For the purpose of answering this question, it is necessary to distinguish entry that \textit{deters} anti-competitive conduct from entry that \textit{counteracts} such conduct.

**Entry That Deters Anti-Competitive Conduct:** If the prospect of entry outside the two-year time frame would fully and reliably \textit{deter} any anti-competitive conduct, even during the two-year time frame, such entry certainly should be included in the analysis of competitive effects, presumably then leading to a conclusion that the merger poses no danger to competition. This might occur, for example, if entry were certain to occur in response to the anti-competitive conduct and if the profits earned from the anti-competitive conduct prior to entry were smaller (in expected present discounted value) than the profits lost due to the subsequent entry. Presumably, this fact pattern is more likely, the larger is the scale of entry, the sooner the entry would occur, and the longer-lived are the industry-specific investments associated with the entry. One reason to place less weight on entry that takes longer to accomplish is that such entry is less likely in fact to deter anti-competitive conduct. But there is nothing magical about the two-year time horizon in this calculus.

**Entry That Counteracts Anti-Competitive Conduct:** A rather different logic applies when considering entry that would \textit{counteract} anti-competitive conduct. As emphasized in the Guidelines, such entry must be timely, likely, and sufficient. For the purposes of answering the Commission’s question, I will assume that the entry in question is likely and sufficient. Therefore, we can focus on what constitutes “timeliness.” To pose the question crisply, suppose that sufficient entry would occur for sure precisely \(N\) months after the merger is consummated, and suppose that this entry would instantly counteract the anti-competitive effects of the merger. Therefore, the merger would lead to anti-competitive effects, and consumer harm, for \(N\) months, after which its effects would be neutralized. Under these circumstances, I can see no principled basis for simply ignoring those \(N\) months of consumer harm. Rather, I interpret the two-year time horizon for entry under the Guidelines to be a compromise: entry that is likely and sufficient and takes place in less than two years greatly limits any consumer harm, and as a policy matter (i.e., looking across mergers as a whole) such harm is likely to be offset by the various merger synergies that are difficult to demonstrate or measure and thus as a practical matter play little role in the antitrust analysis. So, I do not agree that enhanced market power resulting from a horizontal merger that lasts less than two years (say) is of no antitrust concern. Rather, I would say that enhanced market power due to a horizontal merger that is fleeting is much more likely to be offset by (difficult to prove) merger synergies than is more durable market power. In principle, this balancing would vary from one type of industry to another. For example, long-lived synergies might be more important in a growing market, suggesting a willingness to tolerate more short-term consumer in order to achieve them through merger. However, future benefits to consumers based on such synergies may need to be heavily discounted relative to immediate consumer harm in a dynamic industry subject to the arrival of a disruptive technology.

3. **Should antitrust law be concerned with “innovation markets”? If so, how should antitrust enforcers analyze innovation markets? How often are “innovation markets” analyzed in antitrust enforcement?**

I believe there is a consensus that antitrust law should be (and is) very much be concerned about \textit{innovation competition}, i.e., competition to engage in research and development directed towards
new or improved goods or processes. The classic instances of innovation competition arise when two or more firms race to obtain a patent or to introduce new and improved products into the marketplace. The role of competition in spurring innovation is especially strong in markets with significant first-mover advantages.

Therefore, I interpret the Commission to be asking about the proper role of the “innovation market” construct, which is controversial, in antitrust analysis designed to protect and promote innovation competition, a mission that I believe is not controversial.

The DOJ/FTC “Antitrust Guidelines for the Licensing of Intellectual Property” at §3.2.3, state: “An innovation market consists of the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development.”

Taken at face value, this definition is peculiar: normally a “market” consists of a set of buyers, a set of sellers, and some goods or services that the buyers purchase from the sellers. In contrast, “innovation markets” are defined in terms of certain activities (research and development efforts) that are performed by certain organizations and involve no market transactions. Indeed, if the fruits of the R&D are licensed, i.e., if there is a market transaction associated with the relevant R&D, the “innovation market” concept does not apply. Instead, the applicable concept is a “technology market.” As stated in §3.2.2 of the IP Guidelines: “Technology markets consist of the intellectual property that is licensed (the ‘licensed technology’) and its close substitutes.”

The IP Guidelines motivate the “innovation market” construct by stating, at §3.2.3: “A licensing arrangement may have competitive effects on innovation that cannot be adequately addressed through the analysis of goods or technology markets. For example, the arrangement may affect the development of goods that do not yet exist.” Concerns that licensing agreements or mergers will retard innovation and thus adversely affect competition in product markets that do not yet exist have arisen most frequently in the pharmaceutical industry, where companies typically engage in a long development process to obtain FDA approval for new drugs. In principle, however, licensing agreements and mergers can affect future product markets in many industries. For example, a merger between two defense contractors with overlapping capabilities can adversely affect future competition for weapons systems that have not yet even been designed.

For expositional purposes, the remainder of my discussion of innovation markets will focus on horizontal mergers between firms pursuing R&D programs that might result in competing products in the future.

As best I can determine, as applied to mergers, the “innovation market” construct is primarily a way of evaluating potential future product-market competition by looking at current R&D efforts rather than at the future product-market competition itself. In principle, this is a useful and sensible approach: evidence about recent and planned R&D activities is likely to be more concrete and complete than evidence about future competition in a the market for a product that does not yet exist. So long as the analysis is rooted in reasonably foreseeable impacts on future product-market competition, this approach seems both justified and useful.

Still, there are some rather tricky points that frequently arise in conducting this type of future-looking analysis. I now comment on several of these points.
Identifying Innovation Rivals: Identifying today’s innovation rivals, and tomorrow’s product-market rivals, may be difficult. In a normal merger analysis, important rivals typically will be making significant sales to customers and thus will be easy to identify. When current rivalry is at the innovation stage, it may be much more difficult to identify the firms that are engaging in relevant R&D today and/or likely to be competitors in the relevant product market tomorrow. Presumably it is for this reason that the IP Guidelines, at §3.2.3, state: “The Agencies will delineate an innovation market only when the capabilities to engage in the relevant research and development can be associated with specialized assets or characteristics of specific firms.” It remains unclear how often this requirement is met outside the specific institutional setting of the FDA approval process.

Uncertainties About Research Outcomes: The effect on actual product-market competition of a merger of two firms who are innovation rivals is inevitably somewhat uncertain and delayed. Such effects only arise in the future, when their innovative efforts lead to actual goods or services that customers might buy. And such effects will not arise unless at least one of the firms is in fact able to bring such products to market. For early-stage or highly risky innovation, some discounting of product-market effects is appropriate.

However, these observations do not imply that antitrust concerns in such cases lack merit. To illustrate, suppose that Firm A has an 80% chance of success and Firm B has a 40% chance of success (and one firm’s success is independent of the other’s). Then there is a 32% chance (80% times 40%) that both firms will succeed. I see no reason why antitrust law should be indifferent to consumer harm just because it will only occur with a 32% probability. Furthermore, competition between the two firms may cause both of them to press harder to be the first to succeed. If this is true, then competition also benefits consumers by speeding up the introduction of new products. The probability that at least one of the firms will succeed is 88% (the 80% chance that Firm A will succeed plus a 40% that Firm B will succeed in the 20% of the time that Firm A fails), so consumers will benefit from competition not only in the 32% of the time that both firms would succeed but also in the 56% of the time (80% times 60% that Firm A succeeds and Firm B fails, plus 20% times 40% that Firm A fails and Firm B succeeds) that one of the firms succeeds and the other fails to introduce a product into the market.

As a general rule of thumb, if the merging firms are expending significant resources on their R&D programs, they must believe that there are significant commercial returns, even recognizing that success is uncertain, so the potential impact on consumers also can be significant. In other words, if one is going to establish priorities for antitrust enforcement in this area, it makes more sense to base these priorities on the magnitude of the firms’ R&D programs than on an assessment of the probability that those programs will bear fruit in terms of commercial products.

Presumption of Harm to Innovation Competition: In a typical horizontal merger case, the government can build a prima facie case based on market concentration. This approach is based in part on theoretical and empirical evidence that substantial increases in concentration caused by horizontal mergers tend to lead to diminished pricing competition and consumer harm. However, there is no consensus among industrial
organization economists about the general relationship between concentration and innovation competition. Still, I believe that a presumption of harm to innovation competition is warranted at the very least in situations where the merger involves the only two firms who are pursuing research that will allow them to enter a future product market. (Of course, in any given case, a fact-based inquiry which also accounts for merger synergies is required. My remark here only addresses the basis for a rebuttable presumption of harm to competition based on a merger to monopoly.)

For example, in the case of Genzyme Corporation’s acquisition of Novazyme Pharmaceuticals, it appears that Genzyme and Novazyme were the only two firms pursuing drugs to treat Pompe disease. Therefore, a rebuttable presumption that Genzyme’s acquisition of Novazyme diminished Genzyme’s incentives to bring those drugs to market appears to have been warranted. Chairman Muris did not apply such a presumption. He observed that Genzyme would still have some incentive to bring Novazyme’s treatment to the market, even if its own treatment were already available, because Novazyme’s treatment promised to be superior in several respects. However, this observation does not rebut the key economic point that Genzyme’s incentives would be diminished because the Novazyme product would cannibalize revenues from Genzyme’s own product.

Going beyond mergers to monopoly, how much weaker should the presumption of harm to competition based on an increase in concentration be in cases involving innovation competition rather than traditional pricing competition? At the risk of over-simplifying a large and complex literature, one key question that takes on special importance in innovation cases (as opposed to more traditional cases based on pricing competition) is that of appropriability: if one firm successfully innovates, to what extent will that firm be able to appropriate the benefits of its innovation? If appropriability is high, as it may be with strong patent rights or first-mover advantages, then the normal presumption retains merit: eliminating one of several strong firm may well retard innovation or reduce the diversity of research paths that are explored, to the detriment of consumers. However, if appropriability is low, e.g., due to weak intellectual property rights and significant spillovers to rival firms who engage in imitation, then increased concentration can improve appropriability and promote innovation, weakening the link between concentration and competition.

5. Patent Reform

I am very pleased that the Commission is interested in the operation of the patent system. Much of my recent research involves the intersection of antitrust and patent policy. I urge the Commission to consider the proper antitrust treatment of settlements of patent litigation,

3 See http://www.ftc.gov/opa/2004/01/genzyme.htm. I had no involvement in this case and do not claim familiarity with the facts, beyond those reported in the statements of Chairman Muris and Commissioner Thompson. The statement by Chairman Muris provides a valuable discussion of the use of innovation markets by the FTC.