IPART

Independent Pricing and Regulatory Tribunal
New South Wales

NSW Container Deposit Scheme

Monitoring the impacts on container beverage prices and competition

Draft Report

September 2018

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Invitation for submissions

IPART invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by 2 November 2018

We would prefer to receive them electronically via our online submission form <www.ipart.nsw.gov.au/Home/Consumer_Information/Lodge_a_submission>.

You can also send comments by mail to:

NSW Container Deposit Scheme Review
Independent Pricing and Regulatory Tribunal
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1 Executive Summary

The NSW Government has introduced a Container Deposit Scheme (CDS), known as Return and Earn, to reduce the number of drink containers ending up as litter and cut the state's total litter volume by 40% by 2020.[1] Under this scheme, consumers who return empty eligible beverage containers to Return and Earn collection points receive a 10-cent refund per container. Businesses that supply beverages in eligible containers into NSW pay monthly fees to cover the costs of the scheme, and can increase the price of eligible container beverages to recover these costs.[2]

The Independent Pricing and Regulatory Tribunal of NSW (IPART) is monitoring the effects of the CDS in its first year of operation at the request of the Premier.[3] The Government's concern is to manage the risk that suppliers may seek to raise the price of beverages above the costs of the scheme. Our terms of reference ask us to:

- monitor and report on the effect of the CDS on prices of container beverages and competition for container beverages, and any other market impacts on consumers
- recommend any actions required by government to address adverse effects or behaviours arising from the operation of the scheme, and
- recommend whether price monitoring should continue beyond the initial one-year period.

This report outlines our draft findings and recommendations based on the first nine months of the scheme's operation (November 2017 to July 2018).[4]

1.1 Overview of draft findings and recommendations

We found that the CDS has not had any undue effects on the prices of container beverages. The price increases attributable to the scheme are consistent with a workably competitive market, and we found no specific evidence of material impacts on competition or unintended market impacts on consumers. However, we did identify several issues that have the potential to create barriers to entry and restrict competition if they are not addressed. We are recommending actions to address each of these issues, and that ongoing price monitoring is not necessary.

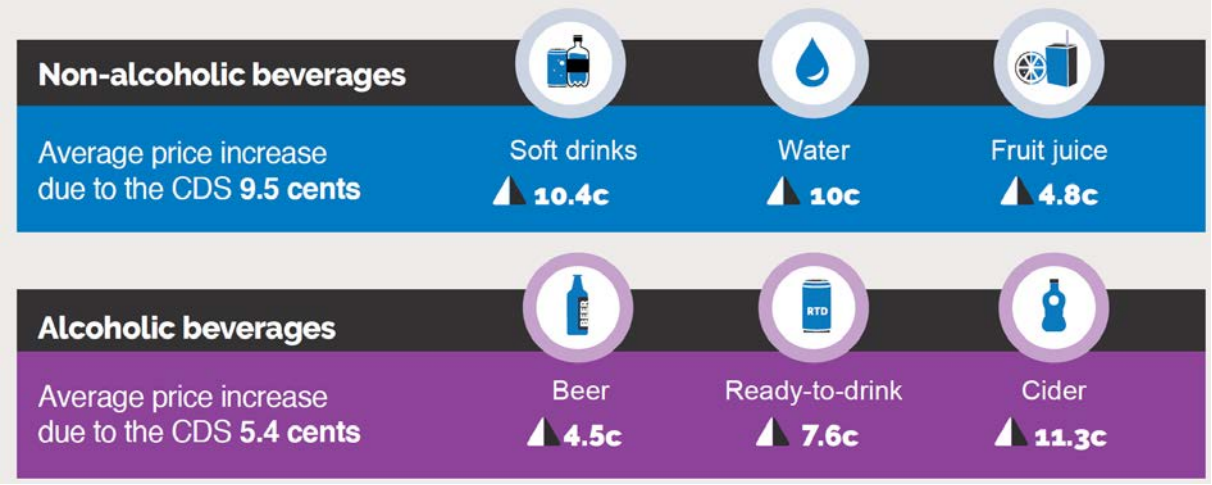
1 Return and Earn, Media Release, 18 August 2017, p 3, available at http://www.exchangeforchange.com.au/ReturnAndEarn_MediaRelease.pdf , accessed on 20 April 2018.
2 The prices suppliers and retailers charge for container beverages are not regulated, so they may increase or decrease prices at any time in response to changes in their costs, and other factors such as changes in consumer preferences or competitive pressures from other suppliers.
3 See Appendix A.
4 Exchange for Change bills suppliers monthly in advance with the first invoices issued 1 November 2017 for the scheme commencement of 1 December 2017.

1.1.1 Price increases are consistent with a workably competitive market but monthly price volatility should be addressed

We found that on average, prices of all eligible container beverages increased by 7.5 cents per container due to the introduction of the CDS over the nine months from November 2017 to July 2018 (Figure 1.1). The average price increase varied across beverage categories. However, in each category, it was consistent with or less than the direct cost of the scheme, which was 9.2 cents per container (including GST) on average over the same period.

As in all competitive markets, beverage suppliers, wholesalers and retailers can allocate their costs and change their prices at any time. This means that the change in prices of individual beverage products that can be attributed to the CDS may be more or less than these averages.

Figure 1.1 Average retail price increases due to the CDS, November 2017 to July 2018 (inc-GST)



Source: IPART analysis

Note: The overall average retail price increases for all, non-alcoholic and alcoholic beverages are weighted by market share. Alcoholic beverage average is based on a weighted average of our estimated price changes for promotional and non-promotional prices, where the weights are 75% and 25% for promotional and non-promotional prices, respectively. For further information see Chapter 5.

As the figure shows, the price impact was greater in the non-alcoholic than the alcoholic beverage market. This appears to be because suppliers in the alcoholic beverage market have chosen not to pass on the costs of the CDS in their non-promotional prices, but to recover them by reducing the discounts they provide in their promotional prices. We consider this is consistent with a workably competitive market.

However, we also found that the average price increases due to the CDS **varied substantially from month to month** within each beverage category. For example, the average monthly price increase for soft drink varied from 9 cents to 14 cents per container and fruit juice varied from 4 cents to 11 cents per container.

This volatility in the monthly price impacts of the CDS was due to volatility in the scheme's direct costs to first suppliers. These costs fluctuated substantially from month to month over the 9-month period, from around 1.0 cent to 15.1 cents per container (inc-GST). In turn, the volatility in the monthly costs of the scheme was a result of the scheme's payment and

contribution methodology where Exchange for Change bills first suppliers one month in advance, based on forecasts of the container volumes and types for the next month, and then 'truing up' later once the actual volumes and types are known. From the commencement of the scheme to July 2018, Exchange for Change has returned around $68 million (ex-GST) to first suppliers through its true-up mechanism (Box 1.1).

We consider that Exchange for Change's scheme payments methodology creates undesirable price volatility for consumers, and reduces the transparency of the CDS' costs. To address these impacts, we are recommending that the NSW EPA and Exchange for Change move to billing suppliers in arrears.

Box 1.1 Overview of the Scheme Payment and Contribution Methodology (Exchange for Change) True Up mechanism

Exchange for Change issues invoices to first suppliers monthly in advance.

The invoiced amount reflects 1) Forecast volume of eligible containers supplied to NSW in next month and 2) Forecast volume of eligible containers returned and recycled through the Network Operator (TOMRA Cleanaway) and Material Recovery Facilities (MRFs).

Exchange for Change pays (or charges) first suppliers a 'true up' amount in the subsequent months, once actual volumes of containers supplied and containers returned and recycled are known.

The true up amount reflects the difference between 1) the amount the supplier was invoiced for the month and paid for in advance and 2) the amount the supplier actually owes for that month.

This 'true up' ensures that suppliers pay scheme costs only for containers that are actually returned in proportion to their actual supply volumes.

1.1.2 No specific evidence of material reduction in competition but potential for impacts should be addressed

In addition to looking at the price effect, we examined changes in supplier behaviour, market share and composition, and other indicators to assess the effect of the CDS on competition in the NSW container beverage market. We found no specific evidence to suggest the scheme has resulted in a material reduction in competition to date.

For example, there is no evidence that the total beverage supply in NSW has changed since the introduction of the CDS, or that the scheme has impacted on market shares differently for larger and smaller suppliers. In addition, there is no evidence that the CDS has resulted in a reduction in product choice or information available to consumers.

However, we identified three issues related to the operation of the CDS that we consider have the potential to reduce the competitiveness of some market participants – particularly smaller businesses and boutique beverage suppliers. The first is the container beverage approval fee of $80 per product, levied by the NSW Environment Protection Authority (EPA). As small and boutique businesses typically supply a wide range of products in small volumes, this fee has a disproportionate impact on them, and may restrict their ability to compete in the market. We are making a draft recommendation to reduce the container

approval fees from $80 to $13.70 so that it only recovers the efficient variable costs of assessment, with the fixed costs of the CDS Portal to be recovered through the scheme compliance fee.

The second issue is the 7-day payment terms on Exchange for Change's invoices to suppliers. We consider these terms impose cash flow pressures on beverage businesses, particularly small and medium size businesses, and are out of step with normal business practice. We are making a draft recommendation to increase these payment terms from 7 days to 30 days.

Exchange for Change would require an overdraft facility to implement an arrears invoicing model and increase payment terms to 30 days. The security for the overdraft facility would be provided by the NSW Government. However, this would not impact on the NSW Government budget as the cost of obtaining and servicing the overdraft (interest and any fees) would be an additional scheme cost payable by all beverage suppliers.

We also found that the CDS may place NSW retailers located near the Victorian border at a competitive disadvantage with Victorian retailers because Victoria does not have a similar scheme. In response to our Progress Report, the NSW Government asked us to investigate this impact further. In June, the Government announced a temporary assistance package for small to medium sized businesses in the border region that can demonstrate they have been adversely affected by competition with Victorian retailers as a result of the CDS. [5]

1.1.3 No specific evidence of unintended market impacts on consumers but scheme efficiency should be improved

We considered whether the CDS has resulted in any other unintended market impacts on consumers, based on analysis of consumers' beverage purchasing and consumption behaviours since the scheme was introduced, and on feedback from stakeholders.

We found that the CDS has reduced consumption of non-alcoholic beverages in NSW by around 790 mL per household per month.[6] This represents a reduction of around 5.5% in average household non-alcoholic beverage consumption. At the same time, the scheme has increased expenditure on non-alcoholic beverages by around 93 cents (or 4.8 per cent) per household per month. We consider this impact is in line with what could be expected given the scheme's impact on the prices of container beverages.

Several stakeholders raised concerns about the efficiency of the scheme's costs, including those of the EPA, Exchange for Change and TOMRA Cleanaway. As the EPA appointed the latter two companies using a competitive market-testing process, we consider their costs are likely to be reasonably efficient given the scheme's design. However, we engaged The CIE to review the efficiency of the EPA's scheme compliance fee which makes up around 1-2 per cent of the direct costs.

We consider that the scheme compliance fee should be set to recover the efficient costs of the EPA's regulatory compliance and enforcement activities. Based on The CIE's draft findings,

5 NSW Government, Media Release, Assistance for Border Businesses Impacted by Container Deposit Scheme, 8 June 2018.

6 We have not been able to draw conclusions about the impact of the CDS on the consumption of and expenditure on alcoholic beverages as there is no equivalent data set available for alcoholic beverages.

we are making a draft recommendation that the monthly scheme compliance fee be reduced from its current level of $300,000 to $284,000 from 2020-21, and then to $157,000 from 2022-23.[7] A copy of The CIE's draft report is available on our website.

Stakeholders also commented on the lack of access to and availability of collection points, particularly in regional NSW. If beverage consumers are unable to easily get their refund from collection points it means they are bearing these costs through higher prices.

The costs of establishing and operating collection points differ between locations and the type of collection point (i.e. RVM, automated depots and over the counter collection points). Any changes to the current arrangements that require changes to TOMRA Cleanaway's obligations would need to be reflected in the network operator fees that are charged to first suppliers and recovered from consumers.

Finally, we found that key elements of the CDS lack transparency, and are making a draft recommendation that the EPA publish a contract summary of each of its agreements with Exchange for Change and TOMRA Cleanaway to improve transparency.

1.1.4 No need for ongoing price monitoring

We recommend that ongoing annual monitoring of the impacts of the CDS on container beverage prices and competition does not take place beyond the initial one-year monitoring period.

We consider that the changes in prices following the introduction of the CDS are consistent with workably competitive markets. We found no material, systemic effects on the prices of container beverages, but did identify some monthly volatility in prices which we consider is transitional. In addition, we found no specific evidence of a material reduction in competition, but identified the potential for impacts in two areas. Any transitional or potential impacts on price or competition that we identified can be addressed, and we have made recommendations to address them.

1.2 Our process for this review

Our review process to date has involved the collection of information as well as detailed analysis and public consultation:

- Since the CDS started, we have collected information from consumers and suppliers (including manufacturers, wholesalers and retailers) on individual changes in prices, and unfair or unjustified supplier behaviour through our website feedback form. We received around 30 comments, although most of these related to operational elements of the scheme that are outside the scope of this review.
- In February 2018 we released an Issues Paper that set out our proposed approach for the review. We received 61 submissions.
- In April 2018 we released a Progress Report setting our preliminary findings and recommendations based on the first three months of the scheme's operation. We received 11 submissions.

7 $ 2018-19

- We have met with and received information from Exchange for Change, TOMRA Cleanaway, and the EPA.[8] We have also held discussions with the Small Business Commissioner and the Cross Border Commissioner.
- We appointed The CIE to provide expert advice on whether the CDS has had an effect on market shares or household expenditure on container beverages and the efficient costs of the EPA regulatory and compliance activities. The CIE's draft reports are available on our website.
- We propose to hold a public hearing in Sydney and one stakeholder workshop in regional NSW in October. Table 1.1 sets out an updated timetable for the review.

Table 1.1 Review timetable

Key milestone	Updated timing
Release Draft Report	25 September 2018
Public roundtables (Sydney and regional NSW)	October 2018
Submissions to Draft Report due	2 November 2018
Provide Final Report to Premier and Minister	December 2018

1.3 How you can have your say

We are seeking written submissions on this Draft Report and encourage all interested parties to comment on the draft findings and recommendations that it discusses, or any other issue relevant to the review. Page iii of this report provides more information on how to make a submission. Submissions are due by 2 November 2018.

1.4 How this Draft Report is structured

The rest of this Draft Report provides more information on this review, our approach and our draft findings and recommendations:

- Chapter 2 provides contextual information on the CDS and the container beverage industry.
- Chapter 3 explains the approach we are using to monitor and report on the impact of the CDS.
- Chapters 4 discusses our findings on the direct costs of the CDS.
- Chapter 5 sets out our estimates on the changes in container beverage prices that are attributable to the CDS.
- Chapter 6 discusses our assessment of whether these changes in container beverage prices are in line with what could be expected in a competitive market.
- Chapter 7 explains our findings on whether changes in other indicators suggest the CDS has led to a material reduction in competition.
- Chapter 8 outlines our findings on whether there have been other unintended market impacts on consumers that require Government action.

8 IPART required Exchange for Change, TOMRA Cleanaway and the EPA to provide information under section 22 of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act).

- Chapter 9 discussion our recommendation on the need for ongoing price monitoring of container beverages.

1.5 List of draft findings and recommendations

Draft findings on scheme costs and impacts of the CDS on beverage prices

1 The direct costs of the CDS averaged around 9.2 cents per container (inc-GST) over the period December 2017 to July 2018. 30

2 The direct costs of the CDS have fluctuated substantially from month to month, ranging from around 1.0 cent per container (in March 2018) to around 15.1 cents per container (in December 2017) (inc-GST). 30

3 First suppliers and other supply chain participants may also incur other costs in participating in and complying with the CDS. 30

4 On average, prices of all eligible container beverages increased by 7.5 cents per container (inc-GST) due to the introduction of the CDS over the nine months from November 2017 to July 2018. The CDS had a larger impact on non-alcoholic beverage prices than alcoholic beverage prices: 48

- Non-alcoholic beverage prices increased by 9.5 cents per container (inc-GST) with water and soft drink prices increasing by around 10 cents per container (inc-GST), and fruit juice prices increasing by 4.8 cents per container (inc-GST) as a result of the CDS. 49
- Alcoholic beverage prices increased by 5.4 cents per container (inc-GST), with beer prices increasing by 4.5 cents per container (inc-GST), cider prices by 11.3 cents per container (inc-GST) and ready-to-drink (RTD) prices by 7.6 cents per container (inc-GST) as a result of the CDS. 49

5 The introduction of the CDS did not have any indirect price effects on container beverages not covered by the scheme such as wine and spirits. 49

6 The changes in container beverage prices that are due to the CDS are consistent with a workably competitive market. That is: 61

- There is no evidence of sustained, systemic increases in beverage prices above the costs of the CDS. 61
- While average beverage prices in some months have increased by more than the direct costs of the scheme incurred by suppliers, this is a result of the volatility in the direct costs resulting from Exchange for Change billing suppliers in advance. 62

Draft findings on impacts of competition

7 At this stage, there is no specific evidence that the CDS has imposed a material restriction on competition in beverage markets. 66

8 The CDS has not resulted in changes in supplier behaviour that would indicate a reduction in competition. That is, there is no specific evidence of a reduction in product choice or information available to consumers. 66

9 The CDS has not resulted in material changes in market share or market composition in beverage markets. 66

10 The introduction of the CDS has had an adverse impact on independent retailers located near the Victorian border, in particular those retailers with a large proportion of their container beverage sales revenue from multipack products (such as cases of soft drink and beer). 70

The NSW Government has provided a temporary assistance package for small to medium sized businesses in the NSW-Victoria border region that showed they had been adversely impacted by competition with Victorian retailers as a result of the introduction of the CDS. 71

Draft findings on other market impacts

11 The CDS has reduced consumption of non-alcoholic beverages by around 790mL per household per month, representing a reduction of around 5.5 per cent, in average household non-alcoholic beverage consumption. 74

12 The CDS has increased expenditure on non-alcoholic beverages by around 93 cents, representing an increase of around 4.8 per cent, per household per month. 74

Draft recommendations on reducing cost volatility

1 To reduce the volatility in scheme costs, the NSW Environment Protection Authority and Exchange for Change implement an arrears invoicing model arrangement for first supplier contributions to the CDS, with payment terms of 30 days. 62

2 The NSW Government provide the security for the overdraft required to implement an arrears invoicing model arrangement for first supplier contributions to the CDS. The cost of the overdraft should be included as a scheme cost to be recovered from participants. 62

3 Exchange for Change and TOMRA Cleanaway vary their payment terms such that the Network Operator invoices the Scheme Co-ordinator two weeks in advance with payment in seven days, rather than the current four weeks in advance with payment within 10 business days. This would reduce the size of the overdraft required to implement an arrears invoicing model arrangement for first supplier contributions to the CDS, whilst ensuring TOMRA Cleanaway continues to be able to provide refunds to consumers at collection points. 62

4 That quarterly true ups to beverage suppliers for container volumes returned via kerbside recycling to the MRFs be smoothed over three months based on the volume of containers returned to the MRFs in the previous three months. 62

5 To reduce the ongoing cost volatility and administrative burden associated with true ups continuing in perpetuity, the period against which true ups can be made should be limited to 12 months after an invoice is issued. 62

Draft recommendations to ensure markets remain competitive

6 The EPA's container registration approval fee be set at $13.70 to recover the variable costs of assessing applications for container approvals. Under this approach: 69

– the remaining unrecovered fixed costs associated with the CDS Portal, and its annual maintenance and licence costs, are recovered through the Scheme Compliance Fee, and 69

– the current cap on annual application fees for smaller beverage suppliers should be removed. 70

7 All CDS related fees to be indexed by the change in the CPI (All groups, Australia) to March of that year. 70

8 That containers be registered for the CDS once, with no expiry. Approval for currently registered containers should also not expire. 70

Draft recommendations to address other market impacts of the CDS

9 That the monthly Scheme Compliance Fee be set to recover the EPA's efficient costs associated with the CDS as ($2018-19): 75

– $300,000 in 2018-19 and 2019-20 75

– $284,000 in 2020-21 and 2021-22, and 75

– $157,000 in 2022-23. 75

10 That the EPA publish a contract summary for each of the agreements with the Scheme Coordinator and the Network Operator including the roles and responsibilities and the number of collection points to be delivered in each geographic zone in NSW. 82

11 Ongoing monitoring of the impacts of the CDS on container beverage prices and competition is not required beyond the initial one-year monitoring period. 84

2 Context

To understand the impact of the CDS on prices, competition and consumers, we need to understand how the scheme works, and the regulatory and market environments that it operates in.

2.1 How the scheme works

The CDS aims to reduce the volume of litter in NSW by encouraging people to collect and return beverage containers for recycling. It does this by paying consumers (or others) a 10-cent refund for every empty container covered by the scheme they return to an authorised Collection Point.

To cover this and other scheme costs, the beverage industry pays fees to the Scheme Coordinator – Exchange for Change. The industry can increase container beverage prices to recover these costs from consumers.

The scheme works alongside the kerbside recycling programs operated by NSW councils. However, when consumers place eligible containers in kerbside recycling bins, they do not receive the refund. Instead, the businesses that process materials collected through kerbside programs – known as Material Recovery Facilities (MRFs) – can claim this amount. Alternatively, the local council, MRF and other players involved in providing the recycling program may share the refund.[9]

The sections below outline what beverage containers are covered by the scheme, and the key scheme participants and their roles and responsibilities.

2.1.1 What beverage containers are covered

Most beverage containers sized between 150 mL and 3 L are covered by the scheme (eligible containers). These include containers made from:

- glass
- plastic (eg, PET, HDPE)
- aluminium
- steel, and
- liquid paperboard (eg, certain milk and juice cartons).[10]

9 Waste Avoidance and Resources Recovery Amendment (Container Deposit Scheme) Regulation. In order for MRFs to continue claiming processing refunds after 1 December 2018, they must have entered into a new processing agreement with the council or a refund sharing agreement that the council considers to be fair and reasonable. Alternatively, the council can notify the EPA that they consider it to be fair and reasonable to not have a sharing arrangement.

10 Return and Earn – Containers, at https://returnandearn.org.au/how-it-works/containers/, accessed 17 September 2018.

The containers **not** covered by the scheme are generally those in sizes or containing beverages that people typically consume at home, which rarely end up in the litter stream (Table 2.1).[11]

Table 2.1 Beverage containers *not* covered by the CDS

Plain milk or milk substitutes containers	Wine and water casks of 1L or more
Flavoured milk containers of 1L or more	Wine sachets of 250 mL or more
Pure fruit and vegetable juices containers of 1L or more	Cordials, concentrated fruit juice and vegetable juice containers
Glass wine and spirits bottles	Registered health tonic containers

Source: Return and Earn – Containers, at https://returnandearn.org.au/how-it-works/containers/, accessed 17 September 2018.

2.2 Key participants and their roles and responsibilities

The key participants in the CDS are the NSW Environment Protection Authority (EPA), the Scheme Coordinator, the Network Operator, and the 'first suppliers'[12] of eligible beverage containers in NSW.

2.2.1 EPA, Scheme Coordinator and Network Operator

The EPA is responsible for regulating the CDS, including designing and developing the scheme, and managing registration of all eligible beverage containers supplied in NSW and managing the contracts with the Scheme Coordinator and Network Operator and various associated deeds. It has appointed other organisations to perform the roles of the Scheme Coordinator and Network Operator.

The Scheme Coordinator – Exchange for Change – is responsible for administering the scheme, including:

- entering into Supply Arrangements with the first suppliers of eligible container beverages in NSW
- calculating and collecting fees from the first suppliers to cover the cost of the scheme
- distributing these funds to operate the scheme,
- sampling and validating materials collected by MRFs, and
- auditing and marketing the scheme.

The Network Operator – TOMRA Cleanaway – is responsible for establishing and managing a network of Return and Earn collection points across NSW, the collection of returned containers and payment of refund amounts and handling fees. It can build or operate the collection points itself or contract other organisations to do so, and contracts recycling companies to recycle the collected containers.

11 Return and Earn – Containers, at https://returnandearn.org.au/how-it-works/containers/, accessed 17 September 2018.

12 Section 2.2.2 explains who first suppliers are.

2.2.2 First suppliers

The supply chain for beverages in NSW includes the following participants:

- **manufacturers,** who produce and package the beverages in NSW
- **importers,** who supply beverages produced in other states or countries to wholesalers or retailers
- **wholesalers**, who supply beverages from manufacturers or importers to retailers, and
- **retailers,** who supply beverages to consumers.

The 'first supplier' is the participant that first supplies beverages in eligible containers to the NSW market. In most cases, this is either the manufacturer or the importer.[13] However, because the supply chain operates differently across the beverage industry it can also be the wholesaler or retailer, as the examples in Table 2.2 show.

Table 2.2 Examples of first suppliers

Beverage is:	Supplied from:	First supplier in NSW is:
Manufactured in NSW	Manufacturer to wholesaler or retailer in NSW	Manufacturer
Manufactured in NSW	Manufacturer to wholesaler or retailer in another state	None (as no supply in NSW)
Manufactured outside NSW	From manufacturer to wholesaler outside NSW then to retailer in NSW	Wholesaler
Manufactured outside NSW	From manufacturer to retailer outside NSW then to that retailer's outlets in NSW	Retailer

Source: EPA, NSW Container Deposit Scheme Information Session, 4 August 2017, pp 20-21.

Under the CDS, first suppliers are required to enter into a Supply Arrangement with the Scheme Coordinator and contribute to the costs of the scheme (which includes the Network Operator's costs). This Supply Arrangement requires the first supplier to:

- Register each class of eligible container it supplies with the EPA (and pay the appropriate container approval fee).[14]
- Report on the volume of its own first supplies of beverages in each class of container in NSW.
- Pay fees to the Scheme Coordinator to contribute to the costs of the scheme. The amount of these fees is based on the volume of the supplier's first supplies as a proportion of the total volume of all eligible containers first supplied in NSW.

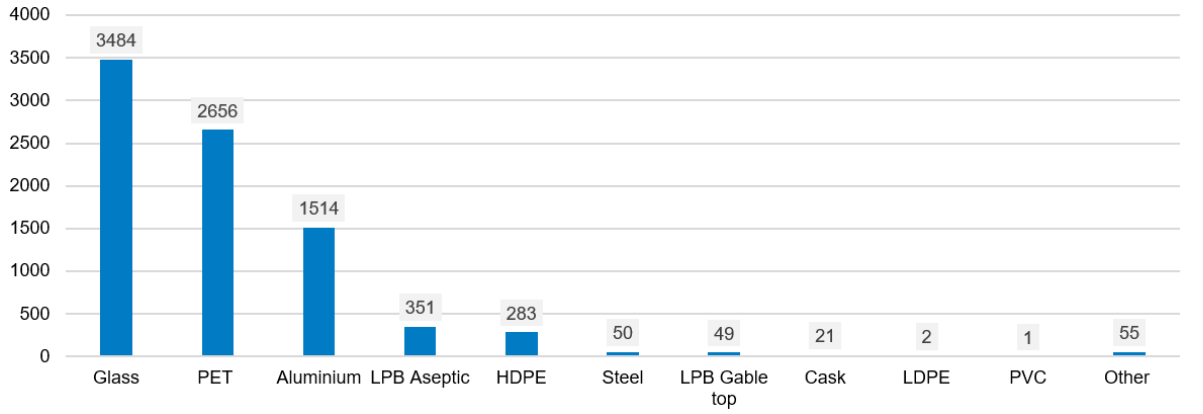
13 Exchange for Change, Container Deposit Scheme Update for Australian Beverages, 25 August 2017, slide 11.

14 An application fee of $80 applies to register per class of eligible container. Individual container registrations are valid for five years. See https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn/role-of-first-suppliers-of-drink-containers

First suppliers must also ensure their containers are marked or labelled with the refund marking – *10c refund at collection depots/points in participating State/Territory of purchase* – in clear and legible characters, and the required barcode, on or before 1 December 2019.[15]

As of August 2018, there were 597 registered first suppliers.[16] There were 8,466 registered container classes at the end of June[17] and glass, PET and aluminium make up the largest number of registered containers (Figure 2.1).

Figure 2.1 Registered container classes by material type (June 2018)



Note: Polyethylene Terephthalate (PET), High-density polyethylene (HDPE) and Low-density polyethylene (LDPE) are types of plastic, LPB is liquid paperboard, PVC is Polyvinyl chloride, LPB Aseptic is UHT or long life packs, Cask can be cardboard, foil and/or plastic.

Data source: Information provided by EPA to IPART, June 2018.

2.3 Regulatory environment

There is no price regulation in the NSW beverage industry. All participants in the supply chain can determine how to allocate their costs and set the price of their products.

Previous assessments of the NSW beverage industry have not revealed substantial concerns about competition or have found there is 'workable competition' in the industry.[18] Workable competition means there is enough rivalry between firms to ensure that, over time, prices are determined by underlying costs rather than any market power. In turn, this means there is no need for any government intervention in relation to prices.

However, all participants are subject to consumer and competition law.

15 These requirements are set out in the *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Amendment (Supply and Collection) Regulation 2017, Part 3, Division 1, Clause 22B.* See Return and Earn Update, November 2017 #3, p 1. See https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/waste/container-deposit/17p0410-cds-return-and-earn-newsletter3-november17.pdf, Accessed 20 September 2018.

16 Information provided by Exchange for Change, August 2018.

17 Information provided by EPA to IPART, June 2018.

18 The CIE, Monitoring the impacts of the NSW Container Deposit Scheme, January 2018, pp 19-20. Also see, ACCC, Grocery Inquiry 2008, available from https://www.accc.gov.au/publications/report-of-the-accc-inquiry-into-the-competitiveness-of-retail-prices-for-standard-groceries-july-2008, p xiv, Accessed 20 September 2018, Harper, I., P. Anderson, S. McCluskey, M. O'Bryan 2015 (The Harper Review 2015), Competition Policy Review, Final Report, March 2015, p 89.

2.3.1 All supply chain participants are subject to consumer law

All participants in the NSW beverage industry are subject to Australian Consumer Law (ACL).[19] This law aims to protect consumers and ensure fair trading. It provides 'consumer guarantees' and establishes businesses' obligations and responsibilities. For example, under the ACL, businesses cannot mislead consumers about the price, value or quality of goods.

The Australian Competition and Consumer Commission (ACCC) and NSW Fair Trading regulate businesses' compliance with the ACL. Generally, the Fair Trading's focus is on individual consumers or small business disputes, while the ACCC has a broader focus on the competitive process, widespread consumer detriment and national issues.[20] Australian courts and tribunals (including those in NSW) can also enforce the ACL. For example, they can order that an unfair contract term is not binding.[21]

2.3.2 Aspects of CDS are exempt from competition law

Some aspects of the CDS are exempt from Part IV of the CCA, which prohibits certain anti-competitive behaviour, including making a contract, arrangement or understanding, or engaging in a concerted practice, that has the purpose or likely effect of substantially lessening competition.

Section 45(1) of the *Waste Avoidance and Resource Recovery Act 2001* (WARRA) specifically authorises certain conduct that would otherwise be prohibited by Part IV. In particular, it authorises:

- a Scheme administration agreement and any Scheme arrangement
- the entering into or making of a Scheme administration agreement or Scheme arrangement
- conduct of the parties to a Scheme administration agreement or Scheme arrangement in negotiating the agreement or arrangement
- the grant or refusal of a container approval, and
- conduct authorised or required by or under the terms or conditions of a Scheme administration agreement, Scheme arrangement or container approval.[22]

The "Scheme administration agreements" under the CDS are the agreement between the Government and the Scheme Coordinator (Exchange for Change) and the agreement between the Government and the Network Operator (TOMRA Cleanaway).[23]

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19 The Australian Consumer Law is contained in Schedule 2 to the *Competition and Consumer Act 2010 (Cth)*

20 Australian Competition and Consumer Commission, 2017 ACCC Compliance and Enforcement Policy 2017, p 2, at https://www.accc.gov.au/system/files/ACCC%20Compliance%20and%20Enforcement%20Policy%202017.pdf, accessed on 24 January 2018.

21 NSW Fair Trading website, at http://www.fairtrading.nsw.gov.au/Consumers/Contracts/Unfair_contract_terms.html, accessed 2 February 2018.

22 Section 45(1) of the Waste Avoidance and Resource Recovery Act 2001 (WARRA) specifically authorises certain conduct for the purposes of competition law. It permits these to the extent that it would, but for section 45(1), otherwise be prohibited by Part IV of the CCA.

23 Waste Avoidance and Resource Recovery Act 2001 (WARRA) section 24.

The "scheme arrangements" under the CDS are agreements between:

- the Scheme Coordinator and suppliers of beverages sold in a container, requiring the suppliers to pay to the Scheme Coordinator contributions towards the cost of the management, administration and operation of the Scheme
- the Scheme Coordinator and the network operator, requiring the Scheme Coordinator to pay to the operators refund amounts and associated administration and handling costs for containers that are collected at the collection points, and
- the Network Operator and persons who operate collection points, requiring the Network Operator to pay to those persons refund amounts and associated handling costs.[24]

A "container approval" is an approval from the EPA to supply a beverage in a container in NSW. The WARRA creates an offence of supplying a container without a container approval.[25]

2.4 Market environment

The market for recyclable materials is currently undergoing change. Until recently, China had been the world's largest importer of recyclable paper and plastics. However, since 2011 it has introduced a range of policies and programs aimed at reducing contamination in imported materials.[26]

In 2017, it launched its "National Sword" campaign, including banning the importation of certain materials, introducing contamination thresholds for others, and announcing that it would phase out imports of materials that can be substituted by domestic resources by the end of 2019. In 2018, it indicated it would enforce this policy. In 2018, it began to enforce these measures.[27]

In March 2018, the NSW Government announced a $47 million support package to address this issue. The support package will:

- enable councils to off-set some extra costs associated with kerbside recycling collections subject to guidelines
- improve council tendering processes to increase the production and use of recycled products, and
- fund community education initiatives to reduce kerbside recycling contamination.[28]

The NSW Government has established an inter-governmental Taskforce to progress a longer-term strategic response to National Sword. The Taskforce is led by the NSW EPA.

24 Waste Avoidance and Resource Recovery Act 2001 (WARRA) section 26.
25 Waste Avoidance and Resource Recovery Act 2001 (WARRA) section 38.
26 China National Sword: the role of Federal Government, MRA Consulting Group, 2018, Available from : http://www.mraconsulting.com.au/PDFs/MRA_China_National_Sword.pdf, p 1, Accessed 7 September 2018.
27 China National Sword: the role of Federal Government, MRA Consulting Group, 2018, Available from : http://www.mraconsulting.com.au/PDFs/MRA_China_National_Sword.pdf, Accessed 7 September 2018.
28 NSW EPA, Media Release, $47 million to support recycling in NSW, 20 March 2018, Available from: - https://www.epa.nsw.gov.au/news/media-releases/2018/epamedia180320-$47-million-to-support-recycling-in-nsw , Accessed 17 April 2018.

The Taskforce includes representatives from the Department of Premier and Cabinet, including the Cross-Border Commissioner, NSW Treasury, Department of Finance, Services and Innovation, Roads and Maritime Services, Fire & Rescue NSW, Department of Planning and Environment, Office of Local Government, Department of Industry, and the Office of the Small Business Commissioner. Its focus is examining the use of recycled products and developing opportunities to increase the use of recycled products, pursuing a national policy, and examining long term recycling strategies and support requirements.[29]

The Senate Standing Committee on Environment and Communications References has completed an inquiry into the waste and recycling industry in Australia.[30] The inquiry considered issues related to landfill, markets for recycled waste and the Australian Government's role in providing a coherent approach to the management of solid waste. The Committee recommended that the Australian Government implement a national container deposit scheme.[31]

29 EPA website, https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/response-to-china-national-sword, Accessed 11 April 2018.

30 Senate Standing Committees on Environment and Communications, https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/WasteandRecycling/Report, accessed on 13 September 2018.

31 See Recommendation 11

3 Our approach

The purpose of this review is to monitor the effects of the CDS in its first year of operation. Our terms of reference for this review (Appendix A) ask us to:

- monitor and report on:
  - the effect of the CDS on prices for container beverages in NSW over the period 1 November 2017 to 1 December 2018
  - the effect of the CDS on competition in the container beverage market in NSW over this period, and
  - any other market impacts on consumers over this period.
- recommend actions to address any adverse effects our monitoring identifies
- recommend whether price monitoring should continue beyond the initial one-year period.

To make our draft findings and recommendations, we assessed the effects of the CDS over the first 9 months of the scheme – from November 2017 to July 2018 – using an approach consistent with the framework used for our Progress Report.[32] The approach is designed to identify any systemic, ongoing impacts arising from the operation of the scheme, and distinguish them from one-off, transitional impacts due to its introduction or retailer competitive behaviour to gain customers or market share.

The sections below provide an overview of this approach, and then discuss each step in more detail.

3.1 Overview of our approach

Our approach for this Draft Report comprised the following 5 steps:

1. Estimate the direct costs of the CDS, based on information from the Scheme Coordinator on the monthly costs per container.
2. Estimate the changes in container beverage prices that are attributable to the CDS by analysing price changes before and after the introduction of the scheme using several methods and data sources.
3. Assess whether these changes in container beverage prices are inconsistent with a competitive market (ie, whether more than the costs of the CDS have been passed through to consumers) by comparing them with the direct costs of the scheme.
4. Assess whether changes in other indicators suggest the CDS has led to a material reduction in competition by applying a method similar to the 'competition tests' included in regulatory impact statements.

32 Exchange for Change issues invoices to first suppliers monthly in advance. It issued its first invoice in November 2017 in advance of the commencement of the scheme on 1 December 2017. Further information on Exchange for Change's invoicing arrangements is contained in Chapter 4.

5. Assess whether there have been other unanticipated market impacts on consumers that require Government action by considering stakeholder feedback and assessing changes in consumers' purchasing behaviour.
6. Assess the need for ongoing price monitoring beyond the initial one year period by considering the results of the first 5 steps.

The main difference between this approach and the framework we applied for our Progress Report is that it breaks our analysis down into a greater number of discrete steps, to make it simpler to communicate our draft findings and recommendations.

3.2 Estimate the direct costs of the CDS

The first step in our approach was to estimate the direct costs of the CDS per container. These are the costs that the Scheme Administrator, Exchange for Change, recovers from first suppliers through monthly fees, as shown in Table 3.1. In line with the billing method set out in the Scheme Payment and Contribution Methodology, we calculated this cost by summing:

- **The monthly advance contributions** paid by first suppliers, which are based on forecasts of container volumes and material types that will be returned to collection points and recovered from MRFs in that month.
- **The periodic 'true up' adjustments** paid **to** first suppliers to reconcile any differences between the advanced contributions paid in a previous month and the actual fees for that month, based on actual container volumes and material types returned to collection points and recovered from MRFs in that month.

Table 3.1 CDS costs recovered from first suppliers

Cost item	Description	Recovered through
Administration costs	Scheme Coordinator costs for administering the scheme - determined through a competitive tender process.	Monthly administration fee
Regulatory compliance costs	EPA costs for monitoring compliance with the scheme	Monthly scheme compliance fee
Collection costs	Network Operator costs for paying the 10-cent refund per container returned to collection points and operating a network of Collection Points. The network fees for operating the Collection Points were determined through a competitive tender process.	Monthly network fee per container collected. This fee varies by container material type. *(Refund Amount (10c) + Network Fee) × Estimated monthly volume of containers recovered through Network Operator collection network*
Refunds to Material Recovery Facilities (MRFs)	Costs of paying the 10-cent refund per container delivered for reuse or recycling by MRFs	Monthly refund fee *(Refund amount (10c) × forecast volume of containers recovered through MRFs*)
Other	Other costs of the scheme such as interest earned on Scheme Payments accounts and recovery of bad debts	Monthly fee

Source: Exchange for Change, at https://returnandearn.org.au/wp-content/uploads/2018/05/ReturnandEarn_SchemeCosts.pdf, accessed on 17 September 2018.

We recognise that first suppliers and other supply chain participants may also incur other costs in participating in and complying with the CDS. We have not included these costs in our analysis as they vary from supplier to supplier. In addition, as the beverage market is workably competitive, the market determines how much of these costs are passed through to customers. Therefore, we consider they have less potential to materially restrict competition in the relevant markets, but nevertheless are an impost on all businesses which may be passed on to consumers.

3.3 Estimate the changes in container beverage prices that are attributable to the CDS

Our second step was to analyse how retail prices of container beverages changed in the periods before and after the introduction of the CDS to identify the price changes that are attributable to the scheme. We used a difference-in-differences approach described in Box 3.1 to quantify the extent to which the costs of the CDS are being passed through to retail beverage prices.

Box 3.1 Our difference-in-differences approach

Difference-in-differences is a statistical technique commonly used to evaluate a policy impact. The base case is where outcomes are observed for two groups over two time periods – one group is exposed to a treatment in the second period but not in the first period (ie, treatment group) while the other group is not exposed to the same treatment during either period (ie, control group).

The difference-in-differences method compares the changes in outcomes between the treatment group and the control group over time. By taking the difference of the differences, the method eliminates biases in the difference between the treatment and control group in the second period (ie, treatment period) that could be driven by permanent differences (that do not change over time) between those groups, as well as biases from changes over time in the treatment group that could be due to trends.

In the context of our review, the treatment is the introduction of the CDS, and the difference-in-differences method identifies changes in beverage prices in NSW that is due to the CDS, by:

1. calculating the change in beverage prices in NSW before and after the CDS
2. calculating the change in beverage prices in a comparison group over the same period, and
3. calculating the difference between 1 and 2. We used Victoria as the comparison group for our difference-in-difference analysis.

We adopted the Victorian beverage market as the comparison group for this analysis. We think it is an appropriate comparison market, as it is comparable in size to the NSW market, Victoria does not have a CDS and has not announced it will introduce one over the monitoring period, and the prices for non-alcoholic beverages in these states tend to move together.

To apply the difference-in-differences approach, we first identified beverage categories in alcoholic and non-alcoholic beverage markets which are relevant to the CDS (see Figure 3.1). Then, for each beverage category, we looked at how retail prices changed in the period November 2017 to July 2018 using the regression model(s) shown in Appendix B. Separate analyses for each beverage category allow us to account for differences in the price elasticity of demand across beverage types, and differences in the underlying production costs of different beverage types.

Our analysis also included beverage categories which are ***not*** covered by the scheme (ie, wine and spirits) to evaluate whether the scheme had any indirect impact on their prices.

Our data sample consisted of monthly prices of container beverages sold in NSW and Victoria over the period January 2016 to July 2018 using datasets outlined in Box 3.2. We categorised products by manufacturer (or brand), product description, pack type (ie, multi pack or single pack), size (eg, 350 ml, 600 ml, etc), price type (ie, promotional or non-promotional price), retailer, and retailer location. We excluded bottled water drink containers of 3 litre or more, pure fruit or vegetable juice containers of 1 litre or more and RTD containers of more than 600 ml from our sample because they are not eligible for a refund under the CDS. We also excluded products that were not available for sale in both states to avoid different product compositions having an effect on our price analysis.

Box 3.2 Datasets used for analysis of the CDS impact on beverage prices

Non-alcoholic beverages

Our analyses of non-alcoholic beverage prices are based on transactional prices from Nielsen's Homescan. The Homescan consists of a national representative panel of consumer purchases in terms of region, household size, life stage, and income. Its panel comprises 10,000 households across Australia.

Participating households are provided with a hand-held scanner (or use Nielsen's mobile app) and are required to scan all items following a purchase. The scanner scans the barcode of the product and records all product specific information for each purchase. In addition, households manually record the price and quantity for the purchase. For each transaction, households are also asked whether they perceived the purchase to have been made on promotion or off promotion. The scanned data is then sent automatically to Nielsen. Participating households receive points exchangeable for gifts and store vouchers.

We obtained two sets of data from Nielsen:

- **Aggregated reports** containing average 4-weekly prices for each group of products where a group is given by a combination of beverage category, pack size, manufacturer, pack type, price type and retailer. For example, an aggregated report provides that for a 4 week period from 3 January 2016 to 30 January 2016, the average price paid for *single pack 1L soft drink* manufactured by *Coca Cola Amatil* sold at a *Retailer A* in *NSW* is $3.
- **Transactional data** containing individual transactions made across the categories by the Homescan panel. This contains price paid, price type (ie, promotional or non-promotional price), manufacturer, pack type (ie, multi pack or single pack), beverage size, retailer and region (ie, Sydney Metro, Northern NSW and Southern NSW for NSW, and Melbourne Metro and regional Victoria for Victoria).

Alcoholic beverages

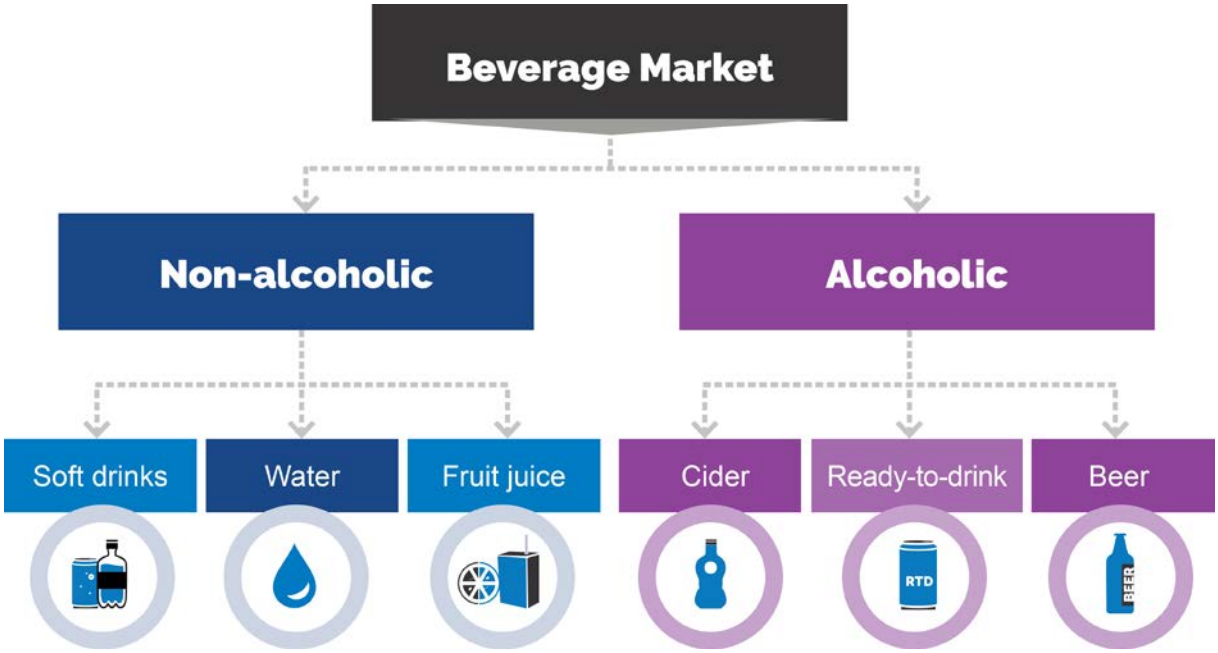
Our analyses of alcoholic beverage prices are based on retail prices collected by Invigor Group (Invigor) Insights Retail datasets. Invigor collects prices for beer, cider, RTD, spirits and wine from 28 retailer websites a number of times each day, and has provided aggregated monthly prices such as mean, median, maximum, minimum and mode prices.

Based on information provided by Invigor, of the 27 retailers, Dan Murphy's, First Choice Liquor, Liquorland, Thirsty Camel, Vintage Cellars have state-based pricing (ie, different prices for different states). Within each state, Dan Murphy's is the only retailer which has different prices at a postcode level.

In quantifying the impact of the CDS on beverage prices, we analysed:

- **Overall impacts**, that is how much of the price changes, if any, in the overall post-CDS period as a whole (ie, November 2017 to July 2018) relative to the pre-CDS period (ie, January 2016 to October 2017) can be attributed to the introduction of the CDS, and
- **Monthly impacts**, that is how much of the price changes, if any, in each month after the introduction of the CDS, relative to the pre-CDS period, can be attributed to the introduction of the CDS.

Figure 3.1 Beverage categories for difference-in-differences approach



We note that the regression model for our difference-in-differences analysis requires that, for a product to be included in our sample, its price must be available every month since June 2017. In the case of alcoholic beverages, requiring prices to be available every month eliminated all temporary, promotional prices from our datasets. To analyse the CDS impact on promotional prices for alcoholic beverages, we have conducted additional analysis using a *portfolio-based* difference-in-difference approach, which does not require prices to be available every month.[33] For more detail on our portfolio analysis, see Appendix C. Our overall assessment regarding the CDS impact on alcoholic beverage prices is based on our findings from these two approaches.

As in all competitive markets, beverage suppliers, wholesalers and retailers can allocate their costs and change their prices at any time. This means that the change in prices of individual beverage products that can be attributed to the CDS may be more or less than these averages.

As a cross check on the results of the difference-in-differences analysis, we also analysed overall price changes using price indices for beverages published by the Australian Bureau of Statistics (ABS).

In addition, we also considered individual prices changes since the introduction of CDS reported by consumers and scheme participants via our website, and price complaints about the CDS made to other regulators, such as NSW Fair Trading and the NSW Small Business Commissioner. This allowed us to assess the extent to which individual prices differed from the average changes.

33 Specifically, we constructed monthly portfolios consisting of prices of identical products sold by the same retailer(s) operating in both NSW and Victoria. We then computed the average price difference between the NSW portfolio and the Victoria portfolio in each month of the sample period, and evaluate whether the price difference, if any, is statistically significant for the pre-CDS period and for the post-CDS period. The post-CDS period for the portfolio analysis is from December 2017 to July 2018.

3.4 Assess whether the changes in container beverage prices are inconsistent with a competitive market

Our third step was to assess whether the changes in container beverage prices that are due to the CDS are inconsistent with a workably competitive market, by comparing our findings on these price changes (step 2) to our findings on the direct costs of the scheme (step 1).

Evidence that beverage prices have increased by more than these costs, and that these higher prices have been sustained over time, could indicate that supply chain participants are seeking to raise the price of beverages above the costs of the scheme. In turn, this could indicate that competition is not working effectively to protect consumers' interests. This is because when competition is working well, a business cannot sustain prices above the costs of supply without being outcompeted and losing customers to other businesses.

3.5 Assess whether changes in other indicators suggest CDS has led to a material reduction in competition

Our fourth step was to examine other potential indicators to assess whether the CDS has led to material reduction in competition.

As noted above, we used a method similar to the 'competition tests' included in regulatory impact statements.[34] This included:

- defining the relevant markets
- assessing whether there have been systemic changes in supplier behaviour since the introduction of the CDS (other than the price changes assessed in step 3) such as an increase in barriers to entry or a reduction in the product choice or information available to consumers.
- assessing whether there have been systemic changes in market shares or market composition, and
- assessing whether there have been one-off instances of unfair or unjustified supplier behaviour with the potential to harm the competitive process.

3.5.1 Defining the relevant markets

The main issues we considered in defining the relevant markets were:

- the **product classes and types** (which we identified as part of step 2) and how readily they can be substituted for each other
- the **geographic space** in which this substitution can occur (eg, Australia, NSW, or regions)

34 These tests reflect the principle that legislation and regulation should not restrict competition unless it can be demonstrated that a) the benefits of the restriction to the community as a whole outweigh the costs, and b) the objectives of the regulation can only be achieved by restricting competition. Regulations can restrict competition in several ways – for example, by limiting the number or types of suppliers in a market (through raising costs for business etc); limiting the ability of suppliers to compete; and reducing the incentive of suppliers to compete.

- the **functional** level of production in which competition occurs (eg, manufacturing, wholesaling or retailing).

We also considered information on the beverage industry, and the findings of recent econometric studies and other regulators' market definitions in relation to the beverage industry.

3.5.2 Assessing whether there have been systemic changes in supplier behaviour

Changes in supplier behaviour provide information on whether the market is becoming more or less competitive. We assessed whether suppliers have increased retail prices of container beverages by more than the direct costs of the CDS as part of step 3. For this step, we considered whether there have been other changes in supplier behaviour that could indicate a reduction in the competitiveness of the market, such as an increase in barriers to entry or a reduction in the product choice or information available to consumers.

3.5.3 Assessing whether there have been systemic changes in market shares or market composition

Changes in market share provide information about whether the market is becoming more or less concentrated and whether there are more or less suppliers in the market. We engaged the Centre for International Economics (The CIE) to provide advice on the impact of the CDS on market shares and quantities and consumption of container beverages. To provide its advice, The CIE used data from the Scheme Coordinator on container quantities by material type to analyse changes in the total quantities and market shares of container beverage suppliers since the introduction of the CDS.

3.5.4 Assessing whether there have been one-off instances of supplier behaviour with the potential to harm the competitive process

The extent and nature of individual instances of unfair or unjustified supplier behaviour since the CDS was introduced can also provide information about whether there has been a material reduction in the competitiveness of beverage markets. During our consultations to date, we have not received any reports on alleged unfair or unjustified supplier behaviour or market outcomes.

As set out in our Progress Report, we will continue to monitor behaviours and outcomes in the beverage market throughout this review and assess whether or not the alleged behaviour or market outcome appears to have an unfair or unjustified impact on consumers or scheme participants. If so, we will consider whether this impact has the potential to harm the competitive process or result in widespread consumer or business detriment. In addition, we will continue to assess whether the alleged behaviour or market outcome should be investigated further. While our terms of reference give us the discretion to investigate such matters, we are not necessarily the most appropriate regulator to do this. (see Box 3.3).

Box 3.3 Our approach for deciding whether to investigate reported behaviours or outcomes that seem unfair or unjustified

To decide whether to exercise our discretion to investigate an alleged behaviour or market outcome that appears unfair or unjustified on consumers or scheme participants, we established the following approach:

1. Assess whether the alleged behaviour or market outcome is likely to be material. For example, this would depend on whether we receive a single complaint or a series of complaints that raise similar concerns from different stakeholders, as well as the nature of the alleged behaviour.
2. Assess whether the alleged behaviour or market outcome is likely to result in a substantial detriment to consumers or businesses. For example, this would depend on whether we receive a series or range of complaints about the behaviour of the same supplier across different geographic markets.
3. Where the alleged behaviour or market outcome is likely to be material and result in substantial detriment, consider the most appropriate regulator to investigate the matter, taking into account that:
    a) IPART does not have a compliance or enforcement role under the Australian Consumer Law and therefore cannot take action on unfair business practices or competition issues that may arise in the beverage market as a result of the introduction of the CDS.
    b) Other regulators, including the Australian Competition and Consumer Commission and NSW Fair Trading, are set up to investigate matters on competition issues and unfair business practices and have expertise and experience in dealing with these matters.
4. Where it is appropriate for Australian Competition and Consumer Commission or NSW Fair Trading to investigate, refer the matter to it. In this case, it would be at this regulator's discretion whether or not to pursue the matter.

3.6 Assess whether there have been other unanticipated market impacts on consumers

The fifth step in our approach was to assess whether there have been other unanticipated market impacts on consumers that require Government action. This involved:

- considering whether consumers have changed their beverage purchasing or consumption behaviours since the CDS was introduced.
- collecting and considering feedback from stakeholders on any aspects of the scheme that could be changed to reduce the costs of the scheme, improve its efficiency, and help the NSW Government achieve its policy objectives.

We engaged The CIE to provide advice on whether consumers are buying less container beverages overall or shifting their consumption into non-CDS container beverages. It used data from Nielsen's home scan survey to conduct its analysis.

3.7 Assess the need for ongoing price monitoring

The final step in our approach was to assess the need for ongoing price monitoring beyond the initial one-year monitoring period. This involved considering the findings of the first five steps in our approach and deciding whether there are any ongoing, systemic impacts on beverage prices or competition in beverage markets as a result of the CDS.

4 Direct costs of the CDS

To estimate the direct costs of the CDS per container, we used data provided by Exchange for Change on:

- **The advance contributions** that it invoiced first suppliers for each month from December 2017 to July 2018. These contributions are based on Exchange for Change forecasts of the volume of containers of each material type that will be returned to TOMRA Cleanaway collection points and recovered from MRFs in the coming month.
- **The periodic 'true up' adjustments** that it applied to first suppliers' invoices to reconcile any differences between the advance contributions they paid in a previous month and the actual fees they were liable for in that month, based on actual container volumes and material types returned to collection points and recovered from MRFs in that month.

Broadly speaking, we summed these amounts for each month, then divided each monthly sum by the volume of containers supplied in that month to provide the direct cost per container over the whole period December 2017 to July 2018 and in each month within this period.

The sections below summarise our draft findings on the direct costs, and then discuss these findings in more detail.

4.1 Summary of draft findings on direct costs

We found that the direct costs of the CDS have averaged around **9.2 cents per container (**including GST) over the period December 2017 to July 2018. However, these costs have fluctuated substantially from month to month over this period from around **1.0 cent per container** to around **15.1 cents per container** (including GST). This volatility was due to two factors:

1. The scheme payment and contribution methodology of billing first suppliers one month in advance, based on forecasts of the container volumes and types for that month, and then truing up later once the actual volumes and types are known, and
2. the substantial differences between the forecasts Exchange for Change used for the months from December 2017 to February 2018 and the actual container volumes and types for those months.

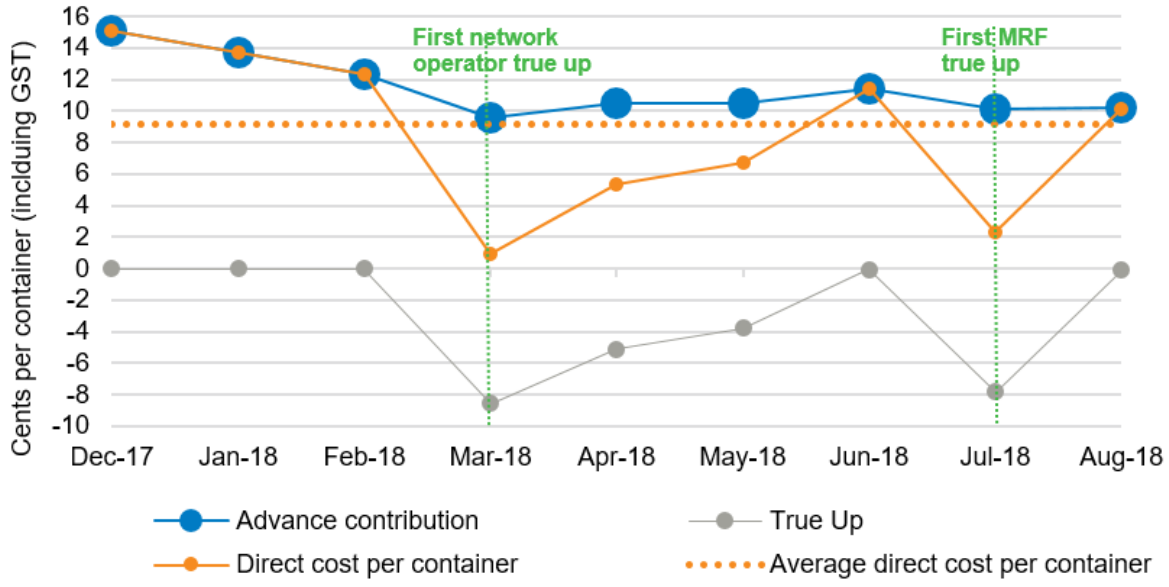
4.2 Direct costs averaged 9.2 cents per container with substantial variation month to month

We estimate that the direct costs of the CDS averaged around **9.2 cents per container** over the period December 2017 to July 2018. The direct costs ranged from around **1.0 cent per container** (in March 2018) to around **15.1 cents per container** (in December 2017). As Figure

4.1 shows, in the period December 2017 to February 2018, Exchange for Change made no true ups, so the direct scheme costs were equal to the advance contributions.

As previously noted, Exchange for Change issues invoices monthly in advance. For example the March advanced contribution was contained in an invoice issued in February. We have shown the 'True up' in the 'Advance contribution' month rather than the month in which the invoice was issued or the month to which the true up relates.

Figure 4.1 Direct costs per container, December 2017 to July 2018 (including GST)



Data source: IPART Analysis based on data provided by Exchange for Change, August 2018. As previously noted, Exchange for Change issues invoices monthly in advance. For example the March advanced contribution was contained in an invoice issued in February. We have shown the 'True up' in the 'Advance contribution' month rather than the month in which the invoice was issued or the month to which the true up relates.

Exchange for Change makes two main types of true-up adjustments:[35]

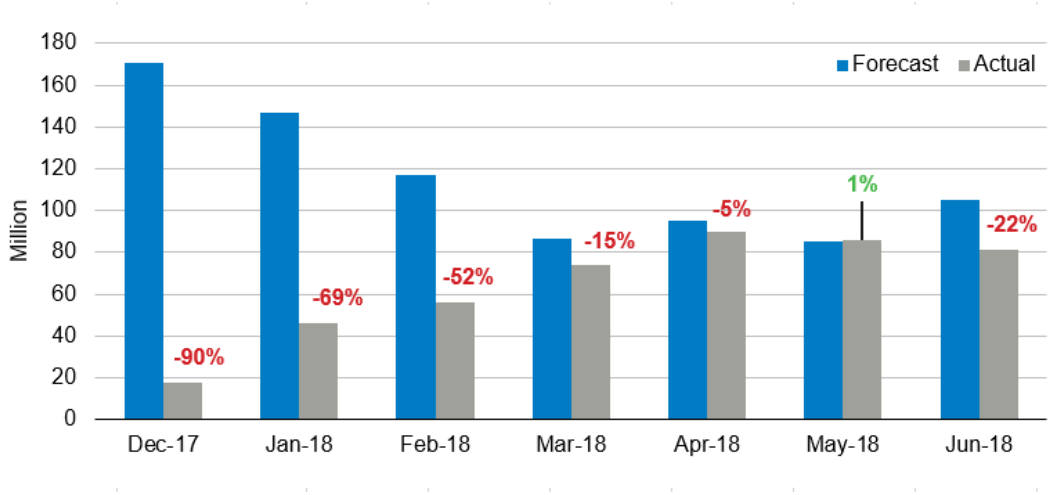
- **Network operator true ups,** which reconcile any differences between the forecast and actual volumes of containers returned through Return and Earn collection points (including reverse vending machines, over the counter, and automated depots).
- **MRF true ups,** which reconcile any differences between the forecast and actual volumes of containers recovered from MRFs.

Since March 2018, Exchange for Change has made network operator true ups each month. These true ups lag by 2 months, as it takes this time for actual volumes to be known (ie, February volumes are known in April). The largest network operator true up, which occurred in the February 2018 invoice with the March 2018 advance contribution, was equal to around negative 8.6 cents per container including GST and related to the actual costs in December 2017. From April 2018 to June 2018, the true up amounts have been smaller (between 0 and negative 5.1 cents per container including GST). This is because the

35 Exchange for Change also makes true ups for differences in forecast and actual supply volumes provided by first suppliers. Since the introduction of the scheme, these true ups have tended to be smaller than the network operator and MRF true ups.

differences between Exchange for Change's forecasts and actual container volumes returned via the network operator have reduced (Figure 4.2).

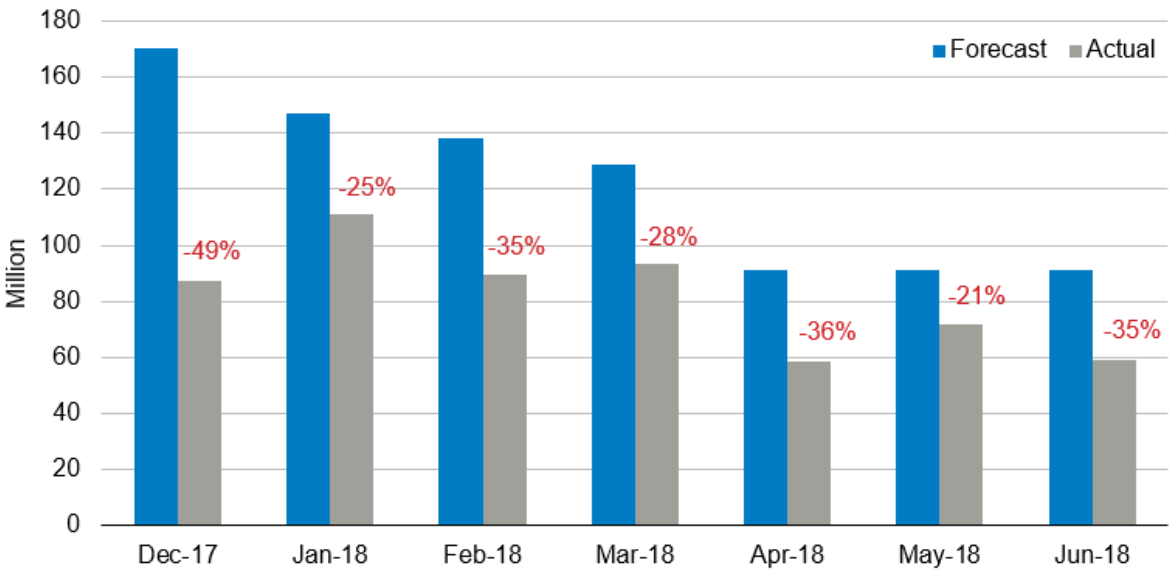
Figure 4.2 Containers returned via collection points – forecast and actual (million)



Data source: IPART analysis based on data provided by Exchange for Change, August 2018.

In July 2018, Exchange for Change made its first MRF true up. This was equal to around negative 8 cents per container including GST. MRF true ups are lagged and occur one quarter after the relevant quarter ends. The July true up adjusted for differences in forecast and actual volumes of containers returned via MRFs for the 4 months from December 2017 to March 2018 (Figure 4.3).[36] The next MRF true up occurred in the September invoice and cover the period from April 2018 to June 2018.

Figure 4.3 Containers returned via MRFs – forecast and actual (million)



36 The MRF true ups occur after the CDS Ministerial Advisory Committee sets the Eligible Container Factors for the quarter most recently ended. This factor is published on the 43rd calendar day after the quarter ends and was publish for the first time in mid-May.

Data source: IPART analysis based on data provided by Exchange for Change, August 2018.

Since the commencement of the scheme, Exchange for Change has returned around $68 million (ex-GST) to first suppliers through true ups. While the differences between the forecast and actual container volumes are reducing over time, we consider that a scheme payments methodology that bills suppliers in arrears would assist with removing this volatility (discussed further in Chapter 6).

Draft finding

1 The direct costs of the CDS averaged around 9.2 cents per container (inc-GST) over the period December 2017 to July 2018.

2 The direct costs of the CDS have fluctuated substantially from month to month, ranging from around 1.0 cent per container (in March 2018) to around 15.1 cents per container (in December 2017) (inc-GST).

3 First suppliers and other supply chain participants may also incur other costs in participating in and complying with the CDS.

5 Price changes attributable to the CDS

To estimate the changes in container beverage prices that are attributable to the CDS, we analysed how retail prices changed in the periods before and after the introduction of the scheme. Specifically, we:

1. quantified price changes, if any, that are attributable to the scheme using a difference-in-differences approach
2. considered changes in price indices for beverages published by the ABS, and
3. considered individual price changes since the introduction of the CDS reported by consumers and scheme participants via our website, and price complaints about the CDS made to other regulators (eg, NSW Fair Trading and the NSW Small Business Commissioner).

The sections below summarise our draft findings overall, and then discuss the findings of each of the above steps in more detail.

5.1 Summary of draft findings on price changes attributable to the CDS

On average, **prices of all eligible container beverages increased by 7.5 cents per container** due to the introduction of the CDS over the nine months from November 2017 to July 2018 (Table 5.1). The price impact was greater in the non-alcoholic beverage market than in the alcoholic beverage market, and varied across beverage categories. On average:

- **Non-alcoholic beverage prices increased by 9.5 cents per container**, with water and soft drink prices increasing by around 10 cents per container, and fruit juice prices increasing by around 4.8 cents per container as a result of the CDS.
- **Alcoholic beverage prices increased by 5.4 cents per container**, with beer prices increasing by 4.5 cents per container, cider prices by 11.3 cents per container and ready-to-drink (RTD) prices by 7.6 cents per container as a result of the CDS.[37]

[37] Including GST

Table 5.1 Average retail price increases due to the CDS, November 2017 to July 2018 (inc-GST)

Beverage market	Beverage category	Price change due to CDS
All		**7.5**
Non-alcoholic		**9.5**
	Water	10.0
	Soft drink	10.4
	Fruit Juice	4.8
Alcoholic[a]		**5.4**
	Beer	4.5
	Cider	11.3
	Ready-to-drink	7.6

a Alcoholic beverage average is based on a weighted average of our estimated price changes for promotional and non-promotional prices, where the weights are 75% and 25% for promotional and non-promotional prices, respectively.

Note: The overall average retail price increases for all, non-alcoholic and alcoholic beverages are weighted by market share sourced from the following IBIS reports: G4123 Liquor Retailing in Australia Industry Report, C1211A Soft Drink Manufacturing in Australia Industry Report, C1211B Bottled Water Manufacturing in Australia Industry Report, and C1211C Fruit Juice Drink Manufacturing in Australia Industry Report.

Source: IPART analysis using Nielsen Homescan and Invigor Insights Retail.

The average price increases due to the CDS also varied substantially from month to month within each beverage category.

5.2 Difference-in-differences approach shows container beverage prices rose by an average of 7.5 cents due to the CDS

Our difference-in-differences approach using the econometric model shown in Box 5.1 indicated that retail prices of all eligible container beverages increased, on average, by 7.5 cents over the period November 2017 to July 2018 due to the introduction of the CDS. However, the average increase varied by product type, by product market, and from month to month.

On average, bottled water and soft drink prices rose the most, while beer prices rose the least. In the alcoholic beverage market, average price increases were lower because suppliers did not pass on any of the scheme's costs in non-promotional beer and cider prices. Average prices for wine and spirits – which are not covered by the CDS – were not affected by the introduction of the scheme.

The sections below discuss the results of our regression analysis for each product type in more detail, including our findings on the CDS impact on the overall and monthly price changes due to the CDS in the nine month period from November 2017 to July 2018. In the first figure in each section (CDS impact on prices), the coloured dots represent the average changes in container beverage prices attributable to the CDS based on our three sets of sample data. The shaded bars represent the likely ranges for the changes in beverage prices attributable to the CDS at a 95% confidence level based on Sample A. For more technical detail on our sample and analysis, see Appendix B.

Box 5.1 Regression model used to quantify the CDS impact on beverage prices

For each beverage category, we quantified price changes due to the CDS using the following regression model:

$$P_{it} = \beta_0 + \beta_1 \text{x } NSW + \beta_2 \text{x } TIME + \beta_3 \text{ x } NSW*TIME + \gamma X_{it} + \varepsilon_{it}$$

where

- P_{it} is the price of product *i* in month *t*, expressed in $ per container.
- *NSW* equals 1 if product *i* is sold in NSW, and 0 otherwise.
- *TIME* equals 1 if month *t* is from December 2017 to November 2018 (ie, treatment period in which the CDS is in place), and 0 otherwise.
- *NSW*TIME* equals 1 if *NSW* = 1 and *TIME* = 1.
- X_{it} comprises a set of variables that are likely to affect beverage prices. Beverage prices may vary across different sizes, package types, manufacturers, etc. Also, they are likely to vary over time or across region. We included these factors as control variables to isolate the impacts of these confounding variables on beverage prices, which are captured in the coefficient(s), γ, and
- ε_{it} is the error term.

We conducted the regression analysis described above for each sample set within each beverage category:

- **Sample A,** which included the products for which there is continuous monthly price information from January 2017
- **Sample B,** which included only the products with continuous monthly price information from January 2016, and
- **Sample C**, which included only the products with continuous monthly price information from June 2017

5.2.1 Bottled water prices rose by average of 10 cents due to the CDS

Across all three of our sample data sets,[38] we found that bottled water prices rose by an average of 10 cents per container as a result of the CDS in the nine-month period November 2017 to July 2018 (Figure 5.1). At a 95% confidence level, average price increases ranged from 8.50 to 11.50 cents.

On a monthly basis, we found that the introduction of the CDS resulted in a statistically significant increase in bottled water prices in each of the nine months to July 2018. From December 2017 to April 2018, the average price increase was around 10 to 11 cents per container in each month. From May to July 2018, it was close to 12 cents per container. At a 95% confidence level, the average increase ranged from 9 to 12 cents per container in December 2017, and from 10 to 13 cents from May to July 2018. The estimated average increases in prices were similar across the three sets of sample data.

38 Since the Progress Report, we have made an adjustment to our bottled water sample by excluding flavoured water such as coconut water as they introduce volatility in coefficient estimates.

Figure 5.1 CDS impact on bottled water prices (cents per container, including GST)

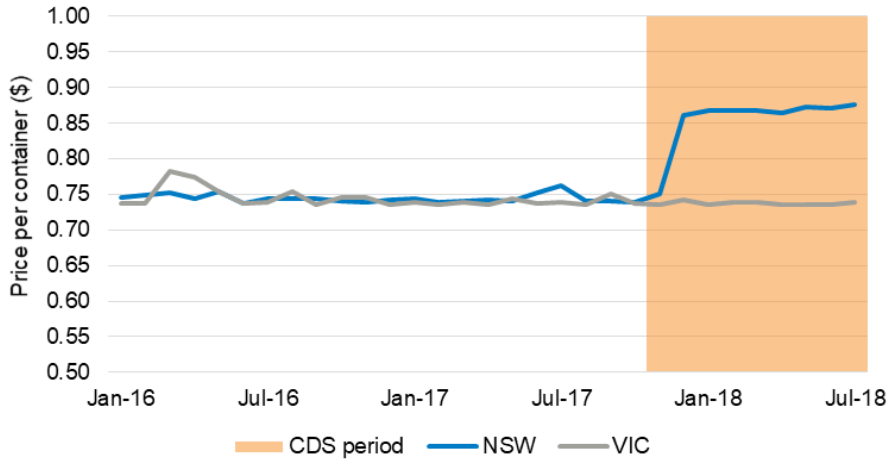
Note: 95% confidence intervals are based on regression results from Sample A.

Data source: IPART analysis using Nielsen Homescan data.

Consistent with the Progress Report, we categorised bottled water products into three size groups – Small, Medium and Large, where a product is defined as Small if its size is less than or equal to 600 ml, Medium if its size is between 600 ml and 1 L (inclusive), and Large if its size is greater than 1 L.

Figure 5.2 shows monthly average prices in NSW and Victoria for bottled water containers in the Large category. Bottled water prices in these states were generally comparable prior to the introduction of the CDS. Since the introduction of the CDS, prices in NSW have increased substantially by between 10 and 12 cents relative to in Victoria, and have remained higher.

Figure 5.2 Monthly average bottled water prices in NSW and Victoria (including GST)



Note: Based on sample of products with prices available for each month from January 2017 (Sample A). Average prices tend to differ between non-promotion and promotional prices – the figure shows non-promotional prices.

Data source: IPART analysis using Nielsen Homescan data.

5.2.2 Soft drink prices rose by an average of 10 cents due to the CDS

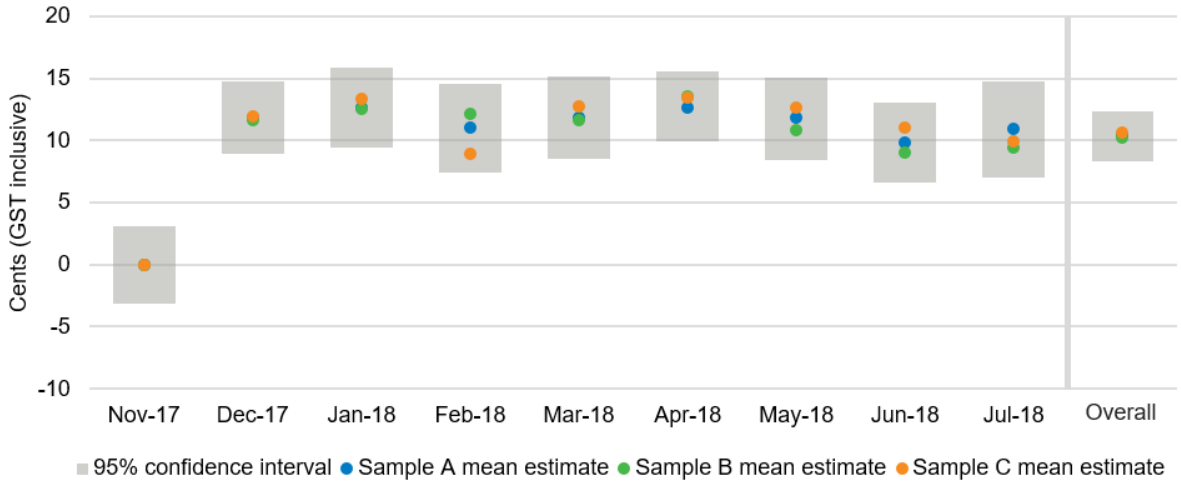
We found that soft drink prices rose by a statistically significant amount as a result of the CDS. Over the nine-month period, these prices rose by an average of 10 cents per container (based on Sample A) and around 10 to 11 cents per container based on Sample B and Sample C. At a 95% confidence level, the average price increase ranged between 8.40 and 12.40 cents.

On a monthly basis, we found a statistically significant increase in soft drinks prices in each month from December 2017. Estimated average price increases varied across the three samples but were within the 95% confidence intervals based on our regression results for Sample A.

We also found some evidence that the price differential due to the CDS decreased in latter months of the monitoring period. Based on Sample A, the average soft drink price increase due to the CDS fell from between 12 and 13 cents from December 2017 to May 2018[39] to between around 10 and 11 cents in June and July 2018. Based on Sample B, this trend was more apparent, with the average price increase due to the CDS decreasing from around 12 to 14 cents from December 2017 to April 2018, to around 9 cents in June and July 2018.

Significantly, the range of average price increases for soft drinks were much wider than those observed for bottled water. This is explained by the high volatility in the estimated price changes for soft drinks. Our 95% confidence interval suggests that soft drink prices increased by between 9 and 15 cents per container in December 2017, compared to a much wider 7 and 15 cents per container in July 2018.

Figure 5.3 CDS impact on soft drink prices (cents per container, including GST)

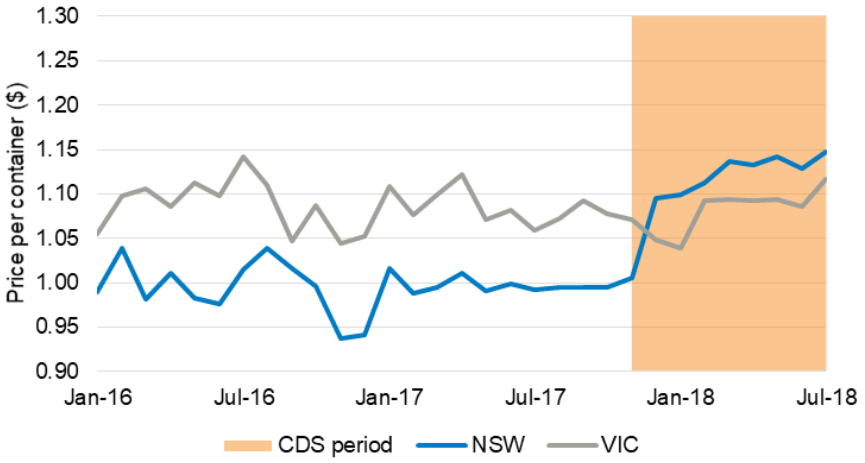


Note: 95% confidence intervals are based on regression results from Sample A.
Data source: IPART analysis using Nielsen Homescan data.

39 Except for February 2018 where the estimated average increase is 11 cents.

Figure 5.4 shows monthly average prices for soft drink products in the Large category in NSW and Victoria.[40] These prices were noticeably lower in NSW than in Victoria prior to the introduction of the CDS. However, since the scheme was introduced, average prices in NSW have been around 10 to 15 cents higher than in Victoria.

Figure 5.4 Monthly average soft drink prices in NSW and Victoria (including GST)



Note: Based on sample of products with prices available for each month from January 2017 (Sample A). Average prices tend to differ between non-promotion and promotional prices – the figure shows non-promotional prices.

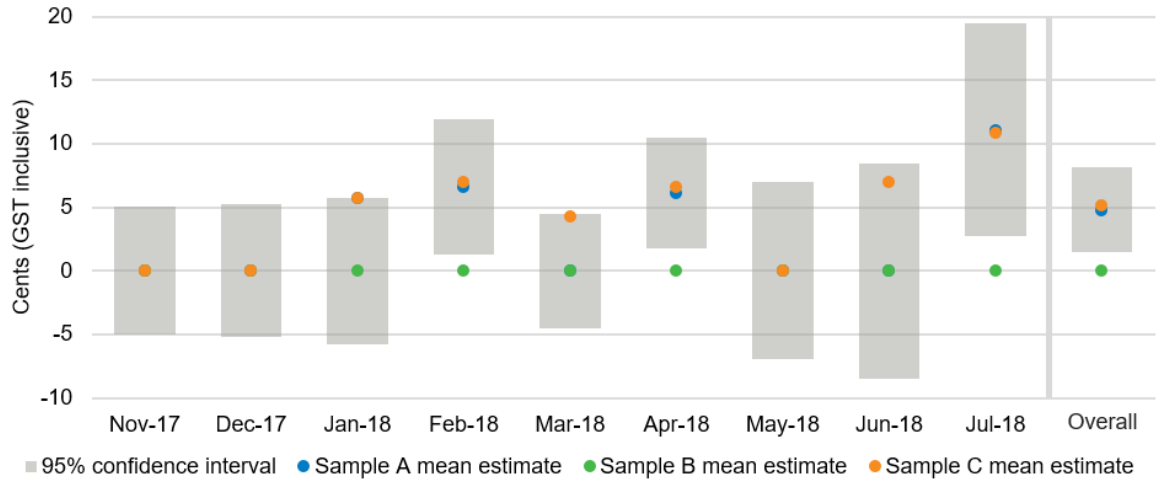
Data source: IPART analysis using Nielsen Homescan data.

5.2.3 Fruit juices rose by an average of 4.8 cents due to the CDS

Fruit juice prices increased by an average of around 5 cents due to the CDS over the nine months to July 2018 based on Sample A (Figure 5.5). At a 95% confidence level, average prices ranged between 1.50 and 8 cents over this period. On a monthly basis, the average price increase was between 4 and 11 cents based on Sample A and Sample C.

40 We grouped soft drinks based on their size where a product is defined as Small if size is less than 500 ml, Medium if size is between 500 ml (inclusive) and 1 L, and Large if size is greater than or equal to 1 L. The figure shows the monthly averages for soft drinks in the Large category because the sample size for the Medium and Small categories is too small (less than 10 products in each state per month).

Figure 5.5 CDS impact on fruit juices prices (cents per container, including GST)



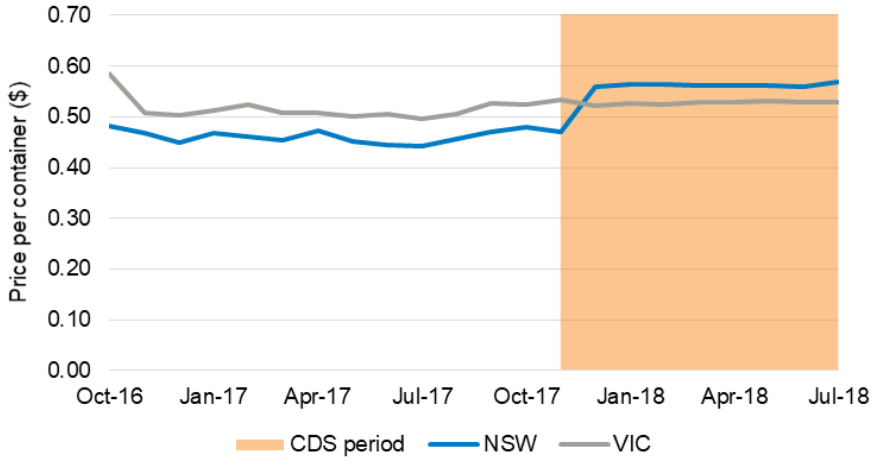
Note: 95% confidence intervals are based on regression results from Sample A.
Data source: IPART analysis using Nielsen Homescan data.

The results of our analysis varied substantially across the three sets of sample data, and from month to month, which suggests our estimated average price changes for fruit juice may not be as statistically reliable as other beverage categories. For example, in some months we did not find a statistically significant price change due to the CDS based on Sample A and Sample C. We did not find a statistically significant price change based on Sample B in any month.

These results are likely due to the small number of available observations in our fruit juice samples. Sample A and C consisted of 1,033 and 1,125 product-month observations, and Sample B consisted of only 372 observations, affecting the statistical significance of the estimated regressions.

However, we did find clear evidence that average fruit juice prices in NSW increased compared to those in Victoria following the introduction of the CDS. Figure 5.6 shows the results of our analysis of average prices for fruit juices in the Small size category. It shows that in NSW, these prices increased by around 10 cents in December 2018, and have remained higher.

Figure 5.6 Monthly average fruit juice prices in NSW and Victoria (including GST)



Note: Based on sample of products with prices available for each month from January 2017 (Sample A). Average prices tend to differ between non-promotion and promotional prices – the figure shows non-promotional prices. The figure shows the prices of fruit juices in the Small size category.

Data source: IPART analysis using Nielsen Homescan data.

5.2.4 Beer prices rose by an average of 4.5 cents due to the CDS

Overall, we found that beer prices increased by an average 4.5 cents per container[41] as a result of the CDS over the period November 2017 to July 2018, and that:

- promotional prices increased by an average of 6 cents per container due to the CDS, whereas
- non-promotional prices were not affected by the introduction of the scheme.

Promotional prices rose by average of 6 cents due to the CDS

Based on our portfolio approach, we found that before the CDS was introduced in NSW, there was no statistically significant difference in promotional beer prices in NSW and Victoria (Table 5.2). However, after the scheme was introduced, based on prices from all liquor retailers in our sample, promotional prices in NSW were an average of 6 cents per container higher.[42]

41 Based on a weighted average of our estimated price changes for promotional and non-promotional prices, where the weights are 75% and 25% for promotional and non-promotional prices, respectively.

42 To rule out the possibility that our results are driven by the concentration of a specific retailer(s) in our sample, we have assessed the average price difference for a number of different retailer groups. We found qualitatively similar results.

Table 5.2 Pre- and post-CDS average beer promotional prices in NSW and Victoria ($ per container)

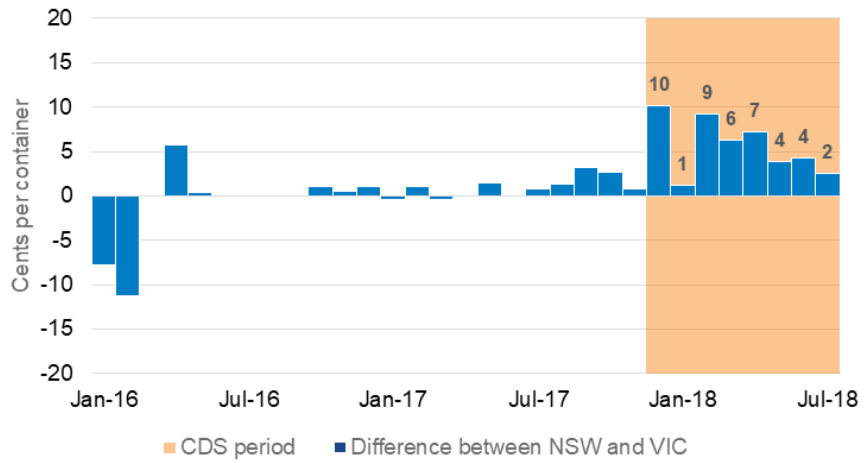
	Pre-CDS			Post-CDS		
	NSW	VIC	Difference	NSW	VIC	Difference
$ per container	2.16	2.16	0.00	2.19	2.14	0.06***

Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Analysis is based on small-sized beverages (less than 600 ml) sold in multipack.

Source: IPART analysis using Invigor Insights Retail.

Figure 5.7 shows monthly average differences between promotional prices for beer in NSW and Victoria. It indicates that before the CDS was introduced, the difference varied from month to month, ranging from no difference, to higher in NSW and lower in NSW. However, after the CDS was introduced, average promotional prices in NSW have been consistently higher than in Victoria. The largest price difference between NSW and Victoria we observed was 10 cents in December 2017, the month the CDS was introduced. The difference decreased to around 2 cents per container in July 2018.

Figure 5.7 Monthly average promotional beer price differences between NSW and Victoria



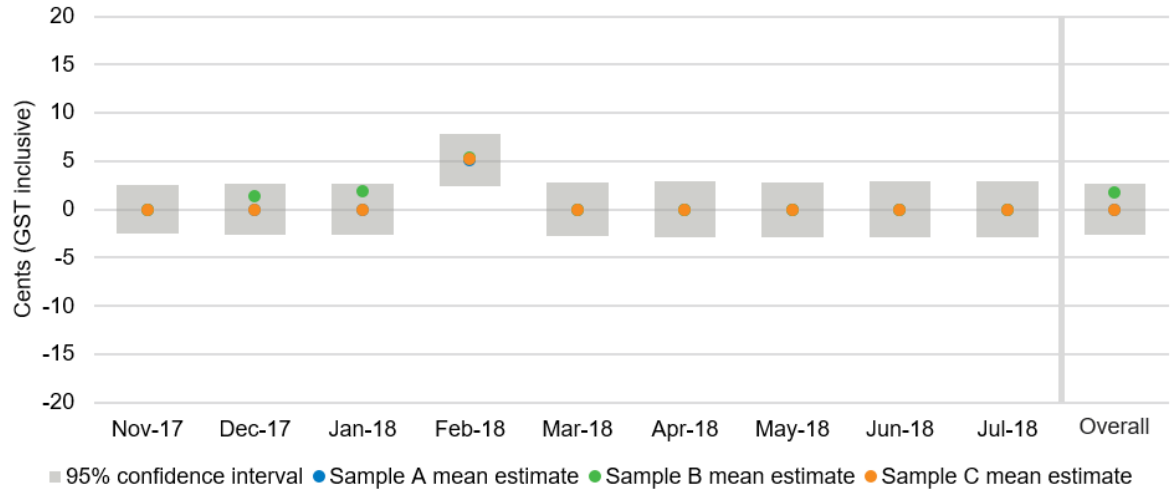
Note: Analysis based on *All Retailers* sample. Analysis is based on small-sized beverages (less than 600 ml) sold in multipack.

Data source: IPART analysis using Invigor Insights Retail data.

Non-promotional prices were not affected by the CDS

Figure 5.8 shows the results of our regression analysis for non-promotional beer prices over the nine months to July 2018. It indicates that the CDS did not have a significant impact on these over this period. We found no statistically significant increase in these prices due to the CDS in any month apart from February, when we found an average increase 5 cents based on all three samples.

Figure 5.8 CDS impact on non-promotional beer prices (cents per container, including GST)



Note: 95% confidence intervals are based on regression results from Sample A. Sample A, Sample B and Sample C mean estimates are indicated at a significance level of 10%.

Data source: IPART analysis using Invigor Insights Retail data.

5.2.5 Cider prices rose by an average of 11.3 cents due to the CDS

We found that cider prices increased by an average of 11.3 cents per container due to the CDS over the period November 2017 to July 2018. Similar to beer, we found that:

- promotional prices rose by an average of 15 cents per container, whereas
- non-promotional prices were not affected by the introduction of the scheme.

Promotional cider prices rose by an average of 15 cents due to the CDS

We found no statistically significant difference between promotional cider prices in NSW and Victoria before the CDS was introduced (Table 5.3). However, based on prices from all liquor retailers in our sample, we found that promotional prices were an average of 15 cents per container higher in NSW after the scheme was introduced.

Table 5.3 Pre- and post-CDS average cider promotional prices in NSW and Victoria ($ per container)

	Pre-CDS			Post-CDS		
	NSW	VIC	Difference	NSW	VIC	Difference
$ per container	2.46	2.42	0.04	2.31	2.16	0.15***

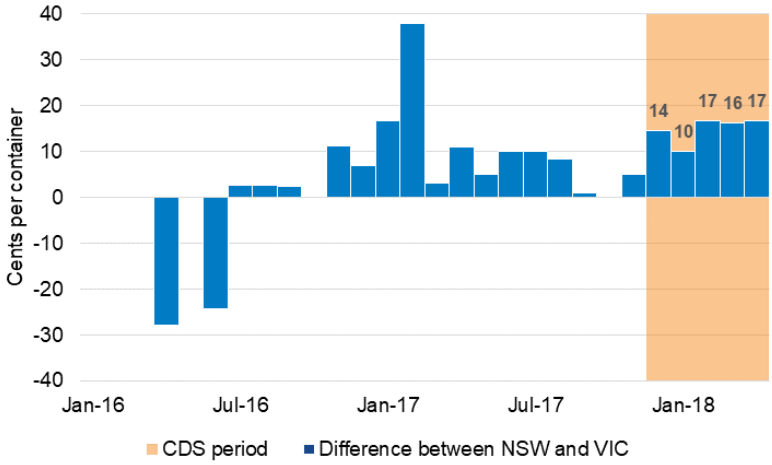
Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. The sample period is from January 2016 and April 2018 as there were no matching cider products (ie, same products sold by the same retailers in both NSW and Victoria) which have promotional prices in our dataset in May to July 2018. Analysis is based on small-sized beverages (less than 600 ml) sold in multipack.

Source: IPART analysis using Invigor Insights Retail.

Figure 5.9 shows average monthly differences between promotional cider prices in NSW and Victoria. In the period before the CDS was introduced, these prices were sometimes higher in NSW and sometimes lower. But, after the scheme was introduced, promotional

prices in NSW were consistently more than 10 cents per container higher in NSW than in Victoria.[43]

Figure 5.9 Monthly average promotional cider price differences between NSW and Victoria



Note: The sample period is from January 2016 and April 2018 as there were no matching cider products (ie, same products sold by the same retailers in both NSW and Victoria) which have promotional prices in our dataset in May to July 2018. Analysis is based on small-sized beverages (less than 600 ml) sold in multipack.

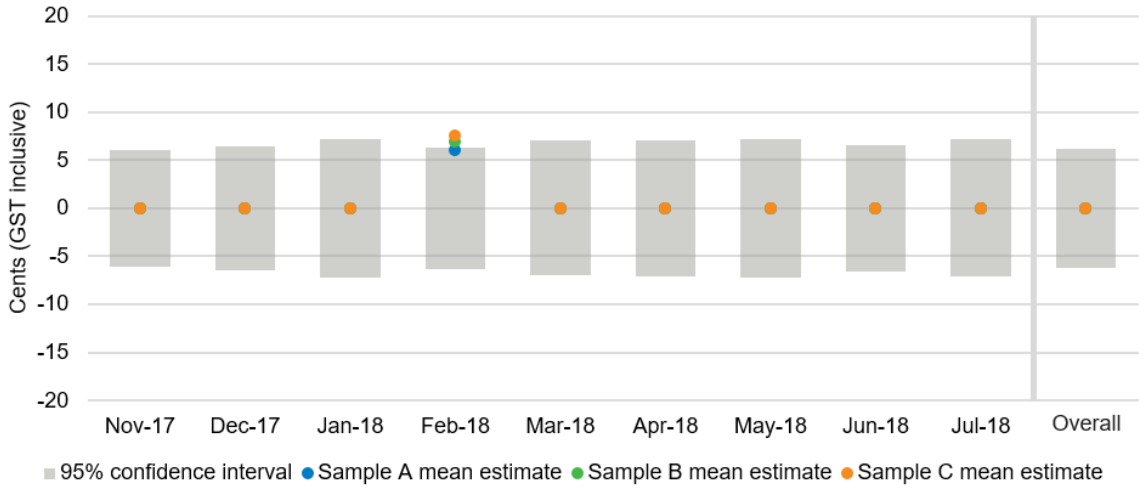
Data source: IPART analysis using Invigor Insights Retail data**.**

Non-promotional cider prices not affected by the CDS

Figure 5.10 shows the results of our regression analysis for non-promotional cider prices over the nine months to July 2018. It indicates that the CDS did not have a significant impact on these prices over this period. When looking at monthly price changes, we found that cider prices were up to 8 cents higher in February 2018 as a result of the CDS. For all other months across all three samples, we found no statistically significant increase in prices due to the CDS.

43 The sample period for promotional cider prices ends in April 2018 as there were no matching cider products (ie, same products sold by the same retailers in both NSW and Victoria) which have promotional prices in our dataset in May to July 2018.

Figure 5.10 CDS impact on cider prices (cents per container, including GST)



Note: 95% confidence intervals are based on regression results from Sample A. Sample A, Sample B and Sample C mean estimates are indicated at a significance level of 10%.

Data source: IPART analysis using Invigor Insights Retail data.

5.2.6 Ready-to-drink prices rose by average of 7.6 cents due to the CDS

We found that RTD prices increased by an average of 7.6 cents per container over the nine months to July 2018 as a result of the CDS. We found that:

- Promotional RTD prices rose by 9 cents per container, and
- Non-promotional RTD prices rose by 3.4 cents per container.

Promotional RTD prices rose by 9 cents per container

We found no significant difference between promotional RTD prices in NSW and Victoria before the CDS was introduced (Table 5.4). However, based on prices from all liquor retailers in our sample, these prices were an average of 9 cents per container higher in NSW after the scheme was introduced.

Table 5.4 Pre- and post-CDS average ready-to-drink promotional prices in NSW and Victoria ($ per container)

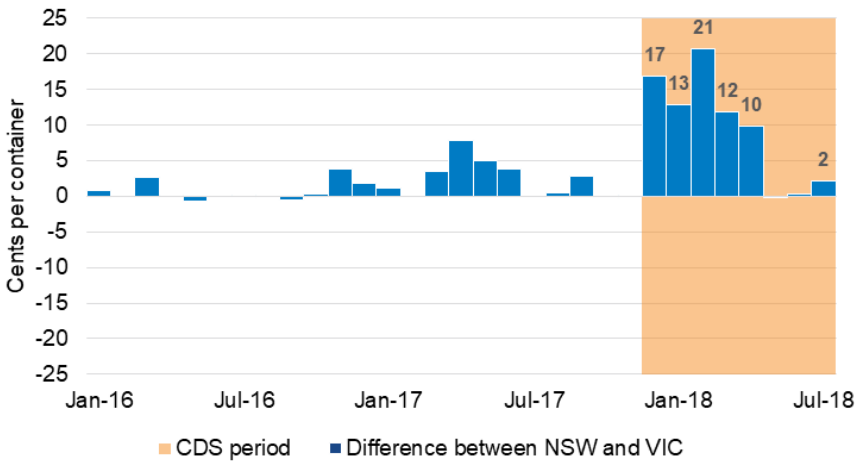
	Pre-CDS			Post-CDS		
	NSW	VIC	Difference	NSW	VIC	Difference
$ per container	3.44	3.43	0.01***	3.84	3.75	0.09**

Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Analysis is based on small-sized beverages (less than 600 ml) sold in multipack.

Source: IPART analysis using Invigor Insights Retail.

Figure 5.11 shows average monthly differences between promotional RTD prices in NSW and Victoria. It shows that while there was little difference before the CDS was introduced, prices in NSW were substantially higher after it was introduced. The average price difference ranged from 10 to 21 cents per container in the 5 months between January and May 2018, but then fell to a negligible level in the last 3 months of the observation period.

Figure 5.11 Monthly average difference in promotional prices between NSW and VIC for ready-to-drink

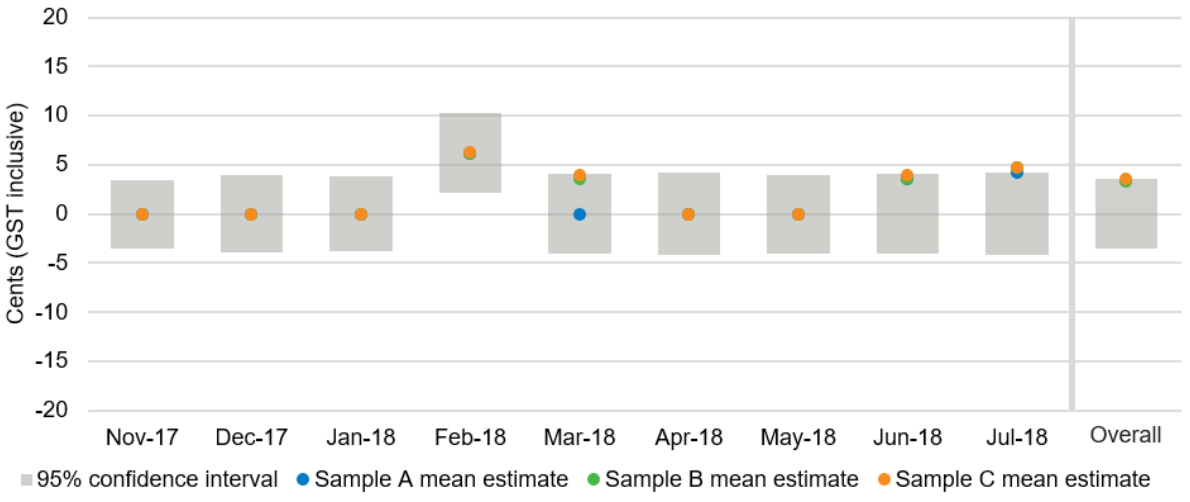


Data source: IPART analysis using Invigor Insights Retail data. Analysis is based on small-sized beverages (less than 600 ml) sold in multipack.

Non-promotional RTD prices rose by 3.4 cents per container

Figure 5.12 shows our regression analysis of non-promotional prices for RTD. Based on Sample A, we found that these prices were an average of 3.4 cents per container higher due to the CDS in the nine months after it was introduced (at a significance level of 10%). When looking at the monthly impacts, these prices were between around 4 and 6 cents higher on average in four of the eight months since its introduction, while we found no statistically significant difference in the other four months.

Figure 5.12 CDS impact on ready-to-drink prices (cents per container, including GST)



Note: 95% confidence intervals are based on regression results from Sample A. Sample A, Sample B and Sample C mean estimates are indicated at a significance level of 10%.

Data source: IPART analysis using Invigor Insights Retail data.

5.2.7 Wine and spirit prices were not affected by the CDS

We analysed the prices of red wine, white wine, and spirits to assess whether the CDS had any indirect price effects on container beverages not covered by the scheme using a regression-based difference-in-differences approach. We found no statistically significant impact of the CDS on these prices in each of the nine months to July 2018.

5.3 Changes in price indices indicate the CDS had a material impact on beverage prices

To cross-check the findings of our regression analysis (discussed above), we also considered the changes in price indices for beverages published by the ABS.[44] Consistent with these findings, the changes in these indices indicate that the CDS increased the prices of beverages covered by the scheme, and had a larger impact on non-alcoholic beverage prices than alcoholic beverage prices, and did not have any indirect impact on the prices of beverages outside the scheme such as wine and spirits.

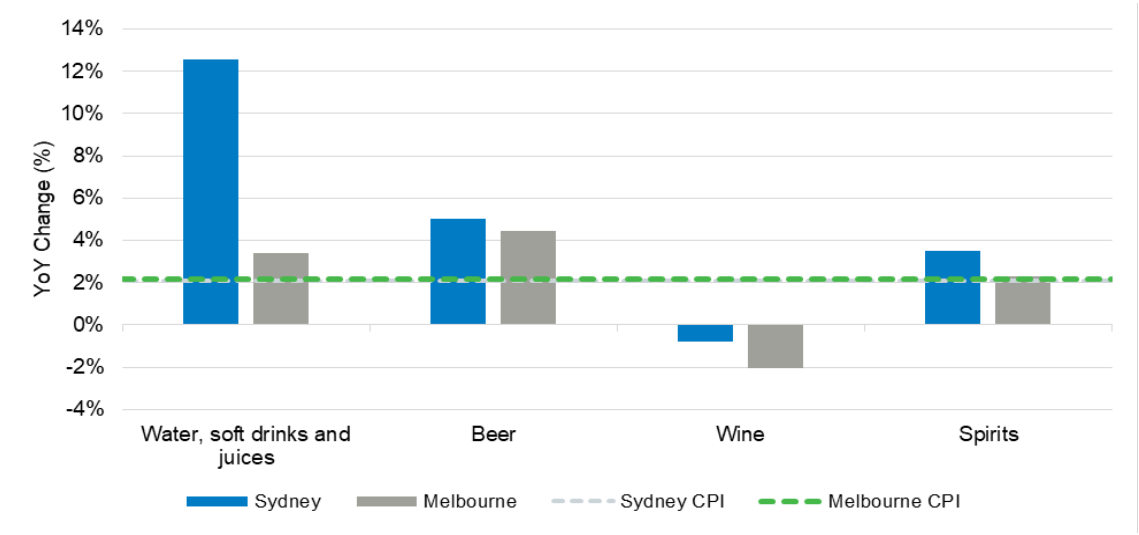
Figure 5.13 and Figure 5.14 show changes in waters, soft drinks and juices, beer, spirits, and wine price indices in Sydney and Melbourne in the March 2018 and June 2018 quarters, relative to the previous corresponding quarters before the introduction of the CDS. These changes confirm that the introduction of the CDS had an impact on prices of all eligible container beverages, and that the impact was larger for non-alcoholic beverages than alcoholic beverages.

For example, in the year to the March 2018 quarter (Figure 5.13):

- Water, soft drink and juice prices rose by 12.5% in Sydney year on year, which was more than 10% higher than the rate of inflation for Sydney, whereas in Melbourne these prices rose by only 1.2% higher than the rate of inflation for Melbourne.
- Beer prices increased similarly in Sydney and Melbourne, suggesting price increases in Sydney may not have been driven solely by the introduction of the CDS.
- Wine prices declined in both cities, and sprits prices increased by slightly more than rate of inflation in Sydney and around the rate of inflation in Melbourne.

44 We did not conduct this analysis for our Progress Report as the relevant ABS data did not cover a sufficient period following the introduction of the CDS.

Figure 5.13 March 2018 on March 2017 changes in beverage prices measured by the ABS Consumer Price Index

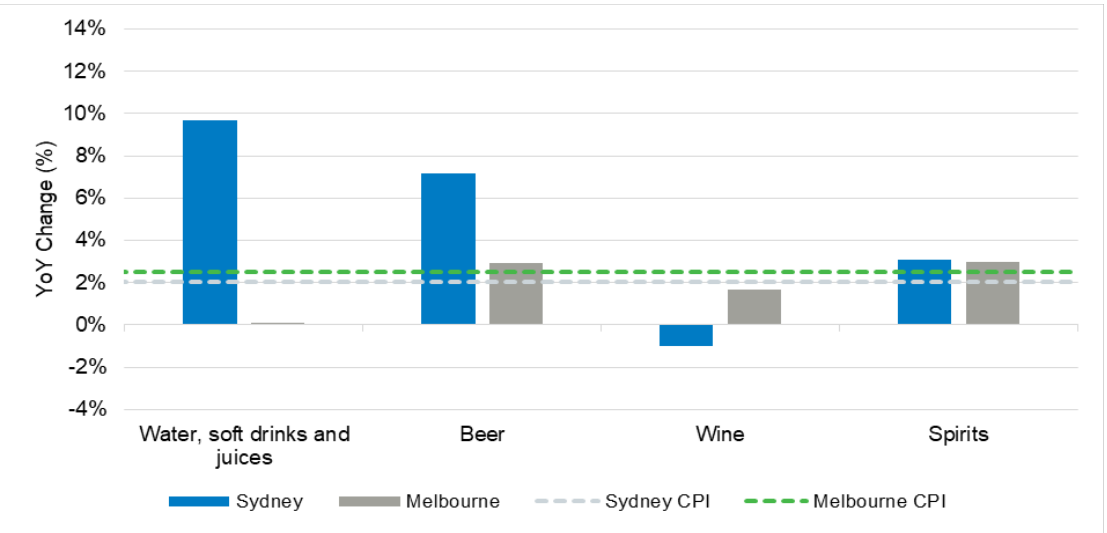


Data source: IPART analysis using ABS CPI Data.

Similarly, in the year to the June 2018 quarter (Figure 5.14):

- Water, soft drink and juice prices in Sydney increased by 9.7%, compared to no change in Melbourne.
- Beer prices in Sydney increased by 7.2%, compared to 2.9% in Melbourne.
- Wine and spirits prices did not change by more than the rate of inflation in both cities.

Figure 5.14 June 2018 on June 2017 changes in beverage prices measured by the ABS Consumer Price Index



Data source: IPART analysis using ABS CPI Data.

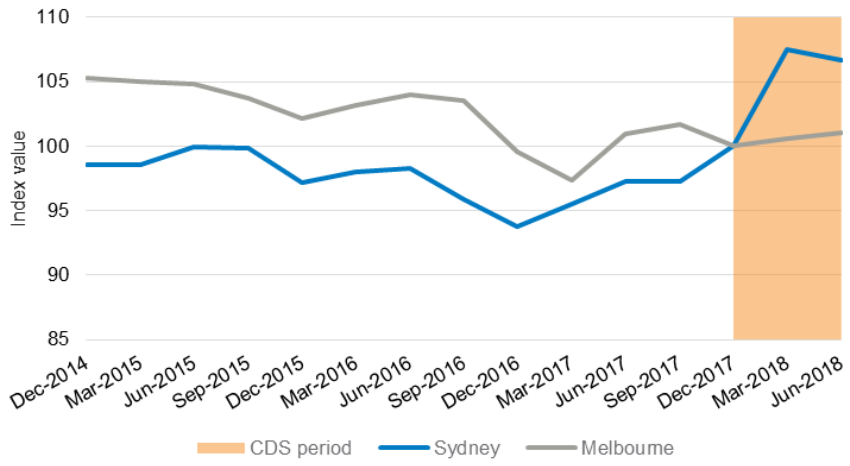
Figure 5.15 to Figure 5.16 show changes in water, soft drinks and juices and beer price indices over the period from December 2014 to June 2018. To separate prices before and

after the introduction of the CDS, we set the index value in December 2017 equal to 100, which is the quarter in which the CDS was introduced in NSW.

Since December 2014, water, soft drinks and juices, and beer price indices in Sydney and Melbourne had been trending roughly in parallel to each other until the CDS was introduced in the December 2017 quarter. After this, prices in Sydney increased noticeably:

- Water, soft drink and juice prices in Sydney rose by 7.5% and 6.7% in the March and June 2018 quarters respectively, relative to the December 2017 quarter. In comparison, prices in Melbourne remained fairly stable.
- Beer prices in Sydney remained in line with those in Melbourne during the March 2018 quarter. But in the June 2018 quarter, they increased by 5.1% relative to the December 2017 quarter whereas those in Melbourne increased by 1.8%.

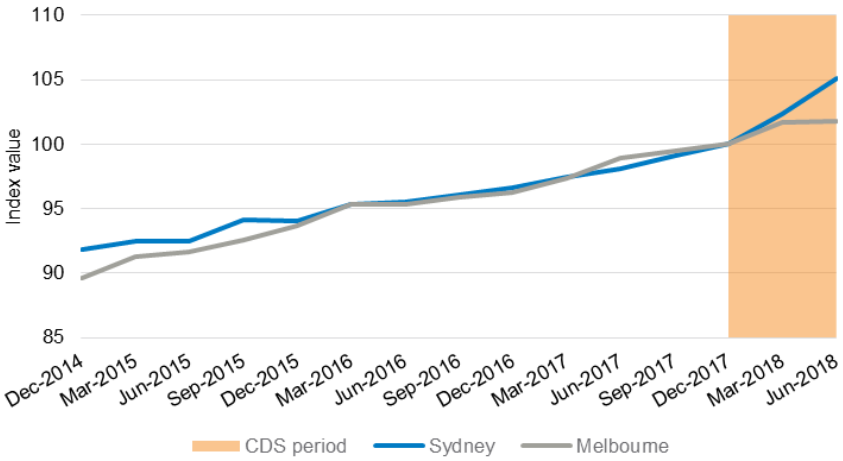
Figure 5.15 Changes in water, soft drinks and juices prices measured by the ABS Consumer Price Index



Note: Index value in December 2017 is set to 100.

Data source: IPART analysis using ABS CPI Data.

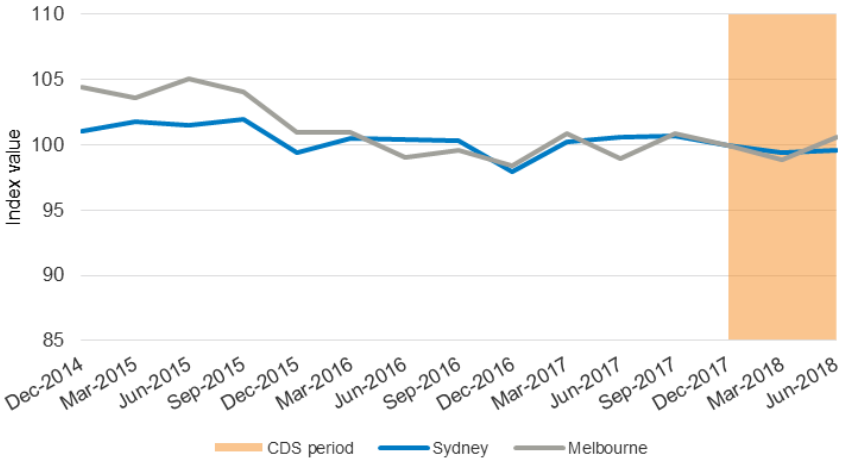
Figure 5.16 Changes in beer prices measured by the ABS Consumer Price Index



Note: Index value in December 2017 is set to 100.
Data source: IPART analysis using ABS CPI Data.

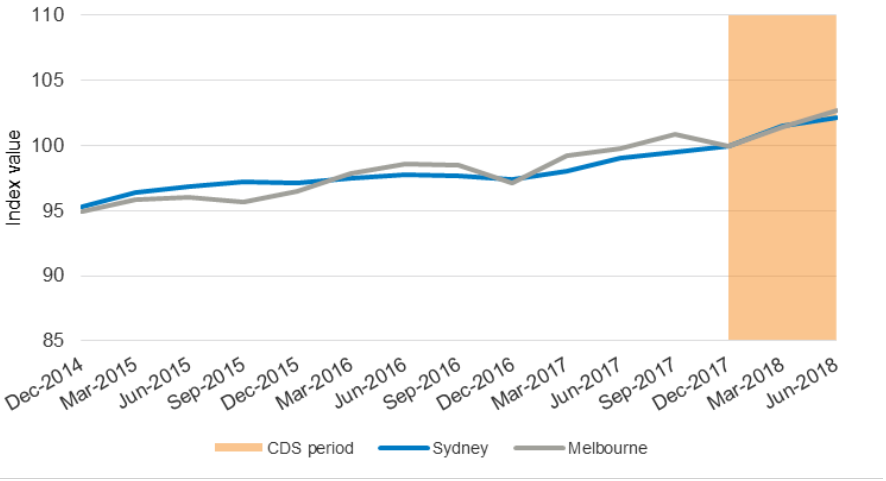
Figure 5.17 and Figure 5.18 indicate that the changes in wine and spirits prices were not significant after the introduction of the CDS, and were not materially different in Sydney and Melbourne.

Figure 5.17 Changes in wine prices measured by the ABS Consumer Price Index



Note: Index value in December 2017 is set to 100.
Data source: ABS and IPART analysis.

Figure 5.18 Changes in spirits prices measured by the ABS Consumer Price Index



Note: Index value in December 2017 is set to 100.
Data source: IPART analysis using ABS CPI Data.

5.4 A small number of customer complaints suggests individual price increases have been in line with average price increases

Since we began this review, we have been monitoring complaints from customers and suppliers about the pricing response and market impacts of the CDS. Prior to releasing our Progress Report in April, we received a few complaints from consumers and scheme participants on individual instances of price changes in the first three months of the scheme. However, we have not received additional complaints about price changes since then.

We also received a small number of comments about individual price changes through our online feedback form. These comments generally fell into two categories:

- Consumers explaining how the price of a particular beverage product (eg, a bottle of mineral water or a carton of beer) increased at a specific retail location, or
- Consumers objecting to paying for a beverage price increase due to the CDS and then finding it difficult or costly to obtain a refund. Most of these consumers consider that that they are out-of-pocket due to the poor design and implementation of the scheme.

Since the CDS commenced on 1 December 2017, NSW Fair Trading has received a small number of complaints about price increases of beverage products.[45]

We consider that the small number of complaints indicates that in most cases, individual price increases after the introduction of the CDS have been in line with the average increases attributable to the scheme discussed in Section 5.2 above.

IPART draft findings

4 On average, prices of all eligible container beverages increased by 7.5 cents per container (inc-GST) due to the introduction of the CDS over the nine months from November 2017 to

45 Correspondence from NSW Fair Trading on 1 August 2018.

July 2018. The CDS had a larger impact on non-alcoholic beverage prices than alcoholic beverage prices:

- Non-alcoholic beverage prices increased by 9.5 cents per container (inc-GST) with water and soft drink prices increasing by around 10 cents per container (inc-GST), and fruit juice prices increasing by 4.8 cents per container (inc-GST) as a result of the CDS.
- Alcoholic beverage prices increased by 5.4 cents per container (inc-GST), with beer prices increasing by 4.5 cents per container (inc-GST), cider prices by 11.3 cents per container (inc-GST) and ready-to-drink (RTD) prices by 7.6 cents per container (inc-GST) as a result of the CDS.

5 The introduction of the CDS did not have any indirect price effects on container beverages not covered by the scheme such as wine and spirits.

6 Changes in prices consistent with competitive markets

Our third step was to assess whether the changes in container beverage prices that are due to the CDS are consistent with a competitive market.

To assess whether the changes in container beverage prices that are due to the CDS are inconsistent with a competitive market, we compared our findings on beverage price changes attributable to the CDS discussed in Chapter 5 to our findings on the direct costs of the scheme discussed in Chapter 4.

The sections below summarise our overall draft findings and recommendations, and then discuss our findings in more detail.

6.1 Summary of overall draft findings

Previous assessments of the beverage industry in NSW have either not revealed substantial concerns about competition, or have found there is 'workable competition' in the industry.[46] Workable competition means there is enough rivalry between firms so that prices are determined by underlying costs rather than any market power.

As is the case for any business operating in a workably competitive market, suppliers may choose to pass all or some of the CDS costs onto their customers. However if there are sustained, systemic increases in prices above the costs of the CDS beyond a reasonable time, this may indicate a change in the competitiveness of the beverage market.

We have not found any evidence of sustained increases in prices in excess of the costs of the CDS. Over the period December 2017 to July 2018, we found that the direct costs of the CDS have averaged around **9.2 cents per container** (including GST). The overall price increase across all eligible container beverages that is attributable to the CDS is estimated to be **7.5 cents per container** (including GST).

The average price increase attributable to the CDS has been greater in the non-alcoholic beverage market than in the alcoholic beverage market:

- The overall increase of **9.5 cents per container** in non-alcoholic beverage prices due to the CDS is broadly consistent with the overall direct cost of the scheme.
- The overall increase of **5.4 cents per container** in alcoholic beverage prices is less than the overall direct cost of the scheme. [47]

However, when looking at monthly price changes and costs, price increases in some months have been higher than the direct costs of the scheme. We consider that this is a result of the

46 The CIE, Monitoring the impacts of the NSW Container Deposit Scheme, January 2018, p 19.
47 The average price increases for all, non-alcoholic and alcoholic beverages are weighted by market share.

volatility in the direct costs of the scheme resulting from the scheme payment and contribution methodology that charges suppliers in advance, rather than an indicator of reduced competition in the beverage market. We consider that a scheme payments methodology that bills suppliers in arrears would assist with removing this volatility and provide greater transparency around scheme costs.

6.2 No evidence of sustained price increases in excess of CDS costs

As discussed above, while price increases have been in line with the direct costs of the scheme, the extent of the pass-through of the direct costs of the scheme to beverage prices has been greater in the non-alcoholic beverage market than in the alcoholic beverage market. The remainder of this section provides our draft findings of each of the beverage markets in more detail.

6.2.1 Non-alcoholic beverage prices have been broadly in line with scheme costs

Overall, the CDS resulted in an increase of **9.5 cents per container** in non-alcoholic beverage prices over the period November 2017 to July 2018, which is broadly in line with the average direct costs of the scheme of **9.2 cents per container**.

Overall price increases are in line with direct costs for all non-alcoholic beverages

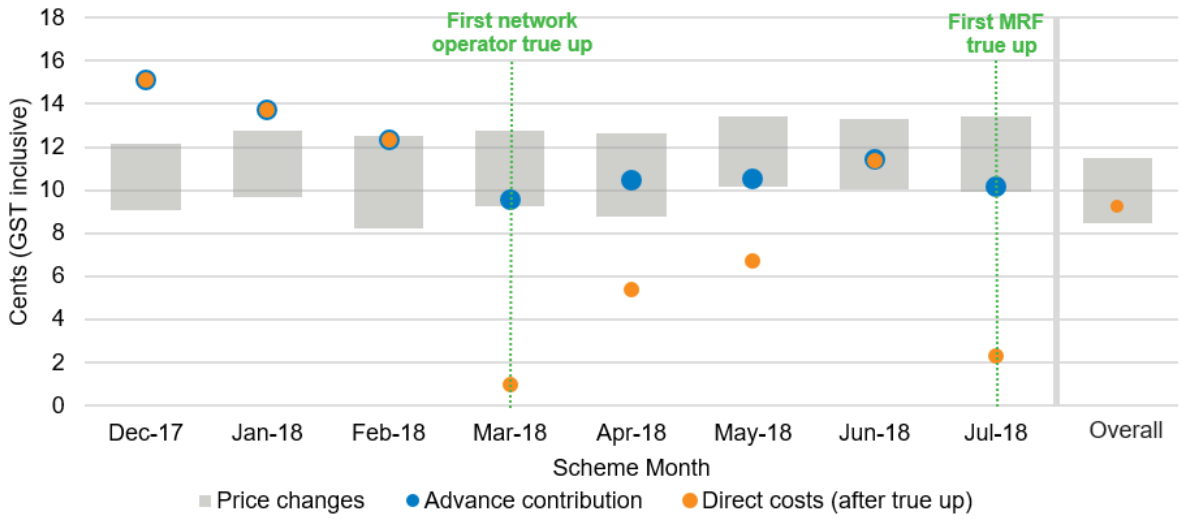
Figure 6.1 to Figure 6.3 show, for bottled water, soft drinks and fruit juices:

- our estimated likely range for the average price increase, and the average direct cost of the scheme over the period December 2017 to July 2018, and
- monthly advance contributions and direct costs of the scheme per container, and our estimated likely ranges for monthly price changes, which are attributable to the introduction of the CDS.

We found that, over the period December 2017 to July 2018 the extent of the pass-through of the direct scheme costs varied across different beverage types:

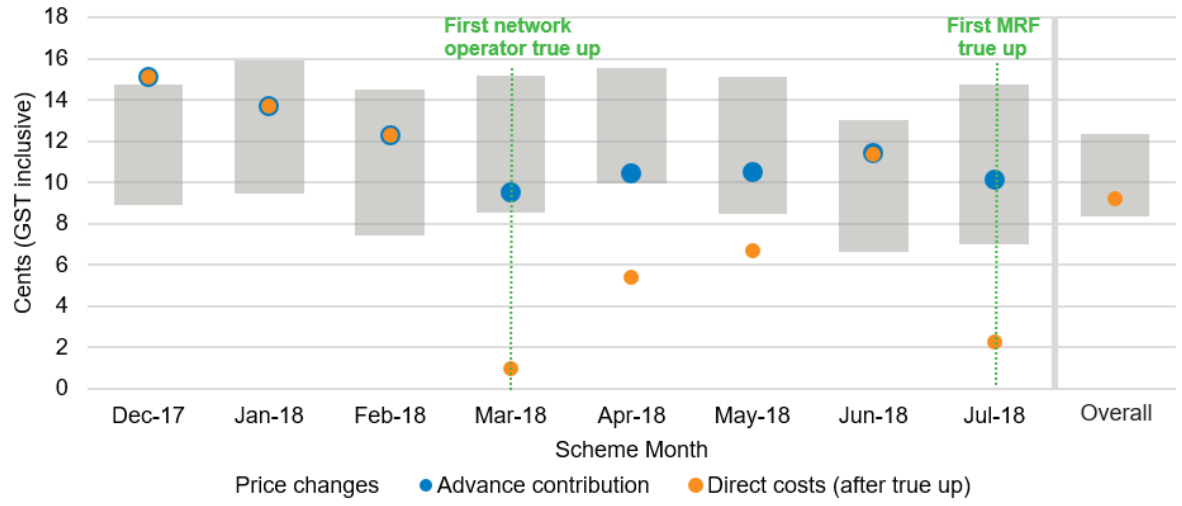
- The overall average price increase in bottled water was **10 cents per container**, and the overall direct cost was within our estimated range for the overall price change.
- The overall average price increase in soft drinks was **10.4 cents per container**, and the overall direct cost was within our estimated range for the overall price change.
- The overall average price increase in fruit juice was **4.8 cents per container**, and our estimated range for the overall price increase was below the overall direct cost.

Figure 6.1 Price increases and scheme costs comparison for bottled water



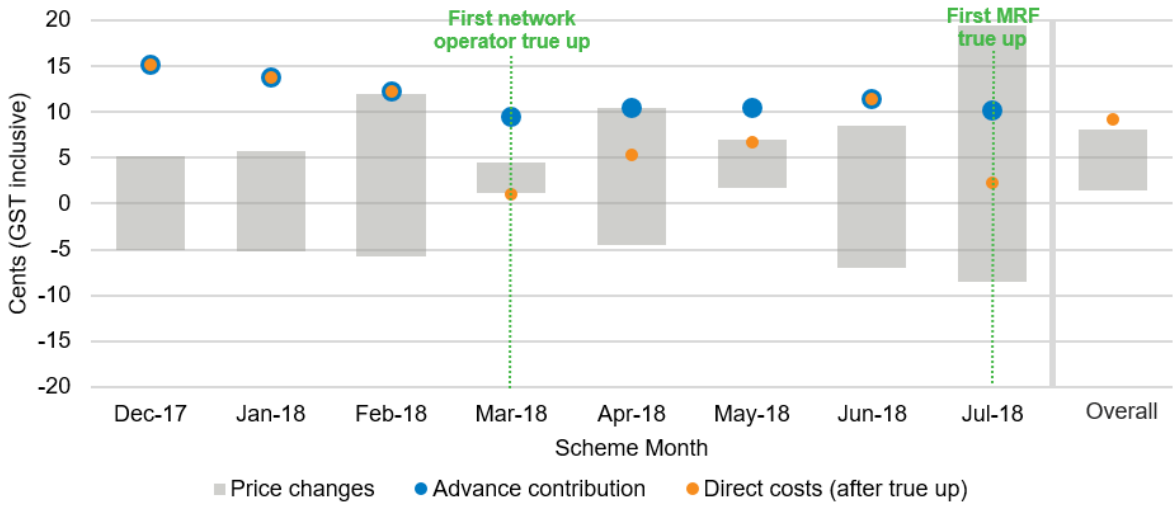
Note: 95% confidence intervals are based on our regression analysis using Sample A.
Data source: IPART analysis using data from Nielsen Homescan and Exchange for Change.

Figure 6.2 Price increases and scheme costs comparison for soft drinks



Note: 95% confidence intervals are based on our regression analysis using Sample A.
Data source: IPART analysis using data from Nielsen Homescan and Exchange for Change.

Figure 6.3 Price increases and scheme costs comparison for fruit juices



Note: 95% confidence intervals are based on our regression analysis using Sample A.
Data source: IPART analysis using data from Nielsen Homescan and Exchange for Change.

Price increases are greater than direct scheme costs in some months

While price increases have typically been in line with the direct costs of the scheme, a monthly comparison of the estimated price increases and scheme costs indicates that prices have increased on average by more than the direct costs of the scheme in some months, driven by monthly and quarterly true ups for network operator and MRF.

In the case of bottled water and soft drinks, the estimated average increases in their prices have exceeded the estimated direct costs since March 2018 when Exchange for Changed has applied monthly network operator true ups. The difference between the direct costs and estimated price increases is the largest in March 2018, in which the direct costs included the largest monthly network operator true up for February 2018, and in July 2018 in which the direct costs included the first quarterly MRF true up for the period December 2017 to March 2018. As for fruit juices, our estimated range for price changes was slightly above the direct cost of the scheme in March 2018.

6.2.2 Alcoholic beverage prices have increased by less than the direct costs of the scheme

Overall, the CDS resulted in an increase of **5.4 cents per container** in alcoholic beverage prices over the period November 2017 to July 2018, which is less than the overall cost of the scheme of **9.2 cents per container**.

Overall price increases are less than direct costs for most alcoholic beverages

Figure 6.4 to Figure 6.6 show, for beer, cider and RTD,

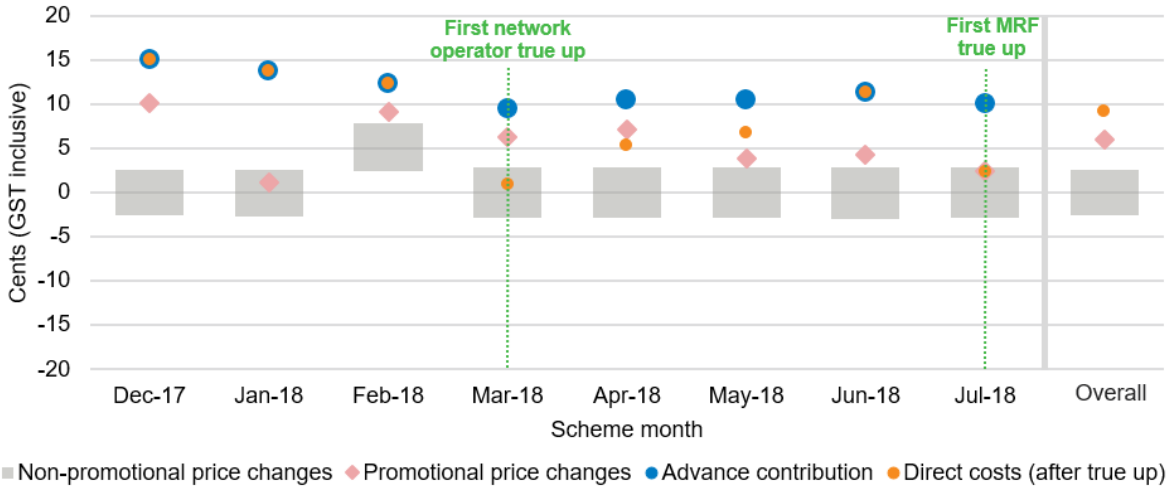
- our estimated likely range for the average price increase, and the average direct cost of the scheme over the period December 2017 to July 2018, and

- monthly advance contributions and direct costs of the scheme per container, and our estimated likely ranges for monthly price changes, which are attributable to the introduction of the CDS.

We found that, over the period December 2017 to July 2018 the extent of the pass-through of the direct scheme costs varied across different beverage types:

- The overall average price increase in beer was **4.5 cents per container**, which is less than the overall direct cost of the scheme.
- The overall average price increase in cider was **11.3 cents per container**.
- The overall average price increase in RTD was **7.6 cents per container**, which is less than the overall direct cost of the scheme.[48]

Figure 6.4 Price increases and scheme costs comparison for beer

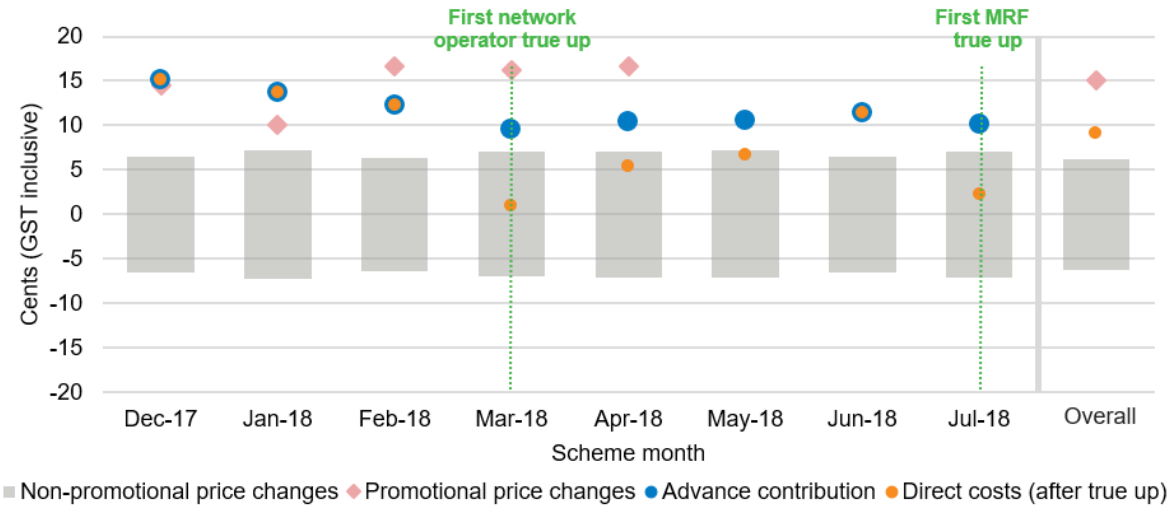


Note: Monthly and overall changes in non-promotional prices are based on 95% confidence intervals from our regression analysis using Sample A. For promotional prices, monthly increases are based on the observed monthly differences in prices between NSW and Victoria, and the overall increase is significant at the 5% level based on two sample t-test for mean difference.

Data source: IPART analysis using Invigor Insights Retail data and information from Exchange for Change.

48 Overall price changes are based on a weighted average of our estimated price changes for promotional and non-promotional prices, where the weights are 75% and 25% for promotional and non-promotional prices, respectively.

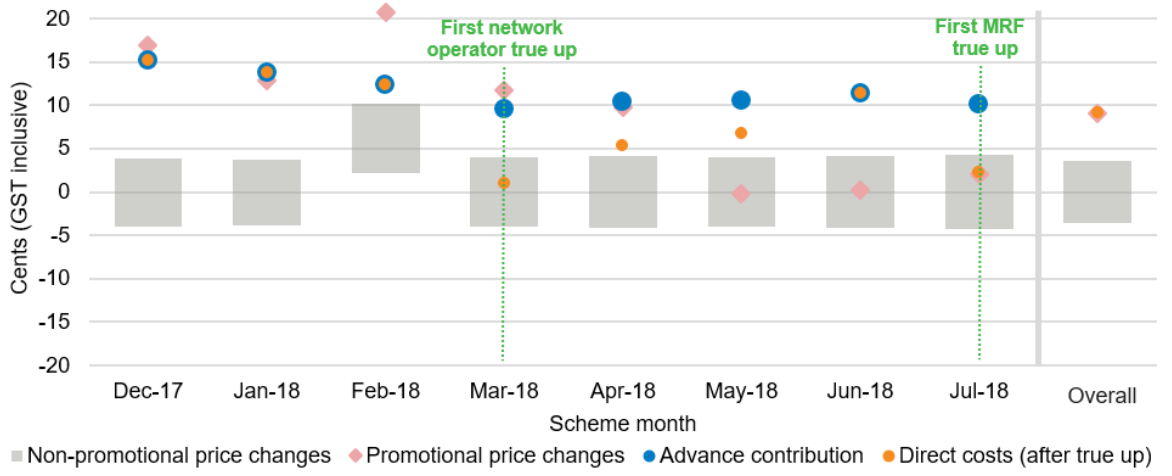
Figure 6.5 Price increases and scheme costs comparison for cider



Note: Monthly and overall changes in non-promotional prices are based on 95% confidence intervals from our regression analysis using Sample A. For promotional prices, monthly increases are based on the observed monthly differences in prices between NSW and Victoria, and the overall increase is significant at the 5% level based on two sample t-test for mean difference.

Data source: IPART analysis using Invigor Insights Retail data and information from Exchange for Change.

Figure 6.6 Price increases and scheme costs comparison for ready-to-drink



Note: Monthly and overall changes in non-promotional prices are based on 95% confidence intervals from our regression analysis using Sample A. For promotional prices, monthly increases are based on the observed monthly differences in prices between NSW and Victoria, and the overall increase is significant at the 5% level based on two sample t-test for mean difference.

Data source: IPART analysis using Invigor Insights Retail data and information from Exchange for Change.

Price increases are greater than direct scheme costs in some months

A monthly comparison of the estimated price increase and scheme costs indicates that non-promotional prices of beer, cider and ready to drink and promotional prices of beer and RTDs have increased by less than or broadly in line with the advance contributions and direct costs after true up. However, promotional prices of cider have increased by more than direct costs after true up.

Our analysis shows that the extent of the pass through of the direct costs varies between different types of alcoholic beverages, price types and month to month:

- For beer, increases in non-promotional prices due to the CDS are less than the direct costs of the scheme. Also, estimated increases in promotional prices have been broadly consistent with the direct costs since December 2017, except for March and April 2018.
- For cider, increases in non-promotional prices are less than the direct costs of the scheme except for March to May 2018. Promotional prices increased by more than the direct costs of the scheme in three of the five months for which we estimated increases in promotional prices due to the CDS[49].
- For RTD, non-promotional prices have not increased by more than the direct costs of the scheme except for March and July 2018. Also, estimated increases in promotional prices have been broadly in line with the direct costs since December 2017, except for February to April 2018.[50]

6.3 Scheme cost volatility leads to price increases

Our analysis above suggests that on average, beverage prices in some months have increased by more than the direct costs of the scheme incurred by suppliers. However, we consider that this is a result of the volatility in the direct costs resulting from the scheme payment and contribution methodology that charges suppliers in advance.

Consistent with a workably competitive market, we have found that different suppliers have responded to this volatility in different ways. For example:

- Lion Nathan halved its CDS charges to customers from 12 to 6 cents per container in March 2018 (ex-GST).[51]
- Coca-Cola Amatil announced on 3 July that from 1 August 2018 it will reduce its CDS rate from 13.59 cents to 10.91 cents (ex GST).[52]

Coca-Cola Amatil also advised that it is using a 'reinvestment program' to return any over-recovery from true ups to consumers through greater use of promotional prices.[53] In its submission to our Progress Report, Coca-Cola Amatil provided an example of coca cola promotional prices in NSW and Victoria before and after the introduction of the CDS and before and after the implementation of the reinvestment program:

- Prior to the introduction of the CDS, the price was the same in NSW and Victoria.

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49 Changes in promotional prices were not estimated for the period May to July 2018 due to small sample size.

50 The monthly estimated increases in promotional prices are based on the observed monthly differences in prices between NSW and Victoria, while those in non-promotional prices are based on statistical testing from our regression analysis. Therefore, it is important to note that, although Victoria is a valid comparison group, the observed differences in promotional prices may not be entirely explained by the introduction of the CDS and hence the CDS impact may be overstated.

51 The Shout, *Lion to halve NSW CDS charges*, at https://www.theshout.com.au/news/lion-halve-nsw-cds-charges/ 5 February 2018, accessed on 21 September 2018.

52 Coca-Cola Amatil, Media Release *CDS: Change to the 'Return and Earn' rate in NSW and ACT*, 3 July 2018.

53 Australian Financial Review, *Coca-Cola Amatil profit falls 6pc, SPC under review*, at https://www.afr.com/business/retail/cocacola-amatil-profit-falls-6pc-spc-under-review-20180820-h148ej, 22 August 2018, accessed on 24 August 2018.

- After the introduction of the CDS and prior to the reinvestment program, the price in NSW was 15 cents higher per container than in Victoria.
- After the reinvestment program (ie, current), the price is the same in NSW and Victoria.

Analysis of promotional prices using Nielsen Homescan data also provides some evidence of price reductions in more recent months, particularly for small sized soft drinks sold in multipacks.

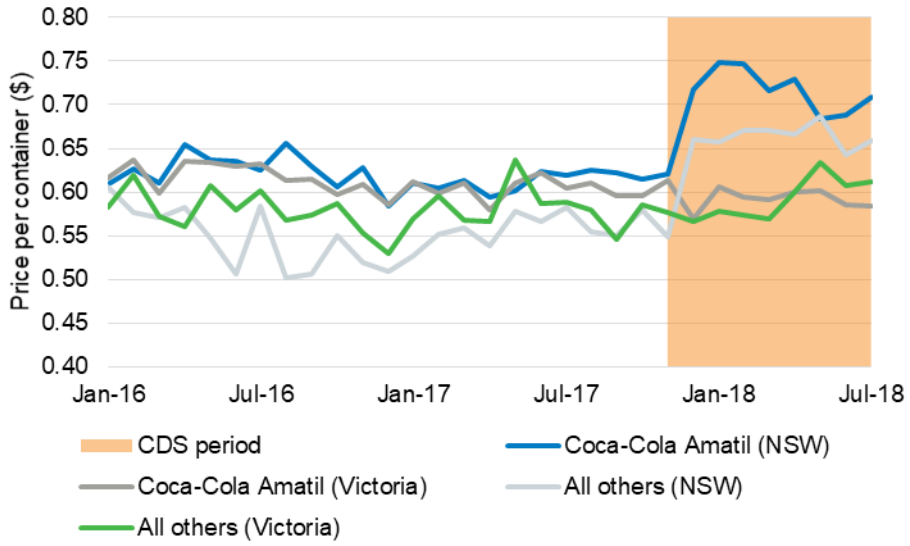
Figure 6.7 shows average monthly promotional prices for the following four groups over the period January 2016 to July 2018. The figure:

- Soft drinks manufactured by Coca-Cola Amatil and sold in NSW
- Soft drinks manufactured by Coca-Cola Amatil and sold in Victoria
- Soft drinks manufactured by all other manufacturers and sold in NSW, and
- Soft drinks manufactured by all other manufacturers and sold in Victoria.

We found that promotional prices of soft drinks manufactured by Coca-Cola Amatil in NSW have increased since December 2017, while those in Victoria remained relatively unchanged. The average price difference between NSW and Victoria has been up to 15 cents over the period December 2017 to April 2018, but has narrowed down to less than 10 cents in more recent months.

Our analysis also shows that in June and July 2018, the average promotional prices of soft drinks produced by other manufactures decreased, and the price difference between NSW and Victoria has reduced substantially.

Figure 6.7 Monthly average promotional prices of small-sized soft drinks sold in multipacks (including GST)



Note: Based on sample of products with prices available for each month from January 2017 (Sample A). A product is defined as Small if size is less than or equal to 600 ml.

Data source: IPART analysis using Nielsen Homescan data.

We also note that the direct costs of the scheme do not include other costs that suppliers may have incurred during the early stages of the scheme. For example, in response to our Issues Paper, The Liquor Stores Association considered that other costs incurred by suppliers include costs of setting up and coordinating the logistics, transport, handling, regular auditing, to ensure that containers are recycled, plus managing the cash flow. It argued that for bottled water, these costs are significant and can equate to price increases of around 60%.[54]

We note that the administrative burden for suppliers is likely to be higher in the early stages of the CDS and acknowledge that suppliers incurred or incur other costs in addition to the 'direct' costs that we have quantified and set out in Chapter 4. Some suppliers may have sought to recover some of these costs in months where the direct costs of the scheme have been lower than the advance contributions.

6.4 Invoicing first suppliers in arrears to reduce scheme cost volatility

The current system where Exchange for Change invoices first suppliers one month in advance with a payment term of seven days creates cash flow pressures and can mean consumers are paying more for container beverages than the 'direct' cost of the CDS.[55]

In our Progress Report we made a preliminary draft recommendation that Exchange for Change publish monthly forecasts of container volumes and scheme cost in advance of issuing invoices each month, to help improve the transparency of forecasting and reduce the volatility in the direct costs of the scheme. We note that Exchange for Change has provided further information in its monthly newsletters on how it has estimated its forecast and has been improving its forecasting since the commencement of the scheme. However, a more effective way to reduce volatility would be to move to a system where first suppliers are invoiced in arrears.

We consider that invoicing first suppliers in arrears would reduce the need for true-ups, the costs of forecasting and reconciling payments and alleviate cash flow pressures on first suppliers. It would also benefit consumers as it would reduce volatility in scheme costs and make it more likely they are only paying for the actual direct costs of the scheme. Moving to invoicing in arrears would make billing arrangements in NSW more consistent with the South Australian and Northern Territory schemes and the proposed scheme in Queensland.

6.4.1 Stakeholders support moving to an arrears invoicing model

In our Progress Report we made a preliminary draft recommendation for the EPA and Exchange for Change to amend the payment terms for first supplier contributions to the CDS from seven days to 30 days, consistent with the payment term requirements for NSW Government agencies.

54 Liquor Stores Association submission to IPART Issues Paper, March 2018, pp 6-7.

55 The 'direct' costs of the scheme are those that Exchange for Change recovers from first suppliers and include scheme administration costs, regulatory compliance costs, network operator collection costs and refunds to material recovery facilities (MRFs)

Submissions from the Australian Beverages Council and National Retail Association[56] supported our Draft Recommendation. However, whilst both these stakeholders support moving to a 30 day payment term, they consider that invoicing in arrears would be superior.

Whilst noting the impact on cash flows was an issue for both small and large beverage manufacturers, the Australian Beverages Council submitted that "the NSW Government should immediately instruct Exchange for Change, the NSW Scheme Coordinator to investigate ways in which the NSW CDS can be amended to change the invoicing and payment terms from seven days in advance, to 30 or better still like Qld, 60 days in arrears."[57]

The National Retail Association supported the Government funding a float to avoid the need for true ups. This would also reduce the costs for industry of managing cash flows and reconciling forecasts and actuals.[58]

The costs to beverage suppliers of the current forecasting and invoicing model, and the need to move to an arrears model, was a key theme at a recent CDS Industry Workshop.[59]

In response to our Preliminary Draft Recommendation, Exchange for Change put forward several options including:

1. No changes to scheme except to extend trading terms for beverage suppliers from 7 days to 30 days. This would result in a negative balance of around $2.5 million each quarter at the time payments are made to the MRFs.
2. Extending payment terms from 7 days to 30 days for small beverage suppliers only.
3. Extending payment terms from 7 days to 30 days for all suppliers in conjunction with a change to payment terms for the Network Operator.
4. Implementing an arrears invoicing model instead of current forecast model. Under the proposed model, beverage suppliers would report their supplied volumes by the 20th day after month end, with Exchange for Change determining costs by the first day of the next month and invoicing suppliers on the next business day. Payment terms would still be 7 days after invoice.[60]

6.4.2 An arrears model would mean consumers pay the actual costs of the CDS

We consider that invoicing suppliers in arrears would mean that consumers are more likely to pay for the direct costs of the scheme in the month that invoices are issued and significantly reduce the need for true ups. It would also reduce the administrative burden of the scheme for first suppliers and Exchange for Change by reducing the need for true-ups and the costs of forecasting and reconciling payments.

We have made a draft recommendation to implement an arrears model similar to Option 4 proposed by Exchange for Change. Consistent with Exchange for Change's proposed

56 National Retail Association submission to IPART Progress Report, June 2018, p 2.
57 Australian Beverages Council submission to IPART Progress Report, June 2018, pp 8-9.
58 National Retail Association submission to IPART Progress Report, June 2018, p 3.
59 The NSW Small Business Commissioner and the Cross Border Commissioner held a Container Deposit Scheme Industry Workshop on 29 June 2018.
60 Exchange for Change submission to IPART Progress Report, June 2018, pp 1-5.

model, our draft recommendations remove the need to true up costs for supplier container volumes and network operator volumes. However, we are recommending further changes to Option 4 to smooth the quarterly MRF true up over three months and extending payment terms from 7 days to 30 days. In addition we consider that the period for suppliers to adjust supply volumes and which results in further true ups should be limited to 12 months after an invoice is issued.

Currently there are three different estimates of container volumes in the advance invoices paid by beverage suppliers:

1. forecast containers volumes supplied into NSW
2. forecast containers volumes returned through the Network Operator's collection points, and
3. forecast containers volumes returned via kerbside recycling to the MRFs.

Invoicing beverage suppliers in arrears would mean that they would be invoiced for the actual containers supplied and returned through the network operator. However, these invoices would still contain forecasts for the number of containers returned through the MRFs, and it is likely that there would be a true-up required once the quarterly eligible container factor is published by the EPA roughly six weeks after each quarter.[61] We consider the impact of this quarterly true up could be minimised by smoothing it over three months based on the volume of containers returned to the MRFs in the previous three months.

Further, we consider that the period against which true ups can be made should be limited to 12 months (that is, adjustments could only be made to true up an invoice for up to 12 months after it was issued, for example corrections made against an invoice issued in June 2018 could only be made up until June 2019). Currently, true ups can occur in perpetuity, resulting in adjustments made for one beverage supplier flowing through to other beverage suppliers, particularly for the costs that are based on their relative market share, such as the monthly compliance fee and the monthly administration fee. This can contribute to the administrative complexity of the scheme and increase volatility in costs.

The need for ongoing true up adjustments should also be reduced through the processes undertaken by Exchange for Change such as quarterly audits of first suppliers and the requirement for first suppliers to execute statutory declarations in relation to their supply volumes at the end of each financial year.

Exchange for Change have estimated their proposed arrears model would require a cash reserve of approximately $15 million as the scheme account would drop into a negative balance quarterly when payments are made to the MRFs. An overdraft could fund this reserve, however such an overdraft would require security, which Exchange for Change has proposed the NSW Government provide.

61 MRF operators report monthly to the Scheme Coordinator the total measured weight of each relevant output type. The eligible container factors are state-wide averages of the number of eligible containers in each kilogram of a material type (eg glass or PET). See Material recovery facility operator at https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn/material-recovery-facility-operator accessed on 22 August 2018.

Exchange for Change note that the size of the overdraft could be lower ($10.5 million) if the payment terms between them and TOMRA Cleanaway were varied – from the current four weeks in advance to two weeks in advance and payment in seven days. Currently the Network Operator invoices Exchange for Change weekly, four weeks in advance, and Exchange for Change is required to pay within of 10 business days.[62] Therefore changing this to invoice two weeks in advance, with payment in seven days, would mean that TOMRA Cleanaway would continue to be able to provide refunds to consumers at collection points.

We recommend the NSW Government provide the security for the overdraft to fund the proposed arrears invoicing model. This is consistent with the approach taken in other jurisdictions where the initial cash reserves for the scheme has been funded by government. This would not impact on the NSW Government budget as the cost of obtaining and servicing the overdraft (interest and any fees) would be an additional scheme cost payable by all beverage suppliers.

We note, however, that the current system of invoicing in advance imposes a cost on suppliers as they are effectively loaning the working capital to the scheme. In addition, the administration involved in forecasting and processing true ups imposes a further, often large, cost on beverage suppliers, in many cases requiring additional staff. An arrears model would largely remove these costs.

As Exchange for Change notes, NSW is one of the only container deposit schemes currently operating in Australia that is a based on a forecast model. Both the South Australian and Northern Territory schemes operate in arrears. Similarly the Queensland scheme to be introduced on 1 November 2018 will operate in arrears.[63]

Exchange for Change is also the Scheme Coordinator for the ACT's CDS which commenced on 30 June 2018. Invoices are issued based on the forecast for the current month with a true-up one month later.[64] This allows for greater forecast accuracy than currently in NSW where invoices are issued one month in advance of the operating month.

We note that the arrears model put forward by Exchange for Change (Option 4 above) maintains invoice payment terms of seven days (37 days after month end). Under this option it is likely that suppliers would continue to face cash flow pressures as with the current payment terms. Therefore, in addition to moving to an arrears model of invoicing, we recommend that in payment terms are extended to 30 days. This will be discussed further in Chapter 7.

Draft findings

6 The changes in container beverage prices that are due to the CDS are consistent with a workably competitive market. That is:

- There is no evidence of sustained, systemic increases in beverage prices above the costs of the CDS.

62 Exchange for Change submission to IPART Progress Report, June 2018, pp 3-6.
63 Exchange for Change submission to IPART Progress Report, June 2018, p 5.
64 Exchange for Change, *ACT CDS Scheme Pricing*, April 2018, at https://www.actcds.com.au/downloads/ACT_CDS_Pricing_Guide-April_2018.pdf accessed on 18 June 2018.

– While average beverage prices in some months have increased by more than the direct costs of the scheme incurred by suppliers, this is a result of the volatility in the direct costs resulting from Exchange for Change billing suppliers in advance.

Draft recommendations

1 To reduce the volatility in scheme costs, the NSW Environment Protection Authority and Exchange for Change implement an arrears invoicing model arrangement for first supplier contributions to the CDS, with payment terms of 30 days.

2 The NSW Government provide the security for the overdraft required to implement an arrears invoicing model arrangement for first supplier contributions to the CDS. The cost of the overdraft should be included as a scheme cost to be recovered from participants.

3 Exchange for Change and TOMRA Cleanaway vary their payment terms such that the Network Operator invoices the Scheme Co-ordinator two weeks in advance with payment in seven days, rather than the current four weeks in advance with payment within 10 business days. This would reduce the size of the overdraft required to implement an arrears invoicing model arrangement for first supplier contributions to the CDS, whilst ensuring TOMRA Cleanaway continues to be able to provide refunds to consumers at collection points.

4 That quarterly true ups to beverage suppliers for container volumes returned via kerbside recycling to the MRFs be smoothed over three months based on the volume of containers returned to the MRFs in the previous three months.

5 To reduce the ongoing cost volatility and administrative burden associated with true ups continuing in perpetuity, the period against which true ups can be made should be limited to 12 months after an invoice is issued.

7 Other effects of the CDS on competition

To assess whether the CDS has imposed a material restriction on competition in the container beverage market, we applied an approach similar to the 'competition tests' included in regulatory impact statements. This involved defining the relevant markets and then, in each market, assessing whether there have been:

- systemic changes in supplier behaviour since the introduction of the CDS other than price changes (discussed in Chapter 5) such as an increase in barriers to entry or a reduction in the product choice or information available to consumers
- systemic changes in market shares or market composition
- one-off instances of unfair or unjustified supplier behaviour with the potential to harm the competitive process.

The sections below summarise our draft findings and recommendations then discusses these in more detail.

7.1 Summary of draft findings and recommendations on effects on competition

We found no specific evidence that the CDS has had a material impact on competition in overall beverage markets to date. For example, there is no evidence that the scheme has impacted on market shares differently for larger or smaller suppliers, or that the CDS has resulted in a reduction in product choice or information available to consumers.

However, we did identify three issues related to the operation of the CDS that we consider have the potential to reduce the competitiveness of some market participants – particularly smaller businesses and boutique beverage suppliers. We found:

- the container beverage approval fee of $80 per product has a disproportionate impact on small businesses and boutique beverage suppliers, and creates a potential barrier to entry and may restrict the ability of existing participants to compete in the long term
- the 7-day payment terms on Exchange for Change's invoices to suppliers may impose cash flow pressures on small and medium size businesses
- the 5-year term for which product registrations are valid creates an additional cost and administrative burden for first suppliers and the EPA, which is not outweighed by the benefit of an up-to-date list of registered containers.

To ensure that the competitiveness of market participants is not affected, we are recommending the container approval fee be reduced to $13.70 per container, the payment terms on Exchange for Change's invoices to suppliers be increased to 30 days, and that there be no expiry date on container registrations.

In addition, we found that the CDS has had an adverse impact on independent NSW retailers located near the Victorian border, because these retailers incur additional CDS-related costs that their Victorian competitors do not. To address these findings, the NSW Government has already announced a temporary assistance package for small to medium sized businesses in the NSW-Victoria border region that can demonstrate they have been adversely affected due to the CDS.[65]

7.2 Separate markets for alcoholic and non-alcoholic container beverages

In defining the relevant markets for analysing whether the CDS has materially restricted competition, we considered:

1. the **product classes and types** being offered (eg, non-alcoholic and alcoholic container beverages, beer and cider, soft drinks and water) and how readily they can be substituted for each other
2. the **geographic space** in which substitution can occur (eg, Australia, NSW, or regions)
3. the **functional** level of production in which competition occurs (eg, manufacturing, wholesaling or retailing).

We found that for the purposes of assessing the effect of the CDS on competition, there are separate markets – alcoholic container beverages and non-alcoholic container beverages – as well as subcategories within each. This applies across the manufacturing, wholesaling and retailing sectors of the market. We note that there is a degree of vertical integration in the industry with some businesses operating across the manufacturing, wholesale and retail sectors.

In general, the geographic market is Australia-wide for manufacturing and wholesaling, but in the retail market there are smaller regional or local submarkets, particularly in the retail market along the NSW border with Victoria. Appendix D contains more detail about defining the relevant markets.

7.3 No specific evidence of material impact on competition due to CDS

To assess whether the CDS has had a material impact on competition in the container beverage markets in the nine months to July 2018, we examined a range of competition indicators. For example, we looked for evidence of systemic and one-off changes in supplier behaviour since the scheme was introduced, such as reductions in innovation or rivalry between market participants, or in information and choice for consumers. We engaged The CIE to analyse whether the CDS has led to changes in the market shares of small and large beverage suppliers (ie, manufacturers) and retailers.

7.3.1 No specific evidence of changes in supplier behaviour due to CDS

We found no specific evidence of either systemic or one-off changes in supplier behaviour due to the CDS to date. We did not receive any reports from consumers of one-off or

65 NSW Government, Media Release, Assistance for Border Businesses Impacted by Container Deposit Scheme, 8 June 2018.

unjustified supplier behaviour with the potential to harm the competitive process. Nor did we receive reports to suggest the CDS is limiting the information available to consumers or reducing the choice of products available. While there were some initial reports of prices increasing by more than 10 cents per container, we consider that these were a result of consumers not understanding that the scheme has additional costs which means that prices may increase by more than the 10-cent refund per container provided to consumers.

We analysed the Invigor Insights Retail dataset on the number of products and brands available in the beverage market for beer, cider and ready to drink (RTD) drinks to see if there has been a substantial reduction in product and brand choice following the introduction of the CDS. We did not find any material change in the number of products and brands available after the scheme was introduced. In addition, the proportions of product offering by major and non-major liquor manufacturers remained unchanged.

We considered market reports from IBISWorld on the various beverage markets affected by the CDS. In several recent reports, IBISWorld noted that although beverage markets can be highly concentrated, they remain competitive with a trend of new smaller niche operators playing larger roles in the market. For example, competition in the beer market is becoming more intense due to the growing market shares of craft beer makers. It is also becoming less price-related, and more driven by branding and beer consumption trends.[66] Similarly, many smaller fruit juice suppliers are releasing premium products, increasing competition in some segments and growing the share of niche operators.[67]

7.3.2 There is no specific evidence that the CDS has impacted on market shares

We engaged The CIE to analyse whether the CDS has impacted on market shares in the container beverage markets. By comparing the year-on-year changes in total beverage supply in periods before and after the introduction of the CDS, it found that these changes were quite volatile in both periods, so it is not possible to identify any impact from the CDS.[68]

Although there is no specific evidence to suggest total beverage supply in NSW has changed due to the CDS, individual beverage suppliers may have made different supply changes in response to the scheme, and the supply decisions of smaller beverage suppliers are likely to be masked by larger beverage suppliers. However, there is no clear evidence at this stage that the CDS has impacted on market shares differently for larger or smaller suppliers or retailers.

The market share for non-alcoholic beverage supply is highly concentrated. Using data from Exchange for Change, to examine supply changes before and after the CDS, The CIE was not able to find any evidence of changes in market share between different sized suppliers, irrespective of container type, since the introduction of the CDS.[69]

66 IBISWorld, Beer Manufacturing in Australia March 2018, p 20.
67 IBISWorld, Fruit Juice Manufacturing in Australia, May 2018, p 20.
68 The CIE, *NSW Container Deposit Scheme, Impacts on beverage expenditure and consumption*, Draft Report, September 2018, p 27.
69 The CIE, *NSW Container Deposit Scheme, Impacts on beverage expenditure and consumption*, Draft Report, September 2018, p 28.

The market for alcoholic beverages is similarly concentrated. Again, The CIE found that there was weak evidence for changes in alcoholic beverage supply between different sized suppliers since the introduction of the CDS.[70]

Draft findings

7 At this stage, there is no specific evidence that the CDS has imposed a material restriction on competition in beverage markets.

8 The CDS has not resulted in changes in supplier behaviour that would indicate a reduction in competition. That is, there is no specific evidence of a reduction in product choice or information available to consumers.

9 The CDS has not resulted in material changes in market share or market composition in beverage markets.

7.4 Action required to ensure markets remain competitive

Although we found no specific evidence that the CDS has imposed a material restriction on competition in the beverage market, we have heard from stakeholders that various aspects of the CDS have the potential to affect the competitiveness of some market participants – in particular smaller businesses and boutique beverage suppliers. To address these concerns, we are making draft recommendations aimed at alleviating cash flow pressures and removing potential barriers to entry for small beverage suppliers.

7.4.1 Extending payment terms to 30 days will reduce cash flow pressures

In line with our Progress Report, we consider the EPA and Exchange for Change should amend the payment terms for first supplier contributions to the CDS from seven to 30 days, consistent with the payment term requirements for NSW Government agencies. This is necessary to ensure the CDS does not put cash flow pressure on beverage businesses, particularly small and medium size businesses.

As discussed in Chapter 6, to reduce the volatility of scheme costs we are making a draft recommendation to move to an arrears model of invoicing first suppliers. As well as moving to invoice first suppliers in arrears, we are also recommending that payment terms be extended from seven days to 30 days.

70 The CIE, *NSW Container Deposit Scheme, Impacts on beverage expenditure and consumption*, Draft Report, September 2018, p 28.

Exchange for Change's proposed arrears invoicing model maintains a 7-day payment term.[71] It estimates that this would require cash reserves of up to approximately $15 million, to be funded by a bank overdraft. We expect that extending the payment terms to 30 days would increase the interest costs of the required overdraft by up to $429,000 a year.[72] This would be an additional scheme cost for first suppliers, however we consider these costs would be outweighed by the benefit to first suppliers of improved cash flows.

7.4.2 Container approval fees could create barriers to entry for smaller suppliers

Currently, the EPA charges suppliers an $80 container approval fee to register each different container product covered by the CDS that they supply to NSW. This registration is valid for five years, and is capped annually at $3,200 for small suppliers.[73]

Many stakeholders submitted that this fee created a competitive disadvantage for smaller businesses wanting to sell into NSW. We agreed with stakeholders that the nature of the container approval fee means that it will have the biggest impact on first suppliers that are small businesses and have a relatively large number of eligible beverage containers. This is often the case for craft beer manufacturers or small beverage importers that offer a large variety of products and regularly introduce new products, often in relatively small quantities.

This suggests that the fee could act as a barrier to entering or remaining in the NSW market for these small businesses and, over time, could lead to systemic changes in market composition. It could also discourage product innovation, particularly for small businesses that produce boutique beverages, which could impact on the competitiveness of markets.

We engaged The CIE to review the costs the EPA recovers through its container approval fee. The CIE found that the $80 application fee charged to first suppliers for each 'class of container' comprised an amount to recover the fixed cost of the CDS Portal, and a smaller amount to recover the variable cost of EPA staff assessment time. The $80 application fee was set based on estimates of the number of container approval applications that would be received in the first year, and each year thereafter, and a payoff period for the upfront IT costs of 5 years.[74]

The CDS Portal enables many aspects of supplier registration and container registration approval processes to be automated, reducing administration time and costs for first suppliers and the EPA. It also receives applications for collection point arrangements. To

71 Exchange for Change submission to IPART Progress Report, June 2018, p 5.

72 Using an overdraft rate of 6.92% which is current rate for the Westpac Business Overdraft – Comm Sec account at https://www.canstar.com.au/compare/business-overdrafts-commercially-secured/?profile=Commercial+property&amount=250000&state=NSW accessed on 10 September 2018. Extending payment terms from 7 to 30 days could require an overdraft for an extra 23 days four times a year (when quarterly payments are made to the MRFs). Extending the payment term from 7 to 30 days would also be likely to increase the size of the required overdraft; we have estimated an average overdraft of $20 million could be required.

73 See *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017*, NSW Government Gazette No 1 of 5 January 2018, p 3. A small supplier supplies 2.5 million beverage containers or less in a financial year.

74 The CIE, *NSW Container Deposit Scheme, EPA fees for monitoring, compliance and approving containers*, Draft Report, September 2018, p 19.

date, approximately 80% of the total development cost of the CDS Portal has been recovered through the container approval fee.[75]

While it is appropriate that the costs associated with container approvals are subject to cost recovery, only the variable cost of the EPA staff's assessment time is directly related to the approval of the container and as such should be recovered through the container application fee.

The CIE estimates that for years 2 to 5 of the scheme, the efficient EPA staff cost (including on-costs) per container registration approval is $13.40 ($2017-18).[76] Therefore, we consider that the container application fee should be $13.70 ($2018-19). This would reduce the impact on smaller businesses wanting to sell beverages into NSW. Under this amended cost recovery arrangement, the current cap on the application fee for small businesses could be removed, thereby reducing administrative complexity.

However, we consider it is more appropriate the remaining fixed costs of the CDS Portal (approximately $150,000) are recovered from first suppliers through the scheme compliance fee as these costs are not clearly linked to the suppliers charged the application fee, and they do not vary with the number of containers. Similarly, the CDS Portal maintenance costs and user licences should also be recovered through the scheme compliance fee during the initiation phase.

We have included these costs in our recommended scheme compliance fee, discussed in Chapter 8.

7.4.3 The EPA's fees should be indexed by the change in the CPI

The EPA's main costs are labour costs. Therefore, as an alternative to changes in the CPI, we considered constructing a cost index that uses changes in the WPI (public sector, NSW) for labour costs and the change in CPI for all other costs. However, there are two disadvantages associated with using the change in the WPI as the main component of an industry-specific cost index:

- the change in the WPI may not reflect changes in the EPA's costs.
- the change in the WPI does not capture changes in productivity. We would need to make a judgement about labour productivity to make provision for efficiency gains.

On balance, we consider that changes in the CPI will capture changes in the EPA's CDS costs. We therefore recommend that fees are updated on 1 July each year using changes in the CPI.

75 The CIE, *NSW Container Deposit Scheme, EPA fees for monitoring, compliance and approving containers*, Draft Report, September 2018, pp 23-25.

76 The CIE, *NSW Container Deposit Scheme, EPA fees for monitoring, compliance and approving containers*, Draft Report, September 2018, p 19.

7.4.4 Renewal of container approvals should not be required

In contrast to the NSW CDS, container approvals under the South Australian scheme do not expire,[77] and no container approval fees are charged under the Northern Territory and ACT schemes or proposed under the Queensland scheme.

The EPA advised that the container renewal process was to ensure the database of containers does not become cumbersome and overburdened with containers no longer in use. It understands that the South Australian scheme has a database of 40,000 containers, and there is no clarity about how many of these are active in the scheme. However, we consider while there may be some benefit in having an accurate up-to-date database of containers, this is unlikely to outweigh the cost to suppliers and the EPA of renewing container approvals every five years. Therefore we are recommending that containers be registered for the CDS once only, with no expiry.

Currently, the NSW scheme requires each 'class of container' to be registered, rather than the unique container characteristics (dimensions and material type). That is, each container must be registered for each type or flavour of beverage it contains. Therefore in many cases containers with the same structure are registered multiple times by first suppliers. For example, Schweppes has registered 89 'classes of containers' in the PET soft drink category for only 10 unique containers based on the structure of the container.[78] This approval process duplicates the EPA's assessment of container characteristics when only the product and barcode vary.

However, the scheme design requires eligible containers to be recognised at collection points by the barcode of each product. We understand this is to reduce fraud in the scheme. Given this, we do not propose to recommend changing the requirement to register each 'class of container'. We consider that setting the application fee to recover only the efficient variable costs of assessment, estimated at $13.70 per application, with no expiry, would mean the requirement to register each 'class of container' will have less impact on beverage suppliers than currently, particularly for smaller boutique beverage suppliers. We consider that this would be the case even with the removal of the current cap for small beverage suppliers.[79]

Draft recommendations

6 The EPA's container registration approval fee be set at $13.70 to recover the variable costs of assessing applications for container approvals. Under this approach:

- the remaining unrecovered fixed costs associated with the CDS Portal, and its annual maintenance and licence costs, are recovered through the Scheme Compliance Fee, and

77 We note that the SA registration fees are higher than NSW for applications up to 15 containers, but the average fees are lower for applications of more than 15 containers: for applications with 1 label $307.50; 2-5 labels $512.50; 6-10 labels $758.70; 11-20 labels $1,250.50; and more than 20 labels $2,234.50. Application for beverage container approval at https://www.epa.sa.gov.au/environmental_info/container_deposit/resources, accessed on 19 September 2018.

78 NSW Government Return and Earn Container Search, https://cds.epa.nsw.gov.au/CDSContainerSearchPage accessed on 22 August 2018.

79 Current cap is for more than 40 applications for suppliers of 2.5 million beverage containers or less in the preceding financial year.

– the current cap on annual application fees for smaller beverage suppliers should be removed.

7 All CDS related fees to be indexed by the change in the CPI (All groups, Australia) to March of that year.

8 That containers be registered for the CDS once, with no expiry. Approval for currently registered containers should also not expire.

7.4.5 The CDS has had an adverse impact on NSW retailers in the NSW-Victoria border area

In our Progress Report we considered that retailers located close to NSW's border may face a competitive disadvantage if the bordering state does not have a similar container deposit scheme – as is the case in the Albury-Wodonga area. In May, the NSW Government asked us to further investigate and report on the impact of the introduction of the CDS on NSW businesses in this area.

We found that the introduction of the CDS has had an adverse impact on independent retailers located near the Victorian border, and particularly on retailers that earn a large proportion of their container beverage sales revenue from multipack products (ie, products with seven or more containers, such as cases of soft drink and beer). This is because NSW retailers in this area incur additional CDS costs, which Victorian retailers do not.

For example, over a two-week period in May, we observed price differences between NSW and Victorian retailers in the border area of between 10 cents for a single container and around $4.15 for a multipack of 30 cans. We considered that price differences towards the end of this range are sufficiently large to motivate customers who purchase multipack products to change their purchasing behaviour and adversely impact NSW independent retailers located near the Victorian border.

To address the findings of our investigation, the NSW Government announced a temporary assistance package for small to medium sized businesses in the NSW-Victoria border region that can show they have been adversely impacted by competition with Victorian retailers as a result of the introduction of the CDS. The package provided financial support and business advice to assist businesses in adjusting to the introduction of the CDS.[80]

At the request of the NSW Government, we assessed applications for assistance and made recommendations to the Government on the levels of assistance to be provided to eligible businesses. Applications for financial assistance closed on 31 August 2018.

Draft finding

10 The introduction of the CDS has had an adverse impact on independent retailers located near the Victorian border, in particular those retailers with a large proportion of their container beverage sales revenue from multipack products (such as cases of soft drink and beer).

80 NSW Government, Media Release, Assistance for Border Businesses Impacted by Container Deposit Scheme, 8 June 2018.

The NSW Government has provided a temporary assistance package for small to medium sized businesses in the NSW-Victoria border region that showed they had been adversely impacted by competition with Victorian retailers as a result of the introduction of the CDS.

8 Other market impacts of the CDS on consumers

To assess whether there have been other unintended or unanticipated market impacts on consumers due to the CDS that require Government action, we considered whether consumers have changed their beverage purchasing or consumption behaviours since the scheme was introduced.

We also collected feedback from stakeholders on any aspects of the CDS that could be changed to reduce the costs of the scheme, improve its efficiency, and help the NSW Government achieve its policy objectives. Based on this feedback, we examined:

- the efficiency of the EPA's scheme compliance fee – which makes up around 1-2 per cent of the CDS' direct costs to suppliers
- the availability of and consumers' access to TOMRA Cleanaway collection points to return beverage containers, particularly in regional NSW
- other scheme features that affect the costs and effectiveness of the CDS.

The sections below summarise our draft findings and recommendations and then discusses them in more detail.

8.1 Summary of draft findings and recommendations on other market impacts on consumers

We found that the CDS has reduced consumption of non-alcoholic beverages in NSW households by around 790 mL per household per month. This represents a reduction of around 5.5% in average household non-alcoholic beverage consumption.[81] At the same time, the CDS has increased expenditure on non-alcoholic beverages by around 93 cents or about 4.8 per cent per household per month.[82] This impact is not unexpected, given the price effects of the scheme (discussed in Chapter 5). We have not been able to draw conclusions about the impact of the CDS on the consumption of and expenditure on alcoholic beverages as there is no equivalent data set available for alcoholic beverages.

We also found that the NSW EPA's scheme compliance fee should recover the efficient costs it incurs in undertaking its regulatory and enforcement activities only. In line with The CIE's draft findings on the efficient costs of these activities, we are making a draft recommendation to reduce the monthly scheme compliance fee from its current level of $300,000 to $284,000 from 2020-21, and then to $157,000 from 2022-23.[83]

81 The CIE, NSW Container Deposit Scheme: Impacts on beverage expenditure and consumption, Draft Report, 11 September 2018, p 2.
82 The CIE, NSW Container Deposit Scheme: Impacts on beverage expenditure and consumption, Draft Report, 11 September 2018, p 2.
83 $ 2018-19

During our review stakeholders have commented about limited access to collection points, particularly in some regional areas. If beverage consumers are unable to easily get their refund from collection points it means they are bearing these costs through higher prices.

The costs of establishing and operating collection points differ between locations and the type of collection point (i.e. RVM, automated depots and over the counter collection points). Any changes to the current arrangements that require changes to TOMRA Cleanaway's obligations would need to be reflected in the network operator fees that are charged to first suppliers and recovered from consumers.

Finally, we found that key elements of the CDS lack transparency, and are making a draft recommendation that the EPA publish a contract summary of each of its agreements with Exchange for Change and TOMRA Cleanaway to improve transparency.

8.2 CDS has reduced consumption of non-alcoholic beverages and increased expenditure

As previous chapters have discussed, the CDS has increased the costs of supplying beverages into the NSW market. The extent to which these costs have been passed onto consumers in the form of higher retail prices depends on the beverage category. To assess the impact of this on consumers' consumption of container beverages, we engaged The CIE to estimate whether, as a result of the scheme, consumers are buying less container beverages or shifting their consumption to non-CDS beverages.

The CIE could only assess the impact on non-alcoholic beverages, as suitable data for assessing the impact on alcoholic beverages was not available. It used household-level data on consumption and expenditure on non-alcoholic beverages from the Nielsen Homescan Consumer Panel to compare the behaviour of NSW households before and after the introduction of the CDS with a control group (Victorian households).

The CIE found that the CDS may have reduced consumption of non-alcoholic beverages by around 790mL per household per month. This represents a reduction of around 5.5% in average household non-alcoholic beverage consumption and has been driven by reductions in soft drink and bottled water.[84] These consumption impacts are largest for multi-pack beverage products rather than single beverages.

The CIE also found the CDS may have increased expenditure on non-alcoholic drinks by around 93 cents (4.8 per cent) per household per month.[85] This increase was driven by increases in soft drink expenditure.

According to The CIE, the increase in expenditure on non-alcoholic drinks and the fall in consumption implies higher prices for non-alcoholic beverages of between 5 and 10 per cent following the introduction of the CDS.[86] This result is similar to our findings of the price impact of the CDS on non-alcoholic beverages (as discussed in Chapter 5).

84 The CIE, NSW Container Deposit Scheme: Impacts on beverage expenditure and consumption, Draft Report, 11 September 2018, p 2.

85 The CIE, NSW Container Deposit Scheme: Impacts on beverage expenditure and consumption, Draft Report, 11 September 2018, p 2.

86 The CIE, NSW Container Deposit Scheme: Impacts on beverage expenditure and consumption, Draft Report, 11 September 2018, p 3.

Draft findings

11 The CDS has reduced consumption of non-alcoholic beverages by around 790mL per household per month, representing a reduction of around 5.5 per cent, in average household non-alcoholic beverage consumption.

12 The CDS has increased expenditure on non-alcoholic beverages by around 93 cents, representing an increase of around 4.8 per cent, per household per month.

8.3 Scheme compliance fee should reflect efficient costs

As Chapter 2 discussed, the EPA is responsible for regulating the CDS. Among other things, this role includes administering the regulation, monitoring and enforcing compliance of the Scheme Coordinator and Network Operator with their contractual obligations, and undertaking performance audits of these participants' activities at the Minister's request.

The costs the EPA incurs in undertaking these activities are recovered through a scheme compliance fee paid by Exchange for Change (as Scheme Coordinator), which it in turn recovers from first suppliers. The monthly scheme compliance fee is currently $300,000. This represents 1% to 2% of the total annual costs of the scheme.

In our Progress Report, we found that the scheme compliance fee should be set to reflect the efficient level of regulatory and compliance costs only.[87] Therefore, for our Draft Report, we engaged The CIE to review the EPA's current regulatory and compliance costs and recommend the efficient costs to be recovered through this fee. (The CIE's draft report is available on our website.)

The CIE sought to identify which of the EPA's ongoing regulatory activities were suitable for cost recovery, the efficient costs of these activities, and whether the efficient costs should be recovered through the scheme compliance fee. The EPA identified its ongoing compliance and enforcement activities (since the scheme's implementation) vary, depending on the phase of the scheme's operation:

1. **Initiation phase (July 2018 to June 2020)** – activities include intense engagement with the contractors, scheme participants and other stakeholders to ensure the scheme is established, systems are in place, funds are flowing and suppliers are actively participating.
2. **Scheme stabilisation phase (from July 2020 to June 2022)** – activities include monitoring and managing contractor performance, evaluating scheme performance, gathering stakeholder feedback, identifying and resolving gaps through refining processes or amending the scheme operation and/or legislation, monitoring regulatory compliance and addressing structural issues to minimise non-compliance.
3. **Steady-state phase (from July 2022 onwards)** — represents the business as usual (BAU) phase, where the scheme operation is stable and relationships with scheme participants are transactional.

87 IPART, *NSW Container Deposit Scheme, Monitoring the impacts on container beverage prices and competition*, Progress Report, April 2018, p 53.

The CIE estimated the efficient cost of undertaking the activities in each phase through both a top down approach using available benchmarks (such as other CDS schemes in Australia and overseas, and noting differences between the schemes), and a bottom up approach using the EPA's activity descriptions and FTE estimates and considering whether these were reasonably efficient and appropriate for cost recovery.

The CIE estimated the reasonably efficient costs suitable to be recovered through the scheme compliance fee as set out in Table 8.1.

Table 8.1 Reasonably efficient costs for EPA's ongoing regulatory activities ($2017-18)

Financial Year	Reasonably efficient costs	Monthly scheme compliance fee
2018-19	$348 200	$348,000
2019-20	$314 800	$315,000
2020-21	$234 100	$234,000
2021-22	$234 100	$234,000
2022-23	$154 200	$154,000
2023-24	$154 200	$154,000
Ongoing	$154 200	$154,000

Note: Includes $14,255 per annum to recover remaining efficient capital costs of the Portal. Assumes the remaining fixed capital costs are recovered over 10 years. Also includes Portal maintenance costs and user licences of $86,000 per annum in 2018-19 and 2019-20.

Source: The CIE, NSW Container Deposit Scheme, *EPA's fees for monitoring, compliance and approving containers*, Draft Report, September 2018, pp 3, 24 and 32.

We consider that the scheme compliance fee should be set to recover these efficient costs, however rather than increasing the fee above the current rate of $300,000 per month, we have smoothed the monthly fees over the four years from 2018-19 to 2021-22 using a discount rate of 7 percent.[88] Accordingly, we are making a draft recommendation that the monthly scheme compliance fee be set at ($2018-19):

- $300,000 in 2018-19 and 2019-20
- $284,000 in 2020-21 and 2021-22, and
- $157,000 in 2022-23.

These fees should be indexed by the change in the CPI (All groups, Australia) to March of that year (as is the case for the container approval fee discussed in Chapter 7).

Draft recommendation

9 That the monthly Scheme Compliance Fee be set to recover the EPA's efficient costs associated with the CDS as ($2018-19):

- $300,000 in 2018-19 and 2019-20
- $284,000 in 2020-21 and 2021-22, and
- $157,000 in 2022-23.

88 NSW Treasury recommends using a discount rate of 7 per cent, *NSW Government Guide to Cost-Benefit Analysis*, March 2017, p 45 at https://arp.nsw.gov.au/sites/default/files/TPP17-03_NSW_Government_Guide_to_Cost-Benefit_Analysis_0.pdf accessed on 19 September 2018. We have smoothed the monthly fee over the four years 2018-19 to 2021-22 to be net present value neutral and holding the fee at $300,000 for 2018-19.

8.4 Assessing the availability and accessibility of collection points

Consumers need to be able to return their eligible beverage containers to collection points and receive their 10-cent refund per container. Consumers can find out the location of their closest collection point by searching on the Return and Earn website.[89] Locations and real time status of RVMs can be found on the myTOMRA app that is available for to download for free.

During our review, a range of stakeholders raised concerns through our online feedback form about that availability of and access to collection points, particularly in regional NSW during the early months of the scheme. In its submission to our Progress Report, the National Retail Association argued that the Auditor-General should review the EPA agreement with TOMRA Cleanaway. It considered that the final number of RVMs proposed was the worse-case option from the original Regulatory Impact Statement, and should be scrutinised as to whether the NSW taxpayer has benefited from this option.[90]

To consider this feedback, we looked at the current regulatory requirements for community access to collection points, the current number and types of collection points in each geographic zone, and the commercial framework that influences the network of collection points.

8.4.1 Current regulatory requirements for access to collection points

TOMRA Cleanaway is responsible for establishing and managing the network of collection points[91] for eligible beverage containers across NSW. It has contracted with TOMRA to build or operate the collection points (as it does with reverse vending machines) or contracted with other organisations to do so (such as over the counter collection points operated by small businesses). The types of collection points have different characteristics in terms of the number of containers accepted and payment options offered to consumers (see Table 8.2).

89 https://returnandearn.org.au/return-points/, accessed on 11 September 2018.
90 National Retail Association submission to IPART Progress Report, June 2018, p 3.
91 A collection point is defined as any facility or premises for the collection and handling of containers delivered to the facility or premises in consideration of the payment of refund amounts. See section 20 of *Waste Avoidance and Resource Recovery Act 2001 (NSW).*

Table 8.2 Collection points: container collection and payment options

Type of Collection Point	Container collection	Payment options
Reverse Vending Machine (RVM)	Typically accepts up to 500 containers in any one transaction	1. Paypal 2. Retail voucher 3. Donate to charity
Donation Station - a small RVM (eg Service NSW Offices or train station)	Small number of containers	1. Donate to charity (State-wide or local community group)
Over the Counter Collection	Typically accepts less than 100 containers	1. Cash refund
Automated Depot	Typically accepts volumes more than 500 containers	1. Cash refund 2. Electronic transfer (only in some depots)

Source: EPA return and earn website https://returnandearn.org.au/return-points/return-point-types/ accessed on 20 June 2018.

The operating requirements for collection points are specified in the network operator agreement and the *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017 (NSW)*.[92] These requirements include meeting community access principles for the number of collection points and their hours of operation. In addition, these requirements vary depending on the location of collection point, ie major urban area, regional area or remote area (see Box 8.1).

According to the EPA, the network includes 682 collection points across NSW and more than 1,178 reverse vending machines.[93] To ensure the community has convenient access to collection points across NSW, TOMRA Cleanaway is required to have in place:

- one collection site for towns of 500 people or more in remote NSW (such as far western NSW) – 15 collection sites
- one collection site for towns of 1,000 people or more in regional NSW, with an additional site for each additional 20,000 people in a town – 150 collection sites
- one collection site for each 20,000 people in the Greater Sydney Region - at least 270 collection sites.[94]

92 See Schedule 1, *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017 (NSW)*.
93 Information provided by EPA, 24 September 2018.
94 https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/return-and-earn/how-return-and-earn-works, accessed on 11 September 2018.

Box 8.1 Requirements for container collection points

Community access principles are defined in terms of the number of collection points and their hours of operation. These requirements vary depending on where the collection point is located (ie a major urban area, regional or remote area).

Number of collection points

Major urban area

- The number of collection points is calculated by dividing the population of the major urban area by 20,000. If the result is not a whole number then it is rounded down to the nearest whole number.

Regional or remote area

- The number of collection points in each target area should be no less than the number calculated by dividing the population of that target area by 20,000 and then adding 1. If the result is not a whole number then it is rounded down to the nearest whole number.
- Each collection point operating in a target area should be located within a 10 km radius of any target town within that target area.

Target area means:

(a) in relation to the regional area—an area within a 30 km radius of any target town in the regional area, or

(b) in relation to the remote area—an area within a 50 km radius of any target town in the remote area

Hours of operation

Major urban area – minimum of 35 ordinary hours each week, including at least 8 weekend hours

Regional area – minimum of 24 ordinary hours each week, including at least 8 weekend hours

Remote area – minimum of 16 ordinary hours each 2-week period, including at least 8 weekend hours

Source: Schedule 1 of *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017*.

The Network Operator Agreement also includes collection targets for the number and location of container collection points, and the hours of operation of those collection points.[95] Each collection point arrangement must be approved by the NSW EPA according to the arrangements specified in the regulation.[96]

We have considered the nature of the performance targets for collection points in the Network Operator Agreement. We note that these targets do not differentiate between the different types of collection points for each geographic zone. Nor does the Agreement

95 See section 9A Performance targets, *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017 (NSW)*.

96 See collection point arrangements in Division 2 of *Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulation 2017 (NSW)*. The EPA may consider a number of matters in determining an application for collection point arrangement approval, including compliance with the requirements of the Waste Avoidance and Resource Recovery Act 2001 and Regulation, whether there are adequate provisions for environmental protection measures, whether any necessary development consent or approval of a local council has been obtained or is likely to be obtained, and whether the collection point operator is a fit and proper person to fulfil obligations under the proposed arrangement.

distinguish between a reverse vending machine, an over the counter collection point or an automated depot. While this arrangement provides flexibility for TOMRA Cleanaway in establishing a network of collection points, it could also lead to the types of collection points provided in a geographic zone not meeting community expectations for access and availability.

8.4.2 Current number and types of collection points in each geographic zone

From a consumer's perspective, different types of collection points provide a different service experience in terms of convenience, ease of use, the number of containers that can be returned, and payment options. Consumers living in different locations across NSW may also have preferences for certain types of collection points.

We considered the current number and types of collection points in each geographic zone across NSW. As Table 8.3 shows, in rural and regional NSW (Zones 1 to 6) there are a small number of automated depots and in two geographic zones there are none. We expect that people living in rural and regional areas are more likely to travel long distances when returning eligible containers and return them in bulk. In line with stakeholder comments there seems to be less opportunity to drop off beverage containers in bulk in rural and regional NSW. We understand that TOMRA Cleanaway continue to add collection points across the state. TOMRA Cleanaway advised that these will include automated depots.

Table 8.3 Collection points by type in each geographic zone

Zone		RVM	Over the Counter	Automated Depot	Donation Station	Total
1	Central & Western	12	24	2	1	39
2	Mid North Coast	17	12	2	1	32
3	North Coast	15	3	2	1	21
4	New England	14	8	0	2	24
5	Murray Murrumbidgee	14	18	0	2	34
6	Southern	15	5	1	1	22
7	Greater Sydney, Newcastle & Wollongong	218	266	12	14	510
Total		**305**	**336**	**19**	**22**	**682**

Source: Data supplied by EPA at 24 September 2018

We note that there are different costs and lead times associated in setting up and operating the four types of collection points. For example, the process of establishing automated depots and RVMs requires negotiation of commercial contracts (known as Collection Point Agreements) and planning approvals which can potentially take a number of months to complete. Whereas over the counter collection points generally take less time and effort to establish as small businesses can apply using a standard application process.

8.4.3 Current framework for establishing collection points

Under the Network Operator Agreement, TOMRA Cleanaway is paid a fixed amount per container collected regardless of the type or location of the collection point. It has to manage several parameters including:

- **Regulatory requirements for community access to collection points.** These include requirements for community access principles in the regulation (see Box 8.1) and performance targets for each geographic zone in the Network Operator Agreement.
- **Costs of establishing collection points.** As discussed above there are costs for TOMRA Cleanaway in negotiating contracts with collection point operators, and in some cases arranging planning approvals for the collection sites. Depending on the type of collection point there can be substantial upfront capital costs such as providing reverse vending machines and automated depots.
- **Costs of operating collection points.** These include costs of operating the site, transport and logistics. The relatively large distances and smaller quantities of containers collected in rural and regional areas means the unit cost of collecting containers in regional areas would be higher than in metropolitan areas where economies of scale can be achieved.
- **The frequency of servicing reverse vending machines (RVMs).** RVMs make up over 40 per cent of the collection point network and currently account for over 80% of containers collected.[97] There is a trade-off between the frequency of servicing RVMs and the availability of the machine for consumers to return containers. TOMRA Cleanaway needs to regularly collect containers from RVMs to ensure the machines are not full and consumers can return containers. However we note that RVMs are typically open 15 hours per day or 105 hours per week, which is 3 times the regulated requirement.[98]

Any variations to the Network Operator Agreement to require collection points in different geographic locations and additional collection points would have cost implications. The costs of establishing and operating collection points differ between locations and RVMs, automated depots and over the counter collection points. Therefore, any changes to current arrangements that require changes to TOMRA Cleanaway's obligations would need to be reflected in the network operator fees that are charged to first suppliers and recovered from consumers.

Over time the collection point network may change as, for example, some over the counter operators decide not to participate in the scheme. This presents TOMRA Cleanaway with an opportunity to select the most effective and efficient type of collection point to replace it with. For example, a community may have preferences as to when they want to return containers (eg weekend versus weekday and time of day) and the type of collection point they want to use (machine versus manual collection or bulk container drop off versus smaller quantities).[99]

We also note that the Office of the Customer Service Commissioner has undertaken surveys to assess awareness of and support for the scheme as well as satisfaction amongst users.

97 IPART meeting with Tomra Cleanaway on 16 August 2018.
98 TOMRA Cleanaway, Information provided to IPART, 21 September 2018.
99 The CDS has been designed to count every container and so the numbers of containers returned at an individual collection point can be analysed in terms of the time of day, frequency and costs of collection.

These surveys have indicated that 4 out of 5 users are satisfied with their use of the scheme, with those outside of major cities amongst the most satisfied.[100]

We note that the EPA is responsible for approving collection points and it also monitors the performance of collection points under the Network Operator Agreement. Any information that EPA collects on community preferences for using collection points could be used to inform decision making about the most effective and efficient mix of collection points to service a particular community.

Any changes to current obligations that increase or decrease TOMRA Cleanaway's costs would need to be reflected in the network operator fees that are charged to first suppliers and ultimately recovered from consumers. As a result, the EPA and TOMRA Cleanaway should assess whether the benefits of changing access and availability of collection points exceed the costs.

8.5 Key elements of CDS should be more transparent

In our Progress Report, we recommended that the EPA publish a contract summary of each of the agreements with the Scheme Coordinator and the Network Operator.[101] This was in response to some stakeholder concerns about the implications of the appointment of a single network operator and its partnership with particular retailers (eg, Woolworths) in rolling out RVMs.

The National Retail Association was uncertain as to what a contract summary would achieve was concerned about publication of confidential information. It requested that stakeholders are directly consulted before making any decision to publish details.[102]

We consider that publishing the contract summary provides important transparency around key elements of the scheme and can be done in consultation with the relevant parties to protect any commercially sensitive information. For example, a contract summary for the Network Operator Agreement could include roles and responsibilities and the number of collection points to be delivered in each geographic zone in NSW.

Also in our Progress Report, we consider that changes to the condition in which containers can be returned to collection points may improve the CDS' effectiveness.[103] Currently, to be eligible for a refund, containers must be returned uncrushed, not damaged, and with the original label attached. Eligibility is checked at the collection point, and the infrastructure is designed to reject containers that are crushed, damaged or missing a label.

In its submission, the National Retail Association argued that the CDS should accept containers that are damaged or missing a label.[104] However, we understand that this maintains the integrity of the scheme to ensure that containers cannot be redeemed multiple

100 Information provided to IPART by the EPA, 21 September 2018.
101 IPART, *NSW Container Deposit Scheme, Monitoring the impacts on container beverage prices and competition*, Progress Report, April 2018, p 56.
102 National Retail Association, submission to Progress Report, June 2018, p. 2-3.
103 IPART, *NSW Container Deposit Scheme, Monitoring the impacts on container beverage prices and competition*, Progress Report, April 2018, p 58.
104 National Retail Association, submission to Progress Report, June 2018, p 3.

times and prevents systematic and large scale fraud. We note that other jurisdictions such as South Australia do not necessarily accept damaged or crushed containers.[105]

The National Retail Association also raised concerns relating to the costs and effectiveness of the CDS, including:[106]

- The handling fee adjustment should occur every six months not every month. This would reduce the administrative burden for industry and help keep prices stable.
- That NSW should accept the container product registration from other jurisdictions and visa-versa. The EPA should return fees incurred by stakeholders.
- Prohibit RVMs and depots from accepting more than 100 containers from a single person in a single day to prevent people raiding kerbside bins and undermining local Council collection.

We have considered how fees are billed to first suppliers and the network true up mechanism and have made recommendations in Chapter 6. We have also made recommendations on the container approval fees in Chapter 7. In terms of the number of containers accepted by RVMs and depots, this is a policy decision for the EPA but we note that infrastructure has been designed to accept certain quantities of containers.

Draft recommendation

10 That the EPA publish a contract summary for each of the agreements with the Scheme Coordinator and the Network Operator including the roles and responsibilities and the number of collection points to be delivered in each geographic zone in NSW.

105 In South Australia collection depots are not obliged to accept containers that do not have a refund statement clearly visible. See Frequently Asked Questions at https://www.epa.sa.gov.au/environmental_info/container_deposit/faqs accessed on 5 September 2018.

106 National Retail Association submission to IPART Progress Report, June 2018, p 3.

9 No need for ongoing price monitoring

The final step in our approach was to assess the need for ongoing price monitoring beyond the initial one-year monitoring period. This involved considering the findings of the first five steps in our approach and deciding whether there are any ongoing, systemic impacts on beverage prices or competition in beverage markets as a result of the CDS.

The sections below set out our draft recommendation, summarises the reasons that led to it, and then discusses them in more detail.

9.1 Summary of draft recommendation

We recommend that ongoing annual monitoring of the impacts of the CDS on container beverage prices and competition does not take place beyond the initial one-year monitoring period.

As discussed in Chapter 6, we consider that the changes in prices following the introduction of the CDS are consistent with workably competitive markets. We found no undue or material, systemic effects on the prices of container beverages, but did identify some monthly volatility in prices which we consider is transitional. As discussed in Chapter 7, we found no specific evidence of material reduction in competition, but identified the potential for impacts in three areas. Any transitional or potential impacts on price or competition that we identified can be addressed, and we have made recommendations to address them.

We also considered that other regulatory bodies or agencies have monitoring and enforcement powers that could address ongoing or emerging concerns about the impact of the CDS on beverage prices or competition.

9.2 Beverage markets are workably competitive

Unnecessary price monitoring in workably competitive markets increases costs for market participants that are not outweighed by the benefits of regulation.

As we noted in Chapter 6, previous assessments of the beverage industry in NSW have either not revealed substantial concerns about competition, or have found there is 'workable competition' in the industry. Like other regulators,[107] we think that this competition, together with Australian consumer law and compliance regulation, best protects consumers.

As set out in Chapter 6, we have not found any evidence of sustained increases in prices in excess of costs of the CDS, and our draft finding is that the changes in container beverage

[107] For example, NSW Fair Trading, Compliance and Enforcement Policy, July 2013, p 2, available from http://www.fairtrading.nsw.gov.au/biz_res/ftweb/pdfs/About_us/Compliance_and_enforcement_policy.pdf, p 2, accessed on 6 February 2018.

prices that are due to the CDS are consistent with a workably competitive market. We therefore consider that the costs of ongoing price monitoring would outweigh the benefits.

9.3 Impacts on prices we identified are transitional and can be addressed

As set out in Chapter 6, we found that scheme cost volatility has led to prices increasing by more than costs in some months. We consider that this volatility would reduce over time but that a more effective way to reduce volatility more quickly and ensure consumers are not paying more than the costs of the scheme is to move to a system where first suppliers are invoiced for scheme costs in arrears.

9.4 Potential impacts on competition we identified can be addressed

As discussed in Chapter 7, while we found no evidence of a material reduction in competition, we identified two issues related to the operation of the CDS that have the potential to reduce the competitiveness of some market participants – the level of the container beverage approval fee, and the payment terms for invoices to suppliers. We consider that both these potential impacts can be overcome and have made recommendations to address them.

9.5 Ongoing monitoring of the impacts of the CDS on beverage prices or competition would overlap with monitoring functions of other agencies

Other agencies have an ongoing role in promoting and monitoring competition and fair trading. For example, the ACCC, an independent Commonwealth statutory authority, accepts and records reports of information about business practices that are of concern, and investigates alleged breaches of the *Competition and Consumer Act 2010*. NSW Fair Trading, part of the NSW Department of Finance, Services and Innovation, investigates complaints about misleading conduct such as claiming that price increases are due to the CDS when they are not.

We consider that ongoing monitoring of the impacts of the CDS on beverage prices or competition would overlap with the roles of these agencies.

Draft recommendation

11 Ongoing monitoring of the impacts of the CDS on container beverage prices and competition is not required beyond the initial one-year monitoring period.

A Terms of reference

NSW GOVERNMENT

Gladys Berejiklian MP
Premier of New South Wales

Reference: A2397294

09 FEB 2018

Dr Peter Boxall AO
Chairman
Independent Pricing and Regulatory Tribunal
PO BOX K35
HAYMARKET POST SHOP NSW 1240

Dear Dr Boxall Peter,

Thank you for your letter on 20 December 2017 outlining the result of public consultation on my request to the Independent Pricing and Regulatory Tribunal to monitor and report on the impact of the implementation of the NSW Container Deposit Scheme on beverage prices.

I have considered your request to revise the terms of reference to include monitoring and reporting on the effect of the Scheme on competition for beverages supplied in a container as well as the performance and conduct of suppliers. I am pleased to issue IPART with final terms of reference (attached)

This amendment is consistent with the focus of NSW Government to ensure the success of the CDS and to safeguard against potential risk that suppliers may seek to raise prices of beverages above the costs associated with the Scheme.

I look forward to a final report addressing all aspects of the attached terms of reference in December 2018.

Yours faithfully,

Gladys Berejiklian MP
Premier

cc: The Hon Gabrielle Upton MP, Minister for the Environment

GPO Box 5341 Sydney NSW 2001 ▪ P: (02) 8574 5000 ▪ F: (02) 9339 5500 ▪ W: premier.nsw.gov.au

Terms of Reference for IPART to monitor and report on matters relating to the Container Deposit Scheme

I, Gladys Berejiklian, Premier of New South Wales, under Section 12A of the *Independent Pricing and Regulatory Tribunal Act 1992*, request that the Independent Pricing and Regulatory Tribunal (IPART) monitor and report on the Container Deposit Scheme in accordance with these terms.

Task

IPART is to monitor:

1. the effect of the Container Deposit Scheme on prices of beverages supplied in a container;
2. the effect of the Container Deposit Scheme on competition for beverages supplied in a container and the performance and conduct of suppliers; and
3. any other market impacts on consumers that arise from the commencement of the Scheme, for the period from 1 November 2017 and 1 December 2018 (monitoring period)

IPART is to provide a report to the Premier and the Minister for the Environment regarding:

1. the effect of the Container Deposit Scheme on prices of beverages supplied in a container for the period from 1 November 2017 to 1 December 2018;
2. the framework for monitoring the Container Deposit Scheme including the behaviour of suppliers;
3. the effect of the Container Deposit Scheme on suppliers; and
4. any recommendations for actions by government to address any adverse effects or behaviours arising from the operation of the Scheme.

In undertaking the monitoring, IPART should have regard to:

1. any changes in prices of beverages before or after 1 November 2017 that purport to be in response to the Scheme;
2. any information provided by Scheme participants and consumers;
3. the behaviour of suppliers and major retailers before and after 1 November 2017 including whether beverage prices have increased beyond the amount suppliers are charged by the Scheme Coordinator;
4. the manner in which suppliers are recovering the costs of the Container Deposit Scheme; and
5. any other matters considered relevant.

Public consultation

IPART should undertake public consultation.

Timeframe

IPART is to release a progress report in April 2018 which provides a draft framework for the review and reports on the first three months of the Container Deposit Scheme. IPART is to provide a final report to the Premier and the Minister for the Environment in December 2018. The final report is to also recommend whether subsequent monitoring is necessary.

At any time during the monitoring period, if the Premier or the Minister for the Environment or IPART considers that any behaviour or market outcomes have arisen that appear unfair or unjustified on consumers or Scheme participants, IPART is to:

1. Investigate the matter immediately at its own discretion or on request from the Premier or the Minister, and
2. Provide an interim report to the Premier and the Minister as soon as practicable.

Definitions

Act means the *Waste Avoidance and Resource Recovery Act 2001*.

Beverage has the meaning given to the term under the Act.

Container has the meaning given to the term under the Act.

Container Deposit Scheme means the scheme established by the Act.

Scheme Coordinator has the meaning given to the term under the Act.

Scheme participant has the meaning given to the term under the Act.

Supplier means a supplier, as defined in the Act, who is required under the Act to enter into a supply arrangement with the Scheme Coordinator.

The Hon Gladys Berejiklian MP
Premier

Dated at Sydney ..8/2/..... 2018

B Regression analysis of the CDS impact on all beverage prices

As discussed in Chapter 5, as part of our approach for monitoring the effects of the CDS, we assessed whether there have been any significant increases in beverage prices above the costs of the scheme.

This appendix provides details of our data and the econometric models we used to analyse the impact of the CDS on beverage prices and provides complete regression results from our analysis.

B.1 Data and methodology

B.1.1 Data

We estimated price changes that are attributable to the introduction of the CDS for each of the following beverage categories in the alcoholic and non-alcoholic beverage markets which are relevant to the CDS:

- bottled water
- soft drink
- fruit juice
- beer
- cider, and
- ready-to-drink (RTD).

Our analysis also included beverage categories which are not covered by the scheme (ie, wine and spirits) to evaluate whether the scheme had any indirect impact on their prices.

Our sample consists of monthly prices of beverages sold in NSW and Victoria over the period January 2016 to July 2018. In our analysis, a beverage product is defined by its manufacturer (or brand), product description, pack type (ie, multi pack or single pack), size (eg, 350 ml, 600 ml, etc), price type (ie, promotional or non-promotional price), retailer, and retailer location.

In analysing the CDS impact on beverage categories which are relevant to the CDS, we excluded from the sample the following beverages supplied in containers which are not eligible for a refund under the CDS:

- bottled water drink containers of 3 litre or more,

- pure fruit or vegetable juice containers of 1 litre or more, and
- RTD containers of more than 600 ml.

We excluded products that were not available for sale in both states to avoid different product compositions having an effect on our price analysis. We also excluded beverage products with missing prices from our dataset. Specifically, we required that for a product to be included in our sample, its prices must be available every month since June 2017. This filter is necessary as to identify the impact of the CDS on beverage products at a product level we must track the prices of the same product over time.

Nielsen's Homescan database contains the prices of products purchased by its panel households. By imposing a condition that products must have prices every month since June 2017, we eliminated products that were not regularly purchased by the panel households. This condition also removes the majority of the products with temporary promotional prices from the Homsecan dataset. This filtering also eliminated all products with promotional prices from the Insights Retail dataset.

We note that these filters result in a relatively small sample size for bottled water and fruit juice products.

We also winsorised the data at the 1st and 99th percentile to reduce the impact of possibly spurious outliers. For each product within each beverage size category, we calculated the distributions of prices and replaced all prices below the 1st percentile or above the 99th percentile with the respective percentile.

B.1.2 Methodology

Our first econometric model takes the generic form shown below.

$$P_{i,t,r,s} = \beta_0 + \beta_1 NSW + \sum_{\tau=Nov\ 2017}^{Jul\ 2018} \beta_{2,\tau}\, NSW\text{x}TIME_{\tau} + \gamma X_{i,t,r} + \delta M_t + \varepsilon_{i,t,r,s}$$

where:

- $P_{i,t,r,s}$ is the price (expressed in dollar per container) of product i in month t sold in a retail shop r in state s
- *NSW* equals 1 if product i is sold in NSW, and 0 otherwise
- *TIME* refers to the months of the CDS implementation period from November 2017[108] to July 2018 and equals 1 if month t is any month in the period, and 0 otherwise
- *NSW*TIME* equals 1 if *NSW* = 1 and *TIME* = 1, and 0 if either *NSW* or *TIME* = 0
- $X_{i,t,r}$ comprises a set of beverage and retailer characteristics that are likely to affect prices
- M_t is month dummy variables from January 2016 to July 2018, and
- $\varepsilon_{i,t,r,s}$ is the error term.

108 Note that while the CDS commenced officially on 1 December 2017, we included November 2017 as the first month of the CDS period as first suppliers were issued the first invoice a month prior to the commencement of the scheme (ie, November 2017).

Specifically, we run a pooled OLS regression with month dummy variables to control for time-series variations in prices, for example to control for general price increases over time. T-statistics are based on clustered standard errors by product to account for time series correlation of residuals for a given product – if there are variables that are not controlled for in our regressions which are correlated over time within a product, they are addressed through the calculation of the clustered standard errors.

- β_1 captures possible differences in beverage prices between NSW and VIC prior to the introduction of the CDS (ie, pre-treatment period), and
- $\beta_{2,\tau}$ is the difference-in-differences estimate, which captures the price impact of the CDS attributable to the scheme itself in each of the relevant months. This is our main coefficient of interest. In our regression results presented in Section B.2 and Section B.3, these coefficients are shown as CDS_{NOV}, CDS_{DEC}, CDS_{JAN}, CDS_{FEB}, CDS_{MAR}, CDS_{APR}, CDS_{JUN}, and CDS_{JUL}.

The dependent variable in our regression is the monthly price of a product. We obtained monthly mean, median, maximum, minimum and mode prices for each alcoholic beverage sold by a retailer in NSW and Victoria. For non-alcoholic beverage prices obtained from Nielsen's Homescan transactional data, we calculated monthly average prices for each product sold in a shop in a region (as defined by Nielsen) in each state. For example, to obtain a monthly price of a *350 ml Coca Cola* sold at *Retailer A* in the *Sydney* metro area, we averaged the prices paid for all transactions associated with a *350 ml Coca Cola* at all *Retailer A* stores in the *Sydney* metro area in a given month.

Both the Homescan and Insights Retail datasets report the total price for multi-pack products (eg, 24-pack 350 ml Coca Cola or 30-pack 375 ml Victoria Bitter). In this case, we computed the price per container by dividing the total price of the multi-pack product by the number of units per pack.

Beverage price per container may vary across different dimensions such as time, size, package type, price type, retailer, region, etc. To isolate the impacts of these confounding factors on beverage prices, we control for several product characteristics, which are captured in the coefficient(s), γ.

The model presented above is designed to capture the impact of the CDS on beverage prices for each month of the CDS period from November 2017 to July 2018. In addition to this, we also applied the following model to estimate the overall impact of the CDS on beverage prices for the entire CDS period from November 2017 to July 2018:

$$P_{i,t,r,s} = \beta_0 + \beta_1 NSW + \beta_2 TIME + \beta_3 NSW \times TIME + \gamma X_{i,t,r} + \delta M_t + \varepsilon_{i,t,r,s}$$

where *TIME* equals 1 if month t is from December 2017 to November 2018 (ie, treatment period in which the CDS is in place), and 0 otherwise. All other variables are defined as above.

In this model, β_3 is our main coefficient of interest which captures the average change in beverage prices in NSW that is due to the CDS. In our regression results presented in Section B.2 and Section B.3, this coefficient is shown as $CDS_{NOV\text{-}JUL}$.

In presenting our results, we refer to the first model as **Monthly** model, and to the second model as **Overall** model.

We conducted the regression analysis described above for each sample set within each beverage category:

- **Sample A,** which included the products for which there is continuous monthly price information from January 2017
- **Sample B,** which included only the products with continuous monthly price information from January 2016, and
- **Sample C**, which included only the products with continuous monthly price information from June 2017.

B.2 Non-alcoholic beverages

B.2.1 Variable definitions

As discussed above, we included a set of product and retailer characteristics as a control variable in our regression analysis. Using Nielsen's Homescan data, we have created the following variables:

- beverage size
- brand
- retailer,
- pack type (ie, multi pack), and
- price type (ie, promo price).[109]

Beverage size

For bottled water, products are categorised into three size groups – Small, Medium and Large, where a product is defined as Small if its size is less than or equal to 600 ml, Medium if its size is between 600 ml and 1 L (inclusive), and Large if its size is greater than 1 L.

For soft drinks, a product is defined as Small if its size is less than 500 ml, Medium if its size is between 500 ml (inclusive) and 1 L, and Large if its size is greater than or equal to 1 L.

Fruit juice is defined as Small if its size is less than or equal to 300 ml, Medium if its size is between 300 ml and 750 ml, and Large if its size is greater than or equal to 750 ml.

Brand

Brand is a categorical variable to indicate whether a product is a major, private label or any other brand.

For bottled water and soft drinks, *Brand* is set to *Major brand* if a product is manufactured by Asahi Holdings (Asahi) or Coca Cola Amatil (CCA), and to a *Private label* if it is Aldi-, Coles- or Woolworth-branded. A product that is neither a major brand nor a private label is grouped as "*Other Brand*".

109 These variables were created by IPART.

CCA and Asahi are the two major companies in the bottled water and soft drink manufacturing industries in Australia:

- In bottled water manufacturing, the market shares of CCA and Asahi are 47.7% and 13.7%, respectively.[110]
- In soft drink manufacturing, CCA and Asahi hold 53.7% and 25.5% of the total market share, respectively.[111]

For fruit juices, *Brand* is set to *Major brand* if a product is manufactured by Asahi, Lion or Heinz Wattie's, and to a *Private label* if it is Aldi-, Coles- or Woolworth-branded. A product that is neither a major brand nor a private label is grouped into the "*Other*" category.

Asahi, Lion and Heinz Wattie's are the three major players in fruit juice manufacturing, holding a market share of 22.8%, 25.6% and 15.9%, respectively.[112]

Retailer

Retailer type is a categorical variable to indicate whether a product is sold at a major retailer or a non-major retailer. *Retailer* is set to *Major Retailer* if a product is sold at either Coles or Woolworths, and to a *Second-Tier* if it is sold at Aldi or IGA. A product that is sold neither at *Major Retailer* nor *Second-Tier Retailer* is grouped into the "*Other Retailer*" category.

Pack Type

Multi Pack is a binary variable that is equal to 1 if a product is a multi-pack and zero, otherwise.

Price Type

Promo is a binary variable that is equal to 1 if a product was on promotion and zero, otherwise.

B.2.2 Regression results

This section provides full regression results for non-alcoholic beverages:

- all soft drinks in Table B.1
- bottled water in Table B.2, and
- fruit juices in Table B.3.

110 IBISWorld Industry Report C1211b – Bottled Water Manufacturing in Australia, August 2017, pp 23-24.
111 IBISWorld Industry Report C1211a – Soft Drink Manufacturing in Australia, June 2017, pp 23-24.
112 IBISWorld Industry Report C1211c – Fruit Juice Drink Manufacturing in Australia, August 2017, pp 23-24.

Table B.1 Impact of the CDS on soft drinks ($ including GST)

	Sample A		Sample B		Sample C	
	Overall	**Monthly**	**Overall**	**Monthly**	**Overall**	**Monthly**
NSW	-0.016	-0.016	0.008	0.008	-0.018	-0.018
Time	0.024		0.015		0.01	
$CDS_{NOV-JUL}$	0.104**		0.102**		0.106**	
CDS_{NOV}		0.008		0.011		0.013
CDS_{DEC}		0.118**		0.116**		0.12**
CDS_{JAN}		0.127**		0.126**		0.134**
CDS_{FEB}		0.11**		0.122**		0.089**
CDS_{MAR}		0.118**		0.116**		0.128**
CDS_{APR}		0.127**		0.136**		0.135**
CDS_{MAY}		0.118**		0.108**		0.127**
CDS_{JUN}		0.098**		0.09**		0.11**
CDS_{JUL}		0.109**		0.094**		0.099**
Medium	1.112**	1.112**	1.186**	1.186**	1.205**	1.205**
Small	-1.109**	-1.109**	-1.153**	-1.153**	-1.04**	-1.04**
Other Brand	-0.561**	-0.561**	-0.552**	-0.552**	-0.52**	-0.52**
Private Label	-1.338**	-1.338**	-1.287**	-1.287**	-1.268**	-1.268**
Second Tier Retailer	-0.534**	-0.534**	0.415**	0.415**	-0.541**	-0.541**
Promo	0.655**	0.655**	-0.282**	-0.282**	0.516**	0.516**
Intercept	2.115**	2.115**	2.051**	2.051**	2.063**	2.063**
Month Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	9107	9107	7006	7006	10915	10915
Adj. R squared	83%	83%	84%	84%	83%	83%

Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

Source: IPART analysis using Nielsen Homescan data.

Table B.2 Impact of the CDS on bottled water ($ including GST)

	Sample A		Sample B		Sample C	
	Overall	**Monthly**	**Overall**	**Monthly**	**Overall**	**Monthly**
NSW	0.003	0.003	0	0	-0.019	-0.019
Time	-0.006		-0.003		-0.013**	
$CDS_{NOV-JUL}$	0.1**		0.1**		0.099**	
CDS_{NOV}		0.008		0.008*		0.005
CDS_{DEC}		0.106**		0.105**		0.106**
CDS_{JAN}		0.112**		0.111**		0.114**
CDS_{FEB}		0.104**		0.104**		0.1**
CDS_{MAR}		0.11**		0.111**		0.114**
CDS_{APR}		0.107**		0.109**		0.102**
CDS_{MAY}		0.118**		0.119**		0.114**
CDS_{JUN}		0.117**		0.116**		0.12**
CDS_{JUL}		0.117**		0.118**		0.112**
Small	-0.445**	-0.445**	-0.49**	-0.49**	-0.351**	-0.351**
Promo	-0.013	-0.013	0.011	0.011	-0.049	-0.049
Intercept	0.755**	0.755**	0.754**	0.754**	0.766**	0.766**
Month Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	1234	1234	930	930	1484	1484
Adj. R squared	92%	92%	98%	98%	58%	58%

Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

Source: IPART analysis using Nielsen Homescan data.

Table B.3 Impact of the CDS on fruit juices ($ including GST)

	Sample A		Sample B		Sample C	
	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.081	0.081	0.145**	0.145**	0.073	0.073
Time	-0.003		-0.006		-0.003	
$CDS_{NOV-JUL}$	0.048**		0.026		0.052**	
CDS_{NOV}		-0.041		-0.066		-0.037
CDS_{DEC}		0.034		-0.022		0.04
CDS_{JAN}		0.057*		-0.027		0.057**
CDS_{FEB}		0.066**		0.019		0.07**
CDS_{MAR}		0.036		-0.014		0.043*
CDS_{APR}		0.061**		0.039		0.066**
CDS_{MAY}		0.041		0.053		0.047
CDS_{JUN}		0.068		0.092		0.07*
CDS_{JUL}		0.111**		0.157		0.109**
Multi Pack	-0.608**	-0.608**	-0.566**	-0.566**	-0.611**	-0.611**
Small	-1.073**	-1.073**	-1.103**	-1.103**	-1.072**	-1.072**
Other Brand	-0.611**	-0.611**	-0.329**	-0.329**	-0.605**	-0.605**
Private Label	-0.101**	-0.101**			-0.099**	-0.099**
Second Tier Retailer	0.045	0.045			0.042	0.042
Intercept	2.069**	2.069**	1.985**	1.985**	2.075**	2.075**
Month Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	1033	1033	372	372	1125	1125
Adj. R squared	92%	92%	96%	96%	93%	93%

a Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

b Source: IPART analysis using Nielsen Homescan data.

B.3 Alcoholic beverages

B.3.1 Variable definitions

As discussed above, we included a set of product characteristics as control variables in our regression analysis such as beverage size, pack type, subcategory, retailer, vintage, production region.

Beverage size

For both beer and cider, *Size* is defined as Small if beverage size is less than or equal to 375 ml, Small to Medium if beverage size is between 375 ml and 600 ml, Medium if beverage size is between 600 ml (inclusive) and 1L, and Large if beverage size is greater than or equal to 1L. This variable is included in all regressions except for wine.

Pack Type

Multipack is a binary variable that is equal to 1 if a product is a multi-pack and zero, otherwise. This variable is included in all regressions.

Sub-category

We included dummy variables for sub-category in our regressions for beer. In the Progress Report we included a categorical variable, *Craft*, to indicate whether a product is a craft (premium) beer. For the Draft Report, we included dummy variables for beer sub-category, which include craft beer, pale ale, lager, pilsner etc.

Retailer

We included dummy variables for each alcoholic beverage retailer in all regressions – the number of retailers varies across alcoholic beverages.

Vintage

We included dummy variables for wine vintage years in our regressions for wine as a proxy for quality.

Production region

We included dummy variables for production region in our regressions for spirit and wine as a proxy for quality.

B.3.2 Regression results

This section provides full regression results for alcoholic beverages:

- beer in Table B.4 to Table B.6
- cider in Table B.7 to Table B.9
- RTD in Table B.10 to Table B.12
- red wine in Table B.13 to Table B.15
- white wine in Table B.16 to Table B.18, and
- spirit in Table B.19 to Table B.21.

Table B.4 Impact of the CDS on beer using a sample of products with prices available from January 2017 (Sample A, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.01	-0.01	-0.01	-0.01	-0.011	-0.011	-0.01	-0.01	-0.01	-0.01
Time	0.255**		0.25**		0.258**		0.25**		0.252**	
$CDS_{NOV-JUL}$	0.021		0.019		0.021		0.019		0.022	
CDS_{NOV}		0.006		0.004		0.01		0.004		0.008
CDS_{DEC}		0.016		0.014		0.019		0.014		0.017
CDS_{JAN}		0.021		0.021		0.021		0.021		0.022
CDS_{FEB}		0.051**		0.046**		0.038**		0.046**		0.057**
CDS_{MAR}		0.017		0.018		0.017		0.018		0.017
CDS_{APR}		0.017		0.018		0.016		0.018		0.016
CDS_{MAY}		0.019		0.019		0.021		0.019		0.017
CDS_{JUN}		0.019		0.015		0.024		0.015		0.018
CDS_{JUL}		0.022		0.019		0.023		0.019		0.022
Medium	0.82	0.82	0.817	0.817	0.822	0.822	0.817	0.817	0.818	0.818
Small	-4.791**	-4.791**	-4.818**	-4.818**	-4.769**	-4.769**	-4.818**	-4.818**	-4.788**	-4.788**
Small to Medium	-3.178**	-3.178**	-3.195**	-3.195**	-3.168**	-3.168**	-3.195**	-3.195**	-3.177**	-3.177**
Multi Pack	-1.621**	-1.621**	-1.636**	-1.636**	-1.608**	-1.608**	-1.636**	-1.636**	-1.619**	-1.619**
Intercept	8.95**	8.95**	8.948**	8.948**	8.949**	8.949**	8.948**	8.948**	8.957**	8.957**
N	73274	73274	73274	73274	73274	73274	73274	73274	73274	73274
Adj. R squared	49.31%	49.31%	49.65%	49.64%	48.98%	48.97%	49.65%	49.64%	49.21%	49.20%

c Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, beer sub-categories and retailers.

d Source: IPART analysis using Invigor Insights Retail data.

Table B.5 Impact of the CDS on beer using a sample of products with prices available from January 2016 (Sample B, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.013	-0.013	-0.014	-0.014	-0.013	-0.013	-0.014	-0.014	-0.014	-0.014
Time	0.222**		0.217**		0.224**		0.217**		0.218**	
$CDS_{NOV-JUL}$	0.017**		0.014*		0.017**		0.014*		0.018**	
CDS_{NOV}		0.002		0		0.01		0		0.002
CDS_{DEC}		0.014*		0.012		0.015*		0.012		0.015*
CDS_{JAN}		0.019**		0.019*		0.02**		0.019*		0.022**
CDS_{FEB}		0.054**		0.049**		0.037**		0.049**		0.062**
CDS_{MAR}		0.013		0.014		0.015		0.014		0.014
CDS_{APR}		0.012		0.012		0.013		0.012		0.011
CDS_{MAY}		0.014		0.012		0.014		0.012		0.012
CDS_{JUN}		0.01		0.007		0.015		0.007		0.01
CDS_{JUL}		0.012		0.004		0.014		0.004		0.011
Medium	0.446	0.446	0.439	0.439	0.45	0.45	0.439	0.439	0.445	0.445
Small	-4.695**	-4.695**	-4.725**	-4.725**	-4.672**	-4.672**	-4.725**	-4.725**	-4.692**	-4.692**
Small to Medium	-3.256**	-3.256**	-3.277**	-3.277**	-3.246**	-3.246**	-3.277**	-3.277**	-3.255**	-3.255**
Multi Pack	-1.688**	-1.688**	-1.702**	-1.702**	-1.677**	-1.677**	-1.702**	-1.702**	-1.687**	-1.687**
Intercept	9.157**	9.157**	9.157**	9.157**	9.152**	9.152**	9.157**	9.157**	9.163**	9.163**
N	54467	54467	54467	54467	54467	54467	54467	54467	54467	54467
Adj. R squared	51.50%	51.49%	51.79%	51.78%	51.20%	51.20%	51.79%	51.78%	51.40%	51.39%

e Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, beer sub-categories and retailers.

f Source: IPART analysis using Invigor Insights Retail data.

g

Table B.6 Impact of the CDS on beer using a sample of products with prices available from June 2017 (Sample C, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.01	-0.01	-0.01	-0.01	-0.011	-0.011	-0.01	-0.01	-0.01	-0.01
Time	0.27**		0.265**		0.272**		0.265**		0.267**	
$CDS_{NOV-JUL}$	0.021		0.02		0.021		0.02		0.021	
CDS_{NOV}		0.007		0.006		0.01		0.006		0.009
CDS_{DEC}		0.016		0.014		0.019		0.014		0.017
CDS_{JAN}		0.021		0.02		0.021		0.02		0.022
CDS_{FEB}		0.053**		0.047**		0.038**		0.047**		0.058**
CDS_{MAR}		0.016		0.018		0.017		0.018		0.017
CDS_{APR}		0.016		0.018		0.015		0.018		0.015
CDS_{MAY}		0.018		0.019		0.02		0.019		0.016
CDS_{JUN}		0.019		0.015		0.023		0.015		0.018
CDS_{JUL}		0.022		0.019		0.022		0.019		0.022
Medium	0.821	0.821	0.817	0.817	0.823	0.823	0.817	0.817	0.819	0.819
Small	-4.835**	-4.835**	-4.862**	-4.862**	-4.814**	-4.814**	-4.862**	-4.862**	-4.832**	-4.832**
Small to Medium	-3.186**	-3.186**	-3.203**	-3.203**	-3.177**	-3.177**	-3.203**	-3.203**	-3.185**	-3.185**
Multi Pack	-1.578**	-1.578**	-1.593**	-1.593**	-1.565**	-1.565**	-1.593**	-1.593**	-1.577**	-1.577**
Intercept	8.905**	8.905**	8.901**	8.901**	8.905**	8.905**	8.901**	8.901**	8.911**	8.911**
N	76405	76405	76405	76405	76405	76405	76405	76405	76405	76405
Adj. R squared	49.90%	49.89%	50.22%	50.21%	49.58%	49.57%	50.22%	50.21%	49.80%	49.79%

h **Note:** *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, beer sub-categories and retailers.

i **Source:** IPART analysis using Invigor Insights Retail data.

j

Table B.7 Impact of the CDS on cider using a sample of products with prices available from January 2017 (Sample A, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.001	0.001	0.002	0.002	0	0	0.002	0.002	-0.002	-0.002
Time	0.169**		0.169**		0.171**		0.169**		0.167**	
$CDS_{NOV-JUL}$	0.017		0.012		0.019		0.012		0.026	
CDS_{NOV}		-0.009		-0.007		-0.001		-0.007		-0.008
CDS_{DEC}		0.004		-0.011		0.008		-0.011		0.017
CDS_{JAN}		0.027		0.012		0.019		0.012		0.032
CDS_{FEB}		0.061*		0.064*		0.056*		0.064*		0.081**
CDS_{MAR}		0.017		0.016		0.015		0.016		0.028
CDS_{APR}		0.008		0.013		0.011		0.013		0.014
CDS_{MAY}		0.02		0.008		0.025		0.008		0.037
CDS_{JUN}		0.01		0.002		0.018		0.002		0.014
CDS_{JUL}		0.019		0.015		0.017		0.015		0.021
Small to Medium	3.197**	3.197**	3.23**	3.23**	3.166**	3.166**	3.23**	3.23**	3.187**	3.187**
Multi Pack	-1.05**	-1.05**	-1.106**	-1.106**	-1.002**	-1.002**	-1.106**	-1.106**	-1.046**	-1.046**
Intercept	3.532**	3.532**	3.567**	3.567**	3.522**	3.522**	3.567**	3.567**	3.531**	3.531**
N	7954	7954	7954	7954	7954	7954	7954	7954	7954	7954
Adj. R squared	76.34%	76.32%	76.12%	76.10%	76.33%	76.31%	76.12%	76.10%	76.04%	76.02%

k **Note:** *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months and retailers.

l **Source:** IPART analysis using Invigor Insights Retail data.

Table B.8 Impact of the CDS on cider using a sample of products with prices available from January 2016 (Sample B, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.004	0.004	0.005	0.005	0.002	0.002	0.005	0.005	0.001	0.001
Time	0.194**		0.207**		0.195**		0.207**		0.184**	
$CDS_{NOV-JUL}$	0.017		0.013		0.02		0.013		0.03	
CDS_{NOV}		-0.02		-0.02		0.01		-0.02		-0.019
CDS_{DEC}		0.001		-0.018		0.01		-0.018		0.021
CDS_{JAN}		0.033		0.018		0.019		0.018		0.037
CDS_{FEB}		0.069**		0.077**		0.069**		0.077**		0.087**
CDS_{MAR}		0.022		0.019		0.018		0.019		0.037
CDS_{APR}		0.009		0.017		0.013		0.017		0.023
CDS_{MAY}		0.018		0.014		0.02		0.014		0.041
CDS_{JUN}		0.005		-0.008		0.015		-0.008		0.013
CDS_{JUL}		0.02		0.016		0.009		0.016		0.028
Small to Medium	3.249**	3.249**	3.288**	3.288**	3.213**	3.213**	3.288**	3.288**	3.237**	3.237**
Multi Pack	-1.078**	-1.078**	-1.134**	-1.134**	-1.027**	-1.027**	-1.134**	-1.134**	-1.076**	-1.076**
Intercept	3.269**	3.269**	3.29**	3.29**	3.269**	3.269**	3.29**	3.29**	3.269**	3.269**
N	5177	5177	5177	5177	5177	5177	5177	5177	5177	5177
Adj. R squared	83.49%	83.47%	83.63%	83.61%	83.11%	83.08%	83.63%	83.61%	83.05%	83.03%

m Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months and retailers.

n Source: IPART analysis using Invigor Insights Retail data.

Table B.9 Impact of the CDS on cider using a sample of products with prices available from June 2017 (Sample C, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.003	-0.003	-0.002	-0.002	-0.004	-0.004	-0.002	-0.002	-0.006	-0.006
Time	0.164**		0.163**		0.168**		0.163**		0.161**	
$CDS_{NOV-JUL}$	0.031		0.026		0.032		0.026		0.039	
CDS_{NOV}		0.003		0.004		0.011		0.004		0.006
CDS_{DEC}		0.016		0.002		0.019		0.002		0.028
CDS_{JAN}		0.039		0.024		0.031		0.024		0.044
CDS_{FEB}		0.075**		0.078**		0.066**		0.078**		0.095**
CDS_{MAR}		0.033		0.034		0.03		0.034		0.044
CDS_{APR}		0.024		0.03		0.026		0.03		0.03
CDS_{MAY}		0.034		0.02		0.041		0.02		0.048
CDS_{JUN}		0.023		0.013		0.032		0.013		0.024
CDS_{JUL}		0.031		0.026		0.032		0.026		0.031
Small to Medium	3.187**	3.187**	3.222**	3.222**	3.156**	3.156**	3.222**	3.222**	3.178**	3.178**
Multi Pack	-1.054**	-1.054**	-1.109**	-1.109**	-1.006**	-1.006**	-1.109**	-1.109**	-1.05**	-1.05**
Intercept	3.576**	3.576**	3.606**	3.606**	3.574**	3.574**	3.606**	3.606**	3.571**	3.571**
N	8172	8172	8172	8172	8172	8172	8172	8172	8172	8172
Adj. R squared	76.18%	76.16%	75.95%	75.93%	76.20%	76.17%	75.95%	75.93%	75.89%	75.87%

o Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months and retailers.

Source: IPART analysis using Invigor Insights Retail data.

Table B.10 Impact of the CDS on RTD using a sample of products with prices available from January 2017 (Sample A, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.001	-0.001	0	0	-0.005	-0.005	0	0	-0.002	-0.002
Time	0.263**		0.248**		0.248**		0.248**		0.283**	
$CDS_{NOV-JUL}$	0.034*		0.029		0.042**		0.029		0.038**	
CDS_{NOV}		0.014		0.009		0.034*		0.009		0.013
CDS_{DEC}		0.028		0.03		0.033		0.03		0.032
CDS_{JAN}		0.029		0.029		0.03*		0.029		0.034*
CDS_{FEB}		0.062**		0.039*		0.071**		0.039*		0.082**
CDS_{MAR}		0.034		0.028		0.042**		0.028		0.042*
CDS_{APR}		0.029		0.028		0.039*		0.028		0.026
CDS_{MAY}		0.03		0.02		0.039*		0.02		0.047**
CDS_{JUN}		0.035*		0.031		0.041**		0.031		0.029
CDS_{JUL}		0.042*		0.045*		0.052**		0.045*		0.041*
Small to Medium	1.8**	1.8**	1.855**	1.855**	1.757**	1.757**	1.855**	1.855**	1.788**	1.788**
Multi Pack	-1.545**	-1.545**	-1.621**	-1.621**	-1.49**	-1.49**	-1.621**	-1.621**	-1.531**	-1.531**
Intercept	5.877**	5.877**	5.923**	5.923**	5.872**	5.872**	5.923**	5.923**	5.852**	5.852**
N	30129	30129	30129	30129	30129	30129	30129	30129	30129	30129
Adj. R squared	37.51%	37.49%	38.33%	38.31%	36.35%	36.33%	38.33%	38.31%	36.71%	36.70%

p Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months and retailers.

q Source: IPART analysis using Invigor Insights Retail data.

Table B.11 Impact of the CDS on RTD using a sample of products with prices available from January 2016 (Sample B, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.003	-0.003	-0.001	-0.001	-0.008	-0.008	-0.001	-0.001	-0.005	-0.005
Time	0.227**		0.208**		0.206**		0.208**		0.244**	
$CDS_{NOV-JUL}$	0.033*		0.026		0.047**		0.026		0.041**	
CDS_{NOV}		0.013		0.004		0.041**		0.004		0.018
CDS_{DEC}		0.026		0.029		0.032*		0.029		0.026
CDS_{JAN}		0.026		0.028		0.032*		0.028		0.034*
CDS_{FEB}		0.062**		0.039*		0.08**		0.039*		0.079**
CDS_{MAR}		0.035*		0.023		0.047**		0.023		0.05**
CDS_{APR}		0.027		0.024		0.043**		0.024		0.03
CDS_{MAY}		0.03		0.014		0.043**		0.014		0.05**
CDS_{JUN}		0.035*		0.026		0.045**		0.026		0.029
CDS_{JUL}		0.047**		0.049*		0.056**		0.049*		0.053**
Small to Medium	1.669**	1.669**	1.74**	1.74**	1.617**	1.617**	1.74**	1.74**	1.653**	1.653**
Multi Pack	-1.572**	-1.572**	-1.651**	-1.651**	-1.516**	-1.516**	-1.651**	-1.651**	-1.558**	-1.558**
Intercept	5.361**	5.361**	5.337**	5.337**	5.405**	5.405**	5.337**	5.337**	5.354**	5.354**
N	23126	23126	23126	23126	23126	23126	23126	23126	23126	23126
Adj. R squared	35.97%	35.95%	37.08%	37.06%	34.68%	34.66%	37.08%	37.06%	35.20%	35.18%

r Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months and retailers.

s Source: IPART analysis using Invigor Insights Retail data.

t

Table B.12 Impact of the CDS on RTD using a sample of products with prices available from June 2017 (Sample C, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.002	-0.002	-0.001	-0.001	-0.006	-0.006	-0.001	-0.001	-0.004	-0.004
Time	0.262**		0.245**		0.249**		0.245**		0.282**	
$CDS_{NOV-JUL}$	0.036**		0.032		0.045**		0.032		0.041**	
CDS_{NOV}		0.014		0.009		0.034*		0.009		0.015
CDS_{DEC}		0.028		0.031		0.034		0.031		0.032
CDS_{JAN}		0.03		0.03		0.031*		0.03		0.035*
CDS_{FEB}		0.063**		0.041*		0.071**		0.041*		0.082**
CDS_{MAR}		0.039*		0.032		0.047**		0.032		0.047**
CDS_{APR}		0.034		0.033		0.044**		0.033		0.03
CDS_{MAY}		0.034		0.024		0.044**		0.024		0.051**
CDS_{JUN}		0.039*		0.035		0.045**		0.035		0.033
CDS_{JUL}		0.047**		0.048**		0.056**		0.048**		0.046**
Small to Medium	1.804**	1.804**	1.858**	1.858**	1.761**	1.761**	1.858**	1.858**	1.791**	1.791**
Multi Pack	-1.551**	-1.551**	-1.625**	-1.625**	-1.496**	-1.496**	-1.625**	-1.625**	-1.536**	-1.536**
Intercept	5.822**	5.822**	5.873**	5.873**	5.812**	5.812**	5.873**	5.873**	5.798**	5.798**
N	30612	30612	30612	30612	30612	30612	30612	30612	30612	30612
Adj. R squared	37.19%	37.18%	38.04%	38.03%	35.99%	35.97%	38.04%	38.03%	36.41%	36.40%

u Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months and retailers.

v Source: IPART analysis using Invigor Insights Retail data.

Table B.13 Impact of the CDS on red wine using a sample of products with prices available from January 2017 (Sample A, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.154	-0.149	-0.158	-0.153	-0.154	-0.15	-0.158	-0.153	-0.15	-0.145
Time	5.161**		5.182**		5.14**		5.182**		5.163**	
$CDS_{NOV-JUL}$	0.013		0.016		0.016		0.016		0.01	
CDS_{NOV}		0.056		0.065		0.055		0.065		0.053
CDS_{DEC}		0.038		0.049		0.036		0.049		0.035
CDS_{JAN}		0.028		0.032		0.036		0.032		0.024
CDS_{FEB}		0.028		0.037		0.024		0.037		0.023
CDS_{MAR}		0.01		0.013		0.009		0.013		0.006
CDS_{APR}		-0.001		0.011		0.007		0.011		-0.007
CDS_{MAY}		-0.008		-0.017		0.005		-0.017		-0.008
CDS_{JUN}		-0.039		-0.04		-0.031		-0.04		-0.04
CDS_{JUL}		-0.015		-0.021		-0.02		-0.021		-0.014
Multi Pack	-30.355**	30.21**	-30.311**	30.447**	-30.395**	30.047**	-30.311**	30.447**	-30.354**	30.177**
Intercept	1961.168**	1977.029**	1961.374**	1977.211**	1961.156**	1977.038**	1961.374**	1977.211**	1961.109**	1976.969**
N	259843	259843	259843	259843	259843	259843	259843	259843	259843	259843
Adj. R squared	49.79%	49.35%	49.81%	49.38%	49.77%	49.33%	49.81%	49.38%	49.78%	49.34%

w Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers, vintages and production regions.

x Source: IPART analysis using Invigor Insights Retail data.

Table B.14 Impact of the CDS on red wine using a sample of products with prices available from January 2016 (Sample B, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.101	-0.098	-0.106	-0.103	-0.103	-0.1	-0.106	-0.103	-0.097	-0.094
Time	2.769**		2.775**		2.776**		2.775**		2.77**	
$CDS_{NOV-JUL}$	-0.004		-0.005		0.001		-0.005		-0.003	
CDS_{NOV}		0.021		0.025		0.019		0.025		0.022
CDS_{DEC}		0.009		0.007		0.01		0.007		0.017
CDS_{JAN}		0.003		-0.001		0.004		-0.001		0.005
CDS_{FEB}		-0.002		-0.003		0		-0.003		-0.006
CDS_{MAR}		-0.008		0.013		-0.001		0.013		-0.017
CDS_{APR}		-0.011		-0.016		-0.003		-0.016		-0.014
CDS_{MAY}		-0.008		-0.014		0.004		-0.014		-0.002
CDS_{JUN}		-0.022		-0.023		-0.013		-0.023		-0.018
CDS_{JUL}		-0.018		-0.028		-0.009		-0.028		-0.012
Multi Pack	-25.535**	30.795**	-25.509**	31.056**	-25.566**	30.612**	-25.509**	31.056**	-25.536**	30.765**
Intercept	1966.716**	1980.652**	1966.925**	1980.846**	1966.728**	1980.681**	1966.925**	1980.846**	1966.647**	1980.583**
N	218736	218736	218736	218736	218736	218736	218736	218736	218736	218736
Adj. R squared	52.26%	51.97%	52.28%	51.98%	52.24%	51.94%	52.28%	51.98%	52.25%	51.96%

y Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers, vintages and production regions.

z Source: IPART analysis using Invigor Insights Retail data.

Table B.15 Impact of the CDS on red wine using a sample of products with prices available from June 2017 (Sample C, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.146	-0.141	-0.151	-0.145	-0.147	-0.141	-0.151	-0.145	-0.143	-0.137
Time	5.247**		5.265**		5.225**		5.265**		5.251**	
$CDS_{NOV-JUL}$	0.031		0.035		0.034		0.035		0.028	
CDS_{NOV}		0.077		0.086		0.076		0.086		0.075
CDS_{DEC}		0.059		0.069		0.057		0.069		0.057
CDS_{JAN}		0.05		0.052		0.059		0.052		0.048
CDS_{FEB}		0.046		0.057		0.044		0.057		0.042
CDS_{MAR}		0.033		0.035		0.033		0.035		0.028
CDS_{APR}		0.018		0.036		0.022		0.036		0.009
CDS_{MAY}		0.007		0		0.018		0		0.007
CDS_{JUN}		-0.025		-0.027		-0.016		-0.027		-0.025
CDS_{JUL}		-0.003		-0.011		-0.005		-0.011		-0.003
Multi Pack	-30.189**	30.303**	-30.144**	30.541**	-30.229**	30.14**	-30.144**	30.541**	-30.188**	30.267**
Intercept	1959.852**	1975.789**	1959.958**	1975.871**	1959.975**	1975.933**	1959.958**	1975.871**	1959.786**	1975.722**
N	262111	262111	262111	262111	262111	262111	262111	262111	262111	262111
Adj. R squared	49.84%	49.41%	49.86%	49.43%	49.82%	49.38%	49.86%	49.43%	49.83%	49.40%

aa Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers, vintages and production regions.

bb Source: IPART analysis using Invigor Insights Retail data.

cc

Table B.16 Impact of the CDS on white wine using a sample of products with prices available from January 2017 (Sample A, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.13	0.13	0.132	0.132	0.125	0.125	0.132	0.132	0.132	0.132
Time	2.464**		2.493**		2.436**		2.493**		2.477**	
$CDS_{NOV-JUL}$	0.038		0.037		0.042		0.037		0.036	
CDS_{NOV}		0.057		0.058		0.053		0.058		0.055
CDS_{DEC}		0.063		0.062		0.066		0.062		0.063
CDS_{JAN}		0.065		0.068		0.066		0.068		0.065
CDS_{FEB}		0.061		0.061		0.067		0.061		0.059
CDS_{MAR}		0.027		0.034		0.03		0.034		0.021
CDS_{APR}		0.032		0.032		0.036		0.032		0.031
CDS_{MAY}		0.031		0.031		0.048		0.031		0.03
CDS_{JUN}		0.003		-0.016		0.01		-0.016		-0.003
CDS_{JUL}		0.005		0.001		0.002		0.001		0.002
Multi Pack	-2.849	-16.307**	-2.839	-16.047**	-2.854	-16.468**	-2.839	-16.047**	-2.854	-16.378**
Intercept	133.137**	134.312**	132.38**	133.551**	133.685**	134.862**	132.38**	133.551**	133.24**	134.417**
N	110198	110198	110198	110198	110198	110198	110198	110198	110198	110198
Adj. R squared	41.47%	41.43%	41.53%	41.49%	41.43%	41.39%	41.53%	41.49%	41.46%	41.42%

dd Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers, vintages and production regions.

ee Source: IPART analysis using Invigor Insights Retail data.

ff

Table B.17 Impact of the CDS on white wine using a sample of products with prices available from January 2016 (Sample B, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	-0.059	-0.059	-0.062	-0.061	-0.061	-0.061	-0.062	-0.061	-0.056	-0.056
Time	0.571**		0.6**		0.561**		0.6**		0.579**	
$CDS_{NOV-JUL}$	-0.009		-0.014		-0.005		-0.014		-0.011	
CDS_{NOV}		0.023		0.02		0.011		0.02		0.023
CDS_{DEC}		0.02		0.019		0.023		0.019		0.019
CDS_{JAN}		0.024		0.014		0.027		0.014		0.026
CDS_{FEB}		0.025		0.028		0.032		0.028		0.024
CDS_{MAR}		-0.015		-0.01		-0.013		-0.01		-0.023
CDS_{APR}		-0.017		-0.017		-0.017		-0.017		-0.02
CDS_{MAY}		-0.024		-0.029		-0.013		-0.029		-0.023
CDS_{JUN}		-0.058		-0.084		-0.045		-0.084		-0.066
CDS_{JUL}		-0.057		-0.063		-0.055		-0.063		-0.063
Multi Pack	-3.573**	-15.269**	-3.57**	-15.008**	-3.575**	-15.424**	-3.57**	-15.008**	-3.576**	-15.343**
Intercept	135.582**	137.023**	134.919**	136.36**	136.055**	137.498**	134.919**	136.36**	135.661**	137.104**
N	92411	92411	92411	92411	92411	92411	92411	92411	92411	92411
Adj. R squared	39.56%	39.50%	39.62%	39.55%	39.52%	39.46%	39.62%	39.55%	39.54%	39.48%

gg Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers, vintages and production regions.

hh Source: IPART analysis using Invigor Insights Retail data.

Table B.18 Impact of the CDS on white wine using a sample of products with prices available from June 2017 (Sample C, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.136	0.136	0.137	0.137	0.131	0.132	0.137	0.137	0.138	0.138
Time	2.493**		2.524**		2.461**		2.524**		2.507**	
$CDS_{NOV-JUL}$	0.017		0.015		0.021		0.015		0.015	
CDS_{NOV}		0.036		0.036		0.032		0.036		0.034
CDS_{DEC}		0.042		0.041		0.045		0.041		0.042
CDS_{JAN}		0.043		0.047		0.045		0.047		0.043
CDS_{FEB}		0.04		0.038		0.046		0.038		0.037
CDS_{MAR}		0.006		0.011		0.01		0.011		0
CDS_{APR}		0.011		0.01		0.016		0.01		0.01
CDS_{MAY}		0.01		0.008		0.027		0.008		0.009
CDS_{JUN}		-0.017		-0.037		-0.011		-0.037		-0.023
CDS_{JUL}		-0.017		-0.023		-0.018		-0.023		-0.019
Multi Pack	-2.849	-16.183**	-2.838	-15.93**	-2.854	-16.338**	-2.838	-15.93**	-2.854	-16.253**
Intercept	134.209**	135.4**	133.396**	134.582**	134.76**	135.953**	133.396**	134.582**	134.33**	135.523**
N	111169	111169	111169	111169	111169	111169	111169	111169	111169	111169
Adj. R squared	41.48%	41.44%	41.54%	41.50%	41.44%	41.40%	41.54%	41.50%	41.46%	41.42%

ii Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers, vintages and production regions.

jj Source: IPART analysis using Invigor Insights Retail data.

Table B.19 Impact of the CDS on spirits using a sample of products with prices available from January 2017 (Sample A, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.262	0.262	0.257	0.257	0.257	0.257	0.257	0.257	0.259	0.259
Time	1.765		2.074		1.692		2.074		1.624	
$CDS_{NOV-JUL}$	0.325		0.33		0.336		0.33		0.33	
CDS_{NOV}		0.379		0.399		0.375		0.399		0.384
CDS_{DEC}		0.366		0.381		0.376		0.381		0.358
CDS_{JAN}		0.37		0.346		0.371		0.346		0.373
CDS_{FEB}		0.348		0.307		0.363		0.307		0.347
CDS_{MAR}		0.264		0.314		0.254		0.314		0.259
CDS_{APR}		0.258		0.228		0.289		0.228		0.266
CDS_{MAY}		0.302		0.322		0.311		0.322		0.297
CDS_{JUN}		0.314		0.334		0.333		0.334		0.313
CDS_{JUL}		0.323		0.337		0.348		0.337		0.374
Medium	8.426	8.426	8.355	8.355	8.45	8.45	8.355	8.355	8.464	8.464
Small	-129.296**	-129.296**	-129.327**	-129.327**	-129.286**	-129.286**	-129.327**	-129.327**	-129.268**	-129.268**
Small to Medium	-108.397*	-108.397*	-107.852*	-107.852*	-108.673*	-108.673*	-107.852*	-107.852*	-108.557*	-108.557*
Multi Pack	-25.481	-25.481	-25.543	-25.543	-25.531	-25.531	-25.543	-25.543	-25.449	-25.449
Intercept	34.556	34.556	34.372	34.372	34.632	34.632	34.372	34.372	34.557	34.557
N	26844	26844	26844	26844	26844	26844	26844	26844	26844	26844
Adj. R squared	24.97%	24.95%	24.86%	24.84%	25.04%	25.01%	24.86%	24.84%	25.00%	24.97%

kk Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers and production regions.

ll Source: IPART analysis using Invigor Insights Retail data.

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Table B.20 Impact of the CDS on spirits using a sample of products with prices available from January 2016 (Sample B, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.155	0.155	0.153	0.153	0.153	0.153	0.153	0.153	0.152	0.152
Time	4.292**		4.57**		4.273**		4.57**		4.16**	
$CDS_{NOV-JUL}$	-0.028		-0.024		-0.016		-0.024		-0.007	
CDS_{NOV}		0.004		0.007		0.006		0.007		0.007
CDS_{DEC}		0.004		0.007		0.006		0.007		0.007
CDS_{JAN}		0.003		0.006		0.005		0.006		0.006
CDS_{FEB}		0.004		0.008		0.002		0.008		0.007
CDS_{MAR}		-0.054		-0.049		-0.053		-0.049		-0.052
CDS_{APR}		-0.054		-0.052		-0.054		-0.052		0.071
CDS_{MAY}		-0.055		-0.052		-0.054		-0.052		-0.052
CDS_{JUN}		-0.056		-0.053		-0.054		-0.053		-0.053
CDS_{JUL}		-0.044		-0.033		0.054		-0.033		-0.003
Medium	25.943	25.943	25.905	25.905	25.951	25.951	25.905	25.905	25.988	25.988
Small	-122.237*	-122.237*	-122.244*	-122.244*	-122.241*	-122.241*	-122.244*	-122.244*	-122.205*	-122.205*
Small to Medium	-106.808	-106.808	-106.136	-106.136	-107.17	-107.17	-106.136	-106.136	-106.991	-106.991
Multi Pack	-27.835	-27.835	-27.891	-27.891	-27.921	-27.921	-27.891	-27.891	-27.803	-27.803
Intercept	143.761**	143.761**	143.591**	143.591**	143.797**	143.797**	143.591**	143.591**	143.818**	143.818**
N	23839	23839	23839	23839	23839	23839	23839	23839	23839	23839
Adj. R squared	23.71%	23.69%	23.60%	23.58%	23.77%	23.75%	23.60%	23.58%	23.74%	23.71%

nn Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers and production regions.

oo Source: IPART analysis using Invigor Insights Retail data.

Table B.21 Impact of the CDS on spirits using a sample of products with prices available from June 2017 (Sample C, $ including GST)

	Mean Price		Median Price		Maximum Price		Minimum Price		Most Common Price	
	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly	Overall	Monthly
NSW	0.596	0.596	0.588	0.588	0.59	0.59	0.588	0.588	0.592	0.592
Time	1.694		2		1.622		2		1.551	
$CDS_{NOV-JUL}$	-0.808		-0.8		-0.798		-0.8		-0.802	
CDS_{NOV}		-0.696		-0.676		-0.702		-0.676		-0.692
CDS_{DEC}		-0.708		-0.69		-0.69		-0.69		-0.718
CDS_{JAN}		-0.724		-0.777		-0.696		-0.777		-0.697
CDS_{FEB}		-0.769		-0.798		-0.785		-0.798		-0.768
CDS_{MAR}		-0.894		-0.818		-0.91		-0.818		-0.907
CDS_{APR}		-0.909		-0.936		-0.879		-0.936		-0.902
CDS_{MAY}		-0.866		-0.839		-0.859		-0.839		-0.871
CDS_{JUN}		-0.857		-0.835		-0.838		-0.835		-0.859
CDS_{JUL}		-0.849		-0.835		-0.825		-0.835		-0.8
Medium	16.032	16.032	15.968	15.968	16.049	16.049	15.968	15.968	16.068	16.068
Small	-123.94*	-123.94*	-123.966*	-123.966*	-123.935*	-123.935*	-123.966*	-123.966*	-123.914*	-123.914*
Small to Medium	-100.952	-100.952	-100.399	-100.399	-101.234	-101.234	-100.399	-100.399	-101.113	-101.113
Multi Pack	-26.302	-26.302	-26.364	-26.364	-26.351	-26.351	-26.364	-26.364	-26.27	-26.27
Intercept	29.268	29.268	29.113	29.113	29.295	29.295	29.113	29.113	29.283	29.283
N	27288	27288	27288	27288	27288	27288	27288	27288	27288	27288
Adj. R squared	24.29%	24.27%	24.18%	24.16%	24.36%	24.33%	24.18%	24.16%	24.32%	24.29%

pp Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level. Each model includes dummy variables for individual months, retailers and production regions.

Source: IPART analysis using Invigor Insights Retail data.

C Portfolio analysis of the CDS impact on alcoholic beverage prices

As discussed in Chapter 3, to analyse the CDS impact on promotional prices for alcoholic beverages, we have conducted additional analysis using a **portfolio-based** difference-in-difference approach. This approach does not require prices to be available every month. Specifically, we constructed monthly portfolios consisting of prices of identical products sold by the same retailer(s) operating in both NSW and Victoria. We then computed the average price difference between the NSW portfolio and the Victoria portfolio in each month of the sample period, and evaluated whether the price difference, if any, is statistically significant for the pre-CDS period and for the post-CDS period. The post-CDS period for the portfolio analysis is from December 2017 to July 2018.[113]

One retailer's products dominate the sample used for our portfolio analysis, accounting 72% for beer, 58% for cider and 62% for ready-to-drinks. To rule out the possibility that our results are driven by the concentration of a specific retailer(s) in our sample, we have assessed the average price difference for a number of different retailer groups:

- **All retailers** sample includes products sold by all retailers
- **Large Retailer** sample includes products sold by the largest retailer in our sample
- **All ex Large Retailer** sample includes products sold by all retailers except for those by the largest retailer
- **Major ex the Large Retailer** sample includes products sold by major liquor retailers except for those by the largest retailer
- **Non-major retailers** sample includes products sold by non-major liquor retailers.

113 For our portfolio analysis, we analysed small-sized beverages (less than 600 ml) sold in multipack. We did not analyse beverages sold in containers greater than 600 ml and/or those sold in single pack due to small sample size.

D Defining the relevant markets

As discussed in Chapter 7, in defining the relevant markets for analysing whether the CDS has materially restricted competition, we considered:

1. the **product classes and types** being offered and how readily they can be substituted for each other
2. the **geographic space** in which substitution can occur
3. the **functional** level of production in which competition occurs (eg, manufacturing, wholesaling or retailing).

D.1.1 Separate markets for alcoholic and non-alcoholic container beverages

We consider there are separate markets for alcoholic and non-alcoholic container beverages. Recent econometric studies have found a high degree of substitutability between non-alcoholic beverages. For example, sugar sweetened beverages including soft drinks, flavoured mineral waters, energy drinks, fruit juices and cordials are substitutes for diet soft drinks and bottled water.[114] There is also evidence of a high degree of substitutability among alcoholic beverages, including beer, wine and ready-to-drink or pre-mixed spirits.[115]

There also appear to be separate subcategories for boutique beverages that are produced or supplied in small volumes but a wide range of types, flavours or styles. For example, craft beers often release multiple product types in small batches throughout a year. We consider that these products are targeted at niche markets and so are not as readily substituted by large volume mass market beers. Similarly, boutique non-alcoholic products form a distinct subcategory of non-alcoholic container beverages.

D.1.2 Distinction between alcoholic and non-alcoholic applies across all sectors

We also consider that the distinction between alcoholic and non-alcoholic container beverage markets applies across the manufacturing, wholesale and retail sectors of these markets. For example:

- Businesses that manufacture alcoholic drinks require different equipment to those producing non-alcoholic drinks.

114 Duckett, S., Swerissen, H. and Wiltshire, T. 2016, *A sugary drinks tax: recovering the community costs of obesity*, Grattan Institute, p 58; Sharma S, Hauck K, Hollingsworth B, Siciliani L, *The Effects of taxing sugar-sweetened beverages across different income groups*, Health Economics 23(9) 2014 pp 1159-1184.

115 Srivastava P, McLaren K, Wohlgenant M and Zhao X, *Econometric Modelling of Price Response by Alcohol Types to Inform Alcohol Tax Policies*, Monash University Department of Econometrics and Business Statistics Working Papers, February 2014, p 20.

- In the wholesaling space, businesses that supply non-alcoholic beverages are typically small family-run firms that focus on niche food and drink products. The major supermarkets and retailers generally purchase directly from manufacturers rather than using wholesalers.[116] In contrast, the alcoholic beverage wholesale market is dominated by two firms, Metcash Ltd and Independent Liquor Group.[117]
- In the retailing market, businesses that sell alcoholic beverages require a licence with their local authority[118] while those that retail only non-alcoholic drinks do not.

We note however that there is a degree of vertical integration in the industry with some businesses operating across the manufacturing, wholesale and retail sectors.

D.1.3 Geographic market is Australia-wide for manufacturing and wholesaling but there are smaller regional or local submarkets for retailing

We found that the geographic market for manufacturing and wholesaling container beverages is not restricted to NSW but extends Australia-wide. This is consistent with the ACCC's position when it has considered market definitions in relation to the beverage industry in the context of proposed mergers and acquisitions. For example, in 2012, it considered a proposed acquisition by Coca-Cola Amatil Pty Ltd of the non-alcoholic beverages business of Foster's Group Limited. In this case, it found there were separate markets for national production and national wholesale supply of carbonated soft drinks, bottled water, fruit beverages and cordial.[119]

However, when considering retail beverage markets, we found that the CDS has had an impact on small NSW retail businesses close to the Victorian border, where consumers may seek to avoid the costs of the CDS by shopping over the border (as discussed in section 7.4.5). The introduction of a container deposit scheme in the ACT in July 2018 and the scheme due to commence in Queensland on 1 November 2018 mean that similar impacts are unlikely to continue in these border areas.

116 The CIE, *Monitoring the Impacts of the NSW Container Deposit Scheme*, January 2018, p 9.
117 IBISWorld Industry Report F3606a Liquor Wholesaling in Australia, August 2017, pp 21-22
118 In NSW this is the Department of Industry - Liquor and Gaming.
119 ACCC Public Register: Coca-Cola Amatil – Proposed Acquisition for Foster's Non-Alcoholic Beverage Assets, at http://registers.accc.gov.au/content/index.phtml/itemId/1069965/fromItemId/751043, accessed on 19 April 2018.

E List of submissions

Table E.1 List of submission to IPART Issues Paper

Submitter	Date received
Individual – Anonymous (Confidential)	13 February 2018
Individual – Anonymous (Confidential)	13 February 2018
Individual – Anonymous (Confidential)	15 February 2018
Individual – Anonymous (Confidential)	16 February 2018
Organisation – Anonymous (Confidential)	12 March 2018
Organisation – Anonymous (Confidential)	13 March 2018
Organisation – Anonymous (Confidential)	13 March 2018
Organisation – Anonymous (Confidential)	13 March 2018
Individual – T Allport (Confidential)	14 February 2018
Sternwin TA Firstwater Springs (Confidential)	13 March 2018
Individual – Anonymous	13 February 2018
Individual – Anonymous	14 February 2018
Individual – Anonymous	14 February 2018
Individual – Anonymous	14 February 2018
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Individual – Anonymous	15 February 2018
Individual – Anonymous	15 February 2018
Individual – Anonymous	15 February 2018
Individual – Anonymous	16 February 2018
Individual – Anonymous	17 February 2018
Individual – Anonymous	23 February 2018
Individual – Anonymous	24 February 2018
Individual – A Zaunders	15 February 2018
Individual – B. Batten	16 February 2018
Individual – F. Shaw	15 February 2018
Individual – G. O'Riley	13 February 2018
Individual – J Connell	6 March 2018
Individual – J. Ellis	1 March 2018
Individual – J. Haddon	4 March 2018

Submitter	Date received
Individual – J. Moffitt	16 February 2018
Individual – J. Parry	15 February 2018
Individual – J. Singh	15 February 2018
Individual – L. Townsend	25 February 2018
Individual – M. Bowen	25 February 2018
Individual – M. Ingram	16 February 2018
Individual – M. Thompson	21 February 2018
Individual – R. McKay	15 February 2018
Individual – S. Smith	14 February 2018
Individual – T. Caldwell	28 February 2018
Individual – V. Clayton	17 February 2018
Individual – V Nielson	15 February 2018
Organisation - Anonymous	24 February 2018
Australian Beverages Council	13 March 2018
DSICA	12 March 2018
Liquor Stores Association NSW ACT	13 March 2018
Mathews IGA Supermarkets	5 March 2018
MGA Liquor	27 March 2018
National Retail Association	13 March 2018
NSW Business Chamber	21 March 2018
Office of the NSW Small Business Commissioner	16 March 2018
Restaurant Catering Industry Association	14 March 2018
The Two Metre Tall Company Pty Ltd	12 March 2018
Thirst for Life	27 February 2018

Table E.2 List of submissions to IPART Progress Report

Submitter	Date received
Individual - Anonymous	27 April 2018
Individual - L Hume	4 May 2018
Individual - R Hunter	8 May 2018
Individual - D Noacco	12 May 2018
Individual – P Dorrian (Confidential)	21 May 2018
Australian Hotels Association NSW – J Green	30 May 2018
Australian Beverages Council Ltd – A Taylor	6 June 2018
Lion – S Barr	8 June 2018
Exchange for Change – P Bruce	8 June 2018
National Retail Association – D Stout	12 June 2018
Coca-Cola Amatil	6 August 2018