
Anticipated acquisition by Carl Zeiss Jena GmbH of the microscopy business of Bio-Rad Laboratories Inc

The OFT's decision on reference under section 33 given on 30 December 2003

PARTIES

1. **Carl Zeiss Group GmbH (CZ Group)** is active in the fields of optics, precision engineering and electronic visualisation. It has six operating divisions: consumer optics (camera lenses, binoculars, eyeglass lenses and frames); medical systems (surgical instruments/microscopes); microscopy (microscopes including laser scanning and 3D); opto-electronic systems (equipment for laboratories, defence optics, telescopes); semiconductor technology; and industrial metrology. In the year to 30 September 2003 CZ Group had total worldwide turnover of € 2,029 million. In the preceding year its microscopy division sales totalled [] (see note 1), including [] (see note 1) for advanced imaging microscopes. Carl Zeiss Jena GmbH, which carries on the microscopy business, is a wholly owned subsidiary of CZ the Group.
2. **Bio-Rad Laboratories Inc (Bio-Rad)** is a US company involved in the manufacture and distribution of life science research products and clinical diagnostics, and analytical instruments. Bio-Rad had total sales of US\$ 892.7 million in 2002. Its Cell Science Division develops and sells advanced 3D microscopes.

TRANSACTION

3. CZ proposes to buy the advanced microscopes business which forms part of the Cell Sciences Division of Bio-Rad, including the assets of its UK subsidiary Bio-Rad Microscience Ltd (the business). The business is concerned with the sale, maintenance and servicing of advanced 3D microscopes. Bio-Rad's Cell Science Division had total sales of [] (see note 1) in 2002 [] (see note 1) – with UK sales of [] (see note 1) in 2001, and estimated sales of [] (see note 1) in 2002. CZ's sales in the UK are approximately [] (see note 1).
4. The merger has been notified and received competition clearance in Germany.
5. OFT has been informed by CZ that Bio-Rad has decided to sell its microscopy business – [] (see note 1) and forms only a small part of its overall sales. [] (see note 1). [] (see note 1) an outstanding dispute over patent rights held by Bio-Rad for femto-second technology used in multi-photon confocal laser scanning microscope systems (CSLM) and to obtain certain specialist know-how in the field

of microscopy. Bio-Rad introduced multi-photon CSLM in 1996. [] (see note 1). Bio-Rad was subsequently granted a European patent (covering the UK) in September 1998, which was challenged by CZ and Leica, revoked, and then reinstated on appeal in November 2002 by the European Patent Office. The parties have been in [] (see note 1) negotiation about the acquisition of the Bio-Rad business, since before November 2002. Because of this situation, the pending US and other legal action between Bio-Rad and CZ has been suspended.

6. Details of the merger, in the form of a complete submission, were received in OFT on 14 October 2003. The 40 day administrative deadline is 31 December 2003 following certain delays in receipt of information.

JURISDICTION

7. As a result of this transaction arrangements are in progress or in contemplation which if carried into effect will result in the creation of a relevant merger situation under sections 33(1)(a) and 23 of the Enterprise Act 2002 (the Act) whereby CZ and the Bio-Rad business will cease to be distinct. The parties overlap in the supply of advanced 3D microscopes and the share of supply test in section 23 of the Act is met in respect of the supply of both single photon and multi-photon confocal laser scanning microscopes (CLSM). A relevant merger situation is therefore likely to be created.

RELEVANT MARKET

Product market

8. There are three broad areas of microscopy:
 - Scanning probe microscopy which magnifies surface textures at an atomic level;
 - Light microscopy which magnifies images from light particles; and
 - Electron microscopy which magnifies from bombardment with electrons.
9. CZ recognises that significant differences exist between these three different types, such that they are not substitutes. This is supported by third parties' views. As a result, OFT's analysis concentrates only on light microscopy where the activities of CZ and Bio-Rad overlap in the supply of single photon and multi-photon microscopes.
10. Light microscopy can be split broadly between wide-field microscopy (traditional microscopes) and advanced (3D) microscopy where a 3D computer image is produced. CZ believes a distinction can be drawn between these two techniques.
11. Several techniques exist in advanced microscopy which can be broadly split between optical sectioning (where a 3D image is formed from light particles) and non-optical sectioning (where the 3D image is reconstructed from a computer model of images). The parties overlap only in CLSM, an optical sectioning technique used to magnify samples, which can be living tissues or other materials. The depth of image which is constructed is dependent on the specifications and type of microscopy used - multi-photon CLSM allows a greater depth of image

compared to single photon CLSM. There are two types of multi-photon technology: femto-second and pico-second. CZ argues that the relevant market includes all types of 3D advanced microscopes. This is because different technologies may be better suited to particular research applications and that an effective chain of substitution is present such that a competitive constraint applies across this sector.

12. Customers of advanced microscopes are primarily universities and research institutes which account for over 80 per cent of the parties' sales, followed by customers in the healthcare sector and industry. The customer base can be broadly split between those examining materials (non-organic specimens) and organic specimens. Customers are typically specialist scientists who are highly knowledgeable about the specifications of products purchased. Customers also purchase maintenance and installation services and third parties have confirmed this is an important consideration at the point of purchase. As a consequence, it would not appear appropriate to consider competition to supply maintenance and repair services separately from competition in the primary product. Sales of single and multi-photon CLSM in the UK are estimated at approximately £14 million and £3 million respectively.
13. Third parties did not generally consider non-optical advanced techniques to be substitutable with optical techniques, and within CLSM single photon and multi-photon were not considered as substitutes. This is further supported by the difference in price between single and multi-photon, the latter being twice as expensive. There is likely to be some blurring between the two products since high-tech single photon CLSM can be upgraded to multi-photon. (This however requires the purchase of a second laser at a cost of euro 150,000.)
14. Given the views of third parties, the appropriate frame of reference for examining this merger appears to be no wider than CLSM and this may be further delineated between single and multi-photon CLSM.
15. As described in more detail below, CLSM appears to be a sector characterised by high levels of innovation. It would therefore seem appropriate to consider the effects of the merger on competition in innovation in this industry separately from questions of competition in the supply of CLSM.

Geographic market

16. CZ considers that the relevant frame of reference for analysing this merger is worldwide, with each of the US and Japan as important sales regions. The products are developed for sale globally and are of very high value, suggesting transport costs are likely to be a modest factor. The scientists or technicians making the purchasing decision are also likely to be part of a global research community which readily exchanges information.
17. An important part of the purchase of advanced (3D) microscopes is on-site servicing and maintenance since these microscopes utilise lasers and are highly technical in nature. Third parties have pointed to the importance of aligning the lasers involved in single and multi-photon microscope systems. This expertise is

not held by customers, who are reliant on the supplier to provide on-site engineers to set-up and maintain the system. A local presence for suppliers of advanced 3D microscopes is thus required. Both third parties and CZ have emphasised the importance of highly trained sales and support staff. This analysis suggests that the likely geographic area for considering this merger is the UK due to the importance of locally based support and sales staff.

18. However, important aspects of competition are likely to take place on a global basis, in particular the competitive pressure on longer term product innovation and development. Such aspects of rivalry are almost certainly conducted on a basis wider than merely the UK.
19. The above information suggests that the appropriate geographic frame of reference is the UK, as regards the actual supply and installation of advanced 3D microscopes, and is likely to be worldwide in respect of innovation and development. Both CZ and Bio-Rad are important players in these two areas.

HORIZONTAL ISSUES

Shares of supply

20. The parties are leading suppliers of single and multi-photon microscopes utilising femto second technology, where Bio-Rad is the holder of an exclusive worldwide patent licence¹. The other principal competitor is Leica, which supplies microscopes based on its patented pico-second technology.
21. Information received from third parties suggests that the differences between single and multi-photon CSLM mean they are not regarded as economic substitutes. On this basis, estimated shares of supply in the UK of single photon microscopes would be CZ 30-40 per cent per cent², Bio-Rad 0-10 per cent, and Leica 30-40 per cent (see note 2) by value (volume shares are not dissimilar). Other suppliers identified by UK customers were Olympus and Nikon. Perkin Elmer is a further supplier. This suggests the merger would result in a reduction in the number of main providers from six to five.
22. In multi-photon microscopes, the shares of supply in the UK are CZ 20-30 per cent per cent, Bio-Rad 15-25 per cent and Leica 20-30 per cent (see note 2). Third parties have suggested that these are the only three credible bidders for the supply of this type of microscope. The merger would thus result in a reduction from three to two in the principal suppliers. Given that this is a bidding market, share of supply data is not necessarily a key indicator of market power; of likely greater importance is the number of credible bidders. This is particularly true in what appears to be a dynamic high technology, innovation led industry, where the introduction of a new product can quickly change shares of supply. Consequently

¹ Femto-second technology was developed by Cornell University in the US. Cornell granted an exclusive worldwide licence to Bio-Rad to use this technology.

² The shares are based on data provided by CZ for 3 years between 2000 to 2002 and have been averaged to taken account of fluctuations in what is essentially a bidding market.

a static view of current suppliers and their shares of supply may not be appropriate. Competition appears to occur both *in* and *for* the market.

23. Evidence provided to OFT suggests that CZ and Bio-Rad are currently close competitors in the supply of single and multi-photon CLSM in the UK and on a worldwide basis. Evidence available suggests that the reduction in the number of suppliers, particularly in multi-photon CSLM, would significantly alter UK bidding dynamics (from a three- to two-way competitive interaction) which appears likely to reduce competition and alter the incentives of the remaining companies, CZ and Leica, to compete for multi-photon business. More suppliers appear to remain in single photon CSLM.
24. Furthermore, competition between suppliers of CLSM appears to be primarily innovation led. In particular, CZ, Bio-Rad and Leica could be described as innovation based competitors. As indicated above, the merger can be characterised as a reduction from three to two suppliers of multi-photon CLSM. The evidence available suggests that competition between CZ and Bio-Rad has been an important driver of innovation in this sector. Although Leica would remain an important centre of innovation, the loss of Bio-Rad as an independent innovator is expected to result in less innovation than would have prevailed, absent the merger.
25. In contrast, CZ argues that the merger will enhance rivalry through creating a more effective competitor to Leica, and in particular, the removal of the patent dispute associated with CZ's use of femto-second technology will [] (see note 1). As a result this will encourage Leica to invest in further innovations based on their rival pico-second technology. [] (see note 1)
26. Both characterisations of the effects of the merger set out above appear credible and this is reflected in the mixed views received from third parties.

Barriers to entry and expansion

27. Evidence suggests that the existence of patent rights for femto-second and pico-second technology have to date been the only successful technologies capable of providing multi-photon CLSM. [] (see note 1) The ability to produce these microscopes, which are technically complex, requires significant annual expenditure on research and development. This suggests that barriers to entry are high and that the possibility of new entry in the near future is unlikely.

Buyer power

28. Information provided to the OFT indicates that although some customers are technically well informed, the customer base is very fragmented and such purchases are undertaken on a sporadic basis. While some customers go to lengthy comparisons, including installing equipment on site to evaluate it, and conducting tenders, customers do not appear likely to hold any degree of countervailing buyer power. Consequently, this does not appear likely to act as a constraint on the parties post-merger.

Assessing the correct counterfactual

29. There are two important issues for consideration in this case: whether the merger will lessen or enhance competition, and assessing the correct counterfactual. In most cases, the appropriate counterfactual will be the prevailing conditions of competition. This approach would suggest that the merger will lead to a reduction in the number of suppliers from three to two, giving rise to potential competition concerns.
30. [] (see note 1).
31. [] proposition [] (see note 1). However, OFT does not consider that [] (see note 1) has provided sufficient evidence to support the conclusion that [] (see note 1).
32. [] (see note 1).

VERTICAL ISSUES

33. No significant vertical issues appear to be raised by this transaction.

THIRD PARTY VIEWS

34. Customers and competitors were contacted in the usual way. Their views were mixed. Several customers expressed some degree of concern, primarily regarding the reduction in number of credible suppliers, whilst others considered the merger could result in positive benefits through combining the best features of the companies' microscopes.
35. Most of the competitors contacted raised concerns and considered that the merger would strengthen CZ, particularly in the area of multi-photon supplies. Concerns were also raised about the possibility of the merged business seeking to leverage power from the supply of multi-photon microscopes to single photon by precluding other suppliers from being able to upgrade single photon by denying access to femto-second technology.

ASSESSMENT

36. CZ and Bio-Rad are leading suppliers of single and multi-photon CLSM in the UK and worldwide, and will hold a combined share of 35-45 per cent (see note 2) in single and 40-50 per cent (see note 2) in multi-photon CLSM in the UK, with a similar presence worldwide. In particular the merger would result in the reduction in suppliers from three to two in multi-photon CLSM and consequently significantly reduce customer choice in the supply of such equipment. Evidence provided to the OFT does not suggest that countervailing buyer power to offset the increase in concentration is present, and as well as high barriers to entry, is unlikely to act as an effective constraint post-merger.
37. CZ has argued that the acquisition of the Bio-Rad business will be pro-competitive since it would strengthen CZ as a direct competitor to Leica, which is of similar size to CZ. CZ contends that Bio-Rad is not currently a strong competitive

constraint, and a stronger CZ post-merger would be preferable [] (see note 1). A merger with Bio-Rad could thus increase rivalry between CZ and Leica and benefit innovation, particularly as both companies are recognised as leading innovative companies in this area. It would also serve to resolve the legal dispute with Bio-Rad, [] (see note 1).

38. The OFT considers CZ's argument plausible, in particular as it is supported by some customers. The weight of evidence, however, does not permit the conclusion that this is the likely outcome and that anti-competitive effects either will not result or will be outweighed by customer benefits. Similarly, the weight of evidence does not allow the OFT to conclude with sufficient certainty that [] (see note 1). Consequently, the OFT believes that there is a significant prospect that the merger would substantially lessen competition in the UK. That is a sufficient condition for OFT to refer the merger to the Competition Commission. It has not been necessary therefore, in this case, to assess the merger further in relation to the interpretation of the test for reference given in the recent judgment of the Competition Appeals Tribunal in *IBA Health v OFT* [2003] CAT 27.

UNDERTAKINGS IN LIEU OF REFERENCE

39. Where the duty to make a reference under section 33(1) of the Act is met, pursuant to section 73(2) of the Act the OFT may, instead of making such a reference, accept undertakings for the purposes of remedying, mitigating or preventing the substantial lessening of competition concerned or any adverse effect which may be expected to result from it. In considering whether to accept such undertakings, the OFT is, in particular to have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the substantial lessening of competition and adverse effects resulting from it pursuant to section 73(3) of the Act. In this case, CZ was not prepared to offer any undertakings in lieu of reference.

DECISION

40. This merger will therefore **be referred** to the Competition Commission under section 33(1) of the Act.

NOTES

1. Text deleted at the request of the parties
2. Actual figures replaced by a range at the request of the parties