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26 June 2009

By email and hand

Dear Tim,

Groceries Market Investigation (Remittal): quantifying costs and benefits

Thank you for your email of 23 June. As requested, I enclose a short note detailing our alternative approach for quantifying the costs and benefits of the competition test.

This a self-standing piece which can be shared with other parties. The Commission will recognise that it follows and builds upon our earlier submissions, and in particular our note of 26 May assessing the risk of unmet demand arising as a result of the test. Our previous offer to share the details of this research of course still stands.

In developing our approach we have had in mind the degree of consensus at the recent plenary session that the Commission's technique was inevitably complex and theoretical, in particular as it lacked empirical bases and contained assumptions which were inaccurate or inconsistent with the Report. Reflecting on this, our note uses historical data to assess the risk of unmet demand arising from the operation of the test, as required by the CAT judgment. We then extend this analysis by using the approach we discussed at the plenary to calculate a monetary value for the costs and benefits of the test.

The key assumptions in our approach, and how the results vary when these parameters are changed, are clearly described. Where possible, we have based these assumptions on the Report's findings. We would be very happy to provide further details to the Commission. In any event, the tractability of our approach allows the results to be easily sensitivity-tested.

Our conclusion is that when the costs and benefits of the test are robustly and quantitatively modelled, the costs outweigh the benefits. However, as noted at the plenary meeting, a model such as this can only tell part of the story, as the test will also generate substantial off-model economic and delay costs. These costs include the

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spillover effect on growth in non-food markets; the complexity and delay associated with a further hurdle in the planning process; and the potential that retailers will feel compelled to build smaller stores than customers really want.

We would be very happy to answer any questions you have on this work.

Lucy Neville-Rolfe, CMG
Executive Director
(Corporate and Legal Affairs)

Note on the costs and benefits of the competition test

Introduction

1. Tesco has used recent historical data to estimate what would have happened had the competition test been in operation over the period from June 2006 to December 2008, and in particular whether the blocking of stores by the test would have facilitated replacement entry. The aim of this exercise is to assist the Commission to assess the "effectiveness" of the remedy, the risk of unmet demand, and to produce a robust and tractable assessment of its costs and benefits. Paragraphs 111, 119-124 and 162-165 of the CAT judgment confirm that these questions are central to the issues remitted to the Commission.

2. This approach is based on empirical data; is tractable and explicit about the assumptions used; and relies where appropriate on data and findings in the Commission's Report. It might be adopted in place of, or as a cross-check on a parallel track to, the inevitably complex theoretical approach the Commission described at the plenary session.

Assessing the effect of a competition test in place between end June 2006 and end December 2008

3. We first identified all developments potentially subject to the test over the period. This analysis was not limited to Tesco, but included all the major retailers[1]. We assessed whether the competition test, had it been in operation at the time, would have been expected to block the development.

4. We identified that there are three potential scenarios following the application of the test to block a development. Each development was categorised according to whether blocking it would have led to:

(I) immediate replacement of the blocked store by a rival development;

(II) delayed replacement; or

(III) no obvious prospect of replacement entry.

5. Reflecting the CAT's concern that the Commission had not previously assessed the likely effectiveness of the test in even a single highly-concentrated market[2], our assessment of each development involved a detailed, iterative, expert-led process. This employed our data on the characteristics of the site that would be blocked, our knowledge of existing interests of other operators in that area, the

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1 We looked at all developments relating to stores over 1,000 sq m developed by the major retailers (Tesco, Asda, Sainsbury's, Morrison, Waitrose, M&S, Co-Op and Somerfield).

2 See para 155 of the CAT judgment.

characteristics of the local area (such as customer demographics, the existence of alternative sites for development, and the views of the LPA on grocery development), and the behaviour of rivals subsequent to the original development occurring.[3] The methodology and results were summarised in our note to the CC of 26 May 2009, in which we also indicated our willingness to provide the background data and research to allow the CC to reproduce our results.

6. **Table 1** summarises and annualises the results from this exercise. We predict that there would be around 26 blocked developments each year, most of which would be extensions. The majority of the blocked developments would not be expected to be replaced immediately or at all (i.e., would result in scenarios II or III).

Table 1: Estimates of the risk of unmet demand, annualised data

		Following the block…		
	Blocked by CT	**I**	**II**	**III**
New stores	0.8	0.0 (0%)	0.8 (100%)	0.0 (0%)
Extensions	18.0	0.0 (0%)	0.5 (3%)	17.5 (97%)
On-site replacements	3.6	0.0 (0%)	0.0 (0%)	3.6 (100%)
Off-site replacements	3.6	2.1 (57%)	0.0 (0%)	1.5 (43%)
Total	26.0	2.1 (8%)	1.3 (5%)	22.6 (87%)

7. We understand the Commission is itself considering the impact the test would have had had it been in place over 2000 to end-June 2006 (rather than the more recent period we have been considering). Our initial assessment of the impact of the test over this period suggests that approximately the same number of developments would have been blocked each year as in the period end-June 2006 to end-Dec 2008. One minor difference is that fewer off-site developments would have been blocked, while slightly more on-site replacements would have been blocked. We have no reason to believe that the pattern of prospects for replacement would have been any different.

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[3] Details of how the assessment of the likelihood of replacement entry was carried out are attached at **Annex 1**.

How to quantify the welfare consequences of unmet demand

8. The next stage of our work has been to assess the welfare consequences of any identified unmet demand, and balance this against the welfare consequences of facilitated entry.

Benefits from facilitated entry

9. We have followed the logic in paragraph 9 of the Commission's Framework for the assessment of the competition test (the ***Framework***). Benefits from facilitated entry arise where a new large fascia enters the area as a result of the competition test blocking an incumbent development, so that there is one more fascia than there would have been had the incumbent been allowed to expand.

10. As discussed in the CAT and at the recent roundtable, the margin-concentration results should be used to estimate the welfare gains from an increased number of fascia. The results suggest that, on average, a new large fascia in an area reduced incumbent profit margins by around 1.9%.[4] Assuming (as Mr Gaysford did when he described this approach at the plenary session) an average industry store variable profit margin of 15% implies that an additional fascia has a price impact (or an equivalent increase in 'QRS' terms) of 0.3%.

11. Multiplying the reduction in margin by the actual sales at the incumbent store or stores gives the benefit of the test in monetary terms.[5]

12. This calculation conservatively assumes that in all cases where a blocked development is replaced, it is replaced by a new large fascia. There are several reasons why this might not always be the case. For instance, in duopoly or triopoly areas, any unmet demand could be met by an extension of the second or third store rather than the entry of a new large store, in which case there would be no extra fascia in the area and so no associated fascia benefit.[6] Alternatively, the blocked development might be replaced by a new smaller (mid-sized) store or stores, which

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[4] The regression used by the CC to estimate detriment in the Report was model 1 in Table 5 of Supplement 1 to Appendix 4.4. This shows that entry of a store operated by a new fascia reduces incumbent profit margins by 3.8%. However, as explained at the recent roundtable, this is an over-estimate of the benefit because this impact includes the effect of both a new store and a new fascia. Models 1 and 2 in Table 1 of Supplement 1 to Appendix 4.4 suggest that these two effects will be roughly equal.

[5] Sales can be identified directly based on the sales of incumbents proposing a new development. The CC will be able to verify this data directly. If actual sales data is not available, a reasonable approximation may be made by multiplying an estimate of the fascia sales density (from public data sources) by the store size. Alternatively, sensitivity analyses may allow for different store sizes and gross profit rates.

[6] The CC's analysis would suggest that the extension of a rival incumbent is more likely than the introduction of a new large store (paragraph 7.67, Report).

again provide no extra large grocery fascia or stores.[7] In these circumstances, the test will not give rise to benefits.

Costs from unmet demand

13. Consistent with paragraph 26 of the Framework, costs arise from the test whenever a blocked store development is not immediately replaced by a new rival store, and so the amount of grocery floorspace available to customers is less than would have been the case had the test not been in operation. As the CC recognises, these costs relate to the lost consumer surplus that would have been created by the new store and continue for the length of delay prior to replacement.

14. The CC recognises at paragraph 30 of its Framework that the length of delay before replacement entry occurs will need to include the time taken to search for and assemble a site. The CC specifically identifies the case of extensions (and on-site replacements, which as the CC recognises have similar characteristics to extensions). As there are relatively few instances of head to head bidding for sites, the need to spend time searching for and assembling a site will arise regularly across all types of developments.[8]

15. We believe the approach to site development used by the CC in the Report can be extended to develop a timeline for site development with five phases.

(a) Search Time. Before an alternative development can begin, a suitable site needs to be found in the area of the blocked development. This is true even where a retailer relies on a developer to research and identify sites: in such a scenario, the requirement to find a suitable site has effectively been outsourced. We understand the CC is now considering how to analyse search times. For the purpose of our model we have used confidential internal data.

(b) Site Assembly. After finding a suitable site, and before submitting a planning application, all the necessary parcels of land need to be secured. For many sites there may be a material site assembly phase. Based on the CC's analysis and confidential internal data, we assume an average Site Assembly time of 0.8 years.

(c) Holding Time 1. As identified by the CC, this is the period of time during which a site is held before submission of a planning application but after the last parcel is acquired, typically because the planning application is being prepared and various aspects of the ultimate development are being decided upon. The length of Holding Time 1 was explored in the CC's Land Holdings working paper, figure 8 of which suggests an average of 1.6 years.

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[7] The CC's analysis would suggest that the introduction of a mid-sized store is more likely than a large store as the planning system is less of a barrier to entry for mid-sized stores (paragraph 10.10, Report).

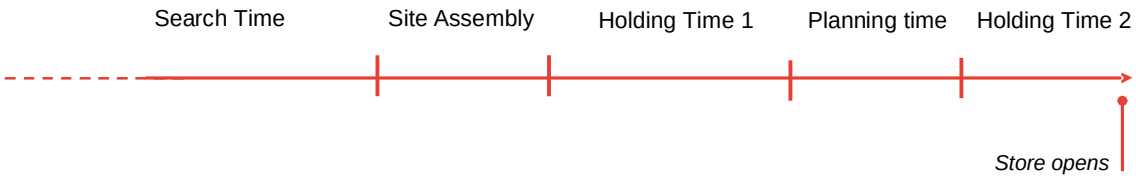
[8] Report, para 7.25.

(d) Planning Time. This is the time between the submission of the planning application and its outcome, before the actual site development can begin. Its extent was explored by the CC in the Report (Section 7) for both full planning applications and two-stage planning applications. We have applied these estimates to the database of historical sites to calculate the weighted average length for each type of application. On this basis, the overall weighted average length of planning time, across both types of applications is estimated to be 1.6 years.[9]

(e) Holding Time 2. This last phase, also explored by the CC, is the period required for building a new grocery store, with proper access and the required amenities. However, this phase of development occurs after planning has been granted, and therefore no additional delay caused by the competition test is associated with this period.

16. These stages are shown in **Figure 1** below.

Figure 1 – Store development timeline



17. Our approach to quantifying the costs of the competition test estimates the lost consumer surplus resulting from unmet demand by looking at gross profits of the blocked developments. This transparent and robust technique produces an empirical estimate of costs to set against the benefits derived from margin-concentration. Specifically, as we described at the plenary it is possible to:

(a) estimate expected sales revenue of the blocked development. (The CC has this information in MPQ 56a for every store that has opened. This information can be used to estimate sales revenue for new stores.)

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[9] In Figures 7.3 and 7.4 of the Report, the CC presents its estimates of the length of Planning Time for full applications and two-stage applications respectively. The Figures show the average length of Planning Time as well as fascia-specific values. We have applied the fascia-specific information to our database to calculate weighted average Planning Times for both full applications and two-stage applications. In the case of full applications, we have estimated weighted average Planning Time to be approximately 10 months (or 0.83 years). For two-stage applications, we have found the average Planning Time to be approximately 36.3 months (or 3.02 years). In paragraph 7.49 of the Report the CC notes that between one-quarter and one-half of all planning applications are two-stage applications. To take this finding into account, we have calculated the overall weighted average Planning Time by assuming that one-third of all planning applications are two-stage applications, while the remainder are full applications. Using this assumption, we have estimated the overall weighted average Planning Time to be 1.6 years. We have used this assumption for all categories of sites with the exception of Category I (timely replacement entry). In this case alone, we have assumed that all planning applications are full applications, implying a Planning Time of approximately 0.8 years.

(b) estimate the gross profit earned on those sales. Gross profits are total sales multiplied by the variable profit margin. We assume an average industry variable profit margin of 15%. Sales can be identified directly based on the realised sales of blocked historic developments.[10]

(c) select an appropriate demand function and estimating the consumer surplus accordingly. If log-linear demand is used, the consumer surplus as a proportion of gross profits would be about 116%.[11] Using a linear demand curve, consumer surplus would be 50% of gross profit.[12] However, the CC considers linear demand to be a "particularly unreasonable" and "implausible" assumption for groceries.[13]

Assumptions

18. We have made certain assumptions to develop a base case, as a starting point for sensitivity analysis. We:

(a) employ a log-linear demand curve;

(b) assume that all blocked developments, including extensions, will over time attract entry (so any unmet demand is assumed not to endure indefinitely);

(c) assume that any entry is by a new rival fascia operating a large grocery store;

(d) assume that administrative costs are £6m per annum (this is the lower bound of the amount estimated by the CC);

(e) allow the time horizon over which costs and benefits are calculated to be 100 years; and

(f) use a discount rate of 3.5%.

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[10] See further, footnote 5 above.

[11] See Hausman, (1997), "Valuing the Effect of Regulations on New Services in Telecommunications", Brookings Papers on Microeconomics, p10.

[12] Linear demand is normally considered to be a lower bound on the consumer surplus as a proportion of profit (see Hausman (2003), "Sources of Bias and Solutions to Bias in the Consumer Price Index", Journal of Economic Perspectives, p26-27). The CC has previously concluded (in *Somerfield/Morrison*) that customer preferences for grocery products are such that demand is substantially more convex to the origin than even the log-linear approximation, i.e. that consumer surplus as a proportion of profits is greater than this. Under the log-linear approximation the elasticity of demand increases as price increases, but by less than under linear demand.

[13] CC, *Somerfield/Morrison*, paragraph 7.26 and Appendix D, paragraph 14. With respect, we disagree with the comments expressed by Mr Mazzarotto at the plenary session at p61, lines 1-13 of the transcript. Specifically, using a linear demand curve will be a conservative lower bound on the costs of the remedy, not a conservative lower bound on the benefits as suggested. The benefits arise from the margin-concentration analysis and are invariant to the choice of demand curve.

19. We can test the sensitivity of the model to plausible changes in these assumptions. In particular, we believe that assumptions a) to e) are broadly conservative given the empirical facts of the industry and the CC's previous statements.

Results

20. The results from our cost-benefit analysis are presented in Table 2. Using the base case assumptions, the annualised discounted net welfare impact is a cost of £315m per annum.[14] Adding in the administrative costs takes this result to an annual cost of £321m per annum.

Table 2: Annualised net benefit of the competition test, £m

	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-9.7	0.0	-9.7
Extensions	0.0	-3.1	-187.1	-190.2
On-site replacements	0.0	0.0	-85.9	-85.9
Off-site replacements	0.4	0.0	-29.7	-29.3
Sub-total	0.4	-12.9	-302.7	-315.1
Administrative costs				-6.0
Total				-321.1

21. As expected, most of the costs arise from extensions and on-site replacements. This is because they represent 83% of the developments being blocked and (for the reasons the CC has articulated) they are least likely to be replaced once blocked.

Sensitivity analysis

22. One of the attractions of this framework is the ease with which it is possible to model alternative assumptions. This could include alternative approaches to all the key questions the CAT has required the CC to consider, such as the frequency with which the test would prevent development and the risk of unmet demand.

23. For illustration we provide eight sensitivities in **Annex 2**.

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[14] This is the combined discounted cost/benefit of one year's worth of blocked developments.

ANNEX 1

The assessment of whether blocked stores would be replaced

1. This Annex explains in further detail the assessment described at paragraph 3 of the note. This analysis is based on:

- the characteristics of the site that would be blocked;
- our commercial knowledge of the existing interests of other operators in that area;
- the characteristics of the local area (including customer demographics, the availability of suitable alternative sites for development, and the attitude of the planning authorities to the prospect of further grocery development); and
- our experts' best understanding of rivals' development plans.

2. **Timely replacement (Category I)**. Developments were assigned to Category I where there was a clear prospect that an alternative development would have happened on a similar timescale. An example where this might be the case would be where the development was developer-led and where it seems reasonable that an alternative retailer would likely have found it attractive to step in to replace the original (blocked) retailer.

3. **Delayed replacement (Category II)**. Developments were assigned to Category II where we were aware of actual or rumoured rival presence in the local area, even where that presence had not yet manifested itself in a planning application. As a result, if the original development had been blocked, it would seem most likely that the alternative outcome was rival development, but with a delay.

4. **No obvious replacement (Category III)**. Developments were assigned to Category III largely for two reasons. Either:

(a) there was no known rival interest in the local area, or

(b) there was interest in the area, but this would likely have been (or in the event actually was) developed in any event, whether or not the original development were blocked.

5. In either case, a rival retailer would need to start the process of searching for a new site in the local area from the beginning. Even once the first parcel of land is secured it is likely to take a substantial time before entry can take place, and there will be a considerable period of 'searching' time before the acquisition of the first parcel of land.

ANNEX 2

Sensitivity-testing for key assumptions

1. In this Annex we test the sensitivity of our cost-benefit model to:

(a) changing the discount rate to 2.5% (Table 3) and 5% (Table 4);

(b) reducing the length of delays, by assuming that the search time for all new stores and off-site replacements is half of that seen in our data (Table 5);

(c) assuming that if there was no obvious prospect of replacement for an extension or on-site replacement, then (rather than assuming a replacement would materialise after a certain time) there would in fact be no replacement of those stores (Table 6); and

(d) assuming that each year one additional new store is blocked, and that it is immediately replaced by a rival new fascia (Table 7), thus more than doubling the numbers of new stores blocked (this is close to a simulation of the CC's unproven facilitation effect);

(e) assuming that each year one additional new store is blocked, and that it is not replaced by a rival new fascia until the full search time has elapsed (Table 8), to explore the CAT's concern that there was a risk of unmet demand; and,

(f) assuming that, for all duopolies and triopolies, whenever a development is blocked, it is replaced by an extension of an existing fascia, thus yielding no benefits (Table 9);

(g) adding an extra delay of one month to the planning time, to explore the costs of extra delays introduced into that process (Table 10).

2. In each case, the sensitivities show that results remain substantially negative in net terms. We would be happy to provide the CC with more details on this approach or to discuss alternative sensitivities and the evidence which might support their use.

Table 3: Annualised net benefit of the competition test, £m: lower discount rate (2.5%)				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-9.3	0.0	-9.3
Extensions	0.0	-2.8	-169.2	-172.0
On-site replacements	0.0	0.0	-83.5	-83.5
Off-site replacements	2.5	0.0	-30.0	-27.5
Sub-total	2.5	-12.2	-282.7	-292.4
Administrative costs				-6.0
Total				-298.4

Table 4: Annualised net benefit of the competition test, £m: higher discount rate (5%)				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-10.0	0.0	-10.0
Extensions	0.0	-3.3	-196.7	-200.1
On-site replacements	0.0	0.0	-85.7	-85.7
Off-site replacements	-1.4	0.0	-28.8	-30.2
Sub-total	-1.4	-13.4	-311.3	-326.0
Administrative costs				-6.0
Total				-332.0

Table 5: Annualised net benefit of the competition test, £m: reduced search time for new stores and off-site replacements				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-9.7	0.0	-9.7
Extensions	0.0	-3.1	-187.1	-190.2
On-site replacements	0.0	0.0	-85.9	-85.9
Off-site replacements	0.4	0.0	-21.0	-20.5
Sub-total	0.4	-12.9	-294.0	-306.4
Administrative costs				-6.0
Total				-312.4

Table 6: Annualised net benefit of the competition test, £m: no replacement for extensions and on-site replacements				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-9.7	0.0	-9.7
Extensions	0.0	-3.1	-848.9	-852.0
On-site replacements	0.0	0.0	-339.4	-339.4
Off-site replacements	0.4	0.0	-29.7	-29.3
Sub-total	0.4	-12.9	-1,281.0	-1,230.5
Administrative costs				-6.0
Total				-1,236.5

Table 7: Annualised net benefit of the competition test, £m: more than doubling numbers of additional new stores blocked, and assuming the extra stores are immediately replaced				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	1.0	-9.7	0.0	-8.7
Extensions	0.0	-3.1	-187.1	-190.2
On-site replacements	0.0	0.0	-85.9	-85.9
Off-site replacements	0.4	0.0	-29.7	-29.3
Sub-total	1.5	-12.9	-302.7	-314.1
Administrative costs				-6.0
Total				-320.1

Table 8: Annualised net benefit of the competition test, £m: more than doubling numbers of additional new stores blocked, and assuming the extra stores are not replaced				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-9.7	-55.6	-65.4
Extensions	0.0	-3.1	-187.1	-190.2
On-site replacements	0.0	0.0	-85.9	-85.9
Off-site replacements	0.4	0.0	-29.7	-29.3
Sub-total	0.4	-12.9	-358.3	-370.8
Administrative costs				-6.0
Total				-376.8

Table 9: Annualised net benefit of the competition test, £m: in duopolies and triopolies, blocked developments are replaced by an extension of an existing fascia				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-11.1	0.0	-11.1
Extensions	0.0	-3.1	-225.0	-228.2
On-site replacements	0.0	0.0	-98.6	-98.6
Off-site replacements	-4.8	0.0	-31.8	-36.6
Sub-total	-4.8	-14.3	-355.4	-374.4
Administrative costs				-6.0
Total				-380.4

Table 10: Annualised net benefit of the competition test, £m: an extra month's delay for all developments due to additional hurdle and complexity in the planning process				
	Net benefit NPV of stores by replacement category			
	I	**II**	**III**	**Total**
New stores	0.0	-10.1	0.0	-10.1
Extensions	0.0	-3.2	-189.1	-192.3
On-site replacements	0.0	0.0	-86.7	-86.7
Off-site replacements	-0.1	0.0	-30.0	-30.1
Sub-total	-0.1	-13.3	-305.7	-319.1
Administrative costs				-6.0
Total				-325.1