Competition in electricity retail markets
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1 Executive summary

1. This report addresses four related questions.
   a. First, we survey the theoretical and empirical economic literature that is relevant to competition in retail electricity markets. We do so to shed light on two issues:
      i. What we would expect to observe in a workably competitive market retail electricity market (e.g., in terms of price dispersion, customer switching and profitability); and
      ii. What the likely impact on consumer welfare is of regulatory interventions in this market aimed at correcting perceived problems with competitive outcomes.
   b. Second, we also examine the empirical basis of claims made by the Grattan Institute that competition in the Victorian electricity retail market is delivering excess profits to retailers and is not delivering outcomes consistent with workably competitive markets.
   c. Third, we set out how one should go about assessing whether gross retail margins are consistent with competitive market outcomes;
   d. Finally, we address questions in relation to the role of vertical integration in delivering/impeding efficient outcomes in the retail electricity market.

1.1 Workably competitive market outcomes and potential regulatory interventions

1.1.1 The economic literature

2. The retail electricity market can be characterised as a homogenous product market with varying degrees of willingness to switch suppliers by individual customers. Some customers require small prices differences in order to be enticed to switch supplier whereas other customers require very large price differences in order to be enticed to switch supplier. There is a gradation between these extremes with different customers being enticed to switch at different price differentials.

3. One can think of this gradation as moving from more to less well-informed/engaged customers. Alternatively, one can think of this gradation reflecting well informed/engaged customers who have positive switching costs and will knowingly forego a lower price until that the savings from switching exceed that switching cost. As a matter of economic analysis it is not important which characterisation is most accurate (and in all likelihood both describe reality). In any event, the gradation in price responsiveness is typically modelled in the economic literature as a dispersion in customer 'switching costs'.
4. The literature predicts that, in the presence of switching costs, suppliers must offer lower prices to attract new customers. That is, suppliers must compete against each other and switching costs for new customers. The effect of which is that suppliers will compete for new customers by offering something close to marginal cost tariffs.

5. The typical mechanism by which this is achieved is by offering discounts from a ‘standard market price’ to new customers (or to existing customers who are clearly signalling a high probability of switching). Existing customers simply pay the ‘standard market price’ and new customers revert back to the ‘standard market price’ if they do not re-engage (threaten to switch) at the end of some predetermined period.

6. With free entry and exit into the industry, theory predicts that normal profits will be earned by suppliers in the long run – with each supplier having ‘enough’ high switching cost customers to allow it to cover its fixed costs of supply. That is, the existence of switching costs does not lead to more than normal economic returns being earned.

1.1.2 Regulatory intervention

7. The price dispersion that is caused by switching costs is sometimes viewed as a problem by regulators. It is seen as inconsistent with the ‘law of one price’ that would be observed in an ‘idealised’ homogenous product markets with well-informed customers. There are two proposed solutions to this perceived problem which we examine. Namely:

   a. Banning price discrimination;
      - For example, banning discounting from a standard price limited to switching/engaged customers; and

   b. Moving all customers to low tariffs by reducing switching costs (increasing the proportion of engaged/well-informed of customers).
      - For example, requiring suppliers to directly inform customers of lower cost tariffs or to automatically move them to lower cost tariffs, etc..

8. The economic literature is clear that banning price discrimination will almost always negatively impact all customers (both high and low switching cost customers).

9. The impact of policies aimed at reducing switching costs is more ambiguous. The first round effect is that those customers who are newly induced to switch receive a lower price and no other customers are harmed. However, the higher proportion of customers now on low (marginal cost) tariffs means profitability falls below normal levels promoting exit from (lack of expansion into) the retail sector and a softening of competition. This leads to an increase in both low discounted and standard tariffs (but not an increase in weighted average prices because more customers are now on the discounted tariff). The end result is that, ultimately, other customers (those who would have been on discounted tariffs anyway and those who would have been on
1.1.2.1  Banning price discrimination

10. As noted above, the economic literature is clear that banning price discrimination will almost always negatively impact all customers (both high and low switching cost customers).

11. Enforcing a rule that suppliers’ charge uniform prices (do not discount to switching customers) will have the immediate effect that discounting is discontinued. This is because any discount must be passed onto existing customers – who would have paid the undiscounted price. Consequently, switching customers are automatically losers from such a policy.

12. A policymaker proposing such a regulation may hope that some of the surplus generated by ceasing to discount at marginal cost prices is used to reduce the standard price paid by all customers. However, the key insight of the literature is that the opposite will happen.

13. Eliminating discounting is the first round effect. Once all suppliers cease discounting to other suppliers’ customers then each supplier’s ‘grip’ on their own existing customer base becomes stronger. Consequently, the profit maximising strategy is to raise uniform prices even higher - above the prices that would have been charged to ‘sticky’ customers when price discrimination was available. Moreover, the effects are self-reinforcing – with each supplier’s optimal price rising as other suppliers raise their prices. The literature suggest that the end result is that average prices settle at more than double the pre-intervention mark-up on marginal cost.

14. That is, regulatory intervention to ban ‘exploitation’ of ‘sticky’ customers will actually result in those customers paying around double the pre-intervention mark-up and other ‘slippery’ customers paying the same price (instead of an approximately zero mark-up on marginal cost).

15. The intuition is that the discounted offers were the competitive weapons being used to try and win customers from each other. These discounted offers set the baseline against which prices to ‘sticky’ customers were set. The removal of discounted offers effectively removes the most potent competitive weapon from the market place.

1.1.2.2  Moving all customers to the low (marginal cost) tariffs

16. The impact of policies aimed at reducing switching costs is more ambiguous. The first round effect is that those customers who are newly induced to switch receive a lower price and no other customers are harmed. However, the higher proportion of customers now on low (marginal cost) tariffs means profitability falls below normal levels promoting exit from (lack of expansion into) the retail sector and a softening of standard market tariffs anyway) pay for the benefits accruing to newly switching customers.
competition. This second round effect leads to an increase in both low discounted and standard tariffs (but not an increase in weighted average prices because more customers are now on the discounted tariff). The end result is that, ultimately, other customers (those who would have been on discounted tariffs anyway and those who would have been on standard market tariffs anyway) pay for the benefits accruing to newly switching customers.

17. Gu and Hehenkamp (2010) develop a model to examine the impact of increases in “the share of informed customers in the market” which is their measure of “transparency”. Their abstract summarises the first and second round effects described above in their specific model as follows.

Including the entry decision in a Bertrand model with imperfectly informed consumers, we introduce a trade-off at the level of social welfare. On the one hand, market transparency is beneficial when the number of firms is exogenously given. On the other, a higher degree of market transparency implies lower profits and hence makes it less attractive to enter the market in the first place. It turns out that the second effect dominates: too much market transparency has a detrimental effect on consumer surplus and on social welfare.

18. More generally, it is ultimately a ‘pipedream’ to shift all consumers onto today’s lowest tariffs. The attempt to do so would cause those tariffs to evaporate in the process. Heavily discounted tariffs, that make no or low contributions to fixed costs, are only made possible by virtue of intense competition for ‘sticky’ customers who, once acquired, can, in subsequent periods, make a contribution to fixed costs. If all customers are always and everywhere ‘slippery’ then marginal cost tariffs will disappear because, if they did not, no supplier would cover their fixed costs.

1.1.3 UK case study

19. In the UK, just as is the case in Australia, there has been considerable concern expressed by policy makers about the level of price dispersion (discounting) resulting in some customers paying higher prices than other customers. This has led to two separate policy interventions:

- First, by Ofgem in 2008 in which Ofgem sought to ban/limit price discrimination; and
- Second, by the Competition and Markets Authority (CMA) in 2016 in which the CMA has proposed policy interventions to make consumers better informed and more engaged.

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20. The first policy intervention by Ofgem was subsequently rescinded because it was perceived to have led to precisely the outcomes predicted by the economic literature (by both Ofgem and the CMA). Specifically, higher mark-ups on marginal cost across all customers. The CMA in particular was very critical of Ofgem’s policy intervention in its recently concluded 2016 review.

21. Nonetheless, the CMA shared Ofgem’s concern that price dispersion in a competitive market was ‘a problem’. The CMA simply differed as to what the best policy ‘solution’ to the perceived ‘problem’ was. We have not yet had time to observe the impacts of the CMA’s policy interventions and, even with time, it may not be possible to econometrically disentangle them from other factors.

22. However, the predictions of economic literature are that, to the extent that the CMA policies are successful at making more customers more likely to switch to low price products then:

- Those newly switching customers will be:
  - better off in the short term;
  - may be better or worse off in the long term— depending on the magnitude of the effect discussed in the next dot point; and
- A softening of competition will make all other customers worse off in the long term (including those that would have switched in any event).

23. Whether this is a net improvement in market outcomes is not obvious (and will, in part, depend on the costs of any interventions).

### 1.2 Grattan institute claims regarding excessive profits

24. The Grattan Institute claims that the ‘profit margins’, expressed as a percentage of revenue, earned by Victorian incumbent retailers are excessive when compared to other industries and electricity retailers in the UK. In particular, the Grattan Institute estimates a profit margin of around 13% (17% for “the Big Three”) of revenues compared to a profit margin of around 4% for UK retailers (and retail margins in motor vehicle, fuel, and food industries averaging around 5%).

25. The basis of the Grattan Institute estimates are opaque and there appear to be a number of errors and internal inconsistencies. For example, the Grattan Institute states that it has estimated ‘hedging costs’ at $15 per MWh. However, the 2014 17%

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2 The Grattan Institute, “Price shock – is the retail market failing consumers”, Figure 2.5, p. 19.

3 The Grattan Institute, “Price shock – is the retail market failing consumers”, p. 36.
profit margin from Figure 2.3 of the Grattan Institute report includes only around $30 in hedging costs. In order for this to be consistent with a $15 per MWh hedging cost then the usage profile of a customer would need to be around 2 MWh per year.

26. This is difficult to reconcile with the AEMC’s estimate of the average usage for Victorian residential customers of 4.65 MWh per year. We estimate that using the Grattan Institute’s stated $15 per MWh of hedging costs on a 4.65 MWh representative consumption would result in $70 per customer hedging cost compared to the around $30 used by the Grattan Institute in 2014. Using this $70 figure would reduce the estimated ‘profit margin’ by over 3% on a $1,300 bill.

27. This suggests that the Grattan Institute estimate of 17%/13% profit margin for incumbent/all retailers would fall to something like 14%/10%.

28. Separately, the AEMC estimated that the representative market offer in 2014/15 was $1,146 – around $150 lower than the Grattan Institute’s estimate. If this was solely due to a difference in the assumed tariff (as opposed to usage patterns/levels) then the AEMC’s lower revenue estimate would, by itself, reduce the Grattan Institute’s estimated margin from 17%/13% to 6%/3%. If we further corrected for the apparent $40 underestimate of hedging costs (on the Grattan Institute’s own method) then the retail margin would be around 3%/0%.

1.2.2 The comparators are problematic

1.2.2.1 Non-electricity retailer as comparators

29. The Grattan Institute places some weight on the fact that its estimate of profit margin in Victorian electricity retailing is between double and four times higher than the margin in other retail industries. In our view this comparison is meaningless.

30. In order to highlight the incongruity of this analysis, consider the difference between Food and Fuel retail profit margins estimated by the Grattan Institute. The Food profit margin expressed as a percentage of sales is more than double the Fuel profit margin expressed as a percentage of sales. Does this provide a basis for concluding that customers are not being well served by the Food retail sector?

31. In our view it does not. These are different industries and we have no basis for believing that they should have the same profit margin expressed as a percentage of sales. However, if we cannot use these figures to draw that conclusion about Food vs

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5 The AEMC, Electricity Price Trends Report 2016 (2015), estimated that the representative market offer in 2014/15 (2015/16) would have cost the representative customer $1,146 ($1,099) see page x (xx).
Fuel retailing we equally cannot use these figures to draw a conclusion that electricity retail margins (expressed as a percentage of sales) are evidence that customers are not being well served.

1.2.2.2 Comparison to estimates of the UK electricity EBIT margin

32. In the Grattan Institute report, the 2014 EBIT margin (3.9%) for the retail sector in the UK is sourced from Competition and Markets Authority (CMA) (2016). This estimate is unreliable – as was clearly stated in the CMA itself. Our best estimate is that UK retail electricity margins are actually higher than in Victoria when estimated on a consistent basis with the Grattan Institute methodology.

33. We deal with the second and third points in the next two sections. In this section we focus on the UK estimates.

34. In the UK, the major energy companies (‘Big 6’) are all vertically integrated. Financial Information Reporting licence condition requires energy firms to break down their total cost and revenue between retail and energy costs. However, there is not uniform method for doing so and the UK businesses have material discretion in how they do so.

35. To the extent that these businesses wished to downplay the level of retail margin they were earning (e.g., to discourage entry by other retailers or to discourage regulatory interventions) then they have the tools to do so. Indeed, in the Energy market investigation report, the CMA criticise the cost allocation approaches used in preparing the CSS:

“The main issue we found here was that some of the Six Large Energy Firms had included within their results for retail supply transfer charges for wholesale energy that did not wholly reflect the costs the firm had actually incurred. These practices indicate that these firms do not define the boundary between retail supply activities and trading/generation activities consistently.”

And

“For example, we found that [□]’s retail supply division recorded that it had ordered certain shaped products before such products were available on the open wholesale markets for that delivery date, and that [□] had purchased products so far ahead of the point of delivery that it was unlikely that these quantities would have been available on the open market...As a

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6 CMA, Energy market investigation Appendix 9.13: Retail profit margins, p.27
result, the prices ‘negotiated’ would not reflect what could have been achieved on external markets.”

36. These concerns are thrown into sharp relief via a comparison of hedged energy costs and total gross margin\(^8\) reported under the CSS and those estimated by the Agency for Cooperation of Energy Regulators (ACER). The EMA, relying on the CSS reports that in 2014:\(^9\)

- Retail gross margin is around 18% of retail revenue (comprised of 4% profit margin and 14% costs);
- Energy costs are around 42% retail revenue; and
- The sum of these is 60% retail revenue.

37. By contrast, ACER estimates that in 2014:\(^10\)

- Retail gross margin is around 27% of retail revenue;
- Energy costs are around 32% retail revenue; and
- The sum of these is 59% retail revenue.

38. Note that the two sums are very similar (59% vs 60%).\(^11\) However, the breakdown of these is radically different. The CSS based estimates have a much higher energy costs and lower gross margin. The effect of this is that retail EBIT margin is squeezed in the CSS estimates. **Indeed, if energy costs were the same proportion of total revenues as in the ACER estimates (i.e., 32% instead of 42%) then the CMA CSS margin would rise from 4% to 14%**.

39. The ACER report clearly sets out their method for arriving at the wholesale price. This method involves the application a hedging strategy using contracts with some role for unhedged spot market purchases. As noted by the CMA itself, there is no clear or consistent basis for the CSS estimates of energy costs. We therefore consider that the ACER estimates of are the more reliable of the two.

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8 Gross retail margin is total retail revenue less hedged energy costs less the cost of government schemes/taxes (i.e., costs under the control of retailers plus profit margin).

9 CMA, Energy market investigation: Final report, June 2016. See Figure 8.2 on page 356.

10 Figure 11 on page 32 reports that “Energy” is 59% of the household post tax prices. “Energy” refers to the residual of the price not accounted for by Network, Taxes, VAT and Environmental Schemes. That is, “Energy” refers to wholesale energy costs plus gross retail margin. The breakdown of this 59% into energy and retail gross margin is calculated by taking the ACER estimated hedged energy cost and applying this to the ACER assumed 4MWh representative consumption and dividing this by the ACER estimated representative revenue.

11 The estimates for network costs and other obligations are also very similar across the ACER and CMA. It is only the energy and retail estimates that are different.
40. The ACER estimates of gross margin, along with the CSS estimates of retail costs, imply a profit margin of 14% - which is higher than the Grattan Institute’s estimates for Victoria (all retailers) of 13% - even before making any correction to the Grattan Institute numbers.

1.2.3 Comparison to a wide range of EU countries

41. Using data from the European Union (EU) we compare gross retail margins per customer in the EU to the Grattan Institute’s estimate of gross margin (retail revenue less costs that are assumed to be external to the retailer’s control (i.e., energy and standardised hedging costs, network costs and the costs of government green schemes)). Unlike the Grattan Institute we do not attempt to remove retailer operational costs.

42. However, in order to make the Grattan Institute estimate comparable to the EU estimates we must make a number of adjustments including converting it into Euro. Figure 1-1 below compares the Grattan Institute estimate (adjusted as noted above) with the estimates from EU countries. Figure 1-1 clearly shows that, while slightly higher than average, the Grattan Institute estimate for Victoria is entirely consistent with the EU estimates. It is notably lower than the estimates for Great Britain, Germany and Ireland.

43. Moreover, we have included this data in a scatterplot of gross margins per customer against purchasing power parity (PPP) as estimated by the World Bank. We do so because we would expect high PPP jurisdictions to have higher costs for everything (including gross retail margins). We see such a relationship in Figure 1-1 and, when account is taken of it, the Grattan Institute’s Victorian estimate is below the predicted level. That is, Victoria has almost as low gross margin per customer than one would expect for a jurisdiction which has the highest cost generally (as measured by PPP) in the sample.
Figure 1-1: EU and comparable Grattan gross retail margins per customer (Euro) vs PPP

Source, ACER, Grattan Institute, CEG analysis. This figure excludes Italy, Norway and Finland where the actual average consumption data was very different to representative consumption used by the ACER. The body of this report also shows the same chart including these countries.

44. The same pattern exists when we plot retail margins against GDP per capita which is another measure one would expect to be correlated with the general level of costs in a country.
1.3 Estimating ‘reasonable’ prices/adequate returns

45. The evidence just surveyed suggests that the Grattan Institute’s analysis does not show an unusual retail margin in Victoria. However, even if it had shown something different it would not be a highly pertinent fact. That is, even if a snapshot analysis made Victoria look high cost it would not provide a strong case for policy intervention.

46. The key data that is relevant to whether there are competition concerns leading to unreasonably high profits in a market is evidence that there is a lack of competition. In this regard the relevant indicia of competition are:

- Evidence of aggressive price competition in the market;
- Evidence that any customers actually engaging with the market are responding to price competition by switching or demanding lower prices from existing suppliers;
- Evidence of free entry to the market.

47. In all of these regards the Victorian market scores highly. Specifically:

- The Grattan Institute report itself states that some discounted offers in Victoria appear to be at, or below, cost to serve;
- The Victorian electricity retail market has consistently led the world in terms of the rate of switching by customers.
There are over 20 separate retail businesses operating in Victoria.

48. As explained earlier, price dispersion is not evidence of a competition concern. On the contrary, a lack of price dispersion in a market like this would be evidence of collusive conduct.

49. Notwithstanding the clear evidence of strong competition, if one were nonetheless committed to attempt to estimate whether prices in the market were cost reflective then one should not attempt to do so via a “Grattan Institute” style of analysis.

50. Before considering determination of what is ‘adequate returns’ consider the problem with simply estimating ‘returns’. In order to estimate a return actually being earned by a specific firm one needs to have an estimate of the capitalised value of historical “investment” and a projection of free cash-flow. Neither of these are easy to do – and one certainly cannot arrive at this by taking a snapshot of cash-flows in a given year.

51. In electricity retailing, as with any other sector, such an analysis would need to involve:

- An estimate of historic investments in the businesses (e.g., building/buying a customer base, business systems (e.g., billing) and firm specific know-how and what, if any, depreciation/appreciation should be applied to historic investments). There would be many difficult data and conceptual issues encountered in trying to do this for any specific firm.

- An estimate of future expected free-cash flows (including actuarially fair modelling of good/bad outcomes) which can be used to compare to the historic investments in order to determine the expected return on the historic investment.

52. Even if one could settle on how to embark on this exercise for a specific firm or set or firms, this would not be a useful input into determining whether the returns being earned by that firm are adequate/reasonable. This is because the above analysis is using historic costs. In a workably competitive market an assessment of ‘adequate’ returns must be based on forward-looking costs.

53. In this context, what is needed is not an estimate of whether a firm is charging a price that generates high/low returns relative to their historic investments. Rather, what is required is an estimate of whether the price being charged is high/low relative to the forward-looking, or new-entrant, costs of the industry. In a workably competitive market the maximum prices that can be charged in the long run are based on the costs of a new entrant. These costs must be modelled over the time it would take a new entrant to reach efficient scale and must include capitalisation of all negative cash-flows in the early years of entry.

54. That is not to say that annualised new entrant costs are ‘the’ estimate of competitive prices. Competition between firms within the market may well push prices below this
level for extended periods. Indeed, although we have not performed this analysis we would expect this to be the case in Victoria given the indicia of competition summarised above. However, one would need to believe that gross retail margins were capable of being persistently above annualised new entrant costs in order to believe that a competition concern existed.

1.4 Vertical integration

55. Finally, we have also been asked to discuss the role of vertical integration in electricity retail markets. Our key conclusions are empirical and theoretical. Namely:

- Vertical integration between generation and retail operations is the dominant form of economic structure in those markets characterised by competition in both sectors (and in other regulated jurisdictions too);
- There are sound economic reasons why this is the most efficient/least cost form of economic organisation.

56. With respect to the second point, vertical integration acts as a natural hedge for both generator and retailer. While these hedges can be achieved via arm’s length contracts, these are likely to be inferior to joint ownership. This is because joint ownership aligns incentives across all dimensions and in all eventualities. A contract, by contrast, is necessarily incomplete in that provision cannot be made for all eventualities in a contract.

57. For example, a contract with a generator may have provisions that allow the generator to undertake maintenance in certain circumstances and leave a retailer exposed to price risk during that time. In which case, the generator may not be careful to manage the timing of that maintenance to minimise the retailer’s risk. Alternatively, the contract may place the price risk on the generator even though there are steps that the retailer could take to manage the risk (e.g., via controlled load). Joint ownership gives both parties the incentives to manage the risks optimally.

58. It is sometimes argued that vertical integration acts as a barrier to entry by either generators or retailers. The argument is that by virtue of taking volume out of contract market this market becomes illiquid and more difficult for standalone generators and retailers to operate in. While this is a theoretical possibility the potential for adverse competition outcomes are small (and smaller than the adverse outcomes that would flow from preventing retailers and generators adopting the most efficient business structure).

59. Ultimately, no party is truly capable of being perfectly vertically integrated (in that the ‘shape’ of generation output perfectly matches the ‘shape’ of retail sales). All parties will typically trade in the contracts market. Moreover, if standalone retailers win market share from vertically integrated retailers (or vice versa) then that automatically ‘undoes’ the level of vertical integration – creating the supply of
uncontracted generation to meet the expanding standalone retailers’ demand (or vice versa if standalone generation captures market share). Competition is a dynamic process and the level vertical integration is not fixed by any one set of market participants.
2 Introduction

2.1 About CEG

60. The author of this report is Dr Tom Hird. Dr Hird holds the following qualifications:
   - Bachelor of Economics (Honours First Class), Monash University (1989); and
   - PhD in Economics, Monash University.

61. From 1990 to 2000 (both prior to, during and after the completion of a PhD in economics) Tom was employed by the Commonwealth Treasury. Since 2001 he has worked as a consulting adviser specialising in economics: first with Arthur Andersen, then NERA Australia and, since 2007, for Competition Economists Group (CEG). Tom has advised private clients, regulators and other Government agencies on a large number of competition law cases. CEG’s competition practice is amongst the top 21 competition economics consultancies according to Global Competition Review and our partners are consistently included in the GCR’s list of recommended competition economists.

62. Dr Hird has more than 25 years of experience in the economic analysis of markets and in the provision of expert advice in regulatory, litigation and policy contexts. I have provided expert testimony before courts and tribunals and in numerous regulatory forums in Australia but also in the United Kingdom and New Zealand. His CV is attached to this report.

63. Dr Hird has been assisted in completing this report by Dr Ker Zhang, Yang Hao and Johnathan Wongsosaputro who have provided research and peer review of the analysis in this report. The final views expressed are Dr Hird’s views.

64. This report has been prepared in compliance with the Federal Court General Practice Note GPN-EXPT (Expert Evidence), including the Harmonised Expert Witness Code of Conduct Federal Court of Australia.

2.2 Report

65. CEG has been retained by Gilbert + Tobin on behalf of Origin Energy. Our terms of reference are attached this report.

66. This report has the following structure:
   - Section 3 surveys the economic literature to shed light on the nature of price dispersion observed in retail electricity markets and the likely impacts of possible regulatory interventions;
- Section 4 provides a critique of empirical work performed by the Grattan Institute;
- Section 5 discusses whether it is sensible to attempt to estimate whether returns being earned are reasonable and the appropriate way to perform such analysis if one was so minded to try;
- Section 6 discusses the role of vertical integration between retail and generation.
3 Competition in retail electricity markets – theory and evidence

3.1 Summary

67. This section addresses the following topics.

- First, what would we expect to observe in a workably competitive market retail electricity market (e.g., in terms of price dispersion, customer switching and profitability); and
- Second, what is the likely impact on consumer welfare of regulatory interventions in this market aimed at correcting perceived problems with competitive outcomes?

68. In this section we note that electricity retailing, like most other consumer markets, is characterised by customers with varying degrees of information and engagement. Consequently, we expect to observe, as we do in most markets, pricing strategies aimed at offering:

- very low (close to marginal cost) prices for new price conscious customers; and
- higher markups to other existing customers (although noting that the higher the markup the more likely otherwise ‘inactive’ customers will become ‘active’).

69. The price dispersion that is caused by switching costs is sometimes viewed as a problem by regulators. It is seen as inconsistent with the ‘law of one price’ that would be observed in an ‘idealised’ homogenous product markets with well-informed customers. There are two proposed solutions to this perceived problem which we examine. Namely:

- Banning price discrimination;
  - For example, banning discounting from a standard price limited to switching/engaged customers; and
- Reducing switching costs by increasing the proportion of engaged/well-informed customers.
  - For example, requiring suppliers to directly inform customers of lower cost tariffs or to automatically move them to lower cost tariffs, etc..

70. The economic literature is clear that, except in extreme circumstances, banning price discrimination will negatively impact all customers (both currently ‘engaged’ and ‘disengaged’ customers).
71. The impact of policies aimed at reducing switching costs is more ambiguous. If successful these policies are likely to have short run effects that benefit some customers (i.e., the customers who become more engaged and, as a result, shift to tariffs closer to marginal cost). However, in the long run this will induce market exit by retailers and a reduction in competition. The end result will be that other customers lose (specifically customers who would have been active anyway and customers who remain inactive). Indeed, it is useful to note that, in the extreme, a universally perfectly informed and engaged customer base would (somewhat counterintuitively) lead to monopoly/collusive oligopoly market structure and all customers would lose as a result.

3.2 ‘Sticky’ customers and price dispersion are ubiquitous in competitive markets

72. In most markets there are customers who pay more/less attention to the prices that they are being charged and who will put more/less effort into ensuring that they are receiving the best possible deal. In this circumstance, sellers will attempt to discriminate between these customers and charge a lower/higher price to the more/less active shoppers.

73. This is a form of price discrimination that is commonly observed in competitive markets. In order for it to be practiced successfully sellers require a method for distinguishing between the most and least price sensitive customers (which often will be the same customer just purchasing at different times). Typically this is achieved by offering a discount to new customers switching from other suppliers or actively threatening to switch to new suppliers. These customers will receive low prices with profit margins close to zero.

74. Customers who are not actively pursuing the lowest prices will tend to end up paying higher prices. For example, a customer who actively pursues the lowest price at one time may be signed to an ‘evergreen’ contract (perpetual but with no exit fees). That customer may be offered a material discount to the base tariff in the first year after switching. However, unless the customer actively engages with the retailer at the end of that year the customer will cease to earn those discounts and pay the higher price until they once again re-engage with the market.

75. The same basic approach is used in a wide range of retail markets. For example, in telecommunications customers typically sign onto evergreen contracts. However, falling costs (due to technological change) only get transmitted into lower prices (or improvements in offering in the form higher free download limits etc.) if/when a customer actively engages with suppliers again.

76. Similarly, magazine subscriptions are typically advertised on a heavily discounted basis for a given period with the prices reverting to ‘standard rates’ thereafter. This practice is applied by the Economist Magazine, which presumably has one of the
better informed/engaged customer groups when it comes to price discrimination practices. By way of example, the Economist Magazine was offering a 73% off ‘introductory offer’ on Google on 20 June 2016.

**Figure 3-1: Introductory offer on the Economist Magazine**


77. If one selects the $45 (78% discounted) 12 week introductory offer then, after 12 weeks, the subscription auto-renews at $155 – unless the subscriber cancels the subscription and re-subscribes at a new discounted price.

78. Such introductory offers are common across a range of industries – from banking to gym memberships. When the introductory offer runs out customers revert to the higher ‘non-discounted’ offering. Unless the customer re-engages with the supplier or a competitor they will stay on that higher priced subscription. However, if the customer does, or threatens to, switch supplier (cease subscription) they can commonly enjoy a discounted price again.

79. The OECD has noted in the context of financial (and postal and telecommunications) markets that the same strategy of ‘discount to win then revert to higher prices’ is common. The OECD also notes (and as we shall discuss further below) that switching costs can promote fierce competition to win customers.\(^{12}\)

> Switching costs represent therefore an important source of market power in retail banking. The competitive effects of switching costs are twofold. On the one hand, they lead to the exercise of market power once banks have established a customer base which remains locked in. On the other hand, they induce fierce competition to enlarge the customer base. In this sense there is a strong element of competition for the market. Thus, switching

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costs may lead banks to offer high deposit rates initially to attract customers and to reduce them subsequently, when consumers are locked in. This pattern seems consistent with empirical observations and stylized facts.\textsuperscript{37}

\textsuperscript{37} See Matutes and Padilla (1994) and also Degryse (1996) for similar conclusions for postal or telephone services.

80. The following figure, published by Ofgem in 2008, shows switching rates by product. All of these products will have an element of ‘ongoing subscription’ where suppliers commonly use an initial discount to attract customers and subsequently the discount lapses absent sustained engagement by the consumer. It can be see that switching rates were higher for retail electricity suppliers than for most other products surveyed.

**Figure 3-2: Switching rates**

![Figure 3-2: Switching rates](image)

Source: Ipsos MORI Consumer survey carried out for the OFT, July 2008

81. It is not just in consumer markets where this conduct is observed it is also in business markets. For example, in professional services (e.g., legal advisers), successful suppliers will build a level of trust with clients and the clients a level of comfort with their existing advisers. As a result, the client faces a ‘switching cost’ in moving to a new adviser. This means that existing providers can, and will, raise the prices charged to the client above the prices that they would offer to work for new clients.
82. Such competitive conduct is ubiquitous in all markets characterised by ‘sticky customers’ – which is most markets. That is, in markets where customers, having made a decision to take a service from a supplier, face some form of ‘switching cost’ (be that monetary or psychological) in moving to a new supplier.

83. In these markets, suppliers will find whatever mechanism are available to offer low prices to customers currently served by their competitors (or at imminent risk of being ‘stolen’ by competitors).

3.3 Does price discrimination to sticky customers raise or lower prices?

84. It is critical to understand that there is an inter-relationship between the higher/lower prices charged to ‘sticky’/‘slippery’ customers. Specifically, the lower prices constrain the higher prices. If the low prices are ‘taken away’ (e.g., via a ban on discounting) then the high prices would very likely be higher still.

85. That is, the concern that firms tend to charge higher price to their existing customers than potential new customers (or customers threatening to leave) is misplaced. In reality, this conduct makes customers better off – including sticky customers. In reality:

a. Competition results in greater price discrimination in favour of active shoppers than monopoly (or duopoly). That is, the stronger is competition the more accentuated is the practice of discounting. In other words, the ‘issue of concern’ is actually a sign of strong competition;

b. Average prices would be higher if a single price was offered to all customers (e.g., if regulation was imposed to that effect). In other words, if a regulator attempted to ‘fix’ the ‘problem’ of price dispersion it would make average prices higher.

c. Moreover, not just average prices but also undiscounted prices (i.e., prices paid by inactive shoppers) would typically be higher absent price discrimination. That is, the apparent ‘victims’ of price discrimination (i.e., inactive shoppers) are actually beneficiaries – in the sense that their prices would rise if discounting were not allowed;

d. Price discrimination in favour of active shoppers is not a sign that excess profits are being earned. Moreover, consistent with points b. and c. above, profits would be higher with if discounting was not possible. That is, regulation to prevent discounting would be a ‘boon’ to retailers – enforcing what would, from their perspective, be a desirable collusive agreement.

86. This conclusion is strongly supported in the economic literature and also in empirical case-studies. However, it is nonetheless, in some ways, counterintuitive. An intuitive, but typically wrong, logical chain of reasoning is as follows:
- Informed and active customers currently benefit by receiving lower discounted prices;

- If retailers are prevented from offering discounted prices then, if they want to **continue to compete for new customers**, they will have to offer the same lower prices to all their existing customers too;

- Therefore, banning discounts will lower prices to existing (inactive) customers because the lower prices demanded by active shoppers will be shared by all customers.

87. The problem with the above logical chain is in the emphasised element. Taking away the least cost/most targeted method of competing for new customers will reduce suppliers’ desire to compete for new customers. Put simply, they will not want to compete as vigorously for new customers because it will be more costly to do so (i.e., lower prices will have to be offered to existing customers). This, in turn, will entrench each suppliers’ ‘grip’ on their existing customer base (because other suppliers have lost their most effective weapon for ‘stealing’ customers). As a result, all suppliers will find it easier (not harder) to raise prices to their existing customers.

88. It appears the AER and the Grattan Institute both employ a logical chain similar to that set out in paragraph 86 above. The AER states:\textsuperscript{13}

> In most markets, engagement by even a limited number of customers can drive lower prices and product improvements that benefit all consumers. But, in energy markets, retailers can easily identify inactive customers and price discriminate against them. With most market offers including benefits that expire after one or two years, customers who do not switch regularly may not access the benefits of competition and may find themselves paying higher prices than necessary.

89. While less explicit about the logical chain, the Grattan Institute’s call to make discounting more difficult\textsuperscript{14} is essentially consistent with this.

90. The fatal flaw with the logical propositions that we set out at paragraph 86 above can be informally illustrated by breaking up the analysis into first and second round effects. In the first round, discounted prices are removed from the market and we are left with the higher undiscounted prices - active shoppers are worse off and inactive shoppers are no better or worse off. What matters is what comes next? Specifically, do retailers lower, raise or leave unchanged their undiscounted prices?

91. The answer in the theoretical economic literature is that, except in very unusual circumstances, the undiscounted price increases. That is, all customers are worse off.

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\textsuperscript{13} AER, State of the energy market, May 2017, p. 144.

\textsuperscript{14} See Grattan Institute, “Price Shock: is the retail market failing consumers?”, p. 32-33
– including the inactive customers. The reason for this is that the loss of discounting as a competitive weapon makes all retailers more secure ‘owners’ of their existing customer base. This raises the profit maximising price that they can charge them. Thus, banning price discrimination based on active/inactive shopping profiles actually raises prices to all customers – both active and inactive customers.

92. The logic expressed by the AER in the above quote would be correct if there were a binary distinction between ‘active’ and ‘inactive’ customers – with the former never at risk of switching even if the price gains were enormous (e.g., in the thousands of dollars). However, this is not realistic. In reality the number of active consumers will be a function of the potential savings available from switching. If savings were $1,000 per year then it is likely that close to 100% of currently ‘inactive’ consumers would become active. As Ofgem has noted:15

“the single largest factor affecting a supplier's churn rate is its relative price”

93. Ernst and Young has also reached the same conclusion in the UK market.16 The AEMC surveys place the value of discounts as the most important factor in customers switching.17

94. Retailers would obviously be well aware of any such a relationship. Given that competition for active customers will typically be based on marginal cost, this relationship determines how much above marginal cost they can profitably set their ‘standard’ tariff. If they set their standard tariff too high then they will turn too many inactive customers into active customers and the price rise will be unprofitable.

95. This result has been set out informally above. However, it is a strong result from the theoretical literature which we summarise in section 3.5 below. This theoretical result is borne out by the experience of regulation of retail tariffs in the UK as set out in section 3.6 below.

16 Ernst and Young, Cash on the meter, electricity and gas utility receivable, 2009.
17 AEMC, 2016 Retail Competition Review, p.70
3.4 The intuition behind the theoretical literature

3.4.1 Why an intuitive understanding of the literature is important

96. Simshauser and Whish-Wilson (2015) have taken a broad look at economic theory on price dispersion/discrimination and have found “price dispersion will increase, not decrease, as competition intensifies ... and price dispersion is common in capital-intensive industries and deregulated markets such as ... energy.” The literature covered by Simshauser is broad and covers the full range of economic forces leading to divergences from marginal cost based prices in competitive industries – from joint production costs in the competitive beef industry to competition with differentiated products. Simshauser and Whish-Wilson demonstrate that price dispersion and discrimination is not just common, but is, in fact, the norm in competitive markets.

97. However, in this report we focus in detail on the relevant part of the literature that deals with competition between suppliers of homogenous goods in markets with less than perfectly informed customers (or, equivalently, customers who face some form of ‘search’ or ‘switching’ costs). Most of the literature that we cover is also referenced in Simshauser and Whish-Wilson. However, our objective is to explain both intuitively and rigorously the nature of competition in such markets as set out in the literature.

98. We feel this is important because some of the predictions of the literature are not, immediately, intuitive. For example, the conclusion that all customers, including customers not actively shopping around, are better off if firms are allowed to ‘exploit’ customer switching costs by charging higher prices to inactive shoppers. However, this conclusion does become intuitive once the nature of competitive dynamics is understood in these markets.

99. This is why we recommend policy makers become spend some time understanding this literature before making decisions. We note that Ofgem clearly did not do so before it put in place regulations the effect of which was to limit dual pricing (discounting to active shoppers). The effect of this was consistent with the predictions of the literature in that prices rose to all customers (including the inactive shoppers).

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3.4.2 A simple stylised example

100. Consider a simple model where there are two customers and two firms – with each firm serving one customer. For simplicity, let the marginal costs supply be zero for each supplier. Let customers face a $1 switching cost in that, other things equal, each customer prefers to be served by their existing supplier\(^{21}\) and would require a slightly more than a $1 price cost saving to switch.

101. If the firms must charge a uniform price then the equilibrium price (without collusion) will be $2. To see this, imagine both firms start by pricing at marginal cost (zero in this example). This cannot be an equilibrium because if Firm A is charging zero then Firm B can charge $1 without losing its customer (due to the $1 switching costs). This establishes that each firm will always charge at least $1 and make $1 profit (before accounting for fixed costs).

102. However, if Firm A is charging $1, the profit maximising price for Firm B is $2. This raises the revenue from the existing customer without causing them to switch (the price differential still does not exceed $1). Firm A can respond by raising its price to $2 (in which case it earns of profit of $2 on a single customer) or reducing its price to $0.99 (in which case it earns a profit of $0.99 on both customers). Raising price to $2 is the dominant strategy.

103. However, price rises above $2 are not profitable because if Firm B raises price above $2, say to $3. Now Firm A will be more profitable if it offers a lower price rather than price matching. For example, at a price of 1.99 (a $1.01 discount to Firm B’s price) Firm A steals Firm B’s customer (because the price differential is greater than $1). Firm A has profits before fixed costs of 3.98 (=2*$1.99) which is more than it if price matched (=1*$3.00). This is true for all Firm B prices in excess of $2.00. Therefore, $2.00 is a stable “Nash” equilibrium.

104. In this simple example with uniform pricing, the profit maximising mark-up on marginal cost ($2) is double the switching costs of customers ($2=2*$1). However, it is relatively easy to demonstrate that if firms can offering price discounts to new customers relative to existing customers then this will lower prices for all customers.

105. Let us run through the same logical thought experiment as above but this time allow each firm to set two prices – one for existing customers and one for new customers. Once more, imagine both firms start by pricing at zero (=marginal cost) to all customers. This cannot be an equilibrium for the prices charged to existing customers because, as set out above, these customers will only switch if the price differential exceeds $1. Therefore, the minimum price that each firm will charge their existing customers is $1 (a mark-up of $1 on marginal cost).

\(^{21}\) This might be because they prefer the service but it might simply be because of the actual/perceived ‘hassle’ of changing suppliers.
However, unlike the scenario with uniform pricing, this also the final equilibrium price. If Firm B raised price to its existing customer above $1 then Firm A would be able to profitably offer Firm B’s customer (without offering their own customer) a greater than $1 discount thereby inducing them to switch (and vice versa). That is, allowing Firm A to price discriminate means that Firm A can (and will) be more aggressive in its pursuit of Firm B’s customers. The same is, of course, true of Firm B. This then constrains the prices that each firm can profitably charge to their existing customers.

For some readers this will be a counterintuitive result. Giving firms the flexibility to discriminate against their existing ‘sticky’ customer base actually results in lower prices to the ‘sticky’ customers. However, this is a more intuitive result when it is recognised that that the flipside is that price discrimination gives firms the flexibility, and incentive, to discriminate in favour of competitors’ customers by offering them prices close to marginal cost. With all firms doing this to their competitors’ customers then all firms are limited in the markup on marginal cost they can successfully charge to their existing customers.

3.4.3 Realism of the example

In the above example, a retailer’s ability to set high prices to their existing customers is constrained by the prices that their competitors are willing to offer those customers. The way this is modelled in this simple example is that each of the ‘two’ customers has a unique switching cost and will change suppliers as soon as the price difference (between their supplier’s offer and the competing supplier’s discounted offer) exceeds their switching cost.

This formalised modelling may be criticised on the basis that it does not reflect reality - in that most customers do not have a well-defined ‘switching cost’ and are not constantly monitoring retail prices to compare these to their switching costs. However, this would be an unreasonable criticism in that all this stylised example really relies on is that a customer is more likely to switch at high price differentials than low price differentials. Thus, the existing retailer knows that as they raise their price to existing customers they are more likely to lose customers to competing suppliers.

The ‘single customer’ and ‘single switching cost’ stylised example is simply used to make the underlying economic principles intuitive and the results tractable/simple to understand. The literature that we describe below includes more complex analysis where rising price differentials result in gradual loss of customers rather than the sudden ‘tipping point’ used in this section. However, the results in that literature are essentially the same as in this stylised example.

In this context, it is important not to hold a simplistic binary distinction between ‘active’ and ‘inactive’ shoppers. While we ourselves use these terms in this report what we are referring to is customers who are more likely to switch and lower price
differentials and customers likely to switch at high price differentials. This terminology should not be taken to mean that there is a class of inactive customers that is ‘fixed’ and independent of the savings available from switching.

112. Of course, firms will still be able to charge above marginal cost to their existing customers given the existence of switching costs. However, the equilibrium price is materially lower with price discrimination because the baseline level of competition for new customers is stronger.

3.5 The theoretical literature

3.5.1 Thisse and Vives (1988)

113. The stylised example in the previous section is actually a simplified version of the model used by Thisse and Vives (1988). In that model the authors assume a two firm Hoteling model with customer preferences uniformly distributed in linear product space – some customers preferring one firm and some the other with varying degrees of intensity for this preference.

114. This is equivalent to a model where some customers are loosely attached (low switching cost) to their existing supplier and some are strongly attached (high switching costs). Thisse and Vives (1988) compare a scenario where each firm can perfectly price discriminate. That is, each firm knows each customers preferences perfectly and can set a unique price to each customer.

115. Thisse and Vives (1988) compare the prices charged under this perfect price discrimination scenario to the prices charged if only uniform pricing is allowed. They show that the uniform price is above all of the discriminatory prices. That is, not only is the uniform price greater than the average of discriminatory prices it is above the maximum discriminatory price.

116. While the mathematics and sophistication of the analysis is more complex, the basic economic forces behind this result are the same as in our simplified example.

3.5.2 Bester and Petrakis (1996)

117. Bester and Petrakis (1996) essentially take Thisse and Vives (1988) model and impose a restriction that price discrimination is limited to each firm only being able to charge two prices (rather than bespoke prices for each customer). This is

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essentially one price for existing customers and one price for competitors’ customers. This is likely a more realistic assumption in the context of electricity retailing competition.

118. Bester and Petrakis (1996) show that the key results of Thisse-Vives (1988) stand. The prices under price discrimination are all below the price that would be set if only uniform pricing was allowed.

3.5.3 Chen (1997)

119. Chen (1997) builds on the work of Bester and Petrakis (1996) and Thisse-Vives (1988) but makes a number of modifications. Bester and Petrakis (1996) and Thisse-Vives (1988) model treated each customer as having a preference for one or the other firm – which the competition firm had to ‘defeat’ by offering a discount. This worked well as a model of ‘switching costs’ because competition was assumed to be a ‘one period’ event.

120. Chen (1997), by contrast, set out to establish a multi-period model where customers ‘won’ in the first period became ‘sticky’ in the second period. In order to do this he formally introduced the assumption that customers faced switching costs from their existing supplier (i.e., switching cost “followed” customers to whatever supplier they chose).

121. Chen (1997) retains the assumption that there are only two firms. He follows Bester and Petrakis (1996) in allowing for variation in the level of switching costs each customer perceives and also in only allowing firms to set two prices (one for its existing customers and one for the competitor’s customers).

122. Chen (1997) demonstrates that firms will price below marginal cost in order to win customers in the first period given that some fraction of them will be ‘sticky’ in the second period. Chen (1997) shows that, assuming that each firm is the same size, then the Bester and Petrakis (1996) and Thisse-Vives (1988) results stand. That is, the uniform price is above all the discriminatory prices.

123. Chen (1997) does find that there is a possibility that some customers will be better off under uniform pricing if there is a large difference in size between the two firms in his model. Specifically, high switching cost customers of the smaller firm can be better off under uniform pricing. (All customers of the larger firm and all low switching cost customers of the smaller firm are better off with discriminatory pricing – such that the average customer is better off.)

124. In Chen’s model with two firms each firm is an ‘alternative supplier’ to the customers of the other firm. Because there is variation in the switching costs of customers each

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firm faces a downward sloping demand curve. Under uniform pricing this is a single demand curve (comprised of demand of the competitor’s customers to switch and the demand for existing customers to stay). Under price discrimination, where different prices are offered to existing and new customers, there are essentially two demand curves one for customers to switch and one for customers to stay.

125. The position of the demand curves each firm faces depends on the price charged by its competitor to each subset of customers (e.g., Firm A’s demand for customers to switch to it depends on Firm B’s price to customers to stay with it). Each firm then sets the ‘monopoly price’ (such that marginal revenue equals marginal cost) for each demand curve it faces.

126. The equilibrium result (based on uniform distribution of switching costs) is that each firm sets:

- the price for competitor’s customers at marginal cost plus one third of the distribution of switching costs; and
- the price for their own customers at marginal cost plus two third of the distribution of switching costs.

127. However, under uniform pricing the profit maximising price for each firm is to set a price at the top (100%) of the distribution for switching costs. This is for essentially the same economic forces we set out in our simple example in section 3.4.2. Indeed, the result in our simple example where the uniform pricing average mark-up is double average switching costs is repeated in Chen (noting that the top of a uniform distribution is double the average of the distribution).

128. Chen does find that a small firm’s customers can be better off under uniform pricing. This reflects the fact that, under uniform pricing, small firms have the strongest incentive to compete for new customers. This is because they have the smallest base of existing customers and, therefore, the least to lose from lowering prices to them (while they have the most to gain from winning customers from their larger competitor).

129. Figure 3-3 summarises Chen’s result in this regard. It shows that when firms are symmetrical (50% located at the left most point on the horizontal axis) then the uniform price of each firm is $1.0 (assuming uniform distribution of switching costs between $0.0 and $1.0). However, as we move right on the horizontal axis (i.e., one firm’s market share increases relative to the other), the uniform price equilibrium for both firms fall.

130. This is because moving rightward on the horizontal axis makes Firm 2 lose market share and become more aggressive. They then lower their uniform price offering. Firm 1’s response is to lower its optimal uniform price – but by less reflecting the fact that Firm 1 has a larger existing customer base and therefore loses more by lowering its price. In the extreme, if the Firm 2 had no existing customers it would set its
uniform price equal to the lowest of its discriminatory prices and Firm 1 would respond by setting its uniform price at the highest of its discriminatory prices. However, even in this extreme, the average uniform price is higher than the average price under price discrimination.

**Figure 3-3: Impact of price discrimination on prices**

![Graph showing the impact of price discrimination on prices.](image)

*Source: CEG simulation using Chen (1997) model.*

### 3.5.4 Taylor (2003)

Taylor (2003)\(^{25}\) extends Chen’s results in two ways. Taylor allows for there to be more than two firms and extends the number of periods of analysis beyond two. Taylor demonstrates that with multiple periods the market will converge to symmetry under the long run (i.e., the symmetric market shares model is the relevant model in the long run). This is because the smaller firm will grow in size as it is the more aggressively priced firm. Taylor (2003) also finds the equilibrium prices under price discrimination.

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discrimination will be more dispersed and lower with 3 or more firms compared to the two firm scenario in Chen (1997).

132. That is:

- increasing the number of competitors leads to greater price dispersion not smaller price dispersion; and
- greater price dispersion is associated with lower average prices.

133. In fact, with three or more firms, Taylor (2003) finds that market becomes “fully competitive and all firms earn zero economic profit” under price discrimination.

3.5.5 Shaffer and Zhang (2000)

134. Shaffer and Zhang (2000) extends Chen (1997) in a different direction by allowing for one firm’s customers to have a different distribution of switching costs to the other firm’s customers. That is, one firm may have more strongly ‘sticky’ customers than the other firm.

135. In terms of our simple in section 3.4.2, this would be ‘as if’ Firm A’s customer had a $2 switching cost and Firm B’s customer had only a $1 switching cost. In our simple example the equilibrium uniform price would be $4 (double the higher customer’s switching cost) and the equilibrium discrimination prices would be $2 and $1 (equal to the average switching costs of each customer base).

136. This is also essentially the result in Shaffer and Zhang (2000) where each firms are of the same size (as they are in our simple example). However, Shaffer and Zhang (2000) also explore the implications where there are asymmetries in the size of the customer bases. They find that:

a. if the larger firm also has the stickiest customers then this will lower average equilibrium prices under price discrimination;

b. if the smallest firm also has the stickiest customers then this will raise the average equilibrium prices under price discrimination.

137. A key conclusion from Shaffer and Zhang (2000) is that it can be profitable to offer a lower price to your own customers than to your competitor’s customers. This can be the case if you have a large customer base that has low switching costs (scenario b above). That is, if the large firm has the least sticky customers then the large firm can be better off ‘paying to stay’ rather than ‘paying to switch’.

138. It is also the case that, under this scenario, price discrimination may actually raise average prices relative to uniform pricing. However, for this to be true the average switching cost of customers from the smaller firm needs to be 4 to 5 times, depending on market share, greater than the switching cost of the larger firm.
139. Clearly, this is not the case in electricity retailing where the smaller ‘new entrant’ firms will typically have lower not higher stickiness than the larger retailers who substantially purchased their customer bases from State Governments (rather than won them from competitors).

**3.5.6 Stole (2007)**

140. Stole (2007)\textsuperscript{26} is not an original piece of research but is a summary of the literature. Stole authors a chapter in the Handbook of Industrial Organization focusing on price discrimination. The relevant section of this Chapter is section 4 “Price discrimination by purchase history” and, in particular, section 4.1 “Exogenous switching costs and homogeneous goods”.

**3.5.7 Collusion is easier with a single price**

141. All of the models surveyed above assumed that there was no collusion (tacit or otherwise) between retailers. We note that collusive prices would be much simpler to agree on, and punishment for cheating simpler to implement, the more simple the offering from each retailer. It is a clear finding in the literature that market transparency facilitates collusion.\textsuperscript{27} Specifically, collusion is more likely to be successful in a world where simple uniform pricing was enforced by regulation because monitoring of each suppliers overall pricing would also be simpler.

**3.6 Empirical evidence**

**3.6.1 UK case study**

142. Prior to 2008, the energy retail sector in the U.K. was deregulated. The market was dominated by the 6 largest suppliers who accounted for 99\% \textsuperscript{28} of residential consumers. In 2008, Ofgem began a probe into the energy supply market to investigate whether the market was working effectively after the deregulation. Ofgem (2008)\textsuperscript{29} found:

\begin{itemize}
  \item \textsuperscript{26} Stole, L. (2007), “Price Discrimination and Competition”, Handbook of Industrial Organization, 64. Edited by M. Armstrong and R. Porter Vol 3, Chapter 4.1 “Exogenous switching costs and homogeneous goods”.
  \item \textsuperscript{27} See Ivaldi, Jullien, Rey Seabright and Tirole, The Economics of Tacit Collusion, 2003, Final Report for DG Competition, European Commission. In particular, section III, 5.
  \item \textsuperscript{29} Ofgem, Energy Supply Probe- Initial Findings Report, 140/08, 6 October 2008
\end{itemize}
There are now greater levels of competitive activity and consumer switching than almost every other energy market in the world and most other UK consumer services markets. The fundamental structures of a competitive market are in place, and the transition to effective competitive markets is well advanced and continuing.

143. However, Ofgem was concerned with the price dispersion within the industry and considered it “unfair”. The Ofgem report found that, in terms of switching suppliers, “the vulnerable consumers more generally have lagged behind other consumers.” The report also found the “use of internet to compare prices is particularly low amongst vulnerable consumers.” As a result, Ofgem adopted policies that required differentials in charges to be cost-reflective on the basis that price differentials between more and less active consumers was unfair.

144. According to Littlechild (2014), Ofgem’s decision to ban price discrimination is based on the following reasoning:

- Differentials in prices is unfair as it indicates ineffective competition amongst non-switchers;
- It expected a zero net revenue impact as a result of non-discrimination conditions;
- Based on these assumptions, the revenue from non-switchers was expected to decrease by approximately the same amount as the increase in revenue from switchers.

145. In essence, Ofgem considered the non-discrimination requirement as a redistribution of income without changes in the overall revenue of the retailers.

146. Littlechild finds the result of the policy is a large decrease in the number of customer switching as shown in Figure 3-4. Littlechild (2014) finds the number of electricity and gas transfers between suppliers decreased from 2.6 million in third quarter 2008 to 1.1 million in third quarter 2013. There was a large spike in the number of switches in the 4th quarter of 2013 due to "media and political attention" on energy prices. Littlechild (2014) also shows that the dramatic decrease cannot be explained by the end of doorstep selling in 2011 and 2012. Littlechild cites from a detailed empirical analysis from Waddams Price and Zhu which finds:

“the non-discrimination condition has changed the nature of competition, that the constraint on incumbent price increases has weakened and that each regional market is now closer to a duopoly between the regional incumbent and British Gas.”

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30 Ofgem 2014, State of the Market Assessment, 27 March 2014
Littlechild (2014) also finds that the restriction also dramatically boosted the EBIT margins of retailers from 0.9% in 2009 to 3.9% in 2013. Analysis by Ofgem (2014)\textsuperscript{31}, shown in Figure 3-5, shows an increase in the gross margin from approximately 100 pounds per customer per year in 2008 to approximately 300 pounds per customer per year by 2013 for dual fuel customers.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure3-4.png}
\caption{Customer switching in the U.K.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure1.png}
\caption{The increase then decrease in customer switching\textsuperscript{58}}
\end{figure}

Source: Littlechild (2014)

\textsuperscript{31} Ofgem 2014, State of the Market Assessment, 27 March 2014
Figure 3-5: Energy retail margin in the U.K.

Source: Ofgem (2014)

148. Ultimately, Ofgem recognised that its ban on price discrimination was counterproductive and it “[wrote] to suppliers to confirm that SLC 25A [which prohibits price discrimination] had lapsed and that suppliers were not bound by it in any way.”32 In fact the prohibition was heavily criticised by CMA (2016).

3.6.1.1 Energy market investigation by Competition & Market Authority

149. Between 2014 and 2016, the U.K. Competition & Market Authority undertook a detailed investigation in the U.K. energy market. One component of the investigation focused on the price discrimination amongst the U.K. energy retailers.

150. CMA (2016) is highly critical of the decisions made by Ofgem, it “found that some decisions taken by Ofgem over the last few years (e.g. SLC 25A [which prohibits price discrimination]…) which in [CMA]’s view were not based on robust analysis, have had adverse effects on consumers.’

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151. CMA (2016) concludes “evidence appears to be consistent with a potential weakening of competition concerning [Standard Variable Tariff (SVT)] over time as the gap between the SVT and underlying costs appear to widen. This is particularly apparent from 2009 which broadly coincides with the introduction of the prohibition on undue regional price discrimination.”

152. In fact CMA (2016) determined the impediment to a more competitive energy retail market is not the presence of price discrimination but the “weak customer response” to rival offers. CMA (2016) found “customers have limited awareness of and interest in, their ability to switch energy supplier.”

153. We return to this alternative solution to the perceived ‘problem’ of price dispersion in section 3.7 below. In short, while we agree with the CMA’s criticism of Ofgem’s policy on price discrimination, it is not obvious that the CMA’s ‘solution’ to the same ‘problem’ is necessarily any better. Specifically, increasing the proportion of active and well informed customers need not lower average prices. In fact, in the extreme, a perfectly informed and perfectly active customer base would almost certainly lead to higher (monopoly) prices.

3.7 Will eliminating sticky customers lower prices?

154. The previous analysis addressed whether, given the existence of sticky customers, the practice of discounting was harmful to customers. The answer is unequivocally that it is not. Discounting benefits all customers – and not just active shoppers.

155. This section addresses a separate but related question. Rather than taking the existence of sticky customers for granted, what if policies were put in place to reduce the number of sticky customers and/or make individual customers less ‘sticky’. Specifically, could we expect such policies to lower the competitive equilibrium average retailer’s markup on marginal cost? Would customers as a group be better off if they all, or a greater proportion, became more active shoppers?

156. The answer is, in fact, ambiguous.

3.7.1 CMA (2016)

157. The CMA clearly was of the view that increasing the proportion of active customers would be beneficial. CMA (2016) was concerned with the “complex information provided in bills and the structure of tariffs which combined to inhibit value for money assessments of available options.” Another concern raised up by CMA (2016)

33 Other than British Gas, the remaining 5 large energy retailers are regional based. Therefore regional price discrimination is equivalent to poaching rivals’ customers.
is the opportunity for “erroneous transfers which have the potential to cause material detriment.”

158. CMA (2016) recommended several changes to reduce the switching cost of consumers and increase in the ability of consumers to take advantage of offers made by rivals. Its recommendations are

- Establish an Ofgem led program to improve consumer engagement in the retail sector through
  - changes to the information in domestic bills and how this is presented;
  - changes to information provided to customers on cheaper tariffs available across the markets;
  - changes to the specific messaging that domestic customers receive in bills once they move, or are moved, on to an SVT and/or other default tariffs; and
  - changes to the name of the default tariffs.

- Require energy retailers to maintain and disclose to Ofgem a database of consumers who has been on the SVT for three years or more. Through the database, Ofgem should actively engage with these consumers to provide “marketing letters” on cheaper tariffs and how to switch suppliers; and to provide the data available to rivals such that the rivals can actively market towards these customers.

159. Ultimately, instead of stifling competition by limiting retailer’s ability to poach consumers, the CMA (2016) determine the solution is “helping customers engage to exploit the benefits of competition.”

3.7.2 What does the literature predict

160. Holding the competitiveness of the market-place constant, making customers better informed must improve outcomes for customers. Well informed and engaged customers are able, in a competitive market with a large number of suppliers, to negotiate supply at marginal cost. The more engaged customers are the more customers that will be receiving the lowest possible price. This is the first round effect.

161. However, the caveat for this to be true is that competitiveness be held constant. This caveat will not typically hold. Put simply, all customers cannot access supply at marginal cost because, if they did, no supplier would be profitable. The market dynamic is quite simple. The first round effect of increasing the proportion of well-informed and engaged customers is increasing the proportion of customers on low priced marginal cost tariffs. However, the second round effect is exit from the market by some retailers, a softening of competition, and higher markups on all tariffs (to all types of customers).
162. Gu and Hehenkamp (2010) develop a model to examine the impact of increases in “the share of informed customers in the market” which is their measure of “transparency”. Their abstract summarises the first and second round effects described above in their specific model as follows.

*Including the entry decision in a Bertrand model with imperfectly informed consumers, we introduce a trade-off at the level of social welfare. On the one hand, market transparency is beneficial when the number of firms is exogenously given. On the other, a higher degree of market transparency implies lower profits and hence makes it less attractive to enter the market in the first place. It turns out that the second effect dominates: too much market transparency has a detrimental effect on consumer surplus and on social welfare.*

163. Overgaard and Mollgaard (2008) note that consumer advocates of better informed customers tend to take a static approach when thinking about the implications of better informed customers:

*Consumer protection advocates tend to take a more static perspective.... The archetypical example du jour is online shop-bots, which allow potential buyers to compare a multitude of different market offerings by pressing a few keys (thus, at low cost). This allows buyers to shop around easily, turning competition between suppliers of close substitutes into something akin to intensive Bertrand-style competition. Consequently, proponents of this view have not only suggested that information should be allowed to flow freely, but even that the gathering, processing and dissemination of the information to potential buyers should be subsidized by the public purse or by levying a duty on firms to foot the bill. Thus, government-sponsored or funded information-transmission mechanisms have been set up.*

164. However, the authors counsel not to let the analysis stop at a static (first round) effect. They state:

*From the perspective of static modelling, it is a relatively robust result that improved consumer information tends to promote the efficiency objective. However, it remains an open question whether this qualitative result is robust to embedding the basic static models in an explicitly dynamic model*

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36 Ibid.
of oligopoly competition. The reason for this is straightforward: if improved information on the consumer side makes it easier for a firm to steal customers from its rivals, it must also make it easier for these rivals to “steal” them back again! So, the result might just be that no one tries to steal customers from rivals in the first place.

165. That is, even holding the number of competitors constant (as Overgaard and Mollgaard (2008) do), increasing the proportion of well-informed customers may lead to less competition because, essentially, the benefits from winning customers is reduced. Of course, if this does not happen and the newly ‘slippery’ customers are the recipients of low “Bertrand” marginal cost pricing, then the inevitable result is less entry/more exist from the industry (which is the mechanism Gu and Hehenkamp (2010) focus on.)

166. More generally, it is ultimately a ‘pipedream’ to shift all consumers onto today’s lowest tariffs by making them all well-informed and engaged. The attempt to do so would cause those tariffs to evaporate in the process. Heavily discounted tariffs, that make no or low contributions to fixed costs, are only made possible by virtue of intense competition for ‘sticky’ customers who, once acquired, can, in subsequent periods, make a contribution to fixed costs. If all customers are always and everywhere ‘slippery’ then marginal cost tariffs will disappear because, if they did not, all customers would be on them and no supplier would cover their fixed costs. (This is true in any industry where a supplier’s marginal cost is constant (or falling) even when market share approaches the entire market.) The mechanism by which this occurs will be market exit and a consequent softening of competition.

167. Indeed, if all customers were everywhere and always perfectly well-informed (and there are constant or declining returns to scale) it is relatively simple to show that the resulting equilibrium market structure would be monopoly (or collusive oligopoly). This is because in the presence of perfectly informed customers who always choose the lowest price all firms will compete prices down to marginal cost (absent collusion). This will lead to all but the lowest marginal cost firm leaving the market.

168. Moreover, once this monopoly is established it will be secure from new entry. This is because, unless they expect some form of collusive accommodation, no firm will enter a market where 100% of customers are perfectly informed because they know that the incumbent’s rational response will be a price war based on marginal cost.

169. The fact that ‘Bertrand competition’ with homogenous products and constant/declining marginal costs leads to monopoly absent collusion is well

37 The classic ‘perfectly competitive’ markets are those in commodities where each supplier marginal costs rise steeply as production approaches a fixed capacity (e.g., based on land owned (e.g. agricultural commodities) or proven reserves of for oil and mineral commodities). In
established in the literature. For example, Dasgupta and Stiglitz (1988)\textsuperscript{38} showed that potential competition is ineffective in constraining an incumbent monopolist if post entry pricing will be based on pure Bertrand competition. More generally they conclude:

‘...the fiercer competition after entry, the less effective is potential competition’.

170. In short, fierce competition is only good for consumers when it results in stable fierce competition. If fierce competition leads to exit (or failure to enter) then the long run effect may be bad for consumers.

171. That is not to say that marginal increases in the proportion of well-informed/engaged customers will necessarily lead to a dramatic reduction in competition and worse outcomes for all customers. The economic literature predicts that it will improve outcomes for the customers who, as a result of the intervention, are now are more likely to switch suppliers. However, the intervention will make outcomes worse for the remaining customers (those who would have switched anyway and those who continue to not switch).

172. There is no ‘free lunch’ in a competitive market. An objective of shifting more customers onto today’s lowest cost tariffs is a mirage. The more customers who shift to those tariffs, and stay permanently on them, the higher the markup on those tariffs will be.

173. In our view the most important conclusion is that it would be a mistake to have a policy goal of eliminating price dispersion by making customers perfectly informed/engaged. If this objective was actually achieved then the result would be that all customers paid the same price – but that price would be the monopoly (or collusive oligopoly) price. More generally, shifting the balance to increase the number of well-informed/engaged customers would benefit those newly informed/engaged customers. However, it would hurt other customers.

174. There is a separate question about whether there is a distributional/fairness justification for shifting a specific subset of consumers onto low tariffs (e.g., particular, ‘vulnerable customers’). This may not be a warranted policy goal. However, if this is accepted as a desirable policy goal it is important not to confuse it with a more general policy goal of shifting all consumers onto the lowest tariffs (which is not possible for the reasons set out above).

3.7.3 What is different about consumer as opposed to commodity markets?

175. The conclusion set out above may seem odd to the reader who is familiar with the idealised ‘perfectly competitive’ market of many firms, a homogenous product and perfectly informed customers. In this ‘text book’ market, the ‘rule of one price’ holds with price set equal to marginal cost across all suppliers. It may reasonably be asked: why would not perfectly informed retail electricity customers give rise to this equilibrium?

176. The answer is relatively simple, in the ‘text book’ model of perfect competition all suppliers have increasing marginal costs — such that if any one supplier were to attempt to serve the entire market they would have materially higher costs than a new entrant. This increasing marginal cost condition ensures that there is competition in equilibrium.

177. This assumption reflects reality in many markets. These markets do fit the stylised ‘perfectly competitive’ market structure. For example, consider the market for crude oil or bulk wheat. In these markets each supplier controls a limited share of the essential inputs (e.g., arable land or proven oil resources). Consequently, no supplier cannot expand without limit at a constant (or declining) marginal cost. A farming corporation, even the very largest in the world, is constrained to the extent that they can profitably increase wheat production at a given price. The largest oil companies will, constrained by the limited reserves that they own, ultimately face severe limits in their annual output beyond a certain point.

178. Consequently, fierce competition can simultaneously push prices down to marginal cost while still allowing for the recovery of fixed costs. This is because rising marginal costs at each supplier allows marginal cost pricing to equal average cost pricing. Thus, fierce competition, marginal cost pricing and a large number of suppliers are all mutually achievable in these markets.

179. Electricity retailing, and, indeed, most other markets are, different. In electricity retailing a single firm does not face material constraints in expanding output at something like the prevailing marginal cost. The main input into electricity retailing is wholesale energy and this can be traded relatively simply — with increasing market share simply matched by higher purchases in the wholesale market (contract and/or spot markets).

180. The other inputs to electricity retailing have large components of fixed costs that are scalable at low marginal cost (such as billing systems, trading operations, management of bad debts etc). Consequently, with the exception of difficulty in acquiring ‘sticky’ customers, any individual retailer faces few, if any, rising costs associated with expanding the scale of their operations.

181. Now consider what would happen if all customers were perfectly well-informed and engaged. Any individual supplier could acquire the entire market simply by having the lowest price – and any supplier that did not have the lowest price would lose their
entire customer market. Unlike the wheat or crude-oil markets, there would be no cost based limitation on how small the number of supplies could fall to. Consequently, the end result would be fierce price competition (based on marginal costs) until market exit occurred that softened competition sufficiently for fixed costs to be recovered. In fact, assuming no collusion the end result would be “Bertrand competition” until a monopoly was established.39

182. The fact that customers are not perfectly well-informed/engaged is what prevents electricity retailing from this long-term anticompetitive fate. It is the existence of ‘sticky’ customers that prevents a marginal cost price war from creating a monopoly (or oligopolistic collusive market structure).

183. It should be noted that the same analysis applies in most markets. That is, commodity markets, not electricity retailing, are the exception. The same analysis applies to any market where:

- The products sold by suppliers are perceived as ‘homogenous’ by customers (i.e., close substitutes);
- Customers are atomistic (as opposed to customers with countervailing size and ability to coordinate/vertically integrate/sponsor entry with long term contracts);
- Suppliers have constant (or falling) marginal costs of supply over the size of the market; and
- There are fixed costs of supply that are scalable over the size of the market.

184. Where these conditions hold then perfectly well informed/engaged customers will lead to a ‘price war’ between suppliers that will ultimately end with monopoly (or collusive oligopoly). It is for this reason that companies put so much effort into differentiating what would otherwise be regarded as homogenous products.

185. Consider Pepsi and Coke and other fast moving consumer goods (FMCG). These products will typically satisfy all of the above characteristics with the possible exception of the first. Indeed, the reason that FMCG suppliers compete so heavily on branding/product differentiation is in order to avoid the kind of price war that will inevitably mean exit from the industry by most suppliers.

186. Alternatively, consider consumer finance. A home or car loan should, to a well informed and engaged customer, be perceived as something close to a homogenous service. If all consumers had this view then the financial institution with the lowest ‘comparison rate’ would win all the customers. A monopoly (or collusive oligopoly) would be quickly be established as all financial institutions fought to be the last one(s)

39 Moreover, a monopoly would be secure because no credible threat of entry exists into a market where the new entrant expects a price war at marginal cost after entry – which would be the rational response from the incumbent.
standing. This does not happen because consumers are either not perfectly well-informed (engaged in sifting between offers) or simply do not regard products as homogenous (which maybe another way of saying the same thing).

187. Of course, the above conclusions do not imply that the current level of customer engagement/information in electricity retailing is optimal. It may be that marginal improvements in customer engagement from where it currently stands will not result in a material exit of suppliers from the industry and the gains (in terms of shifting more customers to marginal cost tariffs in the short run may not be fully offset by higher average tariffs in the long run).

188. However, the clear conclusion from the literature is that a goal of all customers being ‘perfectly informed/engaged’ is not, in fact, desirable. Unless electricity retailing can be turned into a differentiated product market, then successfully pursuing such a goal would ultimately lead to monopoly (or collusive oligopoly).

3.7.4 Grattan Institute views

189. In this context, it is useful to revisit the following claim by the Grattan Institute:40

*The fact that there is a significant price gap between different offers suggests some households are paying more than necessary for their electricity, and therefore retailers are earning more revenue than necessary to supply those consumers with electricity.*

190. The logic in this statement simply does not follow. While it is true that a single household on a high priced tariff is “paying more than necessary for their electricity” it does not follow from this that:

- Households as a group are paying more than necessary for their electricity; and
- Retailers are earning more than necessary.

191. As the literature surveyed in this section makes clear, in a market with sticky customers competition between suppliers will force profits to normal levels but there will remain dispersions in prices – with switching customers paying a low or zero markup on marginal cost and other customers paying a high markup on marginal cost. The Grattan Institute’s statement is implicitly assuming that all customers could switch to the marginal cost tariffs and suppliers could cover their costs (including fixed costs). This is not a reasonable assumption. As explained above, the more customers who switched to the low cost tariffs the fewer the number of competitors there would be in equilibrium – with the effect that all tariffs would rise.

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40 Grattan Institute, “Price shock – is the retail market failing consumers”, p. 20.
4 Critique of Grattan Institute report

4.1 The Grattan report

192. The key result from the Grattan Institute is Figure 2.5 reproduced below.

![Figure 2.5 from Grattan Institute](image)

193. The 13% estimated profit margin in Victorian electricity retailing is dramatically higher than the estimated profit margins in other non-electricity retailing and also in electricity retailing in the UK. The Grattan Institute also estimated that, even on the best offer from one of the ‘Big Three’ retailers 17 percent of the bill was profit for the
While not clearly stated this 17 percent figure appears to come from the 2014 estimate in Figure 2.3 on page 18 of its report.

### 4.2 Comparison to non-electricity retail businesses

194. The Grattan Institute places some weight on the fact that its estimate of profit margin in Victorian electricity retailing is between double and four times higher than the margin in other retail industries. Even if, for the moment, we accept the estimates reported by the Grattan Institute, this comparison is meaningless.

195. A car dealership may well earn a 3% profit margin on the sale of $50,000 car that has been on the showroom floor for two months. However, this tells us nothing about what the appropriate profit margin is on an annual electricity bill of $1,000. The fact that these can both be expressed as a percentage and the businesses can be described as ‘retail’ is where the comparability ends. Car dealership and electricity retailing are simply fundamentally different businesses and there is no reason to expect them to have a similar profit margin (expressed as a percentage of sales). The same is true for fuel, food, and whatever is included in “other” retailing.

196. In order for an EBIT margin, expressed as a percentage of revenues, to be comparable across firms the following must be the case:

- The firms must have the same value of invested capital on which an EBIT is being earned;
- The firms must have the same risk profile which influences the market return required on their value of invested capital;
- The firms must have the same accounting treatment of depreciation and amortisation and, indeed, must have the same economic value of depreciation and amortisation in of their invested capital;
- All of these things must be ‘true’ when expressed as a percentage of revenue. This effectively means that they must have the same non-capital costs.

197. These assumptions will typically not hold even for firms within the same market. They are very unlikely to hold for firms operating within different markets but the same industry (e.g., electricity retailing in Australian and the UK). They will not hold except by complete coincidence for firms operating in different industries.

198. Consider a UK electricity retailer vs an Australian electricity retailer. The value of invested capital can easily differ based on differences in customer acquisition costs and capital investment costs more generally in the jurisdictions. The risk profile will be different because, for example, the wholesale markets will not typically have the same volatility and/or the competitive dynamics in each industry will be different.

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41 The Grattan Institute, “Price shock – is the retail market failing consumers”, p. 19.
Accounting and economic values of depreciation can be very different depending on the: accounting rules; maturity of the market; timing of investments; market dynamics etc. Finally, the non-capital costs (e.g., network and environmental scheme costs) for the retailers are likely to be very different. This means that each dollar of EBIT per customer may imply a very different % of revenue across the jurisdictions.

199. In order to highlight the incongruity of this analysis, consider the difference between Food and Fuel retail profit margins estimated by the Grattan Institute. The Food profit margin expressed as a percentage of sales is more than double the Fuel profit margin expressed as a percentage of sales. Does this provide a basis for concluding that customers are not being well served by the Food retail sector?

200. Of course it does not. These are different industries and we have no basis for believing that they should have the same profit margin expressed as a percentage of sales. However, if we cannot use these figures to draw that conclusion about Food vs Fuel retailing we equally cannot use these figures to draw a conclusion that electricity retail margins (expressed as a percentage of sales) are evidence that customers are not being well served.

201. The CMA also discusses the incongruity across industries:

“the most relevant comparators (for profit margin) were those taken from within the GB energy markets due to similarities in cost structures, risks and capital employed, rather than other retail sectors or international comparators. For example, we observed that a retailer in a different market, such as a supermarket or a telecoms provider, would have both a very different cost structure and a very different level of capital employed.”42

4.3 Comparison to the UK electricity EBIT margin

202. The concerns in the previous section are reduced (but not eliminated) if confine ourselves to a comparison of the UK and Victorian electricity retail profit margins. If these have been estimated on a consistent basis then the dramatic difference to the UK would be a reason for further detailed analysis to determine what that was the case.

203. However, comparison of the Grattan Institute estimate for Victoria and the 3.9% estimate from the UK demonstrate that they have not been estimated on a consistent basis. Moreover, not only have they not been estimated on a consistent basis but:

- the UK estimate is almost certainly an under-estimate;

42 CMA, Energy market investigation Appendix 9.13: Retail profit margins, p.5.
the Grattan Institute estimate is almost certainly an overestimate; and
when we use more ‘like for like’ comparisons using data for EU countries from
the Agency for the Cooperation of Energy Retailers (ACER) we find that the retail
margins in Victoria are lower than in the UK and entirely consistent with EU
countries more generally.

204. We deal with the second and third points in the next two sections. In this section we
focus on the UK estimates.

205. In the Grattan Institute report, the 2014 EBIT margin (3.9%) for the retail sector in
the UK is sourced from Competition and Markets Authority (CMA) (2016). 43

206. In the UK, the major energy companies (‘Big 6’) are all vertically integrated. Financial
Information Reporting licence condition requires energy firms to break down their
total cost and revenue, with the goal of allowing investors and other parties to
scrutinise the performance of the generation and retail segments respectively44. This
is reported in the Consolidated Segmental Statements (CSS) for ‘Big 6’ energy
companies. Figure 4-2 uses this source to compare the retail EBIT ratio for the 6
major UK electricity firms in the financial year of 2014.

207. The EBIT ratios range from 1% to 8% in the retail sector. The wide dispersion in
estimated EBIT margins across firms is notable.

43 CMA, Energy market investigation Appendix 9.13: Retail profit margins, p.27.
44 Ofgem, Energy companies’ Consolidated Segmental Statements, July 2016. The CSS are annual
statements segmenting the financial results of their supply and generation activities.
Figure 4-2: EBIT Margin for 5 major UK electricity firms in the financial year of 2014

<table>
<thead>
<tr>
<th>Company</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>EON</td>
<td>5.0%</td>
</tr>
<tr>
<td>Centrica</td>
<td>1.4%</td>
</tr>
<tr>
<td>RWE</td>
<td>2.0%</td>
</tr>
<tr>
<td>SSE</td>
<td>6.1%</td>
</tr>
<tr>
<td>EDF</td>
<td>1.5%</td>
</tr>
<tr>
<td>Scottish</td>
<td>8.2%</td>
</tr>
<tr>
<td>Average</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

208. While these are published numbers, it does not make them economically meaningful. It certainly does not mean that the retail margins are comparable to the EBIT ratios that the Grattan Institute has estimated. Indeed, they are almost certainly not comparable.

209. In order to see why, note that, UK energy companies have considerable discretion in how they allocated costs between generation and retail internally. That is, because these firms are vertically integrated a ‘dividing line’ must be drawn between retail and generation activities. In the UK the individual businesses have considerable discretion in how they do this. Specifically, the internal ‘price’ that they attribute to generation used to meet their retail load.

210. The CSS estimates of internally provided fuel costs may well be reasonable. However, the fact is that you cannot take an estimate of the EBIT margin based on the individual UK firms CSS methodology for estimating fuel costs and compare this EBI margin to the Grattan Institute estimate that uses a completely different method.

211. Moreover, we do note that to the extent that the UK businesses wished to downplay the level of retail margin they were earning (e.g., to discourage entry by other retailers or to discourage regulatory interventions (including inappropriate interventions) then this may influence their cost allocation decisions. Indeed, in the energy market
investigation report, the CMA criticise the cost allocation approaches used in preparing the CSS: \(^{45}\)

“The main issue we found here was that some of the Six Large Energy Firms had included within their results for retail supply transfer charges for wholesale energy that did not wholly reflect the costs the firm had actually incurred. These practices indicate that these firms do not define the boundary between retail supply activities and trading/generation activities consistently.”

And

“For example, we found that [□]’s retail supply division recorded that it had ordered certain shaped products before such products were available on the open wholesale markets for that delivery date, and that [□] had purchased products so far ahead of the point of delivery that it was unlikely that these quantities would have been available on the open market...As a result, the prices ‘negotiated’ would not reflect what could have been achieved on external markets.”

212. This statement is in the same report that the Grattan Institute took its 3.9% figure from. The Grattan Institute did not discuss issues of comparability in general and did not discuss the specific concerns of the CMA as outlined above.

213. Without in any way endorsing the Grattan Institute methodology\(^{46}\) it is possible to apply it in the UK (instead of relying on the CSS). If we do so the average EBIT margin rises from 4% to 10%. The results are summarised in Figure 4-3 below. The margins now range between 7% and 16% with an average at 10%. This means that, applying the same method in the UK, the Grattan Institute published estimates of Victorian margins (17% for “incumbents” and 13% for all retailers) are entirely consistent with the spread observed across UK retailers). Moreover, this is before corrections for apparent errors in the Grattan Institute estimates as outlined in section 4.4 below.

\(^{45}\) CMA, Energy market investigation Appendix 18.1: Regulatory governance and financial transparency: analysis and consultation responses, p16.

\(^{46}\) This methodology is not reliable because the hedged cost of electricity will not be a fixed amount above the ultimate spot rates.
Figure 4-3: EBIT Margin for 5 major UK electricity firms in the financial year of 2014 (using Grattan Institute method for wholesale costs)

214. The process by which we have made these calculations is as follows:

- The Consolidated Segmental Statements for the “Big 6” include a self-reported direct fuel cost per MWh (WACO) ranges from 55.8 to 66.1 £/MWh. These unit prices are significantly higher than the volume weighted average wholesale prices (£44 /MWh) in the market.  
- Consistent with the Grattan Institute stated method, we add $15/MWh (£8/MWh) for ‘hedging costs’. When we do this the wholesale cost in the market (£52/MWh) remains below the lower bound of the range reported by the “Big 6”;
- We adjust the CSS accounts to use £52/MWh cost – effectively shifting more profit into the retail segment due to the lower assumed cost of fuel.

215. As noted above, we do not endorse the Grattan Institute methodology that we have used to generate the above results. We merely provide them to illustrate the sensitivity of the results to the chosen method. In our view, the Grattan Institute methodology is not reliable because the hedged cost of electricity will not be a fixed amount above the ultimate spot rates. So even if applied consistently across

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47 Data is sourced from the Elexon website and the National Grid website.

48 We adopt the same hedging cost estimated in Grattan Report, which is A$15/MWh×0.55(AUD/GBP Exchange rate in 2014) = 8.25.

49 This number is calculated from £43.54/MWh volume weighted average wholesale cost plus £8.25/MWh hedging cost.
jurisdictions it will not necessarily give rise to consistent/comparable results because “the true” efficient hedged cost of wholesale electricity may well have been different markups to the subsequent spot rates in each jurisdiction. Indeed, it is not, in reality, meaningful to talk about “the true” efficient hedged cost of wholesale electricity because there are many different hedging strategies and these may be equally efficient ex ante but give different costs ex post. Moreover, different strategies may be efficient in different market/firm specific contexts.

216. An alternative third party estimate of hedged wholesale costs in the UK in 2014 is provided by ACER. ACER reports hedged energy costs and total gross retail margin\(^{50}\) in the domestic retail sector. It is illustrative to compare the EMA (based on CSS) and ACER reports. The reports that in 2014:\(^{51}\)

- Retail gross margin is around 18% of retail revenue (comprised of 4% profit margin and 14% costs);
- Energy costs are around 42% retail revenue; and
- The sum of these is 60% retail revenue.

217. By contrast, ACER estimates that in 2014:\(^{52}\)

- Retail gross margin is around 27% of retail revenue;
- Energy costs are around 32% retail revenue; and
- The sum of these is 59% retail revenue.

218. Note that the two sums are very similar (59% vs 60%).\(^{53}\) However, the breakdown of these is radically different. The CSS based estimates have a much higher energy costs and lower gross margin. The effect of this is that retail EBIT margin is squeezed in the CSS estimates. Indeed, if energy costs were the same proportion of total revenues as in the ACER estimates (i.e., 32% instead of 42%) then the CSS margin would rise from 4% to 14%.

\(^{50}\) Gross retail margin is total retail revenue less hedged energy costs less the cost of government schemes/taxes (i.e., costs under the control of retailers plus profit margin).

\(^{51}\) CMA, Energy market investigation: Final report, June 2016. See Figure 8.2 on page 356.

\(^{52}\) Figure 11 on page 32 reports that “Energy” is 59% of the household post tax prices. “Energy” refers to the residual of the price not accounted for by Network, Taxes, VAT and Environmental Schemes. That is, “Energy” refers to wholesale energy costs plus gross retail margin. The breakdown of this 59% into energy and retail gross margin is calculated by taking the ACER estimated hedged energy cost (ACER, Market Monitoring Report (2015), November 2015, p30) and applying this to the ACER assumed 4MWh representative consumption and dividing this by the ACER estimated representative revenue.

\(^{53}\) The estimates for network costs and other obligations are also very similar across the ACER and CMA. It is only the energy and retail estimates that are different.
219. The ACER report clearly sets out their method for arriving at the wholesale price. This method involves the application a hedging strategy using contracts with some role for unhedged spot market purchases. As noted by the CMA itself, there is no clear or consistent basis for the CSS estimates of energy costs. We therefore consider that the ACER estimates of are the more reliable of the two.

220. The ACER estimates of gross margin, along with the CSS estimates of retail costs, imply a profit margin of 14% - which is higher still than the 10% estimated using the Grattan Institute’s method applied in the UK.

4.4 The Grattan Institute’s Victorian estimates

221. The basis of the Grattan Institute estimates are opaque and there appear to be a number of errors and internal inconsistencies.

222. For example, the Grattan Institute states that it has estimated ‘hedging costs’ at $15 per MWh. However, the 17% profit margin in 2014 and reported in Figure 2.3 of the Grattan Institute report includes only around $30 in hedging costs. In order for this to be consistent with a $15 per MWh hedging cost then the usage profile of a customer would need to be around 2 MWh per year.

223. This is difficult to reconcile with the AEMC’s estimate of the average usage for Victorian residential customers of 4.65 MWh per year. The Grattan Institute does not disclose the average annual usage of the customers that informed its estimates. It is, therefore, possible that these customers were on half the average usage of Victorian residential customers. If true then this would make the basis of the analysis non-representative.

224. In any event, a 2 MWh usage is itself difficult to reconcile with the fact that the 17% is based on an average retail bill of around $1,300 - which would imply an average price per kWh of 65 cents on a 2 MWh usage. This is more than double the price estimated by the AEMC for market offers in 2014.

225. We estimate that using the Grattan Institute’s stated $15 per MWh of hedging costs on a 4.645 MWh representative consumption would result in $70 per customer hedging cost compared to the around $30 used by the Grattan Institute in 2014.

54 The Grattan Institute, “Price shock – is the retail market failing consumers”, p. 36.


56 The Grattan Institute, “Price shock – is the retail market failing consumers”, Figure 2.2, p. 16 – see 2014.

57 AEMC, 2014, Electricity Price Trends Report, Victoria Fact Pack, p.1 of “Victoria: Household electricity price trends’ (values read of Figure at the bottom of that page).
Using this $70 figure would reduce the estimated ‘profit margin’ by over 3% on a $1,300 bill.

226. This suggests that the Grattan Institute estimate of 17%/13% profit margin for incumbent/all retailers would fall to something like 14%/10%.

227. Separately, the AEMC estimated that the representative market offer in 2014/15 was $1,146 – around $150 lower than the Grattan Institute’s estimate.\(^5^8\) If this was solely due to a difference in the assumed tariff (as opposed to usage patterns/levels) then the AEMC’s lower revenue estimate would, by itself, reduce the Grattan Institute’s estimated margin from 17%/13% to 6%/3%. If we further corrected for the apparent $40 underestimate of hedging costs (on the Grattan Institute’s own method) then the retail margin would be around 3%/0%.

228. The Grattan Institute report simply does not have enough detail to allow us to say definitively that these corrections are necessary. However, they highlight just two of many potentially contentious issues with the Grattan Institute’s estimates (or, indeed, any estimates of that nature). The end results are very sensitive to a range of assumptions around: what year(s) to choose, what tariffs to include, how to record internal retailer expenditures (both in the year in question but also historically), wholesale energy and hedging costs (especially for vertically integrated firms), customers’ total average usage and customers’ time pattern of use, the costs of environmental schemes etc. At each step along the way there is scope not just for error but simply for differences in interpretation/approach.

229. Moreover, it is really not clear what the purpose of such a calculation is? Even if the Grattan Institute’s analysis held up to scrutiny and there were no errors, at best it would have shown that electricity retail profit margins are 17% when:

- a. The analysis is restricted to Victoria and to four years;
- b. Only offers by the Big Three retailers are examined and these offers are further restricted to only be in the network areas where those retailers originally purchased a retail business from the Victorian Government;
- c. Despite restricting the analysis to (a subset of) the Big Three’s retail offers, wholesale costs are not based on the Big Three’s self-supplied generation services but are based on estimates of energy costs for a standalone retailer with no generation assets; and
- d. Accounting (not economic) estimates of retail costs are used to turn a gross retail margin into a ‘profit margin’; and
- e. The ‘profit’ is expressed as a percentage of revenues.

\(^{5^8}\) The AEMC, Electricity Price Trends Report 2016 (2015), estimated that the representative market offer in in 2014/15 (2015/16) would have cost the representative customer $1,146 ($1,099) see page x (xx).
230. In relation to points a. and c. above, we have already pointed out that Ofgem estimated retail profit margins of around 15% in 2000 to 2004. So, even if one accepted the most recent 0.25% CSS estimated retail margin as accurate one would have to note that Ofgem estimated radically higher estimates in 2000 to 2004. On this basis even if there was no error in the Grattan Institute estimates, one should be wary of assuming that these estimates, taken in a single jurisdiction over short period

4.5 Victoria vs EU gross margins

231. Using data from the European Union (EU) we compare gross margins in the EU to the Grattan Institute’s estimate of gross margin (retail revenue less costs that are assumed to be external to the retailer’s control (i.e., energy and standardised hedging costs, network costs and the costs of government green schemes)). Unlike the Grattan Institute we do not attempt to remove retailer operational costs.

232. In our view, this gives us the most reliable and useful point of comparison between retailers in different jurisdictions. Specifically, how much do customers pay for the retail component of the supply chain? It does not, in our view, make sense to attempt to strip out retailer specific costs such that low cost retailers with high profit margins ‘look’ like they are not delivering value to customers while retailers with high costs and low profit margins ‘look’ like they are. Moreover, this approach removes a fraught step from any analysis and thereby eliminates a potential source of error.

233. Secondly, instead of reporting gross margin as a percentage of revenue we report it on a per customer basis. This is because there is no economic reason to believe the value of the gross margin should be proportional to the total size of the retail bill. Expressing the gross margin as a percentage of the retail bill will make retailers in high cost countries (such as Germany with very high costs of environmental schemes) look like they have a ‘low’ retail margin while retailers in other countries without such schemes look like they have a ‘high’ margins.

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60 Any estimate of retailer costs will be sourced from public accounting information and will be inevitably incomplete and unreliable as a guide to true economic costs. In any event, our EU source does not provide the data that would allow us to estimate net margins. Nonetheless, the first point is most important and we would not propose using such data even if it was available.
4.5.1 Derivation of EU estimates

234. The post-tax total price (POTP) for capital cities in EU are extracted from ACER Market Monitoring Report (MMR) 2015,\textsuperscript{61} with 2014 data based on 4000kWh profile per household per annum. The values are in Euro.

235. The total spending is disaggregated into energy, network, RES (environmental charges), taxes and VAT components. According to the ACER MMR, the “Energy” component includes the price charged for the following costs: generation, aggregation, balancing energy, customer services, after-sales management, other supply costs and the retail margin.

236. The ACER Market Monitoring Report (2015) states in ‘Methodology to identify the wholesale price’ that: \textsuperscript{62}

“The energy costs suppliers incur when buying electricity to supply customers at retail level depend on several factors. The wholesale energy costs vary between suppliers and over time with changing wholesale prices and procurement strategies (Figure 1). The latter include hedging strategies against volatile short-term prices (day-a-head). Hedging strategies are characterised by, among other things i. the portfolio of products used to hedge; ii. the point in time when firms start to purchase energy ahead of time of delivery (e.g. 12, 18, 24, etc. months) and iii. the point in time when firms stop purchasing energy (e.g. 12 or 6 months ahead of time of delivery, immediately before delivery, etc.).”

237. The ACER MMR adopts a strategy that allocates the hedging cost to the wholesale energy price instead of the retail components. This means that hedging costs must be removed from the Victorian estimate of gross margin if the two are to be comparable.

238. We calculate the gross retail component from the ACER MMR by:

- Starting with the “Energy” component;
- Subtracting hedged wholesale cost from the “Energy” component. The hedged wholesale cost is sourced from the appendix of the same report\textsuperscript{63} on a MWh basis and is multiplied by the ACER assumed 4 MWh consumption.

\textsuperscript{61} ACER, Public data underlying the figures of Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2014, Figure 11.


\textsuperscript{63} ACER, Public data underlying the figures of Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2014, Figure 37.
For example, the POTP for the UK is 787 Euro, the energy component accounts for 59% of the total bill, which is 464 Euro. The cost of wholesale energy is 211 Euro (62.6 Euro × 4.0 Euro/MWh). By subtracting the wholesale cost from the “Energy” component, calculate a gross retail margin of 245 Euro.

4.5.2 Adjustments for comparability to EU estimates

In order to make the Grattan Institute estimate comparable to the EU estimates we must make a number of adjustments. First, the EU estimates of gross retail margin exclude the costs of both spot energy and hedging contracts. Thus, in order to make an ‘apples for apples’ comparison we must deduct hedging costs from the Grattan Institute’s $400 gross margin for incumbent retailers in Victoria (average of values in Figure 2.3). To do so we deduct 15 $/MWh hedging cost (Grattan estimate) multiplied by the AEMC estimate of representative usage of 4.65 MWh per year.64 The resulting estimated gross retail margin excluding hedging costs is $330.

However, the EU gross margins are based on a representative usage of 4.0 MWh while the Grattan Institute estimate is (we assume) based on 4.65 MWh. We therefore, conservatively,65 multiply the $330 gross margin excluding hedging costs estimate by a factor of 4.0/4.65. This results in a $284 gross margin on a ‘like for like’ usage. Finally, we convert this into Euro at a 0.68 AUD to the Euro exchange rate.66 This results in a 193 Euro gross margin on a comparable basis.

4.5.3 Analysis

Table 4-1 Final bill and retail component (in Euro, 2014 Data) presents the final bill and retail component of the bill for the unregulated EU countries. Based on the Grattan Institute estimates, Victoria has the third highest gross retail margin per customer.

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64 The Grattan Institute does not provide the basis of their usage assumption. We source 4.65 MWh from AEMC, 2014, Electricity Price Trends Report, Victoria Fact Pack, p.1 of “Victoria: Household electricity price trends”. See also AEMC, 2015 Retail Competition Review, 30 June 2015, p. 289. In the AEM’s 2016 Retail Competition Review the reported usage of a representative customer was 4.03 kWh (see p. 142).

65 This is conservative because the gross margin earned likely falls more than proportionally with usage because retail tariffs tend to have a higher mark up on marginal costs (via the usage component of the tariff) and a low (or negative) markup on fixed costs (via the fixed component of the tariff – if any).

66 The average rate over the calendar year.
### Table 4-1 Final bill and retail component (in Euro, 2014 Data)

<table>
<thead>
<tr>
<th>Countries and Jurisdictions</th>
<th>POTP (Euro)</th>
<th>Gross retail margin (Euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>557</td>
<td>37.29</td>
</tr>
<tr>
<td>Sweden</td>
<td>694</td>
<td>40.16</td>
</tr>
<tr>
<td>Estonia</td>
<td>565</td>
<td>51.05</td>
</tr>
<tr>
<td>Finland</td>
<td>581</td>
<td>51.39</td>
</tr>
<tr>
<td>Slovenia</td>
<td>650</td>
<td>78.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>805</td>
<td>100.25</td>
</tr>
<tr>
<td>Austria</td>
<td>779</td>
<td>101.85</td>
</tr>
<tr>
<td>Italy</td>
<td>954</td>
<td>120.4</td>
</tr>
<tr>
<td>Belgium</td>
<td>788</td>
<td>120.52</td>
</tr>
<tr>
<td>Greece</td>
<td>727</td>
<td>147.31</td>
</tr>
<tr>
<td>Germany</td>
<td>1220</td>
<td>182.6</td>
</tr>
<tr>
<td>Victoria</td>
<td>884</td>
<td>193.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>787</td>
<td>245.23</td>
</tr>
<tr>
<td>Ireland</td>
<td>966</td>
<td>274.04</td>
</tr>
</tbody>
</table>

Source, ACER MMR, Grattan Institute, CEG analysis

243. There is a wide variety of per customer margins in the sample. With the exception of Finland and Sweden, the countries can be grouped into:

- Low gross retail margin observations from Eastern European low GDP per capita countries; and
- High gross retail margin observations from higher GDP per capita countries.

244. In order to illustrate this we plot in Figure 4-4 below the estimates in a scatterplot of gross margins per customer against GDP per capita. GDP per capita is used as a measure of operating cost differences across jurisdictions. It can be seen that the Grattan Institute estimate for Victoria is higher than the predicted level but only marginally higher. That is, Victoria has very similar gross margin to what one would expect for a jurisdiction with a similar GDP per capita.
The same pattern exists when we plot retail margins against purchasing power parity which is a direct measure of operating cost differences across jurisdictions.
246. It is worth noting that Finland and Sweden have very low gross margins relative to their predicted scores. The ACER MMR report states that in:

For some capital cities, the final price shown for the consumption of 4,000 kWh per household annually is not the most representative. In Italy, for example, the average consumption and the connection capacity were significantly lower (2,000 kWh in 2014); in Romania, average consumption is approximately 1,500 kWh, and in Lithuania 1,900 kWh annually. On the other hand, in Norway, Sweden and Finland, average demand is significantly higher than the average profile from the ACER Retail Database (over 16,000 kWh, 9,200 and 9,000 kWh respectively) (see the average consumption profiles in Annex 1).

247. Thus, if one were to adjust the estimated margin per customer for Finland and Sweden to reflect the much higher consumption usage it would rise by a factor of likely much more than 2. Italy would also have a lower gross retail margin per customer. (The other countries listed are not included in our sample because they do not have an unregulated retail sector and, in the case of Norway, are not in the EU).

248. In the following two figures we remove Sweden, Finland and Italy from the sample. The effect of doing so is to create a much better fit of the regression line to the data. It also results in the estimated Victorian margin being on or below the predicted value for a jurisdiction with a similar GDP per capita or PPP.

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67 See notes to Figure 11 on page 32.

68 Much more than 2 because typically fixed retail charges are lower than fixed costs per customer with all of the margin being derived from marginal prices.
The same pattern exists when we plot retail margins against purchasing power parity which is a direct measure of operating cost differences across jurisdictions.

Figure 4-7 EU and comparable Grattan gross retail margins per customer (Euro) vs PPP (excluding Sweden, Finland and Italy)
5 Estimating reasonable margins

250. In the previous section we have provided a critique of the analysis presented by the Grattan Institute. The analysis in that section illustrates that the exercise by the Grattan Institute set itself is fraught with potential for error. The end results are very sensitive to a range of assumptions around: what year(s) to choose, what tariffs to include, how to record internal retailer expenditures (both in the year in question but also historically), how to measure wholesale energy and hedging costs (especially for vertically integrated firms), customers’ total average usage and customers’ time pattern of use, the costs of environmental schemes etc. At each step along the way there is scope not just for error but simply for differences in interpretation/approach.

251. The key data that is relevant to whether there are competition concerns leading to unreasonably high profits in a market is evidence that there is a lack of competition. In this regard the relevant indicia of competition are:

- Evidence of aggressive price competition in the market;
- Evidence that any customers actually engaging with the market are responding to price competition by switching or demanding lower prices from existing suppliers;
- Evidence of free entry into the market.

252. In all of these regards the Victorian market scores highly. Specifically:

- The Grattan Institute report itself states that some discounted offers in Victoria appear to be at, or below, cost to serve.\(^{69}\)
- The Victorian electricity retail market has consistently led the Australian and the world in terms of the rate of switching by customers.\(^{70}\)
- There are over 20 separate retail businesses operating in Victoria.\(^{71}\)

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\(^{69}\) On page 17 the Grattan Institute states: “Indeed, we estimate that the lowest offers available in the AusNet distribution zone yielded close to zero profit.” The Grattan Institute includes a footnote to state that their analysis uses ‘average costs’ and that these tariffs may still be above ‘marginal cost’ or may be being discounted below marginal cost in anticipation of the customer being profitable in the future. The Grattan Institute is wrong to claim that their estimate is an average cost estimate. It does not include any fixed costs that have been historically incurred (e.g., in developing a billing system) and nor does it include related ‘overhead’ costs supporting the retail business.


\(^{71}\) AEMC, 2016 Retail Competition Review, p. 197.
253. As explained in section 3, price dispersion is not evidence of a competition concern. On the contrary, a lack of price dispersion in a market like this would be evidence of collusive conduct.

254. Notwithstanding the clear evidence of strong competition, if one were nonetheless committed to attempt to estimate whether prices in the market were cost reflective then one should not attempt to do so via a Grattan Institute style of analysis which involves taking a snapshot of cash-flows for existing retailers – all at different stages of maturity in the market.

5.1 Returns based on an estimate of forward-looking costs

255. Before considering determination of what is ‘adequate returns’ consider the problem with simply estimating ‘returns’ for an existing retailer. This cannot be achieved by trying to estimate a snapshot of their EBIT as a percentage of revenue in a given year. In order to estimate the expected return of an existing retailer it is necessary to have an estimate of the expected future free cash flows generated by the business (not a snapshot) and compare these to the value of the business. A high ratio of free-cash-flows to value implies a high return and vice versa.

256. However, for this purpose the value of the firm must be based on the forward-looking cost of establishing a firm of the relevant scale/customer base. This is the value that a firm would have in a competitive market – where the present value of expected free cash flows would be competed down to the cost that would be involved in generating those free cash flows.

257. By contrast, one cannot simply use the market value of the business because this would be circular. The higher the free-cash flows the higher the market value would be – with the measured return simply reflecting investors’ discount rates. This illustrates why, if we are interested in assessing whether the level of returns is ‘too high’ we must have a competitive concept of ‘cost’ against which to compare free-cash flows.

258. This concept of ‘cost’ must be forward-looking. In a competitive market prices do not reflect historical costs. If a Company A paid $100m for a machine but a new innovation meant that competitors can buy an equivalent machine for $50m then Company A cannot reflect the cost of the $100m machine in its prices. Rather, it will have to set prices based on the forward looking cost of a new entrant – who can access the relevant input at one tenth of the price. Similarly, if Company A paid $100m for a mineral deposit but market developments mean that it would now cost $1bn to buy a similar deposit then Company A will, in a competitive market, earn a return on the $1bn value (not the historical cost of $100m). That is, Company A will be able to price based on the costs that a new entrant would incur in accessing a deposit of comparable quality.
259. When this logic is applied to electricity retailing, the relevant measure of cost is the cost that a new entrant would incur to establish itself in a similar position to the retailer in question (e.g., a similar customer base). In a competitive market this is the ‘value’ that an existing supplier would have. This is, therefore, the value that should be used to assess whether free cash flows are generating too high (or too low) a return.

260. The concept of ‘new entrant’ valuation is commonly used by telecommunications regulators. By way of example, Ofcom in the UK has modelled mobile telecommunications costs by modelling the cash-flows of a hypothetical new entrant – including taking into account low utilisation of fixed entry costs in the early years of operation.\(^72\)

261. Of course, this is easier said than done. A hypothetical new entrant retailer must start by building a customer base and this would be a cash-flow negative exercise for many years. These losses must be capitalised over time, and adjusted or the risk adjusted time value of money, in order to arrive at an estimate of the cost of building a retail business. Even when the business became cash-flow positive it still would still not be earning a commercial return on the previously capitalised value of losses. The value of any such shortfall would still need to be capitalised.

262. Actually performing such an analysis requires the analyst to, in effect, develop a business plan for entering the electricity retailing business. This business plan would include such things as marketing strategy, staffing and energy procurement policy as well as pricing policy. These strategies may vary depending on the type of customer base being pursued.

263. In summary, an estimate of whether returns being earned on forward looking costs of retailing are ‘too high’ relative to a competitive market benchmark would require:

   a. An annual projection of the value of net losses a new entrant would incur as it grew to a target customer base. This will depend on a number of assumptions including:
      i. A projection of prices being charged by existing retailers against which the new entrant must compete for customers. The lower this price the larger the losses during the growth phase;
      ii. Assumptions about the business strategy (e.g., marketing channels etc.)
   b. A discount rate used to capitalise these losses during the growth phase;
   c. A projection of the free cash-flows that would be earned on the target customer base.
      i. This will depend, again, on the assumed pricing by incumbent retailers.

\(^72\) For example, see para A6.190 of Ofcom, *Wholesale mobile voice call termination* Modelling Annexes, 15 March 2011
d. A discount rate that would be used value the free cash-flows in c.

264. If the free cash-flows in c. (valued at the discount rate in d.) exceeded the value of losses in a. (capitalised using the discount rate in b.) then the level of incumbent pricing is above the estimate of forward looking competitive market prices.

265. Clearly, a critical input into this analysis will be the level of pricing by existing retailers. The higher is the assumed level of existing retailers’ pricing then a hypothetical new entrant will:

- be able to gain market share more quickly at any given price/marketing spend (or will be able to enter at a higher price (sacrificing speed of market share acquisition for a lower initial rate of loss per customer served)); and
- will be able to generate higher free cash flows once the target customer base is established.

266. That is, as must be the case, the higher the assumed level of pricing by existing retailers the higher the modelled return being earned.

267. There are, obviously, a range of implementation issues that this high level discussion only ‘scratches the surface’ on. However, if one were to seriously attempt to attempt to measure whether prices were consistent with competitive market costs this is the only reasonable methodological route to take.

5.2 Having regard to historical costs

268. One could have regard to the actual experience of new entrants in the electricity retail market. However, it is important to keep in mind that prices in a competitive market are based on forward looking costs – not actual past costs.

269. By way of example, if one looked at the historical expenditures of the “Big 3” one would find that these businesses largely acquired customers by buying existing retail operations from State Governments (or bought businesses from owners who had bought the business from State Governments). The values that retailers paid per customer acquired in this manner ranged from $355 to $1,575 – with an average of $1,113. Figure 5-1 below plots the prices paid per customer against time.

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73 SFG, Estimation of the regulated profit margin for electricity retailers in New South Wales (4 June 2013), p. 23
These payments represent, in large part, the best estimate in the circumstances of the costs of acquiring a similar customer base as a new entrant via organic growth. That is, bidders would not have paid more for a customer base than they thought it would have cost (in present value terms) to acquire a similar customer base in another means.

However, these estimates do not necessarily bear any relationship to the expected forward looking customer acquisition costs in the market today. It would not make sense to assess AGL Energy’s customer acquisition costs today based on the $355 it paid in January 1999 in South Australia any more than it would to base AGL Energy’s customer acquisition costs on the $1,575 it paid for Queensland customers in February 2007. Neither of these are necessarily likely to reflect customer acquisition costs today (and certainly both cannot accurately reflect today’s costs). Both of these values reflected expectations about customer acquisition costs from organic growth at the time of the transactions (recall that organic growth is the alternative to buying a customer base). But neither necessarily reflects expected costs now.
6 Vertical integration

272. We have also been asked to discuss the role of vertical integration in electricity retail markets. Our key conclusions are empirical and theoretical. Namely:

- Vertical integration between generation and retail operations is the dominant form of economic structure in those markets characterised by competition in both sectors (and in other regulated jurisdictions too);
- There are sound economic reasons why this is the most efficient/least cost form of economic organisation.

273. With respect to the second point, vertical integration acts as a natural hedge for both generator and retailer. While these hedges can be achieved via arm’s length contracts, these are likely to be inferior to joint ownership. This is because joint ownership aligns incentives across all dimensions and in all eventualities. A contract, by contrast, is necessarily incomplete in that provision cannot be made for all eventualities in a contract.

274. This general principle is recognised in the literature aimed at understanding the efficiently boundaries of the firm (i.e., why firms “make” vs “buy”). This literature started with Roald Coase’s 1937 article “The nature of the firm” but there is a wide literature continuing this field of study.74

275. For example, a contract with a generator may have provisions that allow the generator to undertake maintenance in certain circumstances and leave a retailer exposed to price risk during that time. In which case, the generator may not be careful to manage the timing of that maintenance to minimise the retailer’s risk. Alternatively, the contract may place the price risk on the generator even though there are steps that the retailer could take to manage the risk (e.g., via controlled load). Joint ownership gives both parties the incentives to manage the risks optimally.

276. It is sometimes argued that vertical integration acts as a barrier to entry by either generators or retailers. The argument is that by virtue of taking volume out of contract market this market becomes illiquid and more difficult for standalone generators and retailers to operate in. While this is a theoretical possibility the potential for adverse competition outcomes are small (and smaller than the adverse outcomes that would flow from preventing retailers and generators adopting the most efficient business structure).

277. Ultimately, no party is truly capable of being perfectly vertically integrated (in that the ‘shape’ of generation output perfectly matches the ‘shape’ of retail sales). All parties will typically trade in the contracts market. Moreover, if standalone retailers

win market share from vertically integrated retailers (or vice versa) then that automatically ‘undoes’ the level of vertical integration – creating the supply of uncontracted generation to meet the expanding standalone retailers’ demand (or vice versa if standalone generation captures market share). Competition is a dynamic process and the level vertical integration is not fixed by any one set of market participants.
Curriculum Vitae

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Key Practice Areas
Tom Hird is a founding Director of CEG’s Australian operations. In the ten years since its inception CEG has been recognised by Global Competition Review (GCR) as one of the top 21 worldwide economics consultancies with focus on competition law. Tom has a Ph.D. in Economics from Monash University. Tom has also been named by GCR in its list of top individual competition economists.

Tom’s clients include private businesses and government agencies.

In terms of geographical coverage, Tom’s clients have included businesses and government agencies in Australia, Belgium, France, Germany, Hong Kong, Japan, Korea, Macau, the Netherlands, New Zealand, the Philippines, Poland, Singapore, and the UK. Selected assignments are set out below.

Selected recent projects

**Competition/damages**

**2017**  South32 acquisition of Peabody. Retained by HSF and Jones Day.

**2017**  Tabcorp acquisition of Tatts. Retained by Jones Day

**2017**  Joint venture between Alliance Airline and Virgin Australia Regional Airlines. Retained by Gilbert + Tobin.

**2016**  Qube /Brookfield acquisition Asciano stevedoring assets. Retained by Clayton Utz advising Asciano.

**2016**  APLNG royalty dispute with the Queensland Treasurer. Retained by Clayton Utz.

**2016**  Glencore sale of rail coal haulage operation. Retained by Clayton Utz.

**2016**  Qube acquisition of Asciano stake in Australian Amalgamated Terminals (AAT). Retained by Gilbert + Tobin.

**2016**  Advice to Sainsbury’s on the present value of damages to be claimed from MasterCard in relation to excessive interchange fees. Retained by Mishcon de Reya.

**2016**  Advice to the New Zealand Ministry of Primary Industries (MPI) on the implications of potential reforms to the regulation of the milk processing sector.

www.ceg-ap.com
Macquarie Group acquisition of Esanda Dealer Finance from ANZ Bank. Retained by Clayton Utz.

Advice on the ACCC inquiry into the east coast gas (retained by King & Wood Mallesons on behalf of APA).

**Regulatory design and other issues**

**Ongoing** Advice to a number of Australian and New Zealand businesses on the optimal design of the regulatory system for the treatment of inflation forecast errors (under the National Gas Rules and the National Electricity Rules in Australia and the New Zealand Input Methodologies);

**Ongoing** Advice to the Australian ENA on cost of capital issues;

**Ongoing** Advice to a number of entities (across a range of domestic jurisdictions and countries) on the relationship between the optimal debt hedging strategy (using interest rate swaps) and the regulatory design/policy implemented by the regulator.

**2017** Advice to Vector on the incentive properties of different treatments of economies of scale gained/lost as a result of transactions between regulated entities.

**2016** Advice to the Singapore telecommunications regulator (the IDA) on the incentive properties of adopting various benchmarks to set the cost of debt allowance in regulatory cost modelling.

**2016** Advice to the New Zealand Electricity Networks Association on a range of issues related to review of the New Zealand input methodologies.

**2014-16** Advice to Chorus, the NZ ENA and New Zealand Airports association in relation to the relative merits of setting the regulated cost of capital above the mean estimate of the cost of capital.

**2013-16** Expert evidence to a number of Australian entities (ATCO and the Australian Energy Networks Association) on regulatory reform to the approach for setting cost of debt allowances.

**2016-17** Advice to the following Australian regulated energy business: ActewAGL, APA, ATCO, AusGrid, AusNet Services, Australian Gas Networks, Citipower, Dampier Bunbury Pipeline, ElectraNet, Jemena, Multinet, Powercor Australia, Powerlink, SAPN, TransGrid, United Energy Distribution.

**2016** Advice to Aurizon on the cost of capital for its regulated below rail coal haulage network.

**2016** Advice to the NZ ENA on equity beta for regulated gas and electricity businesses;

**2014-16** Advice to Chorus on the cost of capital (multiple reports)
6 June 2017

By email

Dr Tom Hird
Director, Competition Economists Group

Email tom.hird@ceg-ag.com

Confidential and privileged

Dear Dr Hird

ACCC inquiry into retail electricity supply and pricing

We act for Origin Energy Limited (Origin) and are currently advising Origin in relation to the Australian Competition and Consumer Commission (ACCC) inquiry into retail electricity supply and pricing. The purpose of this letter is to retain you to provide economic advice, for the purposes of us providing legal advice to Origin.

Background

The Federal Treasurer has directed the ACCC to conduct an inquiry into the retail supply of electricity and the competitiveness of retail electricity markets in the NEM. The ACCC has recently released an Issues Paper which sets out the terms of reference and areas of focus for the review.

Scope of work

We are seeking to retain CEG to provide economic advice in relation to the following matters:

1 Returns in the retail electricity sector

   (a) What are the relevant factors when contemplating the adequacy and appropriateness of returns in a workably competitive market?

   (b) What is an appropriate means/metric(s) of considering and measuring returns in the retail electricity sector?

   (c) What risks does an energy retailer face and how should risk be accounted for when observing returns in the retail electricity sector?

   (d) Identify appropriate industries and (or) international jurisdictions that can be used to benchmark returns in the retail electricity sector

   (e) What factors should be considered in undertaking a benchmarking exercise as described at (d), and are there any inherent limitations to such an exercise? A critique of the Grattan Institute benchmarking work (attached) should form part of the response.

   (f) Are there any differences in approach when considering returns of merchant retail entities compared to vertical integrated firms?
2 Vertical integration

(a) Explain the economics of vertical integration including theoretical benefits and shortcomings.

(b) Explain the rationale for the emergence of vertical integration in the National Electricity Market (NEM).

(c) Conceptually, how are the outcomes in the NEM (with the current levels of vertical integration) likely to compare to the counterfactual where there are lower levels of integration?

(d) Consider any theoretical concerns relating to vertical integration in the electricity markets.

3 Nature of competition in retail electricity markets

(a) Explain the nature and rationale for how electricity retailers compete. To what extent does the nature of electricity retailing (i.e. the selling of a homogenous product) impact on how retailers compete?

(b) Explain the marketing of retailer offers and the role of discounting in the retail electricity sector. Is the nature of discounting and the marketing of retail offers consistent with what would be expected in a workably competitive market?

(c) Highlight appropriate industries and (or) international jurisdictions that provide a reasonable means of comparing the marketing of retail offers and the role of discounting seen in the retail electricity sector.

Information provided by us

We may provide information or data from Origin, to be considered in preparing your advice.

Any material supplied to you under this retainer is confidential. This information must be kept confidential and is not to be copied or used for any purpose unrelated to your retainer without our permission.

 Deliverables

CEG is requested to provide a report covering the matters set out above.

Submissions in response to the Issues Paper are due by 30 June. CEG’s report may form part of Origin’s public submission to the ACCC in response to the Issues Paper.

The delivery of a draft report and findings may be staggered along the lines of the three areas of focus.

In the immediate term we are seeking from CEG:

• An indication of the timing of the delivery of a draft report/findings
• CEG’s capability to deliver a final report by 30 June
Its approach in addressing the issues outlined in the request for proposal

A fee estimate and basis of pricing.

Could you please provide this information as soon as possible.

Please contact us if you would like to discuss this matter.

Yours sincerely

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