I would like to submit my comments on the “Provisional findings” document posted on 24.10.19.

Based on the previous report from the CMA, this provisional finding is not surprising. However, it is extremely disappointing. There are several aspects that suggest the possibility the CMA had a predetermined conclusion and went hunting for the evidence they needed to back it up (while ignoring all evidence which countered the conclusion).

For example,

- PacBio’s bright future (in terms of its ability to stay solvent and the ability to generate future improvements) is taken as a given while all other competitors or potential competitors are only judged on what they have on the market today while completely discounting their future potential.
- Customers’ ability to predict what the proposed merger would do to the market (which was broadly viewed as positive) was ignored as they were dismissed for having only a short term view. However, the future predictions of some customers that long reads would come to dominate short reads in the future was accepted without reservation.
- Internal documents of the parties (where essentially all companies are listed as potential competitors) factored heavily in the analysis, but sales forecasts were explicitly ignored because they were created for “specific purposes”. Surely the other internal documents were created for “specific purposes” as well.

Finally, hopefully the rejection of PacBio’s claim to be a “failing firm” will be reevaluated given the tepid results from the most recent earnings report. Declining sales of the Sequel II platform (34 vs 41 the previous quarter) and a bad earnings miss don’t bode well for long term viability.

Specific line item comments:
7.44 As set out below in chapter 8 on competitive effects, we consider that, even if customers are indeed migrating from short read sequencing to long read sequencing, this is still competition. Those customers may consider switching back to short read in the future.
[Comment: Short and long reads have both been available in the market for several years. I have never seen nor heard of anyone “switching back and forth” between short and long reads for the same application. This simply doesn’t happen.]

7.64 Other than Sanger sequencing, customers have not mentioned non-NGS technologies as a substitute to NGS systems. Moreover, the few customers who did mention Sanger sequencing suggested that it represents a very niche segment, which is currently dominated by Thermo Fisher.
[Comment: Sanger sequencing may be “niche”, but it is currently much larger than the long read market. By this logic if Sanger is too niche to be considered, then long reads should also be considered too niche.]

8.34 Secondly, we have found that many customers make purchases with multiple projects in mind. Evidence we have seen from customers demonstrates that they may not simply purchase sequencers for individual projects, but rather the majority take into account the full range of different projects within their research portfolio. These customers therefore, rather than make a

trade-off for a specific project, instead make trade-offs across projects. These customers may face a trade-off between the technology which is most applicable to the greatest number of projects and the extent to which a different sequencer can be used effectively for some projects, even if it is not the optimal choice.407
[Comment: It is true that customers will purchase the platform that fits most of the projects that they anticipate having come through their lab. However, it does NOT follow that they will then run all projects on the platform they purchased. For example, if they purchased PacBio and had a counting application project come through, they would outsource that to a lab (often elsewhere at the same institution) that has a short read platform. And if they purchased a short read platform but had a long read project come through (e.g., long range structural variation), they would outsource it to a long read facility rather than run it in-house on an unsuitable short read platform]

8.38 Therefore, whether a choice is made at the 'use case', application, project, institution, or some other level, does not determine whether the Parties are competing.411 We consider that competing for sequencing dollars, as was described by the Parties,412 encompasses all the forms of competition described above. In our view, this vying for a share of the available sequencing budget is an example of rivalry playing out between firms over time. Therefore, we provisionally conclude that looking solely at 'use cases' is not an appropriate framework for assessing competition between NGS system suppliers.
[Comment: There is no such thing as a "sequencing budget", just overall budgets, a portion of which gets directed towards buying sequencing platforms and reagents. If Illumina had only ever been able to compete for researchers' "sequencing budgets", their revenues today would be very small indeed. Instead, by improving their sequencing platforms, they were able to convince researchers to spend more and more of their research budgets on NGS (and less on Sanger sequencing, PCR, microarrays, etc)]

8.43 We consider that switching, which the Parties characterise as migration, represents competition even if the switching was to some extent inevitable eventually (which cannot be assumed). While the Parties' submission that some customers are switching from short read to long read for uses has been corroborated by customers,420 the available evidence does not show that this switching is necessarily one way.
[Comment: I have never encountered a customer who switched from long reads to short reads for the same project. It also appears that you haven't run across customers who have switched from long to short reads. The only sensible conclusion is that so far the switching is one way.]

8.45 Relatedly, we note that the Parties acknowledge that customers may be using "short read systems for native long read use cases" in limited instances and "will transition such use cases to native long read systems in the short- to medium-term". We would argue that the suggestion that customers may be using the incorrect technology in the short to medium term appears to contradict the Parties' submission that, depending on what a customer is doing, either a short read or a long read instrument will clearly be more appropriate for their needs.
[Comment: I don't think this is a contradiction. There are applications where long reads may be clearly more appropriate, but simply too expensive or low throughput to be practical. These projects would migrate (and have done so already) as the long read platforms improve. For example, a project consisting of a single de novo genome (or even a handful of de novo genomes) would be most appropriately run on a PacBio platform. And, as the project is small, it would be practical as well. However, a project with 100,000 genomes, while it would certainly benefit from being run on a PacBio platform, would be impractical due to the higher costs and dramatically lower throughputs of that platform compared with Illumina's short read platforms.]

8.113 We consider that the Parties' finding that ONT exerts a competitive constraint on PacBio is consistent with other evidence sources (see for example,
PacBio's internal documents and evidence from customers). However, we can place only limited weight on the Parties' analysis, for the following reasons:
(a) Notwithstanding any critique of the econometric approach, the Parties' analysis does not demonstrate that PacBio sales would predominantly divert to ONT if PacBio exits the market in the UK. This is because no other competitors are included in the analysis (meaning it doesn't provide evidence that ONT is PacBio's closest competitor in China), and the analysis looks at the effect of ONT's entry into China504 meaning, even if it did provide evidence that ONT is PacBio's closest competitor in China, this could not be generalised to the UK.
[Comment: "No other competitors are included" because there are no other competitors to include. ONT and PacBio are each other's closest (and essentially only) competitor in every geographic market.]

The specification does not control for differences between countries which may confound the analysis. Specifically, customers in a particular country may be relatively price insensitive, because their research is better funded, but there also may be a greater number of them for the same reason. We would therefore give more weight to countries with a greater number of customers.
[Comment: This supposition doesn't seem to conform to reality. The US is almost certainly the best funded country for scientific research and the consumers are most definitely price sensitive - hence the massive growth of the NGS market as prices have dropped.]

The specification does not control for differences in customer characteristics, which may confound the analysis. Specifically, customers of a particular type may pay relatively high prices, and customers of this type may be relatively common in China, but ONT may have entered into China for this reason.
[Comment: China most definitely is NOT known for having customers who pay relatively high prices. They are extremely price sensitive.]

(iii) The specification does not control for time-specific effects. China may be growing at a relatively high rate, leading to prices also increasing at a relatively high rate, but ONT may have entered due to the high rate of economic growth.
[Comment: This is an extremely confusing statement. You appear to be stating that growing markets cause prices to increase. I've never heard of any markets which behave in this way. Certainly for the NGS market decreasing prices have lead to a growing market. Conversely, the growing NGS market most certainly has NOT caused increasing prices.]

8.116 Our provisional conclusion on this analysis is that because it is necessarily based on historical data, it therefore does not capture the future competitive constraints different suppliers will exert on each other. This is particularly problematic given the dynamic nature of this market and the recent launch of Sequel II. This launch took place in the second quarter of 2019, but the analysis covers from the first quarter of 2013 to the second quarter of 2019, meaning it will not capture any effect Sequel II has had on the market. For these reasons we place very limited weight on the analysis.
[Comment: This suggests that it would that it would have been impossible to submit any acceptable analysis and an almost willful bias against the parties.]

8.162 In our view, based on the evidence we have seen in Illumina's internal documents, Illumina saw an improvement in PacBio's performance during 2018 in relation to its accuracy (as a result of its CCS technology).

[Comment: CSS reads give higher accuracy but with the direct trade off in read length and, therefore, cost; i.e., the reads improve in quality, but the length shortens dramatically and the cost per base increases dramatically - approximately 10 fold]

8.269
(b) We place substantial weight on customer evidence. This is particularly in relation to technical questions that customers (as scientific researchers) are well placed to answer, such as on how they currently make purchasing decisions. However, we place limited weight on customers' overall views of the Proposed Merger as these reflect customers' perspectives on the immediate impact of the Proposed Merger – principally the improvements they consider will result in the short term from Illumina's ability to commercialise and fund the development of PacBio's technology. They take no, or limited account, of the broader impact of the Proposed Merger on competition, R&D and future entry, in a highly dynamic market over the short, medium and long term.
[Comment: This complete dismissal of customers' ability to estimate the impact the merger will have on them on is insulting.]

8.292 In relation to technological convergence, in our view:
(a) While some elements of technology may be outside of PacBio's control (eg data processing and CMOS), historically this has not constrained PacBio development and PacBio has provided no evidence to show why further incremental technological developments in this area will now necessarily be limited at this point in time; and
(b) [Comment: ]796 [Comment: ]. This seems in our view to indicate that any technological limitations will not impact PacBio's trajectory for at least the next few years ([Comment: ]).
[Comment: Has PacBio provided any roadmap, publicly or internally, that suggests a continued increase in throughput/reduction in cost for their platform? I've seen nothing publicly and I didn't see a reference to any such internal document in this provisional assessment. If not, then the CMA view seems indefensible.]

8.295 The view that Illumina and PacBio would compete more closely in future was largely corroborated by evidence from customers and competitors. Almost all customers said that long read technologies will be more prevalent in the future, and some customers made comments stating that this is likely to be at the expense of short read technologies, while all competitors noted that the importance of long read sequencing and its substitutability with short read sequencing is likely to increase going forward.
[Comment: Previously (8.269) you've stated that customers couldn't be trusted to understand the long term implications of a merger, yet here you are explicitly trusting their ability to predict the market well into the future. This gives the appearance of cherry picking evidence to support a predetermined conclusion. Additionally, claims of "long reads taking over" doesn't necessarily mean PacBio taking over. ONT is the company making much bolder claims about future improvements and its ability to compete directly with ILMN.]

8.328 Based on the evidence examined, we provisionally consider that the level of competitive constraint exercised by the Parties' competitors, ie ONT, BGI, Thermo Fisher and QIAGEN is currently fairly limited or focused on particular niches, and is not expected to increase significantly in the foreseeable future such that these rivals are not likely to sufficiently constrain the Merged Entity.
Provisional conclusion
8.329 The market for NGS systems is highly concentrated. Illumina possesses a substantial degree of market power with approximately 80% of the worldwide NGS systems market and 90% share in the UK. Given the strength of Illumina's market position, the removal of a competitor, even one with currently limited market share like PacBio, would result in a significant reduction of competition.

[Comment: It seems like you're trying to have it both ways - all of these various companies together don't offer enough competition to significantly constrain ILMN, but the loss of one of them is too much lost competition. If the point is that PacBio would offer FUTURE competition, you're completing discounting the future competition from ONT and BGI without supplying any convincing evidence as to why this would be the case.]

8.332 Recent developments of the PacBio system (including the launch of Sequel II) have resulted in customers being increasingly able and willing to move a portion of their workflow and budgets from Illumina's to PacBio's technology, and the evidence suggests that this places important competitive pressure on Illumina. Currently the Parties compete for sales in relation to some types of projects and to overall purchasing decisions. It is likely that this competition will intensify in the future and there is strong evidence from the Parties' internal documents that the Parties also consider this to be true.
[Comment: PACB's financial performance post-Sequel II launch doesn't suggest that a large scale switchover from short reads to long reads is imminent.]

9.46 We also have evidence indicating behaviours which are consistent with Illumina exercising its market power. In particular:
(a) Requiring minimum purchases of 10 instruments and including restrictive terms on the applications they can be used for.883 Illumina submitted that less restrictive versions of these instruments were available,884 but we consider that this does not show that these represented an equivalent, contemporaneous alternative.
[Comment: So you're saying the HiSeq X and the HiSeq 4000 were not "equivalent, contemporaneous alternatives", but that all of Illumina's sequencing platforms and PacBio's Sequel are interchangeable (or will be in the near future)? You appear to be applying radically different standards to these two situations. The HiSeq X and HiSeq 4000 are very similar platforms and are very close alternatives. The same cannot be said for PacBio's Sequel II and ANY Illumina platform.]

9.109
(a) There is no counterfactual in which to determine the level of rivalry which would have existed if Solexa had remained independent and had continued to compete with Illumina. As a result, we cannot determine the extent to which any claimed efficiencies were specific to the Solexa merger;
[Comment: Isn't that the definition of a "counterfactual"? By this logic, how could anyone ever prove the point as they can't perform the acquisition AND the counterfactual of not performing the acquisition?]

(b) At the time of the Solexa acquisition, Illumina did not have a viable competing NGS technology. Therefore, the Solexa acquisition is fundamentally different from the Proposed Merger.
[Comment: But they did have a microarray platform that was essentially their only revenue generating platform. This sounds like a direct comparison to the current situation. Did they stop developing their microarray platform and stop releasing reagents for it? Did they introduce competition-damaging bundles of microarray and sequencing platforms? These questions should be answered before you come to your final conclusion as it is a direct parallel to the current situation, even to the point that microarrays and sequencing platforms can both technically be used for the same applications, but generally aren't as researchers have clear reasons to pick one over the other in specific situations. Given that both their microarray and sequencing platforms are STILL being developed and supported, it strongly suggests that Illumina has a history of keeping technology platforms as long as they are relevant and desired by the market and NOT having a history of applying onerous bundling restrictions.]