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Discussion after the Speech of Ms. Veverka

Discussion

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Discussion After the Speech of Ms. Veverka

QUESTION, Professor King: During your speech you stated that in some instances, \$140 million is provided as an outlay for the R&D of some of these drugs, thus establishing what would appear to be somewhat of a long recoupment period. Does the fact that larger companies can afford this luxury limit the activity of smaller companies in this area, and will these high costs eventually eliminate these smaller companies?

ANSWER, Ms. Veverka: No. The \$140 million is looked at from a macro perspective to illustrate what the entire industry may spend to get one new product out. To take an individual successful product all the way through the life cycle would result in a much smaller proportion of the \$140 million. One must also remember that the attrition rate of some smaller companies from the cycle inflates the resulting aggregate outlay because the R&D costs they incurred are still included in the final \$140 million spent even though they may no longer be active in the production of that particular drug. Actually one can take a new product through the full development process for approximately \$40 million.

The fact that taking a new product through the full development stage is so expensive forces companies to be much more careful and thoughtful in the early stages of discussion and planning when deciding what compounds to fully develop. These hurdles have increased greatly when compared to the potential market size of the finished product. Companies often require that a product have \$100 million in sales potential before deciding to pursue it through the development process. Unfortunately, more and more companies are taking the safer route and only choosing to pursue the development of products that will provide the most sales profits. However, I believe that this trend will not be sustainable over the long-term. The industry is heading into a consolidation phase partially because of the economics of health care costs that are beginning to change the external environment, and partially because of the huge buildup in R&D and the sales capacity within the industry itself.

QUESTION, Professor Edwards: How is the early planning with respect to the pricing of pharmaceuticals done, and what are the risks involved in this type of early price-planning? In other words, how do the companies make judgments with respect to the pricing of pharmaceuticals?

ANSWER, Ms. Veverka: Health care costs in the form of economic restraints are influencing the industry. Many companies are working on products that end up costing consumers many times more than similar

working drugs that are priced much lower, thus causing the higher-priced drugs to be market failures. The companies that work on developing these higher-priced, same quality, drugs are working in a fundamentally unsustainable economic area.

When you examine the statistics for the U.S. pharmaceutical industry over the past several years, you can see that the unit growth in the industry has been fairly flat and that it has been mostly a price-driven growth. Although much of that growth is based on new products developed by innovative technology, a lot of the growth is not. It is based on higher prices. Eventually, I believe that a price-regulatory environment will replace the current market environment.

The regulatory market has taken hold dramatically in Japan. In a remarkably short period of time the Japanese pharmaceutical companies have changed their orientation from being predominantly importers of technology from the United States and Europe, which they can exploit on the Japanese market, to being innovators themselves. The innovation was triggered by the steep price cutting imposed by the government. There has been a 40% price reduction over the last eight years. The Japanese are rapidly expanding their own development of pharmaceuticals and are beginning to market them internationally. I think they will play a large role in the pharmaceutical market in the future.

QUESTION, Professor Shanker: The research and development models you have proposed consist mostly of development. Does your model have much room for basic, fundamental research which, absent a goal, may produce some kind of beneficial result?

ANSWER, Ms. Veverka: That is an excellent observation. The information I stressed was predominantly about development. I believe that when looking at the total R&D arena, particularly innovation, a considerable amount of innovation comes from academia. A lot of innovation also comes from new ventures and is eventually funneled to the major corporations who possess the knowledge and resources to truly develop these products. My analysis is skewed towards the perspective of the major corporations who are spending most of the development dollars.

Referring to an earlier discussion about how one continues to stimulate true innovation, there is no clear answer. However, the area of U.S. biotechnology is an excellent example of tremendous innovation. The innovation there is starting to shift to the leading pharmaceutical companies themselves as the technology itself matures. The technology is now being used as a tool for the development of small molecules.

When we conducted an attrition rate analysis of biotech companies about three or four years ago, the attrition rate for biotech companies was much lower than the attrition rate for other pharmaceutical companies. Today the attrition rate is rising dramatically among biotech companies. This will be an issue these companies must address in the future

in order to ascertain their ability and resources to continue to innovate at the scale needed in that particular area.

COMMENT, Dr. Strub: I believe that the R&D policy makers in the United States and Europe must support basic research if we want to be able to innovate thirty years from now. If basic research is not taking place now, and apparently cannot be funded by industry directly, in thirty years we will not have anything to innovate. In the past it was mainly the United States' role to "care" for scientific progress in the last thirty to fifty years. The United States allowed everyone free access to the results. This has changed. Today if you publicize a result, it loses all commercial value. That is a real problem which makes many countries reluctant to support fundamental research.

COMMENT, Ms. Veverka: I believe that much innovation truly belongs in the academic and entrepreneurial environment because that is where the freedom exists to innovate. More and more academic research is being funded by grants from companies because the government is becoming less of a source for funding. From my own observations, companies who have tried to do fundamental research in-house tend to get a poor yield on their research. These companies are better off funding through academic institutions.

From the standpoint of management of the innovation process, strong links with academic partners are required in order to promote the exchange of ideas and direct research toward projects with potential value to the company, ultimately linking the academic knowledge to the commercialization process. However, this will not be enough to support fundamental research.

COMMENT, Dean McNiven: Corporate grants to U.S. universities for R&D in 1986 were approximately 5-6% of the total R&D funds in the entire university system. In Canada the corporate grants were under 3%. Thus a majority of the funding for university research does not come from corporations.

COMMENT, Mr. Bradley: If I'm not mistaken, a good part of the U.S. trade deficit is in fact related to consumer products such as stereos, televisions, cars, household appliances and boutique items. It seems to me that innovation in the market phase for these types of products happens only briefly.

Take for example the Sony *Walkman*. Sony's market research department wanted to persuade the company that the *Walkman* would work. They did not know which version of the *Walkman* would work, so they made thirty versions, ten of which survived, and they gained a share of the market and made money. It seems to me that this type of marketing is not done enough, especially in light of the trade deficit problem. We have to start responding to the need for innovation in consumer goods, and not just in a limited market like pharmaceuticals or industrials.

COMMENT, Ms. Veverka: With reference to the trade deficit and the amount of U.S. innovation that has gone overseas, some nations and industrial groups have succeeded in certain industries by focusing on the development and the commercialization of technology.

There is clearly a need to have a balance between research, development and commercialization. I believe the United States has become much better at recognizing that balance and also at successfully commercializing innovation.

QUESTION, Mr. Mockensturm: Two Soviets told me yesterday that their basic premise was to encourage U.S. companies to utilize Soviet academia and research since they lack manufacturing capabilities. For a relatively small expenditure, a U.S. firm can transfer the intellectual property rights to Soviet technology to the United States. For example, Bausch & Lomb paid \$20,000 for the rights to contact lenses invented in the Soviet Union. Do you believe that taking research overseas and conducting development at home will be widespread in the future?

ANSWER, Ms. Veverka: Those situations are merely companies recognizing and experimenting with the dimensions of research, as opposed to development. We also see more attention being placed on locating research near the center of technology innovation. As one begins to develop technology and move into the commercialization process, there is a different set of dynamics often requiring that development activity be located close to manufacturing and process development or close to market sources.

The whole situation is industry specific and involves several issues. From a research standpoint, where is the actual innovation occurring? From a development standpoint, what are the key elements that need to be managed most carefully to result in success? From a manufacturing standpoint, is having a good yield enough? Is having the right market characteristics to be close to the marketplace enough? The whole situation must be dealt with on an industry-by-industry basis.