

# **Completed acquisition by Cardtronics plc of DirectCash Payments Inc.**

## **Appendices and glossary**

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Glossary

## Terms of reference and conduct of the inquiry

### Terms of reference

1. On 15 May 2017, the CMA referred the completed acquisition by Cardtronics plc of DirectCash Payments Inc.. The terms of reference were as follows:
  1. In exercise of its duty under section 22(1) of the Enterprise Act 2002 (the Act) the Competition and Markets Authority (CMA) believes that it is or may be the case that:
    - (a) a relevant merger situation has been created, in that:
      - (i) enterprises carried on by Cardtronics plc have ceased to be distinct from enterprises carried on by DirectCash Payments Inc.; and
      - (ii) the condition specified in section 23(2)(b) of the Act is satisfied; and
    - (b) the creation of that situation has resulted, or may be expected to result, in a substantial lessening of competition within a market or markets in the United Kingdom for goods or services, including the supply of automated teller machines (ATMs) to ATM users on a local basis.
  2. Therefore, in exercise of its duty under section 22(1) of the Act, the CMA hereby makes a reference to its chair for the constitution of a group under Schedule 4 to the Enterprise and Regulatory Reform Act 2013 in order that the group may investigate and report, within a period ending on 27 October 2017, on the following questions in accordance with section 35(1) of the Act:
    - (a) whether a relevant merger situation has been created; and
    - (b) if so, whether the creation of that situation has resulted, or may be expected to result, in a substantial lessening of competition within any market or markets in the United Kingdom for goods or services.

**Kate Collyer, Deputy Chief Economic Adviser**  
**Competition and Markets Authority**  
**15 May 2017**

## Conduct of the inquiry

2. On 15 May 2017, the transaction was referred for an in-depth (phase 2) merger investigation.
3. We published [biographies of the members of the inquiry group](#) conducting the inquiry on 23 May 2017, and the [administrative timetable](#) for the inquiry on 2 June 2017, with subsequent updates being published as applicable.
4. We sent detailed questionnaires to interested parties and evidence was obtained from these third parties through telephone discussions and written requests. Evidence provided to the CMA during phase 1 was also considered in phase 2.
5. On 7 June 2017, we published an [issues statement](#), setting out the main issues we were likely to consider in this inquiry and inviting comments from the main and third parties. No responses to our issues statement were received.
6. On 9 June 2017, members of the inquiry group, accompanied by staff, visited the head offices of each of Cardtronics and DCP.
7. We received written evidence from the Parties. A [non-confidential version of their response to the phase 1 decision](#) is on our webpages. On 31 July 2017, we held a hearing with the Parties.
8. In the course of our inquiry, we sent to the Parties, as well as third parties, some working papers and extracts from those papers for comment.
9. A non-confidential version of the provisional findings report has been placed on the [case page](#).
10. We would like to thank all those who have assisted in our inquiry so far.

## Consumer survey

### Overview

1. The CMA commissioned consumer survey research with the objective of understanding more about the use of PTU ATMs, in particular:
  - (a) the circumstances in which PTU ATMs are used;
  - (b) the nature of PTU ATM use (eg planned or impulse);
  - (c) consumers' reasons for using a PTU ATM, rather than a FTU ATM or alternative payment method; and
  - (d) the likely impact on consumers' behaviour if the PTU ATM they had used most recently had not been available.
2. This appendix sets out the survey methodology, together with a summation of the headline findings arising from the consumer research.

### CMA survey methodology

3. The CMA commissioned the market research agency Kantar TNS to include a set of questions across four waves<sup>1</sup> of its continuous face-to-face omnibus survey.
4. Fieldwork for the CMA was carried out between 14 June and 9 July 2017, with interviewing conducted during weekdays and at the weekends between 2pm and 8pm. The Kantar TNS omnibus survey uses a random location design, stratified by Government Office Region (GOR) and by an urban/rural classification to reflect population density. Interviews are conducted in respondents' homes using a computer-aided personal interviewing (CAPI) methodology. Respondent quotas are set by gender. For women, quotas are set for the presence of children and working status, and for men, quotas are set for working status. Participation in the survey is not incentivised.
5. The survey collected responses from consumers across Great Britain and Northern Ireland, with a combined starting sample of 8,444 respondents

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<sup>1</sup> Kantar TNS operates one or two face-to-face omnibus surveys per week, depending on demand. In each wave of fieldwork, representative samples of 2,000 adults in Great Britain aged 16 years and over are achieved. An additional sample of interviews in Northern Ireland is added to produce a representative UK-wide sample.

structured to be representative of the population of UK adults aged 16 years and over.

6. Those eligible to answer the CMA's questions in full were identified using the following screening question: 'At any time in the last 3 months, have you used a pay-to-use cash machine in the UK, where you were charged a fee by the machine for using it to make a cash withdrawal?'<sup>2</sup> An achieved sample of 654 UK adults aged 16 years and over who had used a PTU ATM in the three months before the date of interview was obtained.<sup>3</sup> Of these, 62% had used a PTU ATM in the four weeks prior to interview.
7. All information collected during the omnibus survey is weighted to correct for any minor deficiencies or imbalances in the sample achieved. The data are weighted by interlocking sex, age, socio-economic grade,<sup>4</sup> and grouped GOR (North/Midlands/South) variables. In order to match the sample and the weighting targets, the weight scheme was applied to combined data from the four waves of fieldwork for all respondents (ie not just to those who were eligible to answer the CMA's section of the questionnaire).
8. Questions were developed by the CMA, with comments on its content invited from the Parties before finalisation. A copy of all the CMA questions may be found in the Annex to this appendix.
9. Copies of the data tables and survey technical report prepared by Kantar TNS will be published on the [case page](#).

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<sup>2</sup> The CMA's screening question was preceded by an explanatory introduction: 'The following questions I ask you are about using pay-to-use ATMs, also known as pay-to-use cash machines, to make a cash withdrawal. These are cash machines where users are charged a fee by the machine for using it. Please note that if you use a credit card to withdraw cash from a cash machine, the credit card provider may charge a fee, regardless of whether the cash machine itself is free-to-use or pay-to-use. Our questions are NOT about that. We're interested in cash withdrawals for which the cash machine makes a charge, whether the card used is a debit card or credit card.'

<sup>3</sup> In the first wave of fieldwork, 81 respondents (all of whom had used a PTU ATM in the UK in the last three months but not in the last four weeks) were not asked Q4ff as intended, due to a routing error in the questionnaire script. Consequently, base sizes reported throughout the report and appendices may be inconsistent.

<sup>4</sup> Socio-economic group (SEG) is a classification system based on occupation, enabling a household and all its members to be classified according to the occupation of the Chief Income Earner (CIE). A number of questions are asked in the interview in order to assign a classification accurately. The interviewer probes the respondent for information about the occupation of the CIE, the type of organisation (s)he works for, job actually done, job title/rank/grade, and whether the CIE is self-employed. Also relevant are details of the number of people working at the CIE's place of employment and whether the CIE is responsible for anyone, together with confirmation of qualifications. The groups are most often defined as follows:

A - Higher managerial, administrative, professional, eg chief executive, senior civil servant, surgeon.

B - Intermediate managerial, administrative, professional, eg bank manager, teacher.

C1 - Supervisory, clerical, junior managerial, eg shop floor supervisor, bank clerk, salesperson.

C2 - Skilled manual workers, eg electrician, carpenter.

D - Semi-skilled and unskilled manual workers, eg assembly line worker, refuse collector, messenger.

E - Casual labourers, pensioners, unemployed, eg pensioners without private pensions and anyone living on basic benefits.

### ***Diversion questions***

10. The diversion questions in this survey asked consumers about the last/most recent cash withdrawal they had made prior to interview where they were charged a fee by the machine for using it:
  - (a) Those whose visit to the PTU ATM was planned were asked what they would have done instead if they had known before setting out that it and any other cash machines at the same site had not been working.
  - (b) Those whose visit to the PTU ATM was made on impulse were asked what they would have done instead if they had found that it and any other cash machines at the same site were not working.
  - (c) Those who did not know/could not remember whether their visit to the PTU ATM was planned or made on impulse were asked to imagine that it and any other cash machines at the same site were not working, and asked what they would have done instead.
  
11. In each case, response options offered were:
  - (a) Not withdrawn cash and not made [my] purchase.
  - (b) Not withdrawn cash and made [my] purchase using a different payment method.
  - (c) Used another cash machine near to the one I wanted to use.
  - (d) Used another cash machine somewhere else completely.
  - (e) Withdrawn cash over the counter at the bank/building society/post office.
  - (f) Something else (WRITE IN).
  - (g) Don't know.
  
12. Consumers who said they would use another cash machine (either nearby or somewhere else completely) were then asked: whether they had a particular cash machine in mind, whether (if so) it was a FTU or PTU cash machine, and how far it was (in terms of the number of minutes it would take to get there on foot) from the PTU ATM they had actually used.

### ***Survey quality***

13. The CMA, when commissioning its own survey, is able to optimise the survey design with respect to its evidential requirements and in the context of the

wider analysis plan for the case. However, limitations of the survey design, and any issues that may arise during the conduct of the survey, need to be carefully considered in order to assess how much evidential weight can be given to the survey findings. This section describes and assesses the main strengths and weaknesses of the CMA survey.

14. In this inquiry, time, budget and other practical constraints precluded an exit survey in a representative sample of the 848 local areas identified as giving rise to the realistic prospect of an SLC as a result of the Merger at phase 1. These constraints included:
  - (a) The low average number (9) of withdrawals made each day from PTU ATMs,<sup>5</sup> meaning that a high number of interviewer days and a prolonged period of fieldwork per cash machine would be required to achieve a sufficiently robust number of interviews. In this context, the Parties also noted<sup>6</sup> that ‘due to low transaction volumes at individual PTU sites ... a site-specific survey may not be practicable’.
  - (b) The need to have interviewers in place at the sampled ATMs for up to 24 hours a day.
  - (c) The need to negotiate access for interviewers to the sampled ATM sites with multiple site owners.
  - (d) The potential concern caused to ATM users by the presence nearby of an interviewer as they made their cash withdrawal.
  - (e) That ATM users are very unlikely to be able to distinguish between different independent ATM deployers (IADs) or their fascia/branding.
15. Therefore, the CMA acknowledges that – in assessing closeness of competition between the Parties – its survey results cannot be used to estimate directly the diversion ratios in local areas identified in phase 1 as having a realistic prospect of an SLC. Likewise, we also acknowledge that:
  - (a) The survey findings cannot be taken to indicate the closeness of competition between the Parties at even the national level, as respondents were not required to be users of a Cardtronics and/or DCP PTU ATM in order to be eligible to participate, and we do not know how many customers of each party (or of their competitors) is represented in the achieved sample (for the reasons outlined in paragraph 14(e), this information was not sought). Instead, the survey findings provide an

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<sup>5</sup> Payments UK (2016). *UK Cash & Cash Machines*. London: Payments UK.

<sup>6</sup> [REDACTED].

indication of the closeness of competition between different types of ATM (FTU and PTU) at the national level, regardless of deployer, and the CMA has used these findings with due caution as a proxy for the closeness of competition between the Parties in the areas where they overlap.

- (b) Respondent recall may affect the accuracy of their responses in regard to factual aspects of the transaction such as the fee they were charged. The Parties submitted<sup>7</sup> that participation in the survey should be ‘time limited (eg within the last month)’ in order to minimise the risk of respondent error. In this context, the CMA notes that – even with the wider eligibility criterion we adopted (any use of a PTU cash machine in the UK in the last three months) – more than three in five respondents answered the survey in reference to a PTU ATM withdrawal made in the previous four weeks (ie within the time limit suggested by the Parties).
- (c) The survey questions on diversion are hypothetical and consumers’ reported behaviour may differ from their actual behaviour (stated versus revealed preferences).
- (d) As asked in this survey, the questions on diversion do not distinguish between marginal and inframarginal customers. The CMA is interested in the actions of marginal,<sup>8</sup> rather than inframarginal, customers as it is the marginal customer who may switch in response to small changes in offering, eg an increase in the fee charged for withdrawing cash from an ATM. However, in many merger cases it is not possible to report diversion ratios for marginal customers due to the constraints of a small sample size. In such circumstances, the CMA relies on the forced diversion question to estimate diversion ratios, assuming that the diversion behaviour of marginal customers and inframarginal customers are broadly the same. This is not usually a concern in horizontally differentiated product markets, although if inframarginal customers had different switching patterns from marginal customers then the diversion ratios may not provide a meaningful estimate of how marginal customers would react to a worsening in the Parties’ offering, post-merger. This could be a concern if, for example, inframarginal customers have different preferences from marginal customers.

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<sup>7</sup> [REDACTED].

<sup>8</sup> Marginal customers are those who will purchase a particular product at the market price, but will be unwilling to pay any more for it. By contrast, inframarginal customers would purchase the product if the price were higher by a small increment.



## CMA survey analysis

16. The analysis set out in the CMA’s report and appendices is that of the CMA, based on data provided to it by Kantar TNS, and not the analysis of Kantar TNS. Some findings presented result from additional analysis of the survey dataset and may differ from the data tabulations provided to the CMA by Kantar TNS as published.
17. Where the results are presented for questions asked only of subsets of respondents, or comparisons are made between sub-groups, we present results which are based on sufficient responses for us to draw robust conclusions: as a guide, generally speaking this is where there are at least 100 respondents in the unweighted base (for a subset, or for each sub-group).
18. For differences between sub-groups, we comment on results which are statistically significant at the 95% confidence level.
19. Consumers were asked to answer questions in reference to ‘the last/most recent cash withdrawal you made where you were charged a fee by the machine for using it’.

## CMA survey findings

20. Just under one in ten UK adults aged 16 years or over (9%) used a PTU cash machine in the last three months. Some key sub-group differences emerged, with users significantly more likely to be:
  - (a) Male – one in ten men (10%) used a PTU ATM in the last three months compared with around one in twelve women (8%).
  - (b) From social grades ABC1.
  - (c) Living in households with children.
  - (d) White.
  - (e) Younger.

**Table 1a: Use of PTU ATMs in the UK – profile of consumers**

	%									
	Sex			Social grade		Child in household		Ethnicity		
	All*	M	F	ABC1	C2DE	Y	N	White	BME	
Yes, used PTU ATM	9	10	8	10	8	12	8	9	6	
No, did not use PTU ATM	90	90	91	90	91	87	92	90	93	
Don't know/can't remember	1	1	1	1	1	1	1	1	1	

Source: CMA research.

\* Base: 8,444 (all adults age 16+ in the UK).

**Table 1b: Use of PTU ATMs in the UK – profile of consumers**

							%
	Age						
	<i>All</i>	<i>16-24</i>	<i>25-34</i>	<i>35-44</i>	<i>45-54</i>	<i>55-64</i>	<i>65+</i>
Yes, used PTU ATM	9	19	15	10	6	3	1
No, did not use PTU ATM	90	81	84	89	94	96	98
Don't know/can't remember	1	1	1	1	*	1	*

Source: CMA research.

\* Base: 8,444 (all adults age 16+ in the UK).

21. Amongst consumers who had used a PTU ATM in the last three months, just over three in five (62%, or 6% of all adults) had done so in the last four weeks.
22. Overall, a majority of consumers (58%) who had used a PTU ATM in the last three months reported making one cash withdrawal of this type in that period.

**Table 2: Frequency of PTU ATM withdrawals**

	%		
	<i>All*</i>	<i>In the last 4 weeks†</i>	<i>Over 4 weeks ago‡</i>
1 withdrawal	58	58	59
2 withdrawals	22	20	25
1 or 2 withdrawals	80	78	83
3 withdrawals	5	5	7
1-3 withdrawals	85	83	90
4 withdrawals	7	9	3
5 withdrawals	3	3	3
6-10 withdrawals	3	4	*
11+ withdrawals	1	1	-
4+ withdrawals	13	16	6
Don't know	2	1	4

Source: CMA research.

\* Base: 654 (all who used a PTU ATM in the UK in the last 3 months).

† Base: 411 (all who used a PTU ATM in the UK in the last 4 weeks).

‡ Base: 243 (all who used a PTU ATM in the UK in the last 3 months, but not in the last 4 weeks).

23. The majority of consumers reported that they had made their last/most recent PTU ATM cash withdrawal between 9am and 9pm, with around half overall (49%) saying they had done so between midday and 6pm.
24. However, at 11% of respondents age 16 to 24, the youngest consumers were significantly more likely than all other age groups to say they had made a PTU ATM cash withdrawal between midnight and 5.59am.

**Table 3: Timing of PTU ATM withdrawals**

	%
Midnight-5.59am	4
6.00-8.59am	5
9.00-11.59am	13
Midday-2.59pm	27
3.00-5.59pm	22
6.00-8.59pm	16
9.00-11.59pm	7
<i>Night</i>	4
<i>Morning</i>	18
<i>Afternoon</i>	49
<i>Evening</i>	24
Don't know	5

Source: CMA research.

Base: 573 (all who used a PTU ATM in the UK in the last 4 weeks [wave 1 of fieldwork] or in the last 3 months (incl. in the last 4 weeks) [waves 2-4 of fieldwork]).

25. Over half of consumers (55%) used a free-standing ATM inside a premises (an internal ATM) to make their last/most recent cash withdrawal for which they were charged a fee by the machine for using it. A further one in three consumers (32%) said they had used a through-the-wall ATM.<sup>9</sup> Relatively few consumers (12%) had used a free-standing cash dispensing kiosk ATM that was outside (a kiosk ATM).

**Table 4: Cash machine type**

	%
Free-standing machine inside somewhere	55
'Hole in the wall' machine	32
Free-standing machine outside	12
Don't know/can't remember	1

Source: CMA consumer survey.

Base: 573.

26. Overall, consumers reported a wide range of PTU ATM locations, but the location reported most frequently was 'shop' (53% of all consumers, rising significantly to 64% of those who had used a free-standing machine inside somewhere). The next most frequently mentioned venue – by 9% of all consumers – was 'petrol station'.
27. Consumers in social grades C2DE were significantly more likely than ABC1s to say they had used a shop-located PTU ATM (61% compared with 47%). Similarly, those living in conurbations were significantly more likely than consumers living in urban or rural locations to have used a shop-located PTU ATM (62%, 51% and 46% respectively).

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<sup>9</sup> Described in the questionnaire as a 'hole in the wall machine'.

28. Relatively few consumers overall (13%) had used a PTU cash machine in a captive location,<sup>10</sup> but where their use was reported, those in motorway service stations (4%), and at event/festival sites (3%), were mentioned most often.

**Table 5: Cash machine location**

	%			
	<i>All*</i>	<i>FS inside†</i>	<i>HITW‡</i>	<i>FS outside§</i>
Shop	53	64	47	25
Petrol station	9	4	16	13
Shopping centre/mall	6	4	7	12
Motorway service station	4	5	2	4
Event/festival site	3	2	*	19
Bank/building society	3	-	9	1
Post Office	2	4	*	-
Pub	2	3	*	3
Amusement arcade	2	2	-	9
Public transport site	1	1	4	1
Fast food/restaurant/takeaway	1	1	3	-
Night club	1	1	2	1
Sports venue/stadium (captive)	1	1	-	5
Casino	1	1	*	1
Hospital	1	1	*	-
Airport	1	1	*	-
Hotel	1	1	-	-
Holiday park	1	1	-	-
Theme park	*	1	-	-
Place with no public access	*	*	*	-
Betting shop	*	-	*	-
Bingo hall	*	*	-	-
Bureau de Change	*	-	*	-
Race course	*	*	-	-
Sports venue/stadium (non-captive)	*	*	-	-
Gentlemen's club	-	-	-	-
Military base	-	-	-	-
Other (captive)	*	*	-	-
Other (non-captive)	1	2	*	1
Don't know/can't remember	3	*	6	4
All captive	13	13	6	31
All non-captive	84	87	89	65

Source: CMA consumer survey.

\* Base: 573.

† Base: 321.

‡ Base: 181.

§ Base: 65 (small base size).

29. Consumers reported a range of PTU ATM transaction fees, but those in the £1.70/£1.75 or £1.50/£1.55 brackets were mentioned most frequently, and relatively few consumers overall said they had paid more than £2.00.

<sup>10</sup> Please see paragraph 7.95(a) of the main report for a definition of captive sites.

**Table 6: PTU ATM transaction fees**

	%
Up to £1.00	8
£1.01-£1.49	9
£1.50/£1.55	17
£1.60/£1.65	4
£1.70/£1.75	19
£1.80/£1.85	12
£1.90-£1.99	13
£2.00	5
£2.01-£5.00	8
£5.01-£10.00	*
More than £10.00	*
Less than £1.50	16
£1.50-£2.00	70
More than £2.00	8
Don't know/ can't remember	5

Source: CMA consumer survey.  
Base: 573.

30. Overall, most consumers described the PTU ATM they had used last/most recently as being located in an area they knew 'well', including almost three in five (58%) who said they knew the area 'very well'. In this context, consumers who were familiar with the area were more likely than average to say:

(a) They were making a repeat visit to the PTU cash machine ('not first use': 69%).

(b) The visit was planned ('before [I] set out': 34%).

(c) They knew the location of the nearest FTU ATM before they used the PTU cash machine ('did know/ask around': 51%).

(d) They knew the location of the nearest PTU ATM that charged a lower fee before they used the PTU cash machine ('did know/ask around': 23%).

**Table 7: Consumers' familiarity with the area in which the PTU ATM was located**

	%
Very well	58
Fairly well	17
Well ( <i>very + fairly</i> )	74
Not well	25
Don't know/can't remember	1

Source: CMA consumer survey.  
Base: 573.

**Table 8: Consumers' previous use of the PTU ATM**

	%
First use	42
Not first use	57
Don't know/can't remember	1

Source: CMA consumer survey.  
Base: 573.

**Table 9: Consumers' visit decision**

	%
Before you set out on the trip that included the visit to the ATM	27
While you were already out on the trip that included the visit to the ATM	72
Don't know/can't remember	1

Source: CMA consumer survey.  
Base: 573.

**Table 10: Consumers' knowledge of the nearest FTU cash machine**

	%
Did know/ask around for its location before using the PTU ATM	40
Did not know/ask around for its location before using the PTU ATM	59
Don't know/can't remember	*

Source: CMA consumer survey.  
Base: 573.

**Table 11: Consumers' knowledge of the nearest, cheaper PTU cash machine**

	%
Did know/ask around for its location before using the PTU ATM	18
Did not know/ask around for its location before using the PTU ATM	81
Don't know/can't remember	1

Source: CMA consumer survey.  
Base: 573.

31. In most cases (see Tables 10 and 11), consumers reported that – before they used the PTU ATM – they did not know or ask around for the location of the nearest FTU cash machine (59%), or the nearest, cheaper PTU cash machine (81%). Consumers who knew the area well were significantly more likely than average to say they knew the location of the nearest FTU ATM (51%), and the nearest, cheaper PTU ATM (23%), beforehand. Likewise, those whose visit to the PTU ATM was planned were also more likely than average to say they already knew the location of the nearest FTU cash machine (52%), while those whose visit to the PTU ATM was made on impulse were significantly more likely to say they did not know the nearest FTU ATM's location beforehand (64%).
32. In most cases (see Table 9), consumers said their most recent visit to a PTU ATM was made on impulse, ie while they were already out on the trip that included the visit to the PTU cash machine (72%). Impulse visits were significantly more likely than average to be reported by:

- (a) Male consumers (78%).
  - (b) ABC1s (76%).
  - (c) Those who described the PTU ATM as being in an area they did not know well (92%).
  - (d) Those making a first use of the PTU ATM concerned (86%).
33. As their main reason for withdrawing cash, consumers most often said they had done so to pay for shopping (27%) or to pay for food/drink (18%). However, nearly one in five consumers (19%) had withdrawn cash 'just to have some on them' and not for making a specific purchase or other specific reason.
34. Consumers in social grades C2DE were significantly more likely than ABC1s to say they had withdrawn cash to pay for shopping (32% compared with 23%). DEs were also more likely than average to report a cash withdrawal from a PTU ATM to pay a bill (11%).
35. Consumers living in rural locations were significantly more likely than urban or conurbation residents to have withdrawn cash to pay for food/drink (30%, 17% and 12% respectively).
36. Meanwhile, men were more likely than women to say '[I] just like to have some cash on me' (23% compared with 15%).

**Table 12: Consumers' main reason for withdrawing cash from a PTU ATM**

	%
Pay for shopping	27
Pay for food and/or drink (eg at a pub, takeaway, street market)	18
Pay a fare	8
Pay a bill	7
Pay for entry to a venue (eg cinema, night club)	3
Pay someone back for what I owed them/had borrowed from them	2
Pay for a bet	1
Pay to child(ren)/grandchild(ren)/nephew/niece etc. as pocket money	1
Pay for parking	1
Pay for games/rides (eg at amusement arcade)	1
Pay someone for their work for me (eg milkman, window cleaner, house cleaner, gardener, plumber)	1
Make a donation	*
Pay a fine/penalty charge	*
Pay into a collection (eg at work etc.)	*
Pay for fuel	-
Pay for the lottery	-
To pay for something else	*
Other reason	7
No reason – just like to have some cash on me	19
Don't know/can't remember	3

Source: CMA consumer survey.  
Base: 573.

37. Consumers who had withdrawn cash from a PTU ATM to pay for something most often cited a restriction on the use of an alternative payment method as the reason for doing so. In combination, almost half (47%) had withdrawn cash because an alternative payment method was not available, for example, because the recipient would only accept payment in cash (37%), placed ‘minimum spend’ restrictions on card use (3%), or had a card reader that was not working (3%).
38. However, around two in five consumers (39%) referred (in combination) to a preference for using cash generally (36%) or for making that specific transaction. C2DE consumers were significantly more likely than ABC1s to say they had used cash rather than another payment method because ‘I prefer to use cash’ (42% compared with 31%).

**Table 13: Consumers’ reasons for using cash rather than another method of payment**

	%
The recipient would only accept cash	37
I prefer to use cash	36
Cannot do chip and pin/contactless with my card	4
Chip and pin machine/card reader was not working	3
Had to spend a minimum amount to use a card (and didn’t need/want to spend that much)	3
Didn’t want to put a small amount on my card	2
Safer/more secure to withdraw cash from the ATM than risk having my card skimmed	1
The recipient could only be paid in cash	1
Other reason	2
No reason	11
Don’t know/can’t remember	2

Source: CMA consumer survey.

Base: 404 (all who withdrew cash from a PTU ATM to pay for something).

39. Consumers’ reasons for using a PTU ATM rather than a FTU ATM most frequently related to convenience.
- (a) Cumulatively, two in three either felt too time-pressured (‘in a hurry’: 44%) or were unwilling (‘couldn’t be bothered’: 22%) to find a FTU ATM at the time of the transaction. ABC1 consumers were significantly more likely than C2DEs (49% compared with 39%) to say they were in a hurry.
- (b) A further one in five consumers (22%) said they used the PTU ATM because they did not know where to find a FTU ATM.
- (c) Altogether, around one in ten consumers (11%) referred to an inability to use a FTU ATM, either because they were ‘logistically’ constrained from doing so (by distance, geography etc), were constrained by personal circumstances (eg health and mobility issues), or because the FTU ATM was not working.



(d) Overall, one in twenty consumers (5%) said it was difficult or impossible for them to leave the venue in which the PTU ATM was located in order to find a FTU alternative (ie they were, or felt, 'captive').

40. Consumers who gave 'in a hurry' and 'couldn't be bothered to go any further' as a reason for using the PTU ATM rather than a FTU ATM were significantly more likely than average to say they knew the area in which the PTU ATM was located 'well' (50% and 25% respectively).

**Table 14: Consumers' reasons for using a PTU ATM rather than a FTU ATM**

	%
In a hurry	44
Couldn't be bothered to go any further	22
Didn't know where to find a FTU machine	22
Difficult/impossible to get to a FTU machine because of distance, geography, transport issues etc.	7
Difficult to leave the venue in which the cash machine was located	3
Could not leave the venue in which the cash machine was located	3
FTU machine was out-of-order/empty	3
Location of the FTU machine was less safe	2
Difficult/impossible to get to a FTU machine because of my health/mobility reasons, caring responsibilities etc.	2
It was the closest/handiest one	2
Prefer to make cash withdrawals inside somewhere	2
Cheaper to use the PTU machine than pay for travel to a FTU machine	1
£5 notes were available	*
Other reason	3
Don't know/can't remember	4

Source: CMA consumer survey.  
Base: 573.

41. A majority of consumers indicated a willingness to walk to some distance from the PTU ATM they had used, if it meant they could use a FTU ATM, or a PTU ATM with a 20p cheaper withdrawal fee. Overall, though, considerably fewer would have been prepared to walk to a cheaper PTU ATM (47%) than to a FTU ATM (67%).

**Table 15: Distance further (in minutes) that consumers would walk from the PTU ATM they used to a FTU ATM/20p cheaper PTU ATM**

	%	
	<i>FTU</i>	<i>Cheaper PTU</i>
Not willing to walk further	27	45
Willing to walk further (all)	67	47
Not willing + would walk 1 min	32	57
Not willing + would walk 1, 2 min	39	62
Not willing + would walk 1, 2, 3 min	41	63
Not willing + would walk 1, 2, 3, 4 min	41	63
Not willing + would walk 1, 2, 3, 4, 5 min	63	76
Not willing + would walk 1, 2, 3, 4, 5, 6 min	-	76
Not willing + would walk 1, 2, 3, 4, 5, 6, 7 min	63	77
Not willing + would walk 1, 2, 3, 4, 5, 6, 7, 8 min	63	-
Not willing + would walk 1, 2, 3, 4, 5, 6, 7, 8, 9 min	-	-
Not willing + would walk 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 min	82	86
Not willing + would walk up to 15 min incl.	86	88
Not willing + would walk up to 30 min incl.	92	90
Not willing + would walk up to 60 min incl.	93	91
Not willing + would walk (all)	94	92
Don't know	6	8

Source: CMA consumer survey.  
Base: 573.

42. With consumers who did not know how much further they were prepared to walk excluded from the calculation (as not informative) and an 80% threshold applied, the survey suggests that the catchment area for FTU ATMs is a walking distance of up to 10 minutes, and for cheaper PTU ATMs of up to 5 minutes. No significant differences emerged when we looked at the findings from this analysis for all consumers (including those who had used a PTU ATM in a captive site) and for those who had only used an ATM at a non-captive site.

**Table 16: Distance further (in minutes) that consumers would walk from the PTU ATM they used to a FTU ATM/20p cheaper PTU ATM ('don't know' respondents excluded)**

	%			
	<i>FTU</i>		<i>Cheaper PTU</i>	
	<i>All*</i>	<i>All non-captive†</i>	<i>All‡</i>	<i>All non-captive§</i>
Not willing to walk further	29	28	49	49
Willing to walk further (all)	71	72	51	51
Not willing + would walk 1 min	35	33	63	60
Not willing + would walk 1, 2 min	41	40	67	65
Not willing + would walk 1, 2, 3 min	43	42	69	66
Not willing + would walk 1, 2, 3, 4 min	44	43	69	66
Not willing + would walk 1, 2, 3, 4, 5 min	67	67	<b>83</b>	<b>82</b>
Not willing + would walk 1, 2, 3, 4, 5, 6 min	-	-	83	82
Not willing + would walk 1, 2, 3, 4, 5, 6, 7 min	67	67	83	83
Not willing + would walk 1, 2, 3, 4, 5, 6, 7, 8 min	67	67	-	-
Not willing + would walk 1, 2, 3, 4, 5, 6, 7, 8, 9 min	-	-	-	-
Not willing + would walk 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 min	<b>87</b>	<b>88</b>	93	93
Not willing + would walk up to 15 min incl.	92	92	96	96
Not willing + would walk up to 30 min incl.	98	98	98	98
Not willing + would walk up to 60 min incl.	99	98	98	99
Not willing + would walk (all)	100	100	100	100

Source: CMA consumer survey.

\* Base: 536 (all who said whether/how far they would have been prepared to walk to a FTU ATM).

† Base: 457 (all who used a non-captive ATM and said whether/how far they would have been prepared to walk to a FTU ATM).

‡ Base: 524 (all who said whether/how far they would have been prepared to walk to a cheaper ATM).

§ Base: 448 (all who used a non-captive ATM and said whether/how far they would have been prepared to walk to a cheaper ATM).

43. Cumulatively, nearly half of consumers (47%) said that, if the PTU ATM they had used had not been working, they would have used another cash machine instead, either near to the one they wanted to use (32%) or somewhere else completely (15%). A further one in five consumers (22%) said they would not have withdrawn cash and not made their purchase, while one in ten (11%) said they would have made their purchase using a different payment method.

**Table 17: What consumers would have done if the PTU ATM they used had not been working**

	%
Used another cash machine near to the one I wanted to use	32
Not withdrawn cash and not made purchase	22
Used another cash machine somewhere else completely	15
Not withdrawn cash and made purchase using a different payment method	11
Withdrawn cash over-the-counter	4
Borrowed money from someone else	2
Something else	3
Don't know	12

Source: CMA consumer survey.

Base: 573.

44. The CMA undertook additional analysis to assess (indirectly) how consumers who said they would divert might respond to an increase in the surcharge at a PTU ATM. This found that those who had used a non-captive PTU ATM were significantly less likely than average to say they would have diverted out of the market (48% compared with 50%), and significantly more likely to say they would have used another local ATM (52% compared with 50%).

**Table 18: What consumers would have done if the PTU ATM they used had not been working ('not made purchase'/'something else'/'don't know' respondents excluded)**

	<i>All*</i>	<i>All non-captive†</i>	<i>All non-captive prepared to walk to a FTU ATM‡</i>	<i>All non-captive prepared to walk to a cheaper PTU ATM§</i>	%
Used another cash machine near to the one I wanted to use	50	52	55		53
Used another cash machine somewhere else completely	23	22	34		31
Not withdrawn cash and made purchase using a different payment method	17	17	21		22
Withdrawn cash over-the-counter	7	8	14		14
Borrowed money from someone else	3	2	8		9
All out of market	50	48	45		47

Source: CMA consumer survey.

\* Base: 361 (all who would divert).

† Base: 314 (all who would divert and used a non-captive ATM).

‡ Base: 210 (all who would divert, used a non-captive ATM and would be prepared to walk to a FTU cash machine).

§ Base: 150 (all who would divert, used a non-captive ATM and would be prepared to walk to a PTU cash machine).

45. If the PTU ATM they had used had not been working, over three in five (64%) of those consumers who said they would divert to another ATM had a FTU ATM in mind as an alternative. Few – one in 20 (5%) – said they would divert to another PTU ATM, while three in ten (29%) said they did not have any particular ATM in mind.

46. Our additional analysis found that those who had used a non-captive ATM were significantly more likely than average to have an alternative ATM in mind, and for this to be a FTU ATM (68% compared with 64%). This was also true of consumers who described the area in which the PTU ATM they had used as one they knew well (73%), and those who said they had known (or asked around for) the location of the nearest FTU ATM before they used the PTU ATM (79%).

**Table 19: Type of cash machine to which consumers who would use another cash machine would divert if the PTU ATM they used had not been working**

	<i>All*</i>	<i>All non-captive†</i>	<i>All non-captive prepared to walk to a FTU ATM‡</i>	<i>All non-captive prepared to walk to a cheaper PTU ATM§</i>	%
Free-to-use	64	68	72		73
Pay-to-use	5	4	2		3
Do not have a particular ATM in mind	29	27	24		22
Don't know	2	2	2		2

Source: CMA consumer survey.

\* Base: 265 (all who would divert to another cash machine).

† Base: 230 (all who would divert to another cash machine and used a non-captive ATM).

‡ Base: 159 (all who would divert to another cash machine, used a non-captive ATM and would be prepared to walk to a FTU cash machine).

§ Base: 112 (all who would divert to another cash machine, used a non-captive ATM and would be prepared to walk to a PTU cash machine).

## Annex

### COMPETITION AND MARKETS AUTHORITY PROC\_40\_2017 FINAL ATMS CONSUMER SURVEY QUESTIONNAIRE (8 JUNE 2017)

#### VERSION SENT TO AGENCY

Filter for whole section: age (respondents must be 16 or older)

#### INTERVIEWER READ OUT VERBATIM:

The following questions are about using pay-to-use ATMs, also known as pay-to-use cash machines, to make a cash withdrawal. These are cash machines where users are charged a fee by the machine for using it.

Please note that if you use a credit card to withdraw cash from a cash machine, the credit card provider may charge a fee, regardless of whether the cash machine itself is free-to-use or pay-to-use. Our questions are NOT about that. We're interested in cash withdrawals for which the cash machine makes a charge, whether the card used is a debit card or credit card.

**QSCREEN.** At any time in the last 3 months, have you used a pay-to-use cash machine in the UK, where you were charged a fee by the machine for using it to make a cash withdrawal? SINGLE CODE

Yes	GO TO Q1
No	CLOSE
Don't know/can't remember	CLOSE

Remainder of questions = ask all who are yes at QSCREEN unless otherwise stated

**Q1.** Have you used a pay-to-use cash machine at any time in the last 4 weeks? SINGLE CODE

Yes	GO TO Q2
No	GO TO Q3
Don't know/can't remember	GO TO Q3

ASK ALL WHO ARE YES AT Q1

**Q2a.** How many pay-to-use cash machine withdrawals have you made in total over the last 4 weeks? A rough idea is fine if you can't remember exactly. (N.B. Question wording amended by agency at scripting stage.)

WRITE IN AS FIGURE (include logic check for 0)  
Don't know/can't remember

ASK ALL WHO ARE YES AT Q1

**Q2b.** And again thinking back over the last 4 weeks, how many cash machine withdrawals have you made altogether? Please include withdrawals at any type of cash machine in your answer. ADD IF NECESSARY: A rough idea is fine if you can't remember exactly. (N.B. Question wording amended by agency at scripting stage.)

WRITE IN AS FIGURE (include logic check for answers less than answer at Q2a)

Don't know/can't remember

ASK ALL WHO ARE NO/DK AT Q1

**Q3a.** How many pay-to-use cash machine withdrawals have you made in total over the last 3 months? A rough idea is fine if you can't remember exactly. (N.B. Question wording amended by agency at scripting stage.)

WRITE IN AS FIGURE (include logic check for 0)

Don't know/can't remember

ASK ALL WHO ARE NO/DK AT Q1

**Q3b.** And again thinking back over the last 3 months, how many cash machine withdrawals have you made altogether? Please include withdrawals at any type of cash machine in your answer. ADD IF NECESSARY: A rough idea is fine if you can't remember exactly. (N.B. Question wording amended by agency at scripting stage.)

WRITE IN AS FIGURE (include logic check for answers less than answer at Q3a)

Don't know/can't remember

**INTERVIEWER READ OUT:**

As you answer the following questions, please think about the last/most recent cash withdrawal you made where you were charged a fee by the machine for using it.

**Q4.** Where were you when you made this cash withdrawal? (N.B. Question wording amended by agency at scripting stage.)

WRITE IN

Don't know/can't remember

**Q5.** And would you say this particular cash machine was in an area you know ... ? READ OUT. REVERSE FOR 50% OF SAMPLE. SINGLE CODE (N.B. Question wording amended by agency at scripting stage.)

- 1 Very well
- 2 Fairly well
- 3 Not well

Don't know/can't remember (DO NOT READ OUT)

**Q6.** Was the pay-to-use cash machine you used ... ? READ OUT. DO NOT ROTATE/REVERSE. SINGLE CODE (N.B. Question wording amended by agency at scripting stage.)

- 1 A "hole in the wall" machine
- 2 A free-standing machine inside somewhere
- 3 A free-standing machine outside

Don't know/can't remember (DO NOT READ OUT)

ASK ALL CODE 1 AT Q6

**Q7a.** What type of premises was the hole-in-the-wall machine set into? DO NOT PROMPT. SINGLE CODE

ASK ALL CODE 2 AT Q6

**Q7b.** Inside what type of premises? DO NOT PROMPT. SINGLE CODE

ASK ALL CODE 3 AT Q6

**Q7c.** Outside what type of premises? DO NOT PROMPT. SINGLE CODE

Shop

Shopping centre/mall

Bank/building society

Post Office

Bureau de Change (e.g. Travelex, Thomas Cook)

Motorway service station

Petrol station

Public transport site (bus/coach/railway/tram/underground)

Airport

Hospital

Hotel

Pub

Night club

Sports venue/stadium

Betting shop

Bingo hall

Casino

Gentlemen's club (i.e. lap-dancing/strip club)

Race course

Event/festival site

Holiday park

Theme park

Military base

A place with no public access (e.g. within a secure office block, conference centre etc.)

Other (WRITE IN)

Don't know/can't remember

**INTERVIEWER READ OUT:**

Still thinking about the last/most recent cash withdrawal you made where you were charged a fee by the machine for using it ...

**Q8.** Was it the first time you had used this particular pay-to-use cash machine, or not?

SINGLE CODE

Yes – first use

No – not first use

Don't know/can't remember

**Q9.** When did you decide to visit this particular cash machine? Did you decide ... ? READ OUT. DO NOT ROTATE. SINGLE CODE

1 Before you set out on the trip that included the visit to the cash machine (DO NOT READ OUT = planned visit)

2 While you were already out on the trip that included the visit to the cash machine (DO NOT READ OUT = impulse/spontaneous visit)

Don't know/can't remember (DO NOT READ OUT)

**Q10.** What time of day did you make the withdrawal? A rough idea is fine if you can't remember when exactly. SINGLE CODE

Midnight-5.59am  
6.00am-8.59am  
9.00am-11.59am  
Midday-2.59pm  
3.00pm-5.59pm  
6.00pm-8.59pm  
9.00pm-11.59pm  
Don't know/can't remember

**Q11.** And what fee did the machine charge for using it? DO NOT PROMPT. SINGLE CODE

Up to £1.00  
£1.01-£1.49  
£1.50/£1.55  
£1.60/£1.65  
£1.70/£1.75  
£1.80/£1.85  
£1.90/£1.95/£1.99  
£2.00  
£2.01-£5.00 (*include logic check*)  
£5.01-£10.00 (*include logic check*)  
More than £10 (*include logic check*)  
Don't know/can't remember

**Q12.** What was your main reason for withdrawing the cash? DO NOT PROMPT. SINGLE CODE (N.B. Question wording amended by agency at scripting stage.)

- 1 Pay a bill
  - 2 Pay a fare (e.g. public transport, taxi)
  - 3 Pay a fine/penalty charge
  - 4 Pay for a bet
- Item added at scripting by agency: Pay for the lottery
- 5 Pay for entry to a venue (e.g. cinema, night club)
  - 6 Pay for food and/or drink (e.g. at a pub, takeaway, street market)
  - 7 Pay for parking
  - 8 Pay for shopping
  - 9 Pay someone back what I owed them/had borrowed from them
  - 10 Pay someone for their work for me (e.g. milkman, window cleaner, house cleaner, gardener, plumber)
  - 11 Pay to child(ren)/grandchild(ren)/nephew/niece etc. as pocket money
- Item added at scripting by agency: Pay to a collection at work/with friends/family
- 12 To pay for something else (WRITE IN)
- Other (WRITE IN)  
No reason – just like to have some cash on me  
Don't know/can't remember

ASK ALL CODES 1-12 AT Q12

**Q13.** You said that you withdrew cash to pay for something. Why did you use cash to pay rather than another method of payment (e.g. chip and pin, contactless, cashback, mobile payment (such as Apple Pay, Pingit or Google Wallet), or a bank transfer)? DO NOT PROMPT. MULTICODE OK (N.B. Question wording amended by agency at scripting stage.)



Cannot do chip and pin/contactless with my card  
Didn't want to put a small amount on my card  
Had to spend a minimum amount to use a card (and didn't need/want to spend that much)  
I prefer to use cash  
Safer/more secure to withdraw cash from the machine than risk having my card skimmed  
The recipient would only accept cash  
**Item added at scripting by agency: No reason – just like to have some cash on me**  
Other (WRITE IN)  
Don't know/can't remember

**INTERVIEWER READ OUT:**

Still thinking about the last/most recent cash withdrawal you made where you were charged a fee by the machine for using it ...

**Q14.** Before you used the pay-to-use cash machine, did you know (or ask around for) the location of the nearest free-to-use cash machine? SINGLE CODE

Yes  
No  
Don't know/can't remember

**Q15.** And before you used the pay-to-use cash machine, did you know (or ask around for) the location of the nearest pay-to-use cash machine that charged a lower fee for using it? SINGLE CODE

Yes  
No  
Don't know/can't remember

**Q16.** Thinking about the pay-to-use cash machine you actually used, how much further would you have been prepared to walk if it had meant you could use a free-to-use cash machine? Please give me your answer in the number of minutes. SINGLE CODE

WRITE IN AS MINUTES  
No minutes/not willing to walk any further  
Don't know

**Q17.** And again thinking about the pay-to-use cash machine you actually used, how much further would you have been prepared to walk if it had meant you could use a pay-to-use cash machine that charged 20p less for using it? SINGLE CODE

WRITE IN AS MINUTES  
No minutes/not willing to walk further  
Don't know

**Q19.** Why did you use the pay-to-use cash machine, rather than a free-to-use cash machine? DO NOT PROMPT. MULTICODE OK

NOTE TO INTERVIEWER: DO NOT ACCEPT "CONVENIENT/EASIER TO USE IT" AS AN ANSWER. PROBE TO DETERMINE WHAT MADE IT CONVENIENT/EASIER.

- 1 Didn't know where to find a FTU cash machine
- 2 In a hurry
- 3 Couldn't be bothered to go any further
- 4 Location of the FTU cash machine was less safe
- 5 Prefer to make cash withdrawals inside somewhere

- 6 Cheaper to use the PTU cash machine than pay for travel to a FTU cash machine
- 7 Difficult/impossible to get to a FTU cash machine because of my health/mobility reasons, caring responsibilities etc.
- 8 Difficult/impossible to get to a FTU cash machine because of distance, geography, transport issues etc.
- 9 Could not leave the venue in which the cash machine was located
- 10 Difficult to leave the venue in which the cash machine was located
- Other (WRITE IN)
- Don't know/can't remember

ASK ALL CODE 1 AT Q7

**INTERVIEWER: READ OUT VERBATIM**

**Q20a.** Earlier, you told me you decided to visit the pay-to-use cash machine before you set out on the trip that included the visit to the cash machine. If you had known before you set out that the pay-to-use cash machine you used (and any other cash machines at the same site) had not been working, what would you have done instead? SINGLE CODE

ASK ALL CODE 2 AT Q7

**INTERVIEWER: READ OUT VERBATIM**

**Q20b.** Earlier, you told me you decided to visit the pay-to-use cash machine while you were already out on the trip that included the visit to the cash machine. If you had found that the pay-to-use cash machine you used (and any other cash machines at the same site) was not working, what would you have done instead? SINGLE CODE

ASK ALL CODE 3 AT Q7

**INTERVIEWER: READ OUT VERBATIM**

**Q20c.** Please imagine you had found that the pay-to-use cash machine you used (and any other cash machines at the same site) were not working. What would you have done instead? READ OUT IN ITEM ORDER 1-6 FOR 50% OF SAMPLE, AND IN ITEM ORDER 5/3/4/2/1/6 FOR 50% OF SAMPLE. SINGLE CODE

- 1 Not withdrawn cash and not made your purchase
- 2 Not withdrawn cash and made your purchase using a different payment method
- 3 Used another cash machine near to the one I wanted to use
- 4 Used another cash machine somewhere else completely
- 5 Withdrawn cash over the counter at the bank/building society/post office
- 6 Something else (WRITE IN)
- Don't know

ASK ALL CODE 3 AND CODE 4 AT Q20. OTHERS GO TO CLOSE.

**Q21.** If you have a particular cash machine in mind, is it a {TEXT SUB FOR 50% OF SAMPLE: a free-to-use or pay-to-use} {TEXT SUB FOR 50% OF SAMPLE: pay-to-use or free-to-use} machine? SINGLE CODE

- 1 Free-to-use
- 2 Pay-to-use
- 3 Do not have a particular cashpoint in mind
- 4 Don't know

ASK ALL CODE 1 OR 2 AT Q21. OTHERS GO TO CLOSE

**Q22.** How far is it from the pay-to-use cash machine you actually used? Please give me your answer in the number of minutes it would take to get there on foot.

WRITE IN AS MINUTES

- Not possible to get to it on foot
- Don't know

## Econometric analysis of entry and exit

### Overview

1. The econometric analysis examines how the number of cash withdrawals at a PTU ATM operated by one of the Parties (a centroid ATM) is affected by the entry or exit of an ATM in its local area, and whether this is sensitive to the type of ATM in question (FTU or PTU). The purpose of this analysis is to determine the relevant geographic market, ie the area over which ATMs of a particular type compete.
2. This analysis employs a performance concentration analysis (PCA) framework. The dependent variable in this case is the number of withdrawals at a centroid ATM. More specifically, we regress the number of withdrawals on the number of ATMs in a centroid ATM's local area (a measure of concentration which is affected by the entry or exit of ATMs). Furthermore, we use a fixed effects model, which allows us to control for differences in the average number of withdrawals at ATMs in different local areas, and seasonal variation in the number of withdrawals. This allows us to produce reliable estimates of the impact of changes in the number of ATMs in a centroid ATM's local area on the number of withdrawals at the centroid ATM.
3. Our results show that:
  - (a) the entry or exit of a FTU ATM has a statistically significant impact on the number of withdrawals at a centroid ATM over a distance of up to 200 metres; and
  - (b) we do not find a statistically significant impact of entry or exit of a PTU ATM on the number of withdrawals at a centroid ATM over any distance.

### Methodology

#### *Econometric model*

4. In the baseline specification, we regress the number of withdrawals at a centroid ATM on the number of ATMs within different distance bands (ie we do not distinguish between different types of ATM). This can be expressed as follows:

$$\log(W_{ct}) = \sum_d \beta_d N_{d,ct} + \delta_c + \delta_t + \varepsilon_{ct}$$

where  $W_{ct}$  is the number of withdrawals at centroid ATM  $c$  in month  $t$ ,  $N_{d,ct}$  is the number of ATMs within distance band  $d$  of centroid ATM  $c$  in month  $t$ ,  $\delta_c$  is centroid ATM fixed effects,  $\delta_t$  is month fixed effects and  $\varepsilon_{ct}$  is the error term.

5. Estimation of this model provides an estimate of  $\beta_d$ , which indicates the expected percentage increase (decrease) in the number of withdrawals at a centroid ATM following the entry (exit) of an ATM within distance band  $d$ .
6. The distance bands used are 0–50 metres, 50–100 metres, 100–150 metres, 150–200 metres, 200–250 metres and 250–300 metres. We start by using the single distance band of 0–50 metres for a given specification, before successively adding distance bands until we are confident that the relevant geographic market has been identified.
7. In the FTU/PTU specification, we regress the number of withdrawals at a centroid ATM on the number of ATMs of a particular type within different distance bands. This can be expressed as follows:

$$\log(W_{ct}) = \sum_d \sum_f \beta_{df} N_{df,ct} + \delta_c + \delta_t + \varepsilon_{ct}$$

where  $W_{ct}$  is the number of withdrawals at centroid ATM  $c$  in month  $t$ ,  $N_{df,ct}$  is the number of ATMs of type  $f$  (FTU or PTU) within distance band  $d$  of centroid ATM  $c$  in month  $t$ ,  $\delta_c$  is centroid ATM fixed effects,  $\delta_t$  is month fixed effects and  $\varepsilon_{ct}$  is the error term.

8. Estimation of this model provides an estimate of  $\beta_{df}$ , which indicates the expected percentage increase (decrease) in the number of withdrawals at a centroid ATM following the entry (exit) of an ATM of type  $f$  within distance band  $d$ .
9. A limitation of this type of analysis is that the number of ATMs in a centroid ATM's local area may be determined to some extent by factors which also have an impact on the number of withdrawals at the centroid ATM. For example, ATMs on a busy high street have a relatively high number of withdrawals. However, there are also likely to be a relatively high number of ATMs in such a local area, as a relatively high level of footfall attracts entry. As a result, there is likely to be a positive correlation between the number of ATMs in a centroid ATM's local area and the number of withdrawals at the centroid ATM.
10. We control for this to some extent by using centroid ATM fixed effects. However, this only controls for factors that are constant over time. The fixed effects will not account for situations where there is increase in demand for withdrawals in an area and this leads to the installation of new ATMs (or

conversely a reduction of demand leading to the removal of ATMs). To the extent that we cannot control for this effect, our coefficient estimates will be positively biased, since part of the loss of withdrawals that we might expect to see as a result of a new ATM being installed will be offset by an increase in transactions due to rising demand. Since we expect the impact of entry (exit) of an ATM in a centroid ATM's local area to be a decrease (increase) in the number of withdrawals at the centroid ATM, this effect would mean that our coefficient estimates are biased towards zero, or we could even see counter-intuitive positive results. In technical terms, our analysis may suffer from endogeneity bias.

11. In addition to centroid ATM fixed effects, we also use month fixed effects. These control for any changes that affect the overall level of withdrawals (such as seasonal effects due, for example, to Christmas) as well as the overall market evolution of PTU ATM withdrawals.

## **Data**

12. In order to conduct this analysis, we created a panel dataset containing information on each ATM's location (coordinates) and type (FTU/PTU) for every ATM in the UK over the period April 2016 to June 2017 (excluding July 2016, as LINK data was unavailable for this month). It also contains data on the number of withdrawals at ATMs operated by the Parties.
13. This dataset was constructed combining information from LINK, the Parties, and non-bank competitors.<sup>1,2</sup> All bank-operated ATMs are assumed to be FTU.<sup>3</sup> Missing data on ATM type for a given time period is extrapolated from non-missing data from other time periods.
14. Coordinate data identifying the location of ATMs was sourced, in the first instance, from the Parties, as we consider the data provided by the Parties themselves is likely to be more accurate than data from other sources. For ATMs belonging to competitors or where Parties' data was not complete, we used information from LINK. We complemented this with additional information from competitors and the Office for National Statistics.
15. In order to be consistent with our local analysis, we excluded ATMs identified as 'captive' (see Appendix D for further details).

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<sup>1</sup> We have included ATMs that the Parties told us were active during the relevant period, but which did not appear in the relevant LINK dataset.

<sup>2</sup> [REDACTED].

<sup>3</sup> All ATMs operated by foreign exchange firms are also assumed to be FTU, as this is the case for 99% of [REDACTED] ATMs (whose type is known).

## Results

16. The results of our econometric analysis are presented in Table 1 below. The first two columns present the scenario in we considered the number of FTU and PTU ATMs in the local area together. We found that an additional ATM within 50 metres of the centroid results in a reduction in the number of withdrawals at the centroid of approximately 10% on average. The impact is lower in magnitude but still statistically significant to a distance of up to 200 metres from the centroid. We did not find any statistically significant effect beyond this distance.
17. Columns 3 to 6 present the results of considering separately the number of FTU and PTU ATMs in the area around the centroid. We note the results found for ATMs overall are driven by entry and exit of FTU ATMs. The entry or exit of a FTU ATM has a statistically significant impact on the number of withdrawals at a centroid ATM over a distance of up to 200 metres. In fact, the magnitude of the effects is larger when considering FTU ATMs alone as compared to all ATMs together. Beyond 200 metres, the entry or exit of a FTU ATM has no statistically significant impact. We do not find a statistically significant impact of entry or exit of a PTU ATM on the number of withdrawals at a centroid ATM over any distance.

**Table 1: Results of econometric analysis of entry and exit**

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>All ATMs</i>	<i>All ATMs</i>	<i>FTU</i>	<i>PTU</i>	<i>FTU</i>	<i>PTU</i>
N_0_50	-0.101** (0.043)	-0.101** (0.043)	-0.191*** (0.036)	-0.024 (0.043)	-0.191*** (0.036)	-0.024 (0.043)
N_50_100	-0.039*** (0.014)	-0.039*** (0.014)	-0.073*** (0.018)	0.014 (0.020)	-0.074*** (0.018)	0.013 (0.020)
N_100_150	-0.021* (0.013)	-0.021* (0.013)	-0.045*** (0.016)	0.033 (0.021)	-0.046*** (0.016)	0.033 (0.021)
N_150_200	-0.026** (0.011)	-0.027** (0.011)	-0.035*** (0.013)	-0.006 (0.022)	-0.036*** (0.013)	-0.007 (0.022)
N_200_250		-0.005 (0.009)			-0.010 (0.011)	0.008 (0.018)
Constant	5.343*** (0.017)	5.348*** (0.020)	5.346*** (0.015)		5.352*** (0.018)	
ATM fixed effects	Yes	Yes	Yes		Yes	
Monthly dummies	Yes	Yes	Yes		Yes	
Observations	118,044	118,044	118,044		118,044	
R-squared	0.249	0.249	0.250		0.250	
Number of ATM fixed effects	10,260	10,260	10,260		10,260	

Source: CMA analysis of data from LINK, the Parties, competitors, and the ONS.

\*\*\*/\*\*/\* indicate statistically significantly different from zero at 1, 5 and 10% confidence respectively.

Note: Robust standard errors in parentheses. Columns (3)/(4) and (5)/(6) represent each one unique regression where distances are considered separately for FTU and PTU.

18. Statistically insignificant coefficient estimates indicate a lack of evidence of competition between ATMs, rather than evidence of no competition. Such a finding could be due to a lack of competition between ATMs, but it could also be the result of limitations in our methodology and data.
19. First, given customers' preference for FTU ATMs, the effect of entry and exit of a FTU ATM in the vicinity of a PTU ATM is likely to be much larger than the effect of entry or exit of a PTU ATM. This will make capturing any statistically significant effect for entry and exit of a PTU ATM more challenging.
20. We also note that approximately 23% of ATMs in our panel dataset are PTU. Given that there are a smaller number of PTU than FTU ATMs in the sample, it is likely that there would similarly be a smaller number of entry or exit 'events' with respect to PTU ATMs, which may mean that the impact of events cannot be identified for PTU ATMs.<sup>4</sup> It would appear from the smaller number of entry or exit 'events' that there may be location specific factors that drive the entry and exit of PTU ATMs which would make comparison of these areas with others in our dataset less reliable. In other words, it is possible that the endogeneity bias is more pronounced in the case of PTU entry/exit than for FTU. This leads us to conclude that no robust conclusion on the extent of competition between PTU ATMs can be drawn from the results of the econometric analysis, and that other sources of evidence should be considered to establish the distance bands to be used for PTU ATMs.
21. In contrast, most of the current expansion in the number of ATMs is driven by the installation of FTU ATMs. This means that there are more entry events, allowing us to identify entry effects statistically. It would appear from the large numbers of new FTU ATMs that they are being installed in a wider range of areas and local market conditions, making comparison with other areas more reliable. Although results for entry and exit of FTU ATMs may also suffer from the endogeneity bias discussed above, and therefore their magnitude may be underestimated, the fact that we are finding strong effects on withdrawals indicates that our methodology and data are still sufficient to allow us to estimate those effects statistically.

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<sup>4</sup> For example, the number of FTU installations represented [x] % and [x] % of all ATM installations by DCP and Cardtronics, respectively, in the 2017 financial year. [x].

## Local analysis to identify areas of potential concern

### Introduction

1. This appendix provides further details on how we conducted the local analysis to identify potentially problematic local areas. The analysis consisted of two parts:
  - (a) an initial filter to exclude areas that were unlikely to cause competition concerns, including filtering out areas based on the number of competitors remaining post-Merger; and
  - (b) an analysis of the Parties' incentives to increase surcharges at PTU ATMs post-Merger to identify potentially problematic areas.
2. The structure of this appendix is as follows:
  - (a) First, we describe the filtering conducted in phase 1 and the corresponding results.
  - (b) Second, we explain the approach we have used for filtering in phase 2 and set out our results.
  - (c) Third, we explain our incentive analysis using critical and expected diversion ratios, and the resulting number of local areas we have identified as potentially problematic.
3. In Annex 1, we set out the steps we took to clean the data used to conduct the local area analysis. In Annex 2, we describe the evidence underpinning the assumption on the price elasticity of demand we use for the incentive analysis.



## Filtering in phase 1

### *Methodology*

4. The local analysis in phase 1 considered the Parties' PTU ATMs<sup>1</sup> as centroid ATMs, and defined catchment areas around those centroid ATMs to assess local competition. Catchment areas were defined on two bases:<sup>2</sup>
  - (a) within 200 metres and 500 metres for urban areas; and
  - (b) within 500 metres and 1 km for rural areas.
5. 'Captive' ATMs (both those of the Parties and competitors) were excluded from the analysis completely. 'Captive' ATMs were defined as those that do not constrain and are not constrained by other ATMs, as they are in enclosed locations, meaning consumers are very unlikely to go in or out of the venue for the sole purpose of using an ATM.<sup>3</sup>
6. Considering separately each of the two catchment areas around each centroid ATM, it was determined whether the Parties overlapped and the number of other competitors present (both PTU and FTU ATMs of the other party and competitors were considered).
7. Local areas where the Parties overlapped and the Merger would result in a reduction of the number of competitors from three to two or two to one (for either or both catchment area sizes) were considered for further assessment ('hotspots').<sup>4</sup> Additional areas were excluded if they satisfied one of the following two criteria:
  - (a) Criteria 1: Areas around centroid ATMs where a competitor's FTU ATM is located within 200 metres in urban areas (or 500 metres in rural areas).
  - (b) Criteria 2: Areas around centroid ATMs where a competitor's FTU ATM is located within 500 metres in urban areas (or 1 km in rural areas) and

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<sup>1</sup> It was concluded in phase 1 that the Merger would not result in competition concerns in relation to the conversion of FTU ATMs to PTU ATMs.

<sup>2</sup> Due to lack of evidence on what should be the 'true' catchment area size, phase 1 used two catchment area radii around each centroid. This was a cautious approach designed to avoid missing potential issues by drawing the catchment area either too broadly or too narrowly. If we define a radius that is too narrow, the Parties might not overlap and we might be missing an important area to assess competition on. If we define a radius that is too wide, there might be other suppliers that we mistakenly consider as competitors to the centroid ATM when they might not be.

<sup>3</sup> More specifically, the locations are as follows: bingo halls, casinos, 'gentlemen's clubs', night clubs, race courses, holiday parks, theme parks, military bases and private ATMs (ie ATMs with no public access).

<sup>4</sup> In phase 1, the Parties submitted that a three to two or worse threshold is appropriate (rather than the typical four to three). We summarise this submission below in paragraph 16.

where this ATM is closer to the Parties' centroid ATM than any ATM belonging to the other merging party.

8. The remaining areas (848) were considered as having a potential for an SLC to arise. This consisted of areas around 632 DCP centroid ATMs and 216 Cardtronics centroid ATMs. The results are shown in Table 1 below.

**Table 1: Results of local analysis in phase 1**

	<i>Catchment areas</i>	<i>Hotspots*</i>	<i>CMA Criteria #1†</i>	<i>CMA Criteria #2‡</i>	<i>Hotspots, net of CMA criteria</i>
DCP	Urban - 200m	443	(126)	(0)	317
	Rural - 500m				
	Urban - 500m	645	(81)	(58)	536
	Rural - 1km				
	Hotspots failing on either or both radii combined	816	(156)	<b>(58)</b>	<b>632</b>
Cardtronics	Urban - 200m	188	(89)	(0)	99
	Rural - 500m				
	Urban - 500m	213	(37)	(33)	155
	Rural - 1km				
	Hotspots failing on either or both radii combined	338	(101)	<b>(33)</b>	<b>216</b>
Parties combined	Urban - 200m	631	(215)	(0)	416
	Rural - 500m				
	Urban - 500m	858	(118)	(91)	691
	Rural - 1km				
	Hotspots failing on either or both radii combined	1,154	(257)	<b>(91)</b>	<b>848</b>

Source: CMA's analysis in phase 1.

\* Non-captive PTU centroid ATMs where the Parties overlap and the Merger causes a reduction of competitors of three to two or less.

† If there is a competitor FTU within 200m/500m for Urban/Rural.

‡ If there is a competitor FTU within 500m/1km for Urban/Rural catchments and this is closer to the centroid ATM than the other party's ATMs in the area.

## Initial filtering in phase 2

9. The filters may be summarised as follows:
- Removing captive ATMs (those of the Parties and their competitors).
  - Identifying overlaps between the Parties' ATMs and removing ATMs which fall outside the geographic catchment area.
  - Removing local areas in which post-Merger there would remain at least three competing ATM operators in addition to the Parties (ie areas in which there would be a reduction in fascia from five to four or more).

## ***Captive, storage/depot and managed ATMs***

10. We removed captive ATMs from the analysis. However, as explained in Chapter 8 of the main report, we extended the definition of captive ATMs from that used at phase 1 to include motorway service stations and service stations

not easily accessible by foot, ferries, military bases and some additional categories of leisure venue. We also excluded social locations (including pubs) from the competitor set, as we found that these ATMs do not constrain other ATMs outside the location, but are constrained by them.

11. We also excluded those ATMs classified as 'storage/depot' in LINK's data, as these ATMs do not have a fixed location.
12. We also excluded ATMs that the Parties have identified as 'managed'.<sup>5</sup> These are ATMs where the Parties only process transactions and refills, but exercise no control over the surcharge fee. We excluded managed ATMs from the list of centroid PTU ATMs, but not from the other merging party's overlap ATMs as the Parties still gain revenue from them.

### ***Catchment areas***

13. As in phase 1, we also focused on the areas around the Parties' PTU ATMs,<sup>6</sup> defining catchment areas around those centroid ATMs to assess local competition. As noted in Chapter 7 of the main report, we defined the size of the catchment areas based on the results of our econometric analysis of entry and exit, the consumer survey and submissions from the Parties, site owners and competitors.
14. We considered the following catchment areas around centroid ATMs:
  - (a) 200 metres for FTU ATMs around the centroid ATMs; and
  - (b) 100 metres for PTU ATMs around the centroid ATMs.

### ***Number of competitors***

15. We filtered out all those local areas in which the Parties do not overlap as well as local areas in which they overlap but the Merger would result in a reduction in fascia from five to four or more (as these are not considered problematic).
16. In phase 1, the Parties submitted that an appropriate three to two or worse threshold would be to filter out areas where there were three competing fascia after the Merger (rather than the typical four) to reflect the combination of: (a) the almost entirely commoditised nature of the ATM offer; (b) substantial and growing out-of-market constraints; and (c) the influence of site owners. The Parties submitted that, in effect, those three factors in combination count for at

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<sup>5</sup> [REDACTED].

<sup>6</sup> It was concluded in phase 1 that the Merger would not result in competition concerns in relation to the conversion of FTU ATMs into PTU ATMs.

least one extra fascia, and thus a three to two is in effect at least a four to three in a local area analysis without these factors. We do not take this approach at phase 2 as we account for these factors directly in our incentive analysis.

### **Results of the initial filtering exercise**

17. Table 2 below presents the results of our initial filtering. There were 9,056 centroid ATMs in our dataset. After removing captive, storage/depot and managed ATMs and identifying overlaps between the Parties, 741 centroid ATMs remain. We then removed areas that after the merger would have four or more fascia. A total of 530 centroid ATMs remained for further analysis.

**Table 2: Results of the initial filtering exercise**

Total number of centroid ATMs	9,056
After removing captive, storage/depot and managed ATMs	7,695
After removing areas in which the parties don't overlap	741
After removing 5-to-4 or more areas	530

Source: CMA's analysis of LINK's, Parties' and other competitors' data.

### **Incentive analysis**

18. The aim of the analysis of the Parties' incentives is to help understand whether the Parties would have an incentive to increase surcharges post-Merger at its PTU ATM(s) in each local area. Pre-Merger, we assume that the Parties and site owners are setting a surcharge fee that maximises direct profits from the ATM.
19. If the surcharge fee were to increase at the centroid ATM, there would be a gain in revenue from charging more to the customers that continue using it, but also a loss of revenue from those customers that stop using it in response to the surcharge rise. The overall effect on profits at the centroid ATM would be negative given that profits were being maximised pre-Merger.
20. There will only be an incentive to raise surcharges at the centroid ATM if the loss of profit at the centroid ATM is outweighed by the gains in revenue in the ATM(s) of the other merging party in the local area. This will only be the case if there is enough recapture of withdrawals lost at the centroid ATM by the other merging party's ATM(s).
21. The assumption of profit-maximisation pre-Merger means that an increase in the surcharge fee at the centroid ATM post-Merger, all else being equal, will always make the site owner worse off. Whereas the Parties may have an incentive to raise surcharges because some of the lost withdrawals at the centroid ATM where the surcharge increase occurs will be recaptured at

nearby ATM(s) belonging to the other merging party, the site owner will suffer the loss of revenue from its ATM due to the surcharge increase (and potentially indirect revenue if the site owner loses customers that would have previously been attracted by the ATM and would have made other purchases), but does not benefit from diversion to the other party's ATM(s).

22. We first computed the critical diversion ratio for each centroid ATM, which provides a measure of the size of the recapture needed for the Parties to break even after a surcharge increase. We then compared this to the expected diversion ratio computed using market shares. If the expected diversion ratio was higher than the critical diversion ratio, we deemed that centroid ATM to be potentially problematic, as there is likely to be an incentive to raise surcharges post-Merger.
23. We performed the incentive analysis considering a surcharge increase of 10%. As a sensitivity test, we also compared the expected diversion ratios to critical diversion ratios computed using a 5% surcharge increase.

***Parties' submission on critical diversion ratios***

24. The Parties calculated critical diversion ratios above which the Parties would have an incentive to increase surcharges post-Merger. The Parties used a hypothetical example of a local area with two overlapping PTU ATMs (site 1 and site 2). Further, they assumed that the surcharge is the same at both sites,<sup>7</sup> and used different combinations of:
  - (a) price elasticity of demand; and
  - (b) percentage revenue share with site owners.
25. The Parties assumed that:
  - (a) the increase in the centroid ATM's surcharge is 10%; and
  - (b) the centroid party needs to compensate the site owner for ATM revenue losses after the surcharge increase.
26. The results are shown in the Figure 1 below. The critical diversion ratio is lower the more inelastic demand is (ie fewer customers are lost in response to a surcharge rise), and the higher the share of revenue the parties keep at the ATM which recaptures the lost customers.

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<sup>7</sup> Assumptions on site 1 owner's share of revenue was not needed because the Parties only calculated critical diversion ratios assuming compensation to site 1 (meaning the 'centroid party' supports the entire loss in direct ATM revenue post-surcharge increase).

27. For some combinations of elasticity and revenue share, the surcharge increase would not be profitable even if all customers were recaptured at the other ATM (ie critical diversion ratios of above 100%, shown as 'NA' in the table).

**Figure 1: Minimum diversion ratio for there to be an incentive to increase surcharge in the centroid ATM**

		Site 2 Owner Revenue Share						
		30%	40%	50%	60%	70%	80%	90%
Elasticity	-1.1	27%	32%	38%	48%	64%	95%	NA
	-1.2	38%	44%	53%	67%	89%	NA	NA
	-1.3	47%	55%	66%	83%	NA	NA	NA
	-1.4	55%	64%	77%	96%	NA	NA	NA
	-1.5	62%	72%	87%	NA	NA	NA	NA
	-1.6	68%	79%	95%	NA	NA	NA	NA
	-1.7	73%	85%	NA	NA	NA	NA	NA
	-1.8	78%	91%	NA	NA	NA	NA	NA
	-1.9	82%	96%	NA	NA	NA	NA	NA
	-2	86%	NA	NA	NA	NA	NA	NA

Source: Parties' analysis (in response to the phase 1 decision).  
 Notes: NA represents the fact that diversion ratios cannot be higher than 100%.

28. On the basis of these results, the Parties submitted that there are very few plausible scenarios where a surcharge fee increase could be profitable given that:
- (a) in relation to DCP's contracts with [X] (which correspond to the majority of phase 1 problematic areas), the revenue share of site owners is [X]% to [X]%; and
  - (b) elasticity levels need to be very low for the critical diversion ratios to be below 100% for such values of site owner's share of revenue. This means that for there to be an incentive to raise surcharges, diversion ratios would have to be very high and elasticity of demand very low.

**CMA's analysis**

29. Our incentive analysis consisted of two components:
- (a) Computation of critical diversion ratios.
  - (b) Computation of expected diversion ratios and the exclusion of local areas in which critical diversion ratios are higher than or equal to the expected diversion ratios.
30. The Parties' analysis is based on a hypothetical area. As noted above, we conduct our analysis using actual data from each of the local areas to compute critical and expected diversion ratios.

31. To this end, we use data for each local area on:
- (a) number of withdrawals at each of the ATMs present in the local area;
  - (b) surcharge values at each of the Parties' ATMs in the local area; and
  - (c) marginal commission paid to site owners at each of the other party's ATMs in the local area.<sup>8</sup>
32. Further details on the data we use and how we process the data are provided in Annex 1.

### *Critical diversion ratios*

33. The critical diversion ratio from the centroid ATM to the other party's ATM(s) in a local area corresponds to the diversion ratio necessary for the merged Parties to break even after a surcharge increase at the centroid ATM. It is computed as the diversion ratio for which the loss of direct ATM revenue at the centroid ATM, where the surcharge increase occurred, is equal to the gains in direct ATM revenue in the other party's ATM(s). Below, we explain how we compute critical diversion ratios by means of a numerical example.
34. We consider a centroid ATM with 500 withdrawals per month, a surcharge fee of £1.50 per withdrawal, and site owner compensation of £0.50 per withdrawal (one third of the surcharge fee). The total monthly revenue prior to the surcharge increase is equal to £750, of which £500 goes to the ATM deployer ( $500 * (£1.50 - £0.50)$ ).
35. When surcharges increase by 10%, the new surcharge at the centroid ATM is £1.65 per withdrawal. This would lead some customers to divert away from the centroid ATM. For the purpose of this analysis, we assume a price elasticity of demand of -1.1, which is consistent with a situation where deployers and site owners set surcharges to maximise their joint profits pre-Merger, and where marginal costs are very low. We explain our analysis of the evidence supporting this assumption in Annex 2.
36. An elasticity of demand is -1.1 implies that following the 10% surcharge increase, 11% of customers will move away from the centroid ATM reducing the number of withdrawals per month to 445. Therefore, the revenue at the centroid ATM after the surcharge increase will be £734.25 ( $445 * £1.65$ ).

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<sup>8</sup> The marginal commission to site owner is the amount the site owner receives from the deployer per additional cash withdrawal at an ATM and is used to calculate the share of the surcharge that is shared with the site owner.

37. We assume in our analysis that the new surcharge is shared with the site owner in the same proportion as before, therefore, the site owner's commission after the surcharge increase is £0.55 (one third of £1.65), and the net revenue for the deployer is £489.50. The total loss of revenue at the centroid ATM following the surcharge increase is approximately £16, of which £10 correspond to loss of revenue for the deployer. Table 3 below summarises the computations, rounded to the nearest £1.

**Table 3: Revenue loss at centroid ATM following a 10% surcharge increase, numerical example**

	Surcharge	Withdrawals	Total Revenue	Site owner compensation	Deployers' Revenue
Prior to surcharge increase	£1.50	500	£750	£0.50	£500
Post surcharge increase	£1.65	445	£734	£0.55	£490
<b>Change</b>	<b>£0.15</b>	<b>-55</b>	<b>-£16</b>	<b>£0.05</b>	<b>-£10</b>

38. For the surcharge increase to be profitable, diversion to the other party's ATMs in the area should be such that the revenue from recaptured sales is higher than the loss at the centroid ATM.
39. We accounted for the constraint imposed by site owners on the Parties' ability to increase surcharges by assuming that a profitable surcharge increase should leave the site owner revenue unchanged. To this end, Parties must obtain enough revenue from withdrawals diverted to the overlapping ATMs to compensate for the revenue loss incurred by the site owner at the centroid ATM. In our example, this means that, for the surcharge to be profitable, the Parties must be able to recover the full £16 lost at the centroid ATM.<sup>9</sup>
40. For simplicity, we consider in this example a case where there is only one ATM belonging the other party in the local area. We assume that this overlapping ATM is a PTU with a surcharge of £1.60 and site owner commission of £0.50.
41. For each withdrawal that is diverted from the centroid ATM to the other party's ATM, the Parties will receive £1.10 (£1.60 - £0.50). Therefore, in order to recover £16 lost at the centroid ATM, they would require just over 14 withdrawals to be diverted. The diversion ratio necessary to achieve this is 26% (14.5 / 55). This is the critical diversion ratio.

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<sup>9</sup> We do not model indirect ATM revenue loss (eg due to loss of footfall) as it is not possible to numerically include indirect ATM revenue with the data we have available. The effect of ignoring indirect profits in our critical diversion ratios calculation means that our critical diversion ratios are underestimated as critical diversion ratios would have to be higher to compensate for the loss in indirect profits of the site owner. We have taken this into account as part of our competitive assessment in Chapter 9 of the main report.



42. Mathematically, the critical diversion ratio is the diversion ratio that satisfies following equality:<sup>10</sup>

$$R_{c0} - R_{c1} = \Delta W_c * CDR_{ci} * (S_i - SOC_i)$$

where,  $R_{c0}$  and  $R_{c1}$  are total revenue at the centroid ATM before and after the surcharge increase respectively,  $\Delta W_c$  is the total number of withdrawals lost at the centroid ATM following the surcharge increase,  $CDR_{ci}$  is the critical diversion ratio from the centroid ATM to the local ATM  $i$  belonging to the other party,  $S_i$  is the surcharge fee at ATM  $i$  and  $SOC_i$  is the site owner compensation at ATM  $i$ .

43. Therefore, the critical diversion ratio is computed as:<sup>11</sup>

$$CDR_{ci} = \frac{R_{c0} - R_{c1}}{\Delta W_c * (S_i - SOC_i)}$$

44. As a first step, we filtered out all centroid ATMs for which the critical diversion ratio was higher than 100%. This corresponds to a situation where, given the surcharge and site owner's compensation at the other party's local ATM, the gains that Parties' would make per diverted withdrawal are too low to compensate the losses at the centroid ATM.<sup>12</sup> For the remaining areas, we compared critical diversion ratios to the expected diversion ratios computed using information on market shares, as explained next.

### *Diversion ratios*

45. We calculated diversion ratios using market shares (excluding the centroid) in each local area based on withdrawal numbers of each ATM, as follows:<sup>13</sup>

$$MS_i(\text{excluding centroid}) = \frac{W_i}{\sum_{i=1}^{L-\{c\}} W_i} = \frac{MS_i}{1 - MS_c}$$

where,  $W_i$  is the number of withdrawals per month in ATM  $i$  belonging to the other party, and  $\sum_{i=1}^{L-\{c\}} W_i$  is the total number of withdrawals in the local area excluding the centroid ATM. The second equality shows that this is equivalent

<sup>10</sup> For the case of FTU ATMs, the surcharge fee is replaced by the LINK interchange fee.

<sup>11</sup> In areas where the other party has more than one overlapping ATM, we assume diversion occurs in proportion to their relative number of withdrawals prior to surcharge increase. In that case, the denominator in the critical diversion ratio formula becomes:  $\Delta W_c * [\sum_{i=1}^m sw_i * (S_i - SOC_i)]$ , where  $sw_i$  is the share of ATM  $i$  in the total number of withdrawals of ATMs in the area belonging to the other party.

<sup>12</sup> In other words, even if all the lost transactions at the Parties' ATMs where the surcharge increase occurs were captured by the other party's ATMs, these would not be sufficient to create an incentive to increase surcharges by 10%.

<sup>13</sup> In areas where the other party has more than one overlapping ATM, the numerators in this expression will be given by the sum of the withdrawals and market shares, respectively, of all the other party's ATMs in the area.

to the market share of ATM  $i$  (including the centroid ATM) divided by one minus the market share of the centroid ATM.

46. Going back to the numerical example, we assume that the other party's ATM has 200 withdrawals per month and that there is another ATM belonging to a competitor with 100 withdrawals per month. Therefore, the market share of the other party's ATM (excluding the centroid ATM) is 67%.
47. As explained in Chapter 8 of the main report, we considered that 48% of customers who would divert from the centroid ATM following the increase in surcharge, would do so to alternatives other than withdrawing cash from a local ATM. We accounted for this by multiplying market shares by 0.52.
48. Therefore, we computed expected diversion ratios as follows:

$$DR_{ci} = MS_i(\text{excluding centroid}) * (1 - OMC)$$

where,  $DR_{ci}$  is the expected diversion ratio from centroid ATM  $c$  to the other party's ATM  $i$ , and  $OMC$  is the diversion ratio to out-of-market alternatives.

49. In the numerical example above, this would result in an expected diversion ratio to the other party's ATM of 35% (67% \* 0.52). This is higher than the critical diversion ratio computed above, 26%. Therefore, we conclude that the Parties could increase surcharges at the centroid ATM by 10% and recover enough withdrawals in the other party's local ATM to make this increase profitable.

#### *Results of the incentive analysis*

50. Table 4 presents the results of the incentive analysis performed in the 530 centroid ATMs remaining after the filter. In total, we find 64 potentially problematic areas<sup>14</sup> if we assume a 10% surcharge increase (77 if we assume a 5% surcharge increase). Of these, 52 belong to DCP and 12 to Cardtronics.

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<sup>14</sup> For simplicity, we refer in the text to potentially problematic areas. However, some centroid ATMs are in the same area, and therefore, by looking at each centroid separately there is double counting in terms of areas.

**Table 4: Results of incentive analysis**

Type of area	Type of overlap	Post-filter ATMs	Potential problematic areas	
			10% surcharge increase	5% surcharge increase
No other competitors in the local area (2 to 1 areas)	PTU	74	52	60
	FTU	184	2	4
	PTU & FTU	7	1	2
Other competitors in the local area (4 to 3 or 3 to 2 areas)	PTU	49	6	7
	FTU	197	2	3
	PTU & FTU	19	1	1
<b>Total</b>		<b>530</b>	<b>64</b>	<b>77</b>

Source: CMA's analysis of LINK's, Parties' and competitors' data.

Notes: PTU identifies areas where all the ATMs from the other party around the centroid ATM are PTU ATMs; FTU are areas where all the ATMs from the other party around the centroid ATM are FTU ATMs; PTU & FTU are areas where the ATMs from the other party around the centroid ATM include both PTU and FTU ATMs.

51. Table 4 classifies areas depending on whether there are ATMs of other competitors in the local area or not. Within these, it classifies areas depending on whether the centroid ATM overlaps with a PTU from the other party, a FTU or both. We note that most of the potentially problematic ATMs are in areas where the Merger would result in a local monopoly and the overlap between the Parties is between PTU ATMs only (52 out of 64 centroid ATMs).

52. Table 5 below presents summary statistics on the number of withdrawals per month, surcharges and revenue at these ATMs. The median ATM within this group has only around [REDACTED] withdrawals per month, in line with what is typically the case for PTU ATMs,<sup>15</sup> although some ATMs can see more than 1,000 withdrawals per month. The small number of withdrawals reported translates in low level of revenue per ATM. The median ATM in the group has a monthly revenue of [REDACTED]. The aggregated revenue associated with 64 ATMs identified as potentially problematic is around [REDACTED] in total, of which around [REDACTED] corresponds to net revenue for the Parties.

**Table 5: Volumes and revenue of centroid ATMs in potentially problematic areas**

Type of overlap	10% surcharge increase			5% surcharge increase		
	Median	Average	Range	Median	Average	Range
Number of withdrawals per month	[REDACTED]	[REDACTED]	(2–1,124)	[REDACTED]	[REDACTED]	(2–1,124)
Surcharge fee (£)	[REDACTED]	[REDACTED]	(0.75–1.95)	[REDACTED]	[REDACTED]	(0.75–1.99)
Total revenue per month (£)	[REDACTED]	[REDACTED]	(2–1,967)	[REDACTED]	[REDACTED]	(2–1,967)
Deployers' revenue per month (£)	[REDACTED]	[REDACTED]	(0.8–1,124)	[REDACTED]	[REDACTED]	(0.8–1,124)

Source: CMA's analysis of LINK's, Parties' and other competitor's data.

53. We also computed the net revenue gain to the Parties if they were to implement a 10% (5%) surcharge increase in the PTU ATMs identified as potentially problematic. We computed this as the difference between the loss

<sup>15</sup> The median number of withdrawals per month for all Parties' PTU ATMs – excluding captive, storage/depot and managed ATMs – in our dataset is around [REDACTED].

of revenue at the centroid ATM and the revenue gains that the Parties would receive from diversion to the other party's ATMs in the area. To compute the latter, we used the diversion ratios calculated as explained in paragraph 45 above. To compute both the loss at centroid ATM and gain at the overlapping ATMs for the Parties only, we subtracted the relevant site owner's commission from the surcharge fee at each ATM. Following a surcharge increase of 10% (5%) in the 64 (77) centroid ATMs identified as potentially problematic, the overall net revenue generated would be approximately £550 (£340) per month.

54. We also examined the type and location of ATMs and whether these ATMs are part of multi-site or independent contracts. The results are presented in Table 6 below.

**Table 6: Potentially problematic ATMs by type of contract and location**

Location	10% surcharge increase		5% surcharge increase	
	Multi-site (>10 ATMs)	Independent (=<10 ATMs)	Multi-site (>10 ATMs)	Independent (=<10 ATMs)
Convenience	0	26	3	30
Leisure	1	0	1	0
Motoring	0	2	0	2
Other retail	0	2	0	3
Social	17	16	20	18
<b>Total</b>	<b>18</b>	<b>46</b>	<b>24</b>	<b>53</b>

Source: CMA's analysis of LINK's, Parties' and other competitor's data.

55. Around two-thirds of the potentially problematic ATMs are part of independent contracts. In terms of type of location, almost all ATMs are in either convenience stores or social – the latter category includes pubs.
56. Regarding the 18 ATMs corresponding to multi-site contracts under the 10% surcharge increase assumption, we find that they correspond to wider contracts with three [REDACTED]. We compared the number of ATMs identified as potentially problematic with the total number of ATMs covered by each contract. Overall, we find that potentially problematic ATMs represent a very small share of ATMs within much larger contracts (only 2% to 7%). The additional centroid ATMs identified as potentially problematic under the 5% surcharge increase assumption, correspond to three contracts with two convenience store chains ([REDACTED]) and one restaurant chain ([REDACTED]). They are all part of larger contracts and the centroid ATMs in question correspond to less than 2% of the total number of ATMs in each contract.

## Annex 1 – Data cleaning

1. We combined data on UK ATMs from LINK with additional information from the Parties and competitors dated April 2017. Non-UK ATMs were excluded from the analysis.
2. We aggregated different banking brands under the same banking group name and only counted fascia based on overall number of groups in the area (rather than brands). The groups we used as the basis on which to count fascia are the following:
  - Cardtronics (including Cardtronics and Omnicash);
  - DirectCash;
  - AIB Group;
  - Barclays;
  - Bank of Ireland;
  - Change Group ATMs;
  - Citibank;
  - Clydesdale Group (including Clydesdale and Yorkshire);
  - Co-operative Bank;
  - Cumberland Building Society;
  - Coventry Building Society;
  - G4S Cash Solutions;
  - HSBC;
  - Lloyds Group (including Bank of Scotland, Halifax and Lloyds);
  - TTT Money Corp;
  - Northern Bank;
  - Nationwide Building Society;
  - NoteMachine;

- PayPoint;
  - Raphael's Bank;
  - RBS (including Natwest, Royal Bank of Scotland and Ulster Bank);
  - Tesco;<sup>16</sup>
  - Sainsbury's Bank;
  - Santander;
  - Travelex;
  - TSB; and
  - YourCash.
3. We assumed all bank-operated ATMs are FTU.
  4. Coordinate data was sourced from the Parties in the first instance. Where it could not be sourced from the Parties, it was sourced from LINK. Where it could not be sourced from the Parties or LINK, it was sourced from competitors. Finally, where it could not be sourced from the Parties, LINK, or competitors, it was sourced from the ONS.
  5. The local analysis uses publicly available data to classify ATMs as urban or rural. There were some centroid ATMs for which the urban/rural classification was missing in our dataset. In those occasions, we corrected those missing values with the classification of the nearest ATM. Furthermore, areas labelled as 'MIXED URBAN/RURAL' are assumed to be urban.
  6. For the purpose of calculating critical diversion ratios, we computed the per transaction revenue received by deployers in FTU ATMs as the LINK interchange fee (£0.287) net of site owners' commission.

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<sup>16</sup> Tesco's ATMs are operated by Tesco and back-office managed by RBS. It is Tesco that chooses the ATMs' surcharges, not RBS, so they were treated as different fascia.

## Annex 2 – Assumption on elasticity of demand

- 1.1 We consider the elasticity of demand for cash withdrawals with respect to changes in the surcharge fee at PTU ATMs (ie the change in demand following a surcharge fee increase).
- 1.2 In response to the phase 1 decision, the Parties used a range of elasticities from -1.1 to -2.0 to model the critical diversion ratio.<sup>17</sup> The Parties told us that they did not have an estimate of the price elasticity of demand and that, in the absence of such an estimate, they operated on the assumption of [REDACTED].<sup>18</sup>
- 1.3 Assuming a surcharge increase of 5%, a price elasticity of -2 would imply a volume reduction at a given PTU of 10%. The Parties said that PTU volumes are falling, on average, across all PTUs by [REDACTED]% per year and so a 10% fall is only slightly above a one year decline and well within the range of annual decline observed for many PTU ATMs (given that [REDACTED]% is an average). The Parties submitted that this suggests that a price elasticity of -2 is well within the bounds of observed volume reductions, even in the short term, and more so in the medium term, and thus highly plausible.<sup>19</sup>
- 1.4 We note, however, that in order to estimate the change in demand at a PTU ATM following an increase in the surcharge, we need to distinguish between:
- (a) how consumer demand changes as the surcharge changes at any given time, holding everything else constant (ie movements along the demand curve); and
  - (b) how consumer demand changes, holding the surcharge constant, because of other factors such as the use of alternative payment methods.
- Only the first effect is relevant to estimating the change in demand in response to a surcharge increase.
- 1.5 Elasticity of demand is inversely related to the price-cost margin. In order to estimate the price-cost margin, we therefore consider evidence on the costs incurred by the Parties, including analysis carried out by the Parties on which of these costs vary by transaction.
- 1.6 Cardtronics estimated the cost per withdrawal across its estate in 2016, including merchant commissions, vault cash rental expenses, other costs of

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<sup>17</sup> Parties' response to phase 1 decision, 30 May 2017, paragraph 4.41.

<sup>18</sup> [REDACTED].

<sup>19</sup> [REDACTED].

cash, communications, transaction processing, repairs and maintenance and various other expense categories.<sup>20</sup>

- 1.7 Cardtronics told us that a number of these costs are 'stepped' or 'semi-variable' and do not increase in a linear way in relation to transaction volumes. However, Cardtronics said that each additional transaction does result in a movement towards the next stepped increase in costs and therefore these costs are variable over a relatively narrow band.<sup>21</sup>
- 1.8 We note that the cost of transaction processing is only [X] pence per withdrawal and is likely to be the only cost that varies when there is an increase of one additional withdrawal. We consider that a number of other costs estimated by the Parties, such as vault cash rental and repairs and maintenance are likely to be 'stepped' or 'semi-variable' and will not increase unless there is a significant increase in withdrawals. Even if all of these costs are regarded as fully variable, the marginal cost of each additional withdrawal would still be less than [X] pence per withdrawal.<sup>22</sup>
- 1.9 When compared with the average Cardtronics PTU ATM surcharge of £[X], the price-cost margin would be close to 100%. We infer from this that the elasticity of demand is slightly less than -1.
- 1.10 We also note that, in areas where other ATMs belonging to the same merger party are present, pre-Merger profit maximisation implies a demand elasticity slightly below -1 as, following a surcharge increase of 10%, fewer than 10% of consumers are likely to divert away.
- 1.11 The consumer survey also indicates that a number of consumers may be insensitive to surcharge changes. For example, when asked why they had used a PTU ATM and not a FTU ATM, 44% of consumers said they were in a hurry, 22% could not be bothered to go any further, 22% did not know where to find a FTU ATM and 7% said that it would be difficult or impossible to get to a FTU ATM. Another 6% said that it was not possible or difficult to leave the venue in which the ATM was located.
- 1.12 We therefore assume a price elasticity of demand of -1.1 for the purpose of the diversion ratio analysis (ie following a surcharge increase of 10%, 11% of consumers would divert away from the ATM).

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<sup>20</sup> Cardtronics noted that there may be variations within its estate. In particular, in a merchant refill scenario, there would be an increase in costs for merchant fees, but a reduction in the cost of cash and CIT costs (as the merchant is replenishing the ATM itself with its own cash).

<sup>21</sup> [X].

<sup>22</sup> We consider merchant commission separately in the diversion ratio analysis.



## Glossary

<b>Act</b>	The Enterprise Act 2002.
<b>ATM</b>	Automated teller machine – also known as a cash machine.  The primary function of ATMs is to dispense cash, although they also may perform a range of other functions, eg maintenance of a customer's bank account, payment of bills, topping up mobile phone credits and making charitable donations.
<b>BBSs</b>	Banks and Building Societies.
<b>Captive ATM</b>	An <b>ATM</b> that does not constrain and is not constrained by other <b>ATMs</b> .
<b>Cardtronics</b>	Cardtronics plc.
<b>CMA</b>	Competition and Markets Authority.
<b>Consumer survey</b>	Omnibus survey carried out by Kantar TNS of consumers who use <b>PTU ATMs</b> .
<b>DCP</b>	DirectCash Payments Inc..
<b>Fascia</b>	For the purposes of this report, fascia refers to competing <b>ATM</b> operators.
<b>FTU ATMs</b>	Free-to-use <b>ATMs</b> , these are cash machines where users are not charged a fee <u>by the machine</u> for withdrawing cash.
<b>IADs</b>	Deployers of <b>ATMs</b> that are independent from financial institutions such as banks.
<b>Internal ATM</b>	An <b>ATM</b> that is located inside premises such as a bank or a shop.
<b>Issues statement</b>	<b>CMA's</b> issues statement, published 7 June 2017
<b>Kiosk</b>	A freestanding <b>ATM</b> .
<b>LINK</b>	LINK network. Almost every cash machine in the UK is connected to the LINK platform, which is an inter-bank payment system that enables banks and building societies ( <b>BBSs</b> ) to offer their customers access to cash across the whole of the UK.

	All the UK's main debit and <b>ATM</b> card issuers are LINK members
<b>LINK Financial Inclusion Programme</b>	A programme supported by <b>LINK</b> and its members to support the installation of free-to-use cash machines in areas where there is limited free access to cash.
<b>Merchant fill</b>	An <b>ATM</b> where the cash used in the <b>ATM</b> may be provided, and the <b>ATM</b> filled, by the occupier of the premises.
<b>NoteMachine</b>	NoteMachine UK Ltd.
<b>Party/Parties</b>	Each of <b>Cardtronics</b> and <b>DCP</b> (as the context requires). They are referred to collectively as the 'Parties'.
<b>Payments UK</b>	A trade association for financial institutions, technology firms and payment processing companies in the United Kingdom. From 1 July 2017, Payments UK was integrated into UK Finance.
<b>PayPoint</b>	PayPoint plc.
<b>PTU ATMs</b>	Pay-to-use <b>ATMs</b> , these are cash machines where users are charged a fee <u>by the machine</u> for withdrawing cash.
<b>Site owner</b>	The party with which each of the Parties contracts for the installation and operation of an <b>ATM</b> , which may be either the occupier or landlord of the premises in question. For the purpose of this report, we consider a multi-site owner to be a site owner who has a contract for more than 10 <b>ATMs</b> with an <b>ATM</b> deployer, and an independent site owner to be one who has a contract for 10 <b>ATMs</b> or fewer with an ATM deployer.
<b>SLC</b>	Substantial lessening of competition.
<b>TTW ATM</b>	Through-the-wall <b>ATMs</b> . Machines located in the exterior wall of the premises and accessed from the street.
<b>YourCash</b>	YourCash Ltd.