed using Bank of England forward curve data.

Oxera's preliminary replication of Ofgem's analysis indicates that the benefits may not be as high as that presented in the IA to begin with, suggesting that Ofgem may be overestimating the counterfactual RIIO cost of debt in the comparison with the CPM and SPV models. Notwithstanding this potential discrepancy, Oxera has conducted sensitivity analyses to assess the impact of the issues in Ofgem's cost of debt analysis highlighted in sections 4.2.1 and 4.2.2 above.

The impact of the sensitivity analyses on the IA is presented below.

[31] Ofgem (2017), 'Cost of debt indexation AIP 2017'.

Table 4.1 Sensitivity analysis of the cost of debt modelled in the IA ('mid' CPM versus 'mid' RIIO)

	Project value		
	£100m	**£500m**	**£1bn**
Ofgem's IA savings estimate (%)	10.9%	11.5%	12.4%
Preliminary replication of Ofgem IA (%)[1]	8%	9%	12%
Sensitivity checks to Ofgem's assumptions (£m)			
Impact of switching from NGET/SPT trailing average cost of debt index to SHE Transmission weighted average cost of debt index in the counterfactual[2]	-6	-30	-57
Substituting Ofgem's operations phase cost of debt in the actual scenario with updated forecast based on Bank of England forward curves analysis[3]	-7	-34	-64
Cumulative impact of changes (£m)	-14	-71	-136
Indicative revised benefits analysis	**-7**	**-33**	**-41**

Note: [1] Ofgem did not make their cost benefit analysis available so it has not been possible to reconcile these estimates with the results presented by Ofgem. The preliminary analysis developed by Oxera based on the methodology published by Ofgem suggests lower net benefits. [2] Around 70bp lower based on current observed differential. [3] Operations phase cost of debt estimate increases from -0.07% to 0.76%. The -0.07% estimate is based on Ofgem's midpoint estimate for the HSB operations phase cost of debt. The revised 0.76% estimate is based on Bank of England forward curve data. The 'mid' SPV versus 'mid' RIIO scenario is expected to deliver lower benefits to consumers than CPM according to Ofgem's analysis. Hence, and by extension, the overall findings from Oxera's preliminary analysis hold for SPV.

Source: Oxera analysis based on data from Thomson Reuters, Bank of England and Ofgem.

As presented above, accounting for the two main issues relating to Ofgem's cost of debt analysis suggests there are net costs for consumers from implementing the CPM or SPV model for projects that could be undertaken by SHE Transmission under the RIIO strategic wider works regime.

4.2.4 Other issues with the cost of debt methodology

There are additional methodological issues that indicate Ofgem has underestimated the cost of debt under CPM.

- **Ofgem's analysis appears to be inconsistent with the Modigliani–Miller principle**. To estimate the cost of debt in the CPM and SPV operations phase, Ofgem considers the iBoxx UK A and BBB rated non-financial corporate bond indices of 10+ years' maturity. The average gearing of the constituent firms in these iBoxx A and BBB bond indices is around 30%, with the highest observed gearing being around 60% (United Utilities) across both indices.

  Ofgem bases its cost of debt estimate on observed yields for firms with low to medium levels of gearing, but proceeds to assume a notional level of gearing well above that informing its cost of debt estimate. This apparent inconsistency between Ofgem's cost of debt and gearing potentially breaches the Modigliani–Miller[32] principle that higher gearing increases required returns on debt, and thus merits a review.

- **The lower bound of the cost of debt range for the construction phase is not relevant for the CPM and SPV impact assessments**. The low end of Ofgem's cost of debt range in the construction phase is informed by a blend of A and BBB rated debt indexes. This contradicts the approach

[32] Modigliani, F. and Miller, M. (1958), 'The Cost of Capital, Corporation Finance and the Theory of Investment', *The American Economic Review*, 48:3, pp. 261–97.

adopted by Ofgem's advisers in the final decision for Hinkley-Seabank, where it was stated that it would not be appropriate to place any weight on 'A' rated benchmarks to estimate the construction phase cost of debt.[33]

- **There is a timing inconsistency in Ofgem's impact assessment, as it implicitly assumes that all CPM or SPV projects start construction in 2019**. Apart from HSB, there is no other qualifying project that would be subject to CPM or SPV and that is scheduled to start construction in 2019. Given evidence that spot interest rates are expected to rise, this further indicates that for all subsequent projects that would be subject to CPM or SPV, the cost of debt allowance is likely to be higher in both the construction and operations phases. This issue is further accentuated by the expected fall in the counterfactual cost of debt index.

4.3 Cost of equity

Ofgem's cost of equity methodology under CPM (and by implication SPV) relies on the split cost of capital approach developed by CEPA for Hinkley-Seabank. Oxera has previously pointed out issues with this approach to estimating the cost of equity.[34]

- **The estimate for the total market return (TMR) in the construction phase appears unrealistic**. CEPA's analysis does not reflect a balanced view of the available evidence. It also does not take account of many studies that suggest a strong negative relationship between the equity risk premium (ERP) and the risk-free rate (RfR).
- **The estimate of the construction phase beta appears too low.** In particular, the lower bound of CEPA's asset beta range to benchmark the construction phase beta is informed from Scottish Transmission companies and not relevant for a construction only beta.

For the operational phase, the main inconsistencies in the analysis are as follows.

- **Ofgem's WACC estimate implies that the risk premium on the asset is below the risk premium on (lower-risk) debt instruments**. This cannot be correct—the risk premium on unlevered equity must be higher than the risk premium on debt of the same company, since takes precedence in the event of distress or default. This error breaches the central premise of finance that higher-risk assets must offer a higher return than lower-risk assets.
- **CEPA's interpretation of OFTO benchmarks is inconsistent with its own explanation relating to regulatory regime risk**. CEPA considers the second and third OFTO tender rounds (TR2 and TR3) to be more relevant comparators than the first tender round (TR1), as these provide more recent data points and are devoid of the uncertainty relating to TR1 (presumably because it was a first-of-a-kind tender). However, unlike TR2 and TR3, the CPM and SPV model are first-of-a-kind regimes and, as such, are associated with all the uncertainties that characterise untested regimes.

  The CPM and SPV models have not yet been market-tested and the magnitude of the first-of-a-kind premium is therefore uncertain. There is also

[33] Ofgem (2018), 'Hinkley-Seabank project: decision on delivery model'.
[34] Oxera (2018), 'Response to Ofgem's minded-to WACC position for the Hinkley-Seabank project', 19 March.

no direct evidence on how investors would price the risks faced by projects under CPM and the SPV model in comparison to OFTOs or RIIO.

4.4 Other elements of the CPM and SPV impact assessment

4.4.1 Cost of regulatory uncertainty

An important omission from Ofgem's analysis is the potential for this intervention to increase the perception of regulatory risk and to raise the cost of capital across the sector.

Although valuing the cost of regulatory uncertainty is not straightforward, Ofgem stated in the RIIO-ED1 mid-period review decision that:[35]

> the costs associated with changes to regulatory confidence … are potentially significant

It goes on to assess the impact this may have on the cost of capital:[36]

> **an increase** in the cost of equity of 0.5% (50 basis points) or **in the cost of capital of 0.2% (20 basis points)**. Evidence from available academic literature and from other regulatory decisions, both in the UK and elsewhere, suggests that increases of such magnitude are not unlikely.

As the cost of regulatory uncertainty is potentially significant, it would be appropriate for the IA to consider these costs, at least in terms of the potential order of magnitude.

4.4.2 Construction period

Ofgem's assumptions relating to a three- and five-year construction period for £500m and £1bn SWW projects appear unrealistic. For example, HSB is currently envisaged to be a c. £650m asset and to involve a five-year construction phase. Benchmarking the £500m and £1bn SWW projects against HSB indicates a four-year and an eight-year construction period, respectively. This is longer than Ofgem's assumptions in its IA, and, all else equal, the extended construction period increases the cost of capital under the CPM or SPV.

4.4.3 Change in risk allocation between CPM and RIIO

Ofgem has not considered the change in risk allocation between consumers and firms in the actual and counterfactual scenarios and the associated costs. For example, under CPM, consumers bear all of the risks relating to uncontrollable construction cost overspend. Under RIIO, the sharing factor limits this risk to c. 50% of overspend. All else equal, the higher risk associated with the CPM for consumers would indicate higher costs.

4.4.4 Intergenerational equity

While recognising that consumers would bear an additional annual cost under CPM (due to the asset being depreciated over a significantly shorter period), Ofgem's analysis stops short of quantifying this cost and dismisses its potential impact. Given that the cost of capital under CPM is significantly below the social time preference rate, it follows that consumers would prefer to delay payments for assets regulated under CPM (e.g. by adopting the longer regulatory asset lives that are applied under the RIIO framework). As the

[35] Ofgem (2018), 'Decision on a Mid-Period Review for RIIO-ED1', 30 April, para. 3.21.
[36] Ibid., para. 3.23.

intergenerational transfer can be quantified, it would be appropriate to document this in the IA.

4.4.5 Speed of implementation

In stating the benefits specific to CPM, Ofgem indicates that the CPM is likely to be implemented more quickly than SPV due to the Transmission Operator's ability to rely on existing contractual arrangements. However, this is not an incremental benefit when compared against the counterfactual of RIIO.

4.4.6 Cost of capital range and size of SWW project

In estimating the results of the IA, Ofgem applies the entire range of the cost of capital to all three sample project sizes. However, the bottom end of Ofgem's cost of capital is only valid for the £100m projects (due to shorter construction phase), and hence the top end of the benefits estimate associated with the £500m and £1bn projects is not accurate or relevant.

4.5 Conclusion

Ofgem has not provided a robust case for why the CPM or the SPV would be expected to generate net benefits for customers relative to the RIIO counterfactual. The IA also omits or understates the significance of a range of incremental costs and risks that are introduced by the CPM and the SPV model.

At its core, the IA rests on a possibility that fixing the cost of debt for the lifetime of a project may turn out to be cheaper for customers than applying the relevant RIIO cost of debt indices. This possibility is entirely contingent on capital market conditions and is not a robust basis for introducing a new regulatory model and exposing customers to the risk of significantly higher bills.

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