ANTICIPATED ACQUISITION BY ILLUMINA, INC. OF PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

Notice of possible remedies under Rule 12 of the CMA's rules of procedure for merger, market and special reference groups[1]

Introduction

1. On 27 June 2019, the Competition and Markets Authority (CMA), in exercise of its duty under section 33(1) of the Enterprise Act 2002 (the Act), referred the anticipated merger between Illumina, Inc. (Illumina) and Pacific Biosciences of California, Inc. (PacBio) (the Proposed Merger), for further investigation and report by a group of CMA panel members (the Inquiry Group).

2. In its provisional findings on the reference notified to Illumina and PacBio (the Parties) on 24 October 2019, the CMA, provisionally concluded that the Proposed Merger if carried into effect was expected to result in the creation of a relevant merger situation and that the creation of that situation may be expected to result in a substantial lessening of competition (SLC) in the market for next generation sequencing (NGS) systems in the UK.

3. The CMA's analysis provisionally indicates that this SLC within a market or markets in the UK may be expected to result in adverse effects, for example in the form of reduced choice, an increase in prices, deterioration in quality, deterioration in service and/or loss of innovation or re-focus of innovation, compared to what would be the case absent the Proposed Merger.

4. This Notice sets out the actions the CMA considers it might take for the purpose of remedying the SLC and/or any resulting adverse effects identified in the Provisional Findings Report.[2]

5. The CMA invites comments on possible remedies by **Thursday 7 November 2019**.

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[1] CMA Rules of Procedure for Merger, Market and Special Reference Groups (CMA17, 2014).
[2] https://www.gov.uk/cma-cases/illumina-inc-pacific-biosciences-of-california-inc-merger-inquiry

Criteria

6. In deciding on a remedy, the CMA shall in particular have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to remedy the SLC and any adverse effects resulting from it.[3]

7. To this end, the CMA will seek remedies that are effective in addressing the SLC and its resulting adverse effects and will select the least costly and intrusive remedy that it considers to be effective.

8. The CMA will seek to ensure that no remedy is disproportionate in relation to the SLC and its adverse effects.[4]

Possible remedies on which views are sought

9. The CMA prefers structural remedies, such as divestiture or prohibition, over than behavioural remedies, because:

   (a) structural remedies are more likely to deal with an SLC and its resulting adverse effects directly and comprehensively at source by restoring rivalry;

   (b) behavioural remedies are less likely to have an effective impact on the SLC and its resulting adverse effects, and are more likely to create significant costly distortions in market outcomes; and

   (c) structural remedies rarely require monitoring and enforcement once implemented.[5]

10. At this stage, the only structural remedy that CMA has identified as being likely to be effective would be prohibition of the Proposed Merger.

11. The CMA's current view is that a structural remedy involving a divestiture of part of PacBio (or part of Illumina) either functionally or geographically would not be effective at addressing our concerns. This is because of the degree of operational overlap between functions in each business, the complete integration of sequencing systems within the businesses, and the fact that R&D and innovation-related activity is a centralised process which affects each company's global offering.

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[3] Section 36(3) of the Act.
[4] *Merger Remedies: CMA87* (December 2018), paragraph 3.3 and 3.4. This has been adopted by the CMA board.
[5] *Merger Remedies: CMA87* (December 2018), paragraph 3.46. This has been adopted by the CMA board.

12. The CMA's current view is that a remedy requiring divestiture or licensing of Intellectual Property (IP) owned by Illumina and / or PacBio is unlikely to be an effective remedy to the SLC or any resulting adverse effects that it has provisionally identified. The CMA considers that, while IP is an important asset to both companies, they have other important assets including the know-how and expertise of staff in the business, all of which combine to provide their overall offerings. Given this interdependence between IP and other aspects of the business, divestiture or licensing of IP would be unlikely to sufficiently provide a comprehensive solution to the SLC that it has provisionally found.

13. The CMA's current view is that a behavioural remedy on its own is very unlikely to be an effective remedy to the SLC and/or any resulting adverse effects that it has provisionally identified. Given the dynamic nature of the market and the importance of innovation and non-price competition, any behavioural remedy would face acute specification and circumvention risks that would be likely to render it ineffective.

14. Consequently, the CMA will consider any behavioural remedies put forward as part of this consultation, but absent any such submission, the CMA is currently minded to not pursue behavioural remedies any further.

15. The CMA will consider any other practicable remedies that the main parties, or any interested third parties, may propose that could be effective in addressing the SLC and/or any resulting adverse effects.

16. In determining an appropriate remedy, the CMA will consider the extent to which different remedy options would be effective in remedying, mitigating or preventing the SLC or any resulting adverse effects that have been provisionally identified.

17. The CMA will also consider whether a combination of measures is required to achieve a comprehensive solution – for example whether any behavioural remedies would be required in a supporting role to safeguard the effectiveness of any structural remedies. The CMA will evaluate the impact of any such combination of measures on the SLC or any resulting adverse effects.

Prohibition

18. Prohibition of the Proposed Merger would prevent an SLC from arising in any relevant market. The CMA therefore takes the provisional view that prohibition would represent a comprehensive solution to all aspects of the SLC it has provisionally found (and consequently any resulting adverse effects) and that the risks in terms of the effectiveness are very low.

Divestiture

19. In evaluating possible divestitures as a remedy to the provisional SLC it has found, the CMA will consider the likelihood of achieving a successful divestiture and the associated risks.

20. To be effective in remedying the provisional SLC, any divestiture package would need to be appropriately configured to enable a purchaser to operate effectively as an independent competitor and be attractive to potential purchasers.

21. The CMA's current view is that although both Parties carry on business in the UK, their UK-based operations do not correspond at all closely to the SLC the CMA has provisionally found.[6] Competition is global in nature, as are the Parties' operations and R&D efforts. The CMA therefore considers that a divestiture of UK-based operations would not be effective at addressing the provisional competition concerns.

22. The CMA has initially considered whether it would be possible to carve out a business unit from either Party to form the basis of a divestiture package. The large part of Illumina and all of PacBio is involved in the development, production, sales and maintenance of DNA sequencing systems. Accordingly, the CMA's initial view is that it appears unlikely that the divestiture of a smaller part of either business would be effective at addressing the provisional competition concerns.

23. The CMA invites views on:

    (a) whether a structural divestiture short of full prohibition would be effective, and if so what would need to be included in this package of assets to attract a suitable purchaser and allow them to operate as an effective competitor in the market; and

    (b) who might be a suitable purchaser[7] for such a package of assets.

IP remedy

24. The CMA has considered whether divestiture or licencing of IP rights could be an effective remedy.

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[6] The intellectual property is owned by US corporations, innovation happens on a global scale, and the relevant products are manufactured outside the UK.
[7] The CMA will wish to be satisfied that a prospective purchaser is (a) independent of the main parties; (b) has the necessary capability to compete; (c) is committed to competing in the market; and (d) will not create further competition concerns.

25. The licensing or assignment of IP, including patents, licences, brands and data, may be viewed generally as a specialised form of asset divestiture. However, in certain cases, the terms of a licence may contain ongoing behavioural elements such that the remedy is a structural / behavioural hybrid. The key element is the extent to which any material link between licensor and licensee will exist following award of the licence.[8]

26. A remedy that requires an assignment or licence of an IP right that is exclusive, irrevocable and non-terminable with no performance-related royalties will effectively be treated by the CMA as structural in form and subject to similar consideration and evaluation as an asset divestiture. A licence that requires a licensee to rely on the licensor for updates of the technology or continuing access to specialist inputs or know-how will be regarded as a behavioural commitment, which is subject to significant further risks of not being an effective remedy.[9]

27. The CMA guidance also notes that it will generally prefer to divest a business, or standalone business unit, including IP rights, where this is feasible, rather than rely on licensing IP alone. This is because divestiture of a business including IP rights is more likely to include all that the purchaser needs to compete effectively with the merging parties (such as technical expertise).[10] By contrast divestiture of IP rights involves significant additional composition and purchaser risks. The CMA's experience of implementing IP remedies has also found that they may occasionally be effective, but generally have higher risk than a straightforward business divestiture.[11]

28. The Provisional Findings explains that IP is widely used in the DNA sequencing market and constitutes a significant barrier to entry and/or expansion. However, it is not the only barrier and in particular, PacBio has submitted that its value is not rooted simply in its patents; a significant part of its value is the know-how and technical expertise of its engineers, scientists and other R&D staff.[12] In addition, the Parties have emphasised the relative importance of supporting commercial infrastructure (for example sales and marketing, manufacturing), and the potential competitive benefits of existing short read operations.[13] Any licensee would need to have sufficient capabilities in these areas for the CMA to be confident that it could operate its business (and investing in future development) to effectively compete with the

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[8] *Merger Remedies: CMA87* (December 2018), paragraph 6.1. This has been adopted by the CMA board.
[9] *Merger Remedies: CMA87* (December 2018), paragraph 6.2. This has been adopted by the CMA board.
[10] *Merger Remedies: CMA87* (December 2018), paragraph 6.3 and 6.4. This has been adopted by the CMA board.
[11] *Merger remedy evaluations: CMA109* (June 2019), paragraph 1.5(c).
[12] PacBio response to Counterfactual Working Paper, page 14.
[13] Illumina response to Internal Documents Working Paper, paragraph 27.

merged entity, which would retain all of these assets. These points reflect the concerns described in the CMA guidance above and indicates that an IP-based approach is unlikely to represent an effective remedy.

29. Any company which had access to PacBio's IP to build its own business would be reliant on continued access in order to be able to operate. Therefore, it appears unlikely that any time-limited (or terminable) license could represent an effective remedy.

30. Any remedy would also need to continue to be effective as innovation and development in the market continues. However, the CMA's initial view is that an IP remedy for this case raises some concerns in this regard. For example, if PacBio has an existing pipeline of potential patents and developments which have not yet been completed (and so are not in the current portfolio) but represent the optimum path for future development, PacBio's future patents could prevent a licensee from being able to continue to innovate and compete effectively.

31. Furthermore, given the time, cost and expertise associated with developing and delivering DNA sequencing systems, it is likely that any IP remedy would take a substantial period of time before having the intended effect (eg while competitors develop a proposition and the required supporting services). Given this, there is a significant risk that the SLC and its adverse effects would remain during this period and such a remedy would therefore not be a timely solution.

32. Finally, the CMA has found that there are numerous instances in the market where some of the patents used by DNA sequencing companies are licensed from other entities (eg academic institutions). It is not currently clear the extent to which this would apply to PacBio's patents, but this may further exacerbate the difficulties of an IP-based remedy.

33. Consequently, the CMA currently considers that an IP remedy is be unlikely to represent an effective approach to remedy, mitigate or prevent the SLC provisionally identified. However, the CMA invites views on:

    (a) whether an IP remedy is likely to be effective in this case, and if so, how it might be specified; and

(b) who might be a suitable purchaser[14] for any IP to be licensed or divested under such a remedy.

Cost of remedies and proportionality

34. In order to be reasonable and proportionate, the CMA will seek to select the least costly remedy, or package of remedies, that it considers will be effective. The CMA will also seek to ensure that no remedy is disproportionate in relation to the SLC and its adverse effects. Between two remedies that the CMA considers equally effective, it will choose that which imposes the least cost or restriction.[15]

35. The CMA invites views on what costs are likely to arise in implementing any remedy options.

Relevant customer benefits

36. In deciding the question of remedies, the CMA may have regard to the effect of any remedial action on any relevant customer benefits in relation to the creation of the relevant merger situation.[16]

37. Relevant customer benefits are limited by the Act to benefits to customers in the form of:

    (a) 'lower prices, higher quality or greater choice of goods or services in any market in the United Kingdom … or

    (b) greater innovation in relation to such goods or services.'[17]

38. For these purposes, the relevant customers are direct and indirect customers (including future customers) of the merger parties at any point in the chain of production and distribution – they are not limited to final consumers.[18]

39. The Act provides that a benefit is only a relevant customer benefit if:

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[14] The CMA will wish to be satisfied that a prospective purchaser is (a) independent of the main parties; (b) has the necessary capability to compete; (c) is committed to competing in the market; and (d) will not create further competition concerns; *Merger Remedies: CMA87* (December 2018), paragraph 5.21
[15] Merger Remedies, paragraph 3.6
[16] Section 36(4) of the Act, see also *Merger Remedies: CMA87* (December 2018), paragraphs 3.15 and 3.16.
[17] Section 30(1)(a) of the Act, see also Merger Remedies: CMA87 (December 2018), paragraph 3.17.
[18] Section 30(4) of the Act, see also Merger Remedies: CMA87 (December 2018), paragraph 3.18.

(a) it accrues or may be expected to accrue to relevant customers within the UK within a reasonable period as a result of the creation of that situation; and

(b) it was, or is, unlikely to accrue without the creation of that situation or a similar lessening of competition.[19]

40. The Parties have put to the CMA that there a number of customer benefits that will arise as a direct result of the Proposed Merger.[20] The CMA welcomes views on the nature of any relevant customer benefits and on the scale and likelihood of such benefits.

Next steps

41. Interested parties are requested to provide any views in writing, including any practical alternative remedies they wish the CMA to consider, by **Thursday 7 November 2019** (see Note (i)).

42. A copy of this notice will be posted on the CMA website.

Stuart McIntosh
Inquiry Group Chair
24 October 2019

Note

(i) This notice of possible actions to remedy, mitigate or prevent the SLC and/or any resulting adverse effects is made having regard to the Provisional Findings announced on 24 October 2019. The main parties have until 14 November 2019 to respond to the Provisional Findings. The CMA's findings may alter in response to comments it receives on its Provisional Findings, in which case the CMA may consider other possible remedies, if appropriate.

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[19] Section 30(3) of the Act, see also Merger Remedies: CMA87 (December 2018), paragraph 3.19.
[20] In particular, the paragraphs 426 to 459 of the Merger Notice (available on the case page website) states that the Proposed Merger would (i) facilitate wider distribution of/access to PacBio's products and technology by enabling PacBio to benefit from Illumina's global production, and support and service infrastructure; (ii) increase adoption of PacBio's systems by clinical and diagnostic customers by enhancing PacBio system quality with Illumina's quality systems and system management processes; (iii) improve PacBio's systems using Illumina's proprietary technologies; (iv) enable Illumina to develop coordinated solutions (including bioinformatics) to enable customers to harness the complementary nature of the technologies; and (v) accelerate innovation.

Comments should be made by email to Illumina_PacBio@cma.gov.uk or in writing to:

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