

TAX FOUNDATION SEMINAR PROCEEDINGS

Remarks by the Honorable Beryl F. Anthony, Jr.

■
Outlining the Conflicts in R&D Tax Policy

■
**Conflict in R&D Tax Policy and the Need for
Change**

■
Mapping Out Sound R&D Policies for the 1990s

**Hyatt Regency on Capitol
Washington, DC
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FOREWORD

The last half of the 1980s was a great disappointment to Americans who see research and development (R&D) as vital to the nation's economy. Real growth in R&D expenditures only averaged 1.3 percent from 1985 to 1988. They are projected to be even slower from 1988 to 1990, with an 0.9 percent decrease in real growth during 1989, the first such decline in 14 years. This stagnant period contrasts sharply with the first half of the decade when R&D expenditures increased an average of 8.2 percent in constant dollars. The U.S. currently spends substantially less than either West Germany or Japan on non-defense R&D.

What role has tax policy played in this nosedive? What provisions of our tax code provide corporations with positive incentives to invest in research and development? Which provisions of the code inhibit R&D expenditures? Everyone here in Washington seems to agree on the benefits to our economy of more R&D. But despite this unanimity, the U.S. R&D tax credit has been since its inception in 1981 a jumble of short-term extensions and technical changes to its calculation that has not provided substantial incentive for U.S. firms to increase R&D expenditures. On March 22, 1990, the Tax Foundation held a seminar, "R&D Tax Policy: A Study in Conflict - Opportunity for Change" to examine this theme of conflict within the code and propose a variety of possible improvements.

Instrumental in putting together the program were James Q. Riordan, co-chairman of the Tax Foundation, along with Bob Hannon and Glenn White, co-chairmen of the Tax Foundation's Program Committee. The Foundation's special thanks go to Dr. Robert L. Black of Coopers & Lybrand for editing the proceedings and contributing the introduction.

A major accomplishment of the seminar was the lively exchange between the public and private sectors on issues of vital importance to both government and industry. The publication of these proceedings will bring these important viewpoints to a wider audience, promoting understanding of this critical issue.

Wayne Gable
President

INTRODUCTION

Research and development is essential to the growth of the economy and the continued competitiveness of American business. Investment in R&D creates new products and job opportunities. Consequently, technological innovation is a cornerstone for building a better economic future.

Given the integral part R&D plays in our country's economic development, it is surprising how uncertain and inconsistent its treatment in the tax code and by regulations has been during the past decade. The rules governing application of the R&D incentives are quite complex and arguably more burdensome than necessary for an appropriate blend of tax policy and administrative practicality.

Allow me to illustrate this point with an example from my own experience with the taxation of R&D. For somewhat apparent reasons, when viewed from their single perspective, different authoritative bodies, such as regulatory agencies, have created significantly different definitions as to what R&D activities and expenses constitute "research and development" for their purposes. So, for instance, there are GAAP rules for measuring R&D for accounting purposes, government contract accounting rules for eligible R&D on government contracts, specific industry guidelines for R&D in certain industries, and a multiplicity of tax rules.

More specifically, however, once we focus on the tax rules, their construction seems to have been with limited reference to other definitional sources. Moreover, the tax rules rely on different definitions for different statutory applications. For example, the deduction under Section 174 is fairly broad, but the "qualified research" definition for the R&D credit of Section 41 is much more restrictive and only applicable to a subset of expenses. In addition, during the last decade these definitions have been changed both statutorily and by regulation. Imagine then the plight of a manufacturer with some government contracts, for example, who must maintain exhaustive records for distinguishing between the costs on a project-by-project basis that meet the varying definitions: GAAP for financial statements, government contracting regulations for government contracts, Reg. Section 1.174 for R&D deductions, and Section 41 and the regulations thereunder for the R&D credit. Of course, I've not mentioned what is perhaps the most important research numbers for this hypothetical manufacturer: the management reports used to properly administer the research project, which obviously could require an entirely different set of records.

While the objectives of having different definitions may make sense on a separate-purpose basis, the multiple definitions, when applied concurrently to the same projects, only create administrative confusion and inefficiencies. This was one of the themes echoed by several of the speakers. For instance, Edmund K. Harding of Xerox Corporation illustrated how these regulations and the present credit scheme created an accounting nightmare for Xerox, especially during the IRS audit of Xerox's 1983 R&D credit.

This thought-provoking seminar had many excellent speakers, who with their wide-ranging backgrounds offered many excellent ideas for improving R&D tax policy. The two primary sessions of the seminar were chaired by Cyrus J. Halpern, Tax Vice President — Federal & International Taxes for AT&T, and M. D. "Buck" Menssen, Staff Vice President for 3M Corporation, both of whom provided stimulating sessions.

Stuart E. Eizenstat, former Assistant to the President for Domestic Policy and Affairs in the Carter Administration, and John B. Magee of Miller & Chevalier each offered an excellent technical overview of the status of R&D tax incentives and expressed a concern that the Japanese and many European countries are more committed to R&D than the U.S. — a trend that has accelerated over the past decade. Robert N. Mattson of IBM Corporation presented a practical commentary on the

nature and importance of R&D from the business community's perspective.

Even with all the confusion underlying the application of the R&D code provisions, the most critical legislative problem that R&D faces today is the uncertainty surrounding the continued existence of these incentives. The Omnibus Budget Reconciliation Act of 1989 extended the R&D credit through September 1990. Whether or not it will be extended again is certainly not guaranteed. Congressman Beryl F. Anthony, a member of the Ways and Means Committee, and Richard Grafmeyer, minority tax counsel for the U.S. Senate Finance Committee, both discussed the prospects for the credit and other R&D incentives in their presentations.

Awareness of relevant problems is only half the battle. The debate continues as to which proposals would best advance the goal of increased R&D spending. Professor Anthony Billings of Wayne State University suggested that corporate integration may be at least part of the answer. Balanced against the need for incentives are the budget constraints that currently restrict the government's willingness to commit to tax-reduction incentives. Michael J. Graetz, Deputy Assistant Secretary of the Treasury for Tax Policy, discussed this issue at length and reassured those engaged in R&D that the Administration is committed to assisting their efforts.

This Tax Foundation seminar was designed to illuminate the issues that companies face regarding research and development. R&D expenditures are more than corporate operating expenses; they are an investment in future technological advances, in the competitiveness of U.S. industry, and ultimately in society as a whole. As you read through the presentations of these lawyers, scholars, businessmen and government representatives, you may be surprised to learn that a company often reaps little direct or immediate benefit from its R&D spending, and that too frequently there may be no benefit at all. Combined with the fact that the credit percentage has been eroded over the years and the allocation rules require a company to disgorge any benefit it receives from the credit if it conducts any of its R&D overseas, it may seem surprising, from a tax standpoint, that companies commit the level of resources to R&D that they do.

On a personal note, it has been a pleasure editing these proceedings. I was aided by Dina Schapiro and Mary Hansen, Associates at Coopers & Lybrand's National Tax office, to whom I am thankful for their attentiveness and able assistance. In addition, I am grateful to Paul Merski, William Ahern and the rest of the Tax Foundation's staff for attending to the details and making it happen.

Robert L. Black, Ph.D., CPA
National Tax
Coopers & Lybrand
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Robert L. Black is a Director at Coopers & Lybrand's National Tax office in Washington, D.C., where he is responsible for R&D tax consulting and the tax aspects of high-technology businesses. Prior to joining C&L, he was a tax professor at The University of Texas at Austin. He received his Ph.D. in Accounting/Taxation from the University of Minnesota, and is a certified public accountant. Dr. Black is the author of numerous publications on the taxation of R&D and technology, including both of the articles appearing in the *Journal of Taxation* following passage of the 1981 and 1986 tax acts, and the comprehensive analysis of the R&D credit in the 1983 *New York University Institute on Federal Taxation*.

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SEMINAR PARTICIPANTS

The Honorable Beryl F. Anthony has been the Democratic Representative from Arkansas's Fourth District in the United States Congress since 1978. In 1981, during his second term, Congressman Anthony won a seat on the Ways and Means Committee. The Congressman has a keen interest in the Committee's tax treatment of capital gains, and with the development of international trade into the issue of the 1990s, Congressman Anthony will be turning his legislative attention to a 1989 assignment to Ways and Means' Subcommittee on Trade. He is the Chairman of the Democratic Congressional Campaign Committee, and he has formed the Anthony Public Finance Commission, a coalition of mayors, governors, local government officials, and members of the public finance community, who will study how local governments can better finance infrastructure improvements at the local level.

B. Anthony Billings is Associate Professor of Accounting at Wayne State University with his Ph.D. from Texas A&M. Dr. Billings' articles have appeared in journals such as *Accounting Horizons*, *CPA Journal*, *Tax Adviser*, *Taxes*, *Business*, *Journal of Corporate Taxation*, *Journal of Real Estate Taxation*, *Tax Executive*, *Oil and Gas Quarterly*, and *Best Review*. He is the recipient of a grant from the Arthur Young Tax Research Foundation to study international tax problems, and has completed internships with Dow Corning Corporation in Midland, Michigan and with 3M Corporation in St. Paul, Minnesota.

Stuart E. Eizenstat has been a partner in the law firm of Powell, Goldstein, Frazer & Murphy since 1981. During that same period he has been an adjunct lecturer at the JFK School of Government, Harvard University. A graduate of Harvard Law School, Mr. Eizenstat has published articles in numerous public policy and legal periodicals. In 1976 and 1980 he was one of the principal authors of the Democratic Party platform, and from 1977 to

1981, he served President Carter as Assistant to the President for Domestic Affairs and Policy, and Executive Director, Domestic Policy Staff. At the same time he was a member of the Council on Wage and Price Stability, and an ex-officio member of the Economic Policy Group, The White House.

Michael J. Graetz, Deputy Assistant Secretary of the Treasury for Tax Policy, is on leave from his position as Justus S. Hotchkiss Professor of Law at Yale University. He oversees the activities of the Offices of Tax Legislative Counsel, the International Tax Counsel, and the Benefits Tax Counsel. Mr. Graetz has taught law school courses in taxation since 1971 and before joining Yale was a professor of law at the University of Virginia and the University of Southern California law schools. His publications on the subject of Federal taxation include a leading law school text and more than 30 articles on a wide range of tax policy issues in books and scholarly journals. He served previously in the Treasury Department in the Office of Tax Legislative Counsel from 1969 to 1972.

Richard Grafmeyer is currently minority tax counsel for the U.S. Senate Committee on Finance. He is responsible for tax legislation in a variety of subject areas including employee benefits and pensions, child care, individual tax items, savings incentives, and tax exempt organizations. Before joining the Finance Committee, Mr. Grafmeyer was Federal tax manager and tax legislative counsel for MCI Communications Corporation in Washington, DC. Mr. Grafmeyer has an undergraduate degree in accounting from Walsh College in Ohio, a law degree from the University of Akron School of Law, and an LL.M. in taxation from Georgetown University School of Law.

Cyrus J. Halpern is Tax Vice President - Federal & International Taxes for AT&T Corporation. He has been with AT&T since 1967, having held positions as Tax Attorney and Director, Federal & International Taxes. He received

his LL.B. in 1959 and his LL.M. in Tax in 1961, both from New York University Law School. He is a Certified Public Accountant and a Director of the Tax Council. AT&T has been affiliated with the Tax Foundation since 1960.

Edmund K. Harding has since 1979 been Manager, Tax Planning & Litigation, for Xerox Corporation. He received his B.S. in Accounting at the University of Detroit and his J.D. at Wayne State University. Prior to joining Xerox, he worked for General Motors Corporation in Detroit in a variety of tax-related positions. Mr. Harding is a member of the Connecticut and Michigan Bar Associations and numerous tax-related organizations.

John B. Magee is a Member of Miller & Chevalier, Chartered, in Washington, DC. Mr. Magee represents corporate clients and industry trade associations, primarily in the natural resource, chemical, and insurance industries. His responsibilities have included IRS rulings and regulation projects, audit and appeals controversies, Tax Court and refund litigation, and legislation. In the legislative area, he has represented clients before Treasury and Congressional tax staffs on technical and policy matters. Mr. Magee received his J.D. from the University of Washington School of Law in 1972 and his LL.M. in Tax in 1977 from Georgetown University Law Center in Washington, DC.

Robert N. Mattson is currently Assistant Treasurer of IBM Corporation at Armonk, N.Y., and is responsible for all worldwide tax and customs valuation related affairs; all tax returns; negotiations with tax authorities; and analysis of tax effects of contemplated or completed transactions. Previously, he held the positions of director of taxes, corporate tax counsel, and director of tax planning and development. He received a B.S. in Economics from the University of Pennsylvania's Wharton School of Finance, an LL.B. and LL.M. in taxation from New York University School of Law and worked toward a Ph.D. in International Economics at New York University. Mr. Mattson has published tax articles in numerous publications, including articles on research and development.

M.D. (Buck) Menssen is Staff Vice President for 3M Corporation in St. Paul, Minnesota. He has worked for 3M since 1967 and held seven positions with the company during that time. These include serving as Area Controller, Europe from 1981 to 1983 and Sector Controller, Graphic Technologies Sector from 1983 to 1987 before becoming Executive Director, Taxes. He received his B.A. in Accounting in 1959 and his M.B.A. in 1973, both from the University of Minnesota. In 1979 he received a C.M.A. from the Institute of Certified Management Accountants.

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KEYNOTE ADDRESS

The Honorable Beryl F. Anthony, Jr.
United States Representative from Arkansas
Member, Ways and Means Committee

Beryl F. Anthony, Jr., a sixth term congressman from Arkansas and member of the Ways and Means Committee, emphasizes the need for the United States to remain technologically competitive with the rest of the world. He believes the best way to accomplish this is to enact permanent, comprehensive incentives to encourage research and development expenditures. Congressman Anthony notes that the regulations under Code Section 861, governing the allocation and apportionment of expenses between domestic income and foreign income, do not provide sufficient incentives to promote U.S.-based research activity. He indicates that the Ways and Means Committee supports the effort to make the R&D credit permanent.

Congressman Anthony also makes the point that the tax code should not drive the worldwide marketplace. He notes that there should be some parity among tax systems so that products can compete on a level playing field. While the congressman acknowledges federal budget constraints, he says those restrictions should be balanced against the country's need to have stable laws and a permanent national policy regarding R&D.

Before I was introduced, I was talking to John Magee, who has prepared this [outline]. I was very impressed. It looks so good, I will probably steal a copy of it. He said, "Well, Pat is really the one who put it together." So I said, "Pat put it together, but you get to present it." That reminds me of a story I heard once about this particularly cranky rascal, an old United States Senator who used to give his speech writer hell. This Senator was making a commencement speech. He was about three-fourths of the way into the speech, and he was knocking them out. He had them right in the palm of his hand. He flips the page over, and in big, bold letters it says, "You're on your own now, you S.O.B." So, John, I hope you've looked through the pages very closely before you get up here and try to present that detailed package.

I must admit I feel some fear when I am among such knowledgeable presenters and people in the audience. I don't know how many of you know the tax consultant on my personal staff, J. W. Rayder, who represents me on the Ways and Means Committee. When it comes to the politics of it, I think I can handle it, but when it comes to the technical aspects of it, I think he can handle it. Every time someone asks a difficult question, I always tell them my favorite story; so forgive me if you have already heard this.

This college professor is going around making very detailed technical presentations on research and development and how it helps the country's productivity and growth. His chauffeur has heard this speech about a half dozen times, and on their way to the next college, he says, "Professor, I think you're losing

your enthusiasm. Now, I've got that speech memorized, and I believe I could do it with a lot more enthusiasm than you." So the professor says, "All right, just pull over and we'll switch clothes." Sure enough, they switch clothes—the chauffeur's uniform for the professor's business suit. At the next stop, the would-be professor gets up there and just hits a home run. He gives the speech non-stop—doesn't miss a beat—with great enthusiasm. Then comes the time for Q&A. A little fellow in the front row with big, thick glasses looks up and asks him the hardest question that's been asked on the entire tour. He looks at this little fellow and says, "Son, that's such an elementary question, I'll let my chauffeur there in the back answer it." So, don't you dare ask me any hard questions, because J.W. is not here, and I'm afraid we cannot refer them to my chauffeur.

C. Katherine Porter, a long-time friend of mine and my wife had the privilege of watching Sheila go to law school. Sheila is finished now and in her fifth year of practice, but during her first year she did what I guess all freshman law students do. She would call me at the office and start asking me about all of the old, archaic, non-utilized definitions out of Black's Law Dictionary. I finally got exasperated during her third call in one day. I said, "Sheila, I used to be a lawyer, but I'm in a new profession now. I know what the law ought to be." So, I guess I'm here, ladies and gentlemen, to talk to you from that perspective. Probably what I ought to do is take my four-page speech, flip through the pages, just read the final paragraph, then sit down. I think that final paragraph really summarizes how I feel about the topic.

What I want to say is that the current allocation regulations do not provide sufficient incentives for United States-based research activities, and that we must find a permanent solution to this problem. I guess if I could only say one thing, that would be my message.

Taxpayers have had ten years of instability. Temporary rules for allocating R&D expenditures were passed in 1981, 1984, 1985, 1986, and 1988. United States firms need per-

manent rules so they can be certain of the long-term tax ramifications of their R&D expenses. Stable tax laws are needed to encourage the growth of United States research activity, allowing us to maintain our lead in technological development. That, ladies and gentlemen, is where I am coming from.

How did I get there? When I got on the [Ways and Means] Committee in 1981, there was a gentleman from Hawaii, C.F. Trunta, who was the lead sponsor of the research and development issue.

When he became involved in an automobile accident, he called me and asked if I would substitute for him in one of the Oversight Subcommittee hearings because the chairman was taking some pot shots at the R&D tax credit. Trunta alleged that companies like IBM, rather than mom and pop operations, were the ones that utilized it, and it therefore benefitted big companies and not others.

I said I would try to brief myself. So, I read up on it very quickly and went into the hearing. We were able to deflect some adverse criticism that day. Then, I got more interested in that particular technical issue in the tax code, and I began to study it in more detail. I guess I started to realize that if there is any one thing you have to do, it's that we have to treat our research and development as favorably as foreign countries treat their companies. We are the only country in the world that acts like research and development is all done somewhere else. I am personally convinced—and I know you have all made these statements before—that if we don't find a rational, permanent solution to this problem that your companies will take more and more research offshore, and it would be a proper management decision because you can get better treatment under international tax laws.

I am totally convinced that a lot of our future economic prosperity will depend upon how many dollars—both from the federal government and private companies—get invested in research and development.

History is very clear. There are many spin-offs from research and development—

many times accidental, sometimes not discovered at the time—and an enormous amount of future growth and a better way of life are always the result.

You can stack what we are doing in the United States up with any of your foreign competitors, and you can see that we are falling behind. A favorite illustration is to look at what Japan does versus what we do. Many of our foreign competitors are slowly but surely taking away our technological advantage. In 1986, we actually went into a deficit position when it comes to high-tech exports versus imports. This is an indictment in itself, but even knowing the trade numbers, we still can't find a permanent solution to Section 861.

The title of your program is "R&D and Tax Policy: A Study in Conflict—Opportunity for Change." Let me tell you what your problem is, pure and simple. The conflict is not over whether or not people believe in research and development, or over the proper allocation of foreign research versus domestic research. The conflict is between the need to balance the budget and the need to have a permanent, national policy on research and development. I guess that is where I come into play. You can sit and talk about all the technicalities that you want, and you can find all the conflicts in the tax code that you want, but until the wills of the Congress and the Administration combine to put this tax policy on the books permanently, you are always going to have this conflict out there.

I had your coalition come by to see me earlier this year. I told them that I was not really sure I wanted to lead the fight in 1990 for research and development allocation, your Section 861. Why?

I have passed it three times, ladies and gentlemen. I have passed your amendment three times in the Ways and Means Committee. I have passed it three times in the House. Two of those three times, I think, it passed the Senate, but it has been dropped in conference three times in a row. For three years it has been in the President's budget. We have accommodated the President by passing it, but this

industrial policy runs into conflict with budget constraints, because it costs a lot of money as a tax expenditure calculated out over a five-year period of time.

We have turned the corner this year. Chairman Rostenkowski and the staff are saying "enough is enough—let's make it permanent—so we won't have to go through the fight again this year." We will try to get it passed on a permanent basis, and the fight will seem easy. You may think you have won something when it is passed through the House and Senate, but don't take a vacation and think that your part is done. Let me tell you why. You better come circle the conferees and not let them out of the room until they agree to some permanent rational allocation. If you are frustrated with the inability of Congress to find a permanent solution, let me tell you I, too, am frustrated with being asked to do something four years in a row. As far as I, personally, am concerned, this is an indictment of how lackadaisical we are about what is happening in international trade.

I hope your Tax Foundation seminar finds some good arguments to give to Bentsen, Rostenkowski, Brady, Darman, and Bush, and that those arguments sink in. Maybe you can get them to agree that if they really care about it, they will follow through this year and won't come back and talk about another temporary solution to it.

I would say to John and others, "if you find conflicts in the tax code that are working at odds with what we are trying to do, bring them to our attention and I think this is the year to try to do something about it."

It will come about because of another political force that is out there. We had Commissioner Goldberg testify before our Oversight Subcommittee, and I just walked out of that Subcommittee to come here for this presentation. I asked him whether he was allocating any personnel, time, or effort, or had any initiative to make sure that foreign companies with United States subsidiaries are paying their fair taxes, since you are required to pay your fair share of taxes. He said he was, but didn't go

into it in detail, and we are going to follow up on it.

As a result of imbalances in the dollar and our trade deficit, foreign companies come here and can then take advantage of our tax code. In the automobile industry alone, they make \$7.7 billion and only pay tax on \$12 million worth of income. Our domestic companies have to pay 585 percent more tax than they do. There has got to be some type of rational balance in our tax code, vis-a-vis here and other countries, so that everyone is competing as they ought to be: if you have the best product, the marketplace will accept it as such. If you don't have the best product you will come in second or third place.

Basically, I think that is where we are trying to go. We are not trying to say to foreigners "don't invest your money here," because we need that investment. At the same time, John, I hope you can find and make some good recommendations, and that others on the panel can make some recommendations in terms of how we can find a permanent solution to allow us to continue to pursue research and develop-

ment. It will, in the final analysis, change what has occurred over the last ten years. The 1990s has to be the decade of investment in America. If not, then we are on a rocky road with a slippery slope downward.

I thank you for letting me come by and visit with you. You have a great task ahead of you. I guess I will be willing to put on the uniform and go back into the game one more time. But, ladies and gentlemen, if the White House and Congress can't get their acts together this year, maybe we have to consider this the fourth quarter, and the game is about over. Then, maybe you will have to make that final decision about where you are going to play the next game. I hope that we will have a legislative success, and I hope that the proposal I have offered, and the Administration has accepted in its budget, will eventually be adopted, because it is good, sound research and development tax policy. It is good policy for the country in terms of the economics.

Good luck, and you have a big challenge ahead of you.

Q & A

Q: What other incentives is Congress thinking about putting into the tax code besides the traditional tax credit and other rules that already exist? What other bills are out there to further encourage R&D investment?

A: I don't know of any that are being taken seriously by the Ways and Means Committee, other than just your standard research and development extension. The current R&D provision goes through September 30th, as does Section 861. I can't foresee anything other than those two items being implemented through the tax and budget compromise this year. With reference to my comment about making sure that everybody is paying their fair share, I think that might be the one added ingredient that is out there. We have not taken a look at overall international taxation of industries in a long time. I think it will get some

examination this year. I can't foresee that there will be a host of recommended changes this year, but I think you are going to see the start of the learning process—a lot of questions are being asked.

Then, maybe in the next two to three years we will see if there need to be any policy changes.

Q: Just a general budget question about your predictions for the budget process and the chances of the tax bill and where the Rostenkowski proposal fits in.

A: I think the Budget Committee will recommend a \$13.9 billion increase in revenue to the Ways and Means Committee. That is the President's number. We had to do \$5.2 billion last year. It took us until October. We about killed each other just trying to get a \$5.2 billion. Now we have to get to almost 14. It won't be

easy in an election year. The Rostenkowski proposal is getting a lot of play for two reasons. There are a lot of people who perceive a void in leadership who are coming forward and saying we have to do something about the deficit. So, there have been a lot of comments saying "We appreciate the chairman moving forward and laying out a proposal." Then, each group says what they do and do not like, but overall they all like the thrust of where he wants to go, which is, "let's be serious and do something meaningful this year."

What is the reality? You will not get that type of a budget compromise passed in the United States until George Bush, George Mitchell, Lloyd Bentsen, Tom Foley, and Dan Rostenkowski sit down together with their hands up on the table—they have to be holding hands with one another—and say to every media person who is present, "We have agreed jointly that this is the tonic that is needed to get this deficit straightened out so that this country can continue to survive economically."

Until that happens, I think you will just continue to have what Leon Panetta called last year a "slide-by budget." Why? Democrats are concerned about being relabeled "tax and spend." The Republicans remember what happened in 1982 when the Senate passed a budget resolution and Ronald Reagan cut their knees out from under them with a chain saw. In the next election they lost the Senate, and they lost 22 members in the House of Representatives.

You are not going to see the necessary kind of bravery occur on a one-party basis; it will have to happen jointly. To some extent I think that Bush should be given credit. He basically said what these other groups have done. I applaud the Chairman for throwing his plan on the table. There are parts of it I don't like, but I like the whole. It keeps hope alive, and that is what is important.

Q: Congressman, to follow up on a question just asked: the summit we are talking about here, do you see that earlier or later, or what?

A: Later.

Q: What time approximately? After the House approves the budget or before?

A: I think when the House hammers out a budget, we'll pass it. I don't think the Senate will pass a budget, and I think we will be forced to go to a summit in October. Since we will want to get out early in October to go campaign, each passing day in October means that there is more pressure. The greatest amount of pressure will come around the 15th of October. I think the only reason we would have a lame duck session is for the Senators to get their pay raise. There may be a call for a lame duck session, but I just don't think anybody will show up. I personally don't think it will have to happen. I think we will hammer out all of our differences, but, unfortunately, it is looking more and more like it is going to be the end of the year before we actually resolve this budget situation. As sick and tired as I am of big budget reconciliation bills and summity . . . You know why I am opposed to summity, don't you? Because I am not in the summit. I have to go home and defend it, but I don't get to shape it. There are only about 15-20 people in the summit, but everyone has to go home and defend it.

There is a growing resentment of summity because we feel like we should be equal. We are sworn in together, we all draw the same pay check, and we all have to defend the policy, so you would think that we would all have an opportunity, through the regular committee structure, to offer amendments and to debate it. However, my personal political judgment says by the end of the year we will be in some type of a summit.

Q: Very few people would argue with your comment that United States subsidiaries of foreign companies should pay their fair share of taxes. From my understanding, there is a recent proposal by Congressman Gephardt and Chairman Rostenkowski that would in a sense implement some double taxation; these United States subsidiaries are often paying their capital gains, for instance in the country where they are incorporated, just as United States companies and subsidiaries overseas

pay their capital gains here. To what extent have you looked into that issue, and do you see any ways that the tax laws need to be changed?

A: I personally have not done an extensive study of this, and I don't think the Committee has either. I think the bill was put out to be a lightning rod, to create discussion, and to start holding the hearings. I don't think you will see the Chairman pursue a piece of legislation if, in fact, it is proven clearly through the record that it is double taxation. If anything, I think the Chairman's attitude in 1990 is to try to find ways to simplify the tax code, with the repeal of Section 89 he has eventually come around and I think there has been a change in attitudes, both of the Chairman and a lot of the staff. I think they are looking for more ways to simplify the code.

To that extent, do you realize that in 1989 we did not pass one single tax provision that had an effective date retroactive to 1989. This is the first time this has happened since I have

been on the Committee. Just maybe we have learned our lesson. Maybe we are going to try to write solid, progressive, prospective legislation and not get into some of the traps that we got into last time.

I do a tax conference back home with my CPAs and with my tax attorneys. I thought I was going to be strung up in 1989 because of Section 89. This year, you would have thought we were at a love-fest. There has been an enormous change in attitude between last year and this year in terms of the problems that have developed in the tax code.

So, based on that, I just do not think that you are going to see the Chairman shepherd through something that is ill-conceived. I think this is an area he wants to look into.

Moderator: There is a vote on the Hill, so we have to get the Congressman out. But we would like to thank him very much.

ISSUE OVERVIEW

Outlining the Conflicts in R&D Tax Policy

John Magee
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John Magee, a Member of the law firm of Miller & Chevalier, Chartered, focuses on the increased globalization of the world's markets and the role R&D plays in this expanded market. He gives an overview of the decision-making process involved in making R&D expenditures. Through hypothetical scenarios, he sets out a summary of the impact of Code Section 174 (the deduction for R&D expenditures) and Code Section 41 (the credit for increasing research activities) on R&D expenditures. He, as did Congressman Anthony, notes throughout his presentation the importance of Regulation Section 1.861-8 on domestic R&D. He discusses the inverse relationship of credits allocated to foreign-source income to the foreign tax credit limitations and the negative impact this relationship has on domestic R&D expenditures.

Mr. Magee talks at length about Code Section 174 and the regulations thereunder. He notes that in the past there has been a tendency to try to narrow the availability of the deduction. In 1989, the temporary regulations clarified that the deduction for R&D expenditures would not be disqualified merely because the expenditures were made with respect to an existing product. Mr. Magee still sees some problems in the area of computer software, however, and he cautions that a proposal to require capitalization of R&D expenditures conducted overseas, which was dropped in conference last year, may resurface.

Mr. Magee also discusses the importance of making the credit permanent. He notes that it is impossible for companies to plan for the long-run without the benefit of a permanent policy in place.

Mr. Magee concludes his presentation with a discussion of foreign joint ventures. He talks at length about Sections 367(d) and 1491, which imposes a 35 percent excise tax on the transfer of technology to a foreign partnership. This excise tax causes what Mr. Magee refers to as a "transactional meltdown" because it makes contributions of technology to a foreign partnership seemingly prohibitive. Alternatively, a partnership can elect to have Section 367(d) apply and be treated as a corporation. Under that section, the property is treated as sold and the deemed sale generates deemed royalty payments over the life of the asset.

Unlike a real sale of an intangible, which would produce foreign source income if the asset were to be used overseas, this deemed sale creates

domestic source income which will not generate a foreign tax credit. This provision essentially requires the restructuring of a joint venture transaction as an actual sale if the parties want to avoid pricing and paying these deemed royalties.

[A copy of the paper Mr. Magee and Ms. Patricia M. Lacey prepared for the conference is available from the Foundation.]

Thank you Dan. Pat Lacey really wrote the technical outline, so if you have technical questions I may call on her to help me out. I wrote the speech, and that was an experience in technology all by itself because last night at 11:00 p.m. my screen went dead, I got an error signal that the disk drive was down, and I had to call one of the young associates at home at 11:15, put him on the conference speaker phone, and have him walk me through the retrieval of this document.

It is a sign of progress in this country that I have a computer on my desk at my age, and that I am actually learning to use it. In fact, the United States is a major leader in the development of new technologies and new products, and as Congressman Anthony said, it is the key to our economic prosperity in the future.

But our tax laws have not kept pace with the advances of technology, nor with changes in the global market. I am going to be talking not only about some of the domestic issues that affect R&D directly, but some of the issues that affect the deployment of R&D as we enter a global market.

I don't know if you saw the Wall Street Journal this morning, but there was an article about annual reports being more global in their presentation. It is a trend now that firms are beginning to talk about being part of the global market and of global competition. Global competition is becoming increasingly important, and we have some provisions in our tax laws that make it difficult for United States companies with major technology to compete abroad in deploying that technology.

I am a practicing tax lawyer, and since I promised Paul Merski that I would not read directly from the Code today, the easiest way for me to make clear some of these problems is

to illustrate them by examples that show how difficult it is to explain this area to corporate management that may be considering R&D projects or foreign joint ventures.

Assume that you are a tax lawyer sitting at your desk reading Commissioner Goldberg's latest attempt at tax simplification. The phone rings. It is the international business development people in your company and they have two proposals. Naturally, they are going to present them to management tomorrow and they want your quick review and blessing.

The first proposal involves spending \$100 million for research and development related to new technology for the manufacturing process for an existing consumer product the company already markets in Europe. They believe that with the new technology the company will be able to be more competitive in that market, and to begin to penetrate what appears to be an opening Eastern European market.

The second proposal is to enter a joint venture with a German company — a 50/50 deal. Your company has existing technology in the fertilizer business, and it would like to put this technology and some of its capital into a 50/50 equity enterprise with a German company, which is going to put in some of its own technology and capital. Together the joint venture would manufacture fertilizer in Europe for the European markets. The existing manufacturing technology has a value of \$100 million, so it is valuable technology. The company probably does not have much of a cost basis on this technology, however, because it has deducted most of its expenditures under Section 174.

So, let us examine the tax provisions that come into play for the first proposal, the expen-

diture of \$100 million to develop a new manufacturing process for an existing consumer product. Section 174 provides a deduction for research and development expenditures. When it was adopted in 1954, it cleared up ambiguities about whether or not certain R&D had to be capitalized and amortized, or, in the case of property that had no useful life, was never written off at all. So, it was a liberalization and a provision that Congress believed at the time would serve as an incentive to encourage taxpayers to conduct more R&D.

The problems with Section 174 have principally involved the scope of coverage. In 1983, regulations were proposed that would have narrowed the scope of the deduction. Particularly, they might have affected the "manufacturing modification" type of research that we are talking about here, because they disallowed the deduction for activities related to "routine, periodic, or cosmetic alteration or improvement" of existing products or commercial production lines. This was a troubling proposal because in today's technological world it is frequently the case that improvements which build upon existing things are the key to future development. These are often the areas where there are the most significant developments in technology.

Another controversial aspect of the proposed regulations was their treatment of computer software. They narrowed the scope of the deduction available under Rev. Proc. 69-21 for computer software development costs. After publication of the regulations, however, the IRS said that the restrictions on eligible software development costs would not apply for Section 174 purposes, but only for purposes of the research credit. Ultimately as things developed in the 1989 version of the proposed regulations, the treatment of software was clarified to some extent, as was the proposed disqualification for improvements in existing products or product lines.

The concern about the restrictions on "routine alterations" was largely alleviated by the 1989 proposal. It excludes from Section 174 coverage only those "activities not directed at

the functional aspects of a product including expenses relating to style, taste, cosmetic or seasonal design factors." However, routine or periodic research and development expenditures will not be disqualified if they satisfy the basic tests for qualification, including a new "significantly enhanced function or performance level" standard.

The proposed regulations came out in May of last year. They eliminated most of the problems with computer software and made it clear that computer would be governed by the same standards that apply to other products. It is not clear from the regulations themselves, however, how to treat the costs of computer software developed for management functions or internal use of the company. Conversations with National Office personnel at the IRS who drafted the regulations indicate that when the regulations are finalized, they will clarify that this is not intended to be a restriction and that such expenditures may qualify under Section 174. So, if our proposed research expenditures for improvements to a manufacturing process include management software, presumably they would be covered.

In 1989 the Ways and Means Committee passed a provision that would have disallowed a deduction under 174 for foreign-conducted R&D. If, in our example, there was consideration of conducting the company's research and development overseas, one would want to be aware that there have been proposals to require the capitalization of such expenditures instead of allowing the deduction. While the provision did not become law in 1989, it is likely to resurface, particularly in the current budget climate, and also because there is a general concern about keeping R&D in the United States. As Congressman Anthony indicated, there are other pressures that may drive R&D out of the United States, and we are going to talk about 861 in more detail in a few minutes.

The research credit was originally enacted in 1981 as a 25 percent incremental credit. That means you get the credit for incremental expenditures over the expenditures incurred

R&D Tax Policy

during a base period. The credit was reduced to 20 percent in 1986 in conjunction with the reduction in tax rates overall. The credit is obviously intended to be an incentive for domestic research. Its availability is limited to research that is conducted in the United States. So, the credit would be available for our project if we conduct the research here.

A tax credit can be a powerful incentive, because every dollar of eligible expenditure offsets a full dollar of tax liability. The value of the R&D credit has eroded over time, both by uncertainty and direct limitations, many of which were attributable to the budget revenue problems to which Congressman Anthony alluded.

In 1989, the base used to determine the incremental R&D credit was changed from a rolling base period to a fixed period. Even so, the incremental nature of the credit means, at least from what I can ascertain in talking with clients, that for large multinational companies in the United States the credit is really an insignificant piece of the R&D picture. One company told me recently it estimates that the credit represents less than two percent of its annual R&D expenditures. In a 1989 report on the credit, the Government Accounting Office estimated that the average effective rate for the credit in the period 1981 to 1983 was 3.5 percent to 5 percent. So, the incremental nature of the credit has a significant dampening effect, even though the base period has been modified and presumably liberalized.

To make matters worse, now your Section 174 deduction is disallowed to the extent you claim the credit. This started in 1988 with a 50 percent disallowance and increased to a 100 percent disallowance in 1989. So, if you spend \$100 for R&D and you have a credit (let's say it is an incremental expenditure and you have a credit of \$20), you are going to reduce your \$100 deduction under Section 174 by the \$20 credit and claim a deduction of only \$80. What this does effectively in a 34 percent tax rate environment is reduce the value of the credit from 20 percent to about 13.2 percent.

In the 1986 Act, Congress did a number of

other things that reduced the incentive value of the credit. Eligible expenditures were restricted, but the restrictions did not permit a similar redefinition of the base period expenditures. The credit was also brought under the limitations that apply to the business credit. Finally, when adopting the Alternative Minimum Tax, Congress refused to permit the R&D credit to offset AMT liability. That means that industries like the U.S. chemical industry, which is capital intensive, and has minimum tax exposure because depreciation is one of its major considerations, may lose the benefit of the R&D credit. As research-intensive and cyclical in nature as the chemical industry is, it tends to have both good times and bad. A company may lose any benefit of the R&D credit during the down-turn periods in its economic cycle, because it can't use the credit to offset its alternative minimum tax liability.

Perhaps the most common complaint, though, concerning the credit is that it has not been made permanent. Here we have a credit that was enacted in 1981. Initially, it was good through 1985. Then it was extended through 1988. Then it was extended for 1989. Then it was extended through the first nine months of 1990. Again, the Administration has proposed making the credit permanent. But the revenue estimate associated with this provision is \$5.5 billion for the period 1990 through 1995. Given the extent to which revenue considerations have driven tax policy in recent years, it is difficult to believe that a figure of this magnitude will permit the adoption of a permanent R&D credit provision in the absence of some fairly important coalescence of policy in the R&D area — some comprehensive policy that puts everything together and makes all the incentives work in the same direction.

Can I promise my product development people who want to spend \$100 million on their R&D project that if they do, and if it is incremental, they will be eligible for the research credit to the extent that the expenditures are made after September? I think that is somewhat difficult, but it demonstrates the problem with this sort of episodic extension.

Particularly in the modern environment, these projects get bigger and bigger, more expensive and complex, and require longer and longer lead times for planning. As a tax advisor, it is difficult to predict with any kind of certainty what is going to happen one, two, or three years from now as these projects move along. You can't advise management about the availability of the credit even if you are otherwise in a position to utilize it.

I think Congressman Anthony is correct in focussing most of his attention on the 861-8 allocation. It is perhaps the most difficult aspect of analyzing United States tax benefits associated with R&D. As he said, these regulations allocate R&D expense between United States source income and foreign source income. In the game here the stakes are your foreign tax credit. Since the 1986 Act with its lower tax rates and multiple 904 foreign tax credit limitation baskets, many more taxpayers are in an excess foreign tax credit limitation situation. Any time these taxpayers allocate a dollar of R&D expense against foreign source income under these rules, they reduce their foreign tax credit limitation by one dollar and in effect, deprive the company of the foreign taxes paid and nullify the benefit of the R&D deduction.

It is also important to recall that foreign countries frequently do not permit deductions to United States taxpayers for this allocation of expenses. Thus, if under 861-8 \$100 of R&D expense is allocable to foreign source income, and the foreign country does not permit you to take a deduction against your foreign source income for that R&D, you will have a correspondingly higher foreign tax liability.

To give you a flavor of the magnitude of this problem, one client recently told me that for his company the 861-8 issue was worth between \$50 and \$100 million a year under the 1977 regulations. Under the 64 percent solution that we now have temporarily in effect, I think this figure has dropped to something like \$15 or \$20 million. So, we are talking about very large sums of money.

As Congressman Anthony said, a pru-

dent tax advisor is going to begin considering whether or not R&D should be performed overseas in a foreign subsidiary. A foreign technology subsidiary company can perform R&D and then use reciprocal licensing, cost sharing, and other techniques to the extent it is necessary to bring the fruits of that research back into the United States. But, as long as the research is performed overseas, a deduction against foreign source income will be available.

The National Science Foundation has confirmed that this may be a growing trend. They noted that in 1988, industrial R&D spending overseas in current dollars increased by 17.4 percent, while domestic spending increased by only 5.8 percent. The Foundation attributed this differential in part to the 861-8 regulations.

Congress, the Treasury, and taxpayers are aware of this problem and have worked on solutions. Congress has acted on six separate occasions, starting in 1981, to either suspend or modify temporarily the 861-8 regulations. In 1987 a consensus was reached among all of the participants to provide a permanent 67 percent solution. It was never permanently enacted, and as the pressures of the budget operated on it, it became a temporary 64 percent solution. The effect of this episodic treatment has been that there was no moratorium on the 1977 regulations for eight months of 1988, all of 1989, and for three months of 1990. The Administration's current budget proposal would make the 64 percent solution permanent. The estimated price tag by the Administration is \$2.8 billion from 1991 to 1995.

If our business development people spend \$100 million on research during 1990, can we be sure how the deduction is going to be allocated under 861-8? We can't. The temporary 64 percent solution applies through September of 1990 and we don't know what will happen after that. We don't know whether there will be a permanent solution. It could be, if the future is consistent with the past, that there will be a temporary extension that will not pick up the last three months of 1990. Thus, we could end

up in a situation where we have a large portion of the R&D expenditures (9/12ths of the amount spent during the year) treated under the 64 percent solution, and the remainder treated under the 1977 regulations. You can imagine what this uncertainty does to business planning.

On that optimistic note, let's move on to the more difficult problems that are presented by the German joint venture. I think we all know about the domestic problems with R&D. But one area that has not received much attention involves the problems that I am going to point out with respect to the German joint venture.

When we talk about joint ventures today, we are talking about either partnerships or corporations. Joint ventures are becoming a more commonplace method of operating in the global market. You have countries that restrict foreign ownership, so you have to joint venture. You have governments that are interested in government participation, so you have joint ventures. And you have other companies that have technology, knowledge, processes, employees and know-how that make it advantageous to have joint ventures.

The German joint venture we are talking about here is to manufacture fertilizer in Europe and Eastern Europe. So, it is going to be a foreign joint venture. It is not going to be practical to make it a United States company. We are talking about a foreign corporation or a foreign partnership. Ordinarily, putting aside issues with respect to intangibles, you would analyze the choice between corporation and partnership form by comparing the benefits from income deferral in a corporation, subject to certain non-deferral rules, to the benefits of loss pass through from a partnership. In addition to these tax considerations, you would also factor in other considerations from a business standpoint, including the climate in the foreign country and whether they have partnership forms of business, limitations of liability, and all sorts of other things.

In our hypothetical, 50-50 joint venture, we have \$100 million worth of technology to

transfer to the joint venture, and the other side wants the transfer to be an equity investment. They will transfer their technology as an equity investment. It doesn't really matter whether we choose a corporate or partnership form because both will be a disaster from a United States tax standpoint.

Section 367(d) covers equity transfers to foreign corporations, and Section 1491 covers equity transfers to foreign partnerships. Let's start with 1491. It imposes a 35 percent excise tax on the value of the technology contributed to a foreign partnership to the extent that it exceeds our cost basis — in other words, the taxable gain that is inherent in this technology asset. In our case, it is all gain because all of the development costs were deducted. We have \$100 million in technology and a zero basis. We have a 35 percent excise tax liability on this. It doesn't take an economist to tell you that the deal makes no sense on this basis. We had one of these situations recently in the office, and one of my partners labeled it "transactional meltdown" after confronting this provision.

Assuming that I don't abuse the partnership rules of 704(b)(c) allocations, which basically require that the way partners split up income and deductions has substantial economic effect. Under these provisions the government has the authority to write regulations that require you to essentially realize the gains attributable to contributed property. I understand there are some technical glitches there. But if those could be cured, what is the policy reason for requiring an excise tax on this kind of a transfer when we are talking about a pass-through entity where the United States contributor is going to get 50 percent of the income coming out of this venture? If this technology is disposed of in some way, the company will presumably get a proper allocation of the income attributable to the disposition of the property that it has contributed.

There are a couple of elections to help you avoid this "transactional meltdown," except they don't really help. The first one allows you to elect, under Section 1057, to treat the property as though it had been sold. So, if you have

\$100 million of taxable income at a 34 percent rate, you save yourself one million dollars. I still don't think you are going to do the transaction on that basis.

Alternatively, you may elect under Section 1492, to apply the principles of Section 367. This brings us around again to our corporate alternative, because 367 governs contributions of intangibles to corporations. Because you have the option of applying those principles to the partnership, you come out basically in the same place.

Under Section 367, you can ordinarily transfer tangible trade and business assets from United States source to a foreign source without too much expense. Section 367(d) is the provision that governs intangibles and it creates insurmountable barriers. In our case, the equity contribution of \$100 million of intangibles to the foreign corporation or the foreign partnership, if we elect the principles of 367(d), is treated as a deemed sale of intangibles in return for a deemed periodic payment or royalty—an imaginary royalty over the useful life of the asset. If we really sold this technology to the joint venture on a license basis for an arms-length royalty, the royalty paid would be foreign source because the property would be used abroad and therefore would generate foreign source income, at least for a foreign tax credit analysis. Unlike a real royalty, however, the deemed royalty under 367(d) is characterized as domestic source income. No one will ever make a contribution of intangibles like this and take the 367(d) consequences — at least not under circumstances of which I am aware.

You can only avoid these rules by transferring the intangibles to the joint venture in a licensing transaction for a real royalty. That is not what those on the German side of the joint venture are contemplating. They never thought that you would put your intangibles into the enterprise and then take money off the top as an expense for this royalty to you, instead of putting your technology in as an equity, at risk with their technology. The German partners will probably call other potential partners in

Europe and Japan. The fact is that the situation in the U.S. for the deployment of research is disadvantageous in a lot of respects. There are other countries that don't have these restrictions and problems.

The Federal Reserve published a study in the summer of 1989 that quantified the cost of capital rates for the United States, Japan, Germany and the U.K. for 1988 on a ten year payout investment for R&D. The cost of capital rate for the United States was 20.3 percent. The cost of capital rate for Japan was 8.7 percent. The cost of capital rate for Germany was 14.8 percent; and for the U.K., 23.7 percent. The study is a very detailed economic piece which does conclude that the income tax is not the primary effect here. Putting that conclusion aside, however, we are talking about a tremendous differential in burdens in different countries. Now, adding to that as a toll-gate Sections 367(d) or 1491, we are prevented from entering into international joint ventures without insisting that the deal be restructured to satisfy concerns about our tax law.

Let's assume for a minute that the German entity is willing to go along with us and have some dialogue about how we might price the royalty on the transfer of our fertilizer technology. We are going to be dealing with Section 482 which requires arms-length pricing between related parties and applies to the licensing of technology. The standard ought to be fairly straightforward, but it isn't. Like most of the things under the Internal Revenue Code, it has been further complicated by the 1986 Act, which adopted — in the case of transfers of intangibles — a standard that the amount of income under Section 482 must be commensurate with the income from the intangible, whatever that means. This provision is now referred to as the "super-royalty" provision. It resulted from government concerns that income derived from intangible assets that had been transferred outside the U.S. was slipping away from the Treasury through transfers to tax-haven jurisdictions, or where extraordinary intangibles were transferred for ordinary level royalties. The problem is that the new

standard applies as written to all transfers of intangibles whether it is your normal ongoing business technology or a super drug of some kind with the potential to go off the charts in terms of its capacity to earn income.

Treasury published a white paper in the Fall of 1988 on inter-company pricing for intangibles — a lengthy and very difficult piece. It was a valiant effort, but to comply with the kinds of concepts that Treasury must have envisioned will be virtually impossible, particularly in the area of cost-sharing, and even in the more mundane types of transfers. Those concepts now are under reconsideration and Treasury is still struggling to figure out what the super royalty provision means in the context of the old arms-length standard, the standard that the U.S. sold in the international tax community as the proper standard for related-party transactions.

The difficulty with the super royalty provision is that it requires you to look back retroactively in the future and see how much income has been earned. If you have a major change from what was anticipated at the beginning, you may need an adjustment to the royalty. I still fail to see how this can be consistent with what I consider to be arms-length — what unrelated parties would do. It remains to be seen.

How do you respond to your business people when they ask you what kind of royalty we need to ask the Germans for in order to make this joint venture fly? What is the level and what must we do to determine a proper amount? I think a cautious tax advisor will advise you to hire an economist, and have him look at all the comparables that are available for this type of technology. You also better have him look at all the economic functions that you are going to be performing, that the joint venture is going to be performing, and the

Germans are going to be performing. You better look carefully at what the anticipated income stream is and then approximate the proper royalty amount. This will not eliminate future IRS challenges. You cannot predict with any confidence what will happen in the future. Your estimates of the income may be made in good faith, but they may not turn out to be what actually happens and then you may end up facing the look-back requirement.

If you haven't heard enough about these conflicts in tax policy from me, I know that the business people we're talking about have. It makes you wonder what they are going to tell their management committee when they go in tomorrow to talk about the two proposals, and are asked what the tax consequences are from the United States standpoint? They can say, "If we do research in the United States, it is deductible, but that is about all we can tell you, except that the deduction will cut back significantly on our foreign tax credit if we are in an excess credit situation and we have to restructure the deal with the Germans because we can't do a joint-venture equity contribution."

You might think that after this presentation management would decide to get involved in an effort to develop a coherent tax policy toward R&D that would provide strong incentives for conducting R&D and facilitate the use by United States companies of that R&D as they compete outside the United States. The Tax Foundation has, today, taken an important step in developing a dialogue on the development of a coherent policy for R&D. We also need to be mindful of Congressman Anthony's warning that these R&D issues involve budget considerations. I think it is time for tax policies to be based on long-range economic concerns. It is time to do something about the budget, or at least to put it in its proper place when it comes to policy planning.

Q & A

Q: I know you are not an economist, but if we look at a time-line situation and the rules started to stiffen and get very tough, could you

almost pinpoint the time of the more difficult R&D rules and the impediments to R&D with the decline in the R&D picture we have seen in

the United States. This hasn't always been the case. In the early '70s and '60s, R&D had a much more favorable position. What are your comments?

A: I haven't seen any data that would allow me to say anything intelligent in response, but there could well be a connection. Since we started in the '80s enacting and modifying these tax acts and temporary provisions, partial provisions and partial extensions, etc., there has been a tremendous amount of confusion. Even though the credit originated in 1981, it has had a difficult life. It has had a lot of cutbacks, modifications, tinkering, and it has been temporary. So, you may well be right that in the old days we were doing better when there was less interference.

Q: [Note: This question has been shortened considerably because of the transcriber's inability to hear the questioner.] The whole concept of 861-8 as it impacts R&D, seems to be heavily affected by concerns of the Treasury with respect to 482, whether 482 is really doing its job of properly charging subsidiaries. If some of that income is being realized by a foreign subsidiary, then there is a possibility of deferrals. Do you think these considerations apply differently when you are dealing with a joint venture company versus a wholly owned subsidiary?

A: I think those considerations are probably the important ones and I am hoping Mr. Graetz this afternoon may expand on some of the other considerations. Obviously, there is some thinking that while the expenditure may take place here, it may benefit the company at large and the production of its income worldwide. To the extent you are doing things through joint ventures where you have the actual pressure of opposition from your business partner, you are going to keep things in line.

Q: Isn't it true that no 861-8 allocation is

required where there's a bona fide cost-sharing agreement? Have they changed that?

A: I am going to ask Neala Brown to answer that.

Comment: My company operated with cost-sharing. We were effectively exempted from 861-8 allocations with respect to R&D, which shows that there was a great deal of confusion between where 482 stopped and where 861-8 started.

A: Part of that, I think, may be that the normal treatment is to reduce the R&D expenses by the amount of the contribution, and therefore your deduction goes down and your 861-8 problem goes away, at least to the extent of the contribution. Presumably those in a true cost-sharing arrangement are all doing this together anyway. While you may be spending your money here together, they are taking the technology and owning it, if you will, as an undivided piece abroad or wherever they are deploying it.

Q: What is the revenue cost of the credit, and who does the major benefit inure to?

A: I am not sure who gets the major benefit from it. My feeling is that the large United States multinationals don't get a large benefit from it because their ongoing R&D expenditures are so large and they have such large programs and you are looking at an incremental credit.

Q: Do we have a feel for what the total revenue cost is? How much additional revenue might there be if there was no credit at all?

A: I guess that is quantified in the pricing of the extension, making it permanent. What did I say about that? — \$5.5 billion.

Q: That is not just the credit.

A: That is making the credit permanent and that is the cost '90 through '95, I think — '90 meaning from October 1, of 1990 because we are covered. It is the three month gap in 1990 plus the other.

SESSION ONE

Conflict in R&D Tax Policy and the Need for Change

Panel Chairman: Cyrus J. Halpern
Tax Vice President, Federal & International
Taxes
AT&T

Edmund K. Harding
Manager of Tax Planning & Litigation
Xerox

Stuart E. Eizenstat
Partner
Powell, Goldstein, Frazer & Murphy

Richard Grafmeyer
Minority Tax Counsel
U.S. Senate Committee on Finance

Edmund K. Harding

Edmund Harding, Manager of Tax Planning and Litigation for Xerox Corporation, offers the tax practitioner's perception of current R&D policy. He expresses a concern — shared by his fellow speakers — that the Japanese and Europeans are spending considerably more on non-defense R&D than the U.S. and he offers statistics to support this assertion. He also notes that the nature of U.S. R&D expenditures has changed. While once concentrated in the physical sciences, R&D expenditures are now focused more on software, an area which generates more immediate economic return.

Mr. Harding criticizes the series of temporary extensions the availability of the credit has been contingent upon. He notes that in choosing a site to conduct R&D a company must now weigh tax considerations. By way of example, Mr. Harding suggests that a company might be inclined to choose Canada over the U.S. because an R&D credit is already a permanent fixture in Canada's tax system.

Having been through an R&D credit audit, Mr. Harding adds some insight into the Internal Revenue Service's R&D audit procedures.

He explains that, like most firms, Xerox's accounting system was not set up with specific accounts that delineated direct R&D expenditures. As a result, the IRS agent initially allowed or disallowed expenditures for credit purposes based solely on the account title. The company then had the burden of showing that an expenditure charged to a particular account was directly related to R&D and should qualify for the credit. He also explains how application of the 1983 proposed regulations to the early years under audit disadvantaged the company. For instance, the results might have differed if the 1989 final regulations, which permit some R&D expenditures after successful testing of a prototype, could have provided Xerox their more equitable results at the time of its audit.

R&D Tax Policy

My objective today is to give you the tax practitioner's view on current United States R&D tax policy. I have no unique qualifications to perform this role, but have had the responsibility of interpreting the law and regulations and to implement the requirements in our procedures. I have also been involved in an IRS audit of the R&D credit, the appellate review of the same, and participated in corporate planning and strategy activities.

In preparing for today's meeting, I reviewed some of the National Science Foundation data, finding much of it alarming. For example, I was surprised that both Japanese and West German non-defense R&D spending has outpaced that of the United States as a percent of GNP for nearly two decades. Whether there is a direct corollary between spending and technological output or not, I will leave to the experts. However, on the surface, the following statistics make a pretty good case of that proposition to me.

From 1970 to 1986, United States producers of high-tech goods decreased their share of global markets for such goods from 50 percent to 40 percent. Almost all of the loss was due to a reduced share of domestic United States markets for high-tech goods. The share of world non-United States markets for United States high-technology goods actually increased slightly during that period. The share of United States patents granted to foreigners rose to 48 percent in 1988. The Japanese share was 21 percent and is growing rapidly. It was only 10 percent in 1978. Japanese patenting in the United States emphasizes certain specific technical fields that are commercially important. They are photocopying—one that is important to us—information storage and retrieval, photography, motor vehicles, and typewriters.

I also reviewed the Xerox Corporation's recent activities and found that our R&D spending increased steadily and significantly from 1983 to 1988, both in terms of absolute dollars and as a percentage of business equipment revenue. We went from \$529 million and 6.6 percent in 1983 to \$794 million and 7.1 percent, in 1988. In 1989, however, our R&D spending

increased only to \$809 million and actually declined as a percentage of revenue, falling to 6.9 percent.

In the last few years, the nature of our spending has also changed significantly from basic research in the physical sciences, to work in systems and software areas that are more likely to have an immediate product pay-off.

There are several reasons for this change, including, for example, the frustration of developing significant advances in personal computers, only to see such developments brought to the market by others before we could establish a foothold in the industry. Of equal or greater importance was to meet the challenge of our Japanese copier competitors who have been so effective at rapidly translating R&D into successful commercial products.

Has the credit actually helped to increase our R&D spending? I believe that with the competition for corporate funds by all the various activities, whatever you can bring to the table to support a request has got to help. Moreover, if the debate is whether to place a research facility in the United States or, say, Canada, tax benefits obviously play a much more significant role. Is there any correlation between the fall-off in R&D growth and the unsettled state of the reduced R&D credit? I don't know for sure, but this situation certainly doesn't help. Similarly, I wouldn't want to argue the United States versus Canadian site location case and have to explain that we have a credit through 1989, based on nine months activity, with the shot at an extension, while my Canadian counterpart can point to an ongoing 20 percent credit on all R&D spending, including capital acquisitions on top of a 100 percent first-year write-off of all depreciable property. The requirement to allocate United States R&D spending to foreign source income is also a negative in a site selection debate.

I then looked as best I could at what other countries offer in terms of R&D incentives. Foreign taxes aren't my field and our library didn't offer a whole lot. So, my research was severely limited. However, I did get the dis-

tinct impression that most economically competitive countries offer incentives equal to or greater than ours. I also understand, through my Xerox colleagues abroad, that the administration of such incentives is fairly simple and straightforward. For example, in Japan the system of finance and tax incentives operates to stimulate R&D by the private sector. Spending on specific projects for the commercialization of new technology is encouraged through Japanese development bank loans, made at favorable interest rates or as conditional interest free loans. Since 1961, Japan has also made available a 20 percent tax credit for corporate incremental R&D spending. An additional credit, equivalent to 7 percent of the purchase price of equipment related to basic research and materials, electronics, robotics, and manufacturing is also provided.

On the other hand, I did not run across any country which required R&D spending to be allocated to foreign source income as is the case under our law.

With that background, let me now turn to the IRS audit process as it relates to the R&D credit. We have, to date, completed audits through 1983. The R&D years included two different audit segments with the same IRS team on both. At the outset, I should note that the Treasury engineer who handled the R&D credit audit was both professional and intelligent. As further background you should be aware that at Xerox the R&D functions are thoroughly self-sufficient and generally completely separated from other operations. There are two major R&D locations in the United States: one in Webster, New York, and the other in Palo Alto, California.

Neither the Xerox organization nor its accounting R&D was changed during the years under audit, including the pre-R&D audit base period. Accordingly, there was no controversy over whether or not changes were made to optimize the credit.

The R&D effort employs around 7,500 people in literally hundreds of budget centers utilizing Xerox's standard chart of accounts in accounting for these functions. The use of a

standard chart of accounts limits the level of detail, but is necessary in order to allow for any meaningful consolidation of corporate-wide data. The engineer agent took a three-step approach in performing his review. First, he asked for and was given a listing of all the account titles claimed as performing or in direct support of our R&D. Based solely on the account title, he made a decision as to whether the charges qualified for the credit. For example, based on this review, he threw out all charges to an account entitled "General Clerical," no matter what budget center the same fell under. Remember, we didn't change any accounting to accommodate the R&D credit so the account descriptions were not designed to precisely delineate between activities which are in direct support versus those which may indirectly support our R&D.

In checking the number of budget centers, however, we were able to determine that this account was used to accumulate costs for a variety of job classifications directly supporting R&D, such as engineering records, document control, and scheduling. We also found that because R&D functions were operated on a stand-alone basis, some non-direct R&D clerical functions were also charged to this account. To examine all the charges to this account for all the R&D budget centers would have been a horrendous task, so we recommended the budget center approach. That is, if the budget center performed direct R&D, all charges under that account for that budget center qualify. If it didn't, none would qualify. The engineer agent wouldn't buy that approach and insisted that we prove it or lose it.

The second prong of this audit approach was to review the budget center titles for which we claimed qualifying R&D expenditures. Again, strictly by the title he allowed or disallowed expenditures to such budget centers as qualifying for the credit. To the extent the entire budget center was disallowed, he first adjusted for the accounts previously disallowed in the first step so there was no doubling up in that regard.

This approach, though, fell prey to the

R&D Tax Policy

same deficiency as the first, because the budget center titles were not designed with qualifying or not qualifying for the credit in mind, and therefore could be — and in some instances were — misleading. We had a slew of these and worked out most of them, all but about 14, to a mutually satisfactory solution. The ones we were left with generally had titles indicating test or design functions which, for the most part, actually were R&D. For example, we had one entitled the mid-volume test budget center, which was actually performing analytical and measurement techniques in support of the mid-size copier development activities. This would stand to reason given the R&D facilities operating on a stand-alone basis with product testing falling under manufacturing.

You may also recall that I said the engineer agent was both professional and intelligent and also that we had not changed any of the accounting practices or procedures to try to maximize the credit. Further, because the credit is incremental, the base period should self-police any undue advantage or disadvantage taking place. Moreover, in the course of these discussions, neither the agent nor Xerox paid a whole lot of attention to the amounts involved. Thus it was more a matter of principle, or even perhaps, stubbornness on both our parts that we could not come to an agreement after we had both put so much time and effort into the process. Unfortunately, we also consumed a good bit of time of those who would have been more productive in the R&D functions that they were hired to perform.

At any rate, we took the unsettled account and budget center issues to the appellate level. The appellate looked at purely the factual issues and in fact threw up their hands, sending them back to the agent level where they were compromised to nobody's satisfaction.

The third step in the audit process was the agent's request for a complete description of all R&D projects worked on during the period: who did what, when, how, and what was the result. The volume was incredible and his own team even convinced him to back off a bit. Further, at the time in 1988 when we were

looking for records on 1981 through 1983 activity, non-accounting detailed records were not easy to come by. It was very difficult to come up with information. Moreover, the engineer agent used regulations proposed in 1983 in making his decisions as to what did or didn't constitute R&D. Those proposed regulations were more restrictive in several respects pertinent to the years at issue, than the presently published final regulations. For example, the engineer agent relied on 1983 rates to disallow the R&D costs incurred with respect to any copier model after construction and testing of the original prototype for that model had been completed. In fact, he pretty much disallowed all product development costs after completion of a prototype. The new final regulations, while creating their own set of time-line problems, at least cleared up this issue by permitting the cost of all subsequent prototypes and disqualifying only the cost of duplicates used for market testing or held for sale.

Similarly, use of the 1983 regulations resulted in an out-of-hand denial of all internal software development costs. Prior to the 1986 Act, there was absolutely no authority for such an adjustment in either the credit or deduction for R&D. Moreover, the 1986 Act does not completely exclude an R&D credit for internal-use management software. In fact, the Committee Reports direct that regulations should make clear that research on software which is innovative, risky and not commercially available, should be eligible for the credit. With regard to both the prototype and internal-use software issues, however, we were forced to compromise before issuance of the new regulations.

The agent also disallowed any salaries above the first-line supervisory position on the basis that involvement above that level would not constitute the conduct of hands-on R&D. In an organization of 7,500 people totally devoted to R&D, such a position seems totally absurd, and we were able to prove that in a number of budget centers. However, again, it was difficult to come up with organization charts and job descriptions, and I heard this morning that

in other audits they even requested job evaluations on each individual, which sounds rather extreme five years after the fact. We, quite frankly, wound up compromising much more than we should have had to.

Enough of that. I don't want to get too carried away with war stories about the complexity of administering the credit. In point of fact, I believe the audit process is fairly administered by those charged with the responsibility. This is just another case where the law's requirement for precision is not reasonably obtainable without undue and sometimes impossible complexity.

In concluding, I would like to say that I believe that the Administration and Congress on both sides of the aisle are sincere when they state we must continue our prominence in world markets and that a strong R&D effort is the key to that performance. However, if tax policy is to play a role in that performance, as I think it should, I also think we are kidding ourselves that it does so under the current law. Let's face it, in 1981 we started off with a 25 percent credit based on incremental spending without any limitation on deductions, and no

requirement to allocate R&D to foreign earnings. In 1990, we have effectively a 10 percent credit after the elimination of a deduction equivalent to the credit, and the restriction to nine-months activity, the bottom line of which is further reduced on audit. Coupled with the allocation requirements, this doesn't leave much in the way of an incentive.

With the Administration, Congress, and even the man on the street in favor of increasing R&D, it is hard to figure just why tax incentives to accomplish that goal are drastically reduced and in danger of elimination. It brings to mind the story of the fighter returning to his corner bleeding profusely, telling his trainer that his opponent never laid a hand on him. His trainer's reply, "If that's the case, you better keep an eye on the referee, because someone is killing you." Unfortunately, the same might be said to those of us in the R&D tax policy battle, but I am not sure who we should be keeping our eye on. Maybe we will find out today.

Stuart E. Eizenstat

Stuart Eizenstat, former Assistant to the President for Domestic Affairs and Policy in the Carter Administration, and currently a partner in the law firm of Powell, Goldstein, Frazer & Murphy, expresses concern over the fact that the U.S. spends considerably less on civilian R&D than its competitors. He notes that as a percentage of gross national product, R&D expenditures have dropped from 9 percent in 1970 to just over 6 percent in 1990 while countries like Japan are rapidly increasing their expenditures. He says that while the United States struggles with brief extensions of the R&D credit and a solution to Section 861, the rest of the world is passing the United States by.

Mr. Eizenstat says the solution is to foster R&D efforts by private sector profit and non-profit institutions. He indicates that the financial rewards for investment in R&D are high, higher in fact than the return on physical capital, provided the product is eventually viable. Mr. Eizenstat indicates that feasible technology is the result of only 20 percent of all R&D efforts. He adds that the benefit to society as a whole is twice what it is for the company conducting the research. Therefore, the stagnation of the average U.S. family's income over the last 15 years could be related to the decline in R&D expenditures over the same period.

Eizenstat states that CORETECH, a coalition dedicated to a reforming R&D public policy, has a three-fold set of goals: (1) to assist in developing permanent tax policies which encourage R&D in the U.S.; (2) to help develop a technical and scientific workforce; and, (3) to aid in rebuilding the U.S.'s research infrastructure by encouraging the renovation and modernization of university and non-profit research facilities. One area CORETECH focuses on is modification of the credit's base period. Mr. Eizenstat is concerned about prior years' efforts to increase the base limitation. He notes that a change of this nature would further reduce the incentive to invest in R&D for many taxpayers.

He further expresses his concern over Section 861's allocation requirements. He says the effect of that provision is to drive U.S. R&D overseas. He concludes by indicating that tax policy is not the only consideration in developing a solid R&D policy, CORETECH's other two goals are equally important.

I. R&D is central to America's ability to compete in a fiercely competitive world environment.

A. As President Bush noted in his Budget Message this year: "R&D has long been identi-

fied as a major source of economic growth. It results in new processes that produce more output with less input, it creates innovative products to perform old tasks more effectively, and it opens up previously unimagined mar-

kets. In today's international marketplace, the United States can remain competitive only if it stays at the forefront of technological innovation."

B. Despite the fact the United States spent \$132 billion on R&D in calendar year 1988 and government R&D outlays totaled \$61 billion of that figure—one-half of the total figure—we do not do nearly as much R&D as we must.

1. While we spent roughly the same amount on total R&D as France, West Germany, the United Kingdom, and Japan relative to GNP—about 2-1/2 percent—we spent considerably less than our competitors on civilian R&D. During the 1980s, 65 percent of all federal R&D went to defense.

2. While federal R&D expenditures have remained roughly constant as a percentage of GNP for the past two decades—while that of our competitors has increased—their share of the overall federal budget has dropped precipitously—from 9 percent of all federal spending in 1970 to 6.7 percent in 1990.

3. A recent study by the National Science Foundation (NSF) shows that a wide variety of American companies are leveling off their R&D spending at the very time Japanese firms are increasing theirs. The NSF report showed that adjusted for inflation, corporate R&D fell .9 of 1 percent, the first drop since 1975.

4. Last November, the National Advisory Committee on Semiconductors reported to President Bush that research spending by the five biggest Japanese chip makers was nearly double that spent by the five top United States merchant suppliers. The report concluded that we were gaining in no technological area.

5. Japan's Science and Technology Agency said in a report at the end of 1989 that R&D budgets are virtually sacrosanct and that two-thirds of Japanese corporate mergers identify "strengthening R&D" as their number one objective, up from a little over half only three years ago.

6. While R&D rose 20 percent between 1982 and 1987 in the United States, the Science

and Technology Agency in Japan found it rose by 60 percent for Japanese companies. Figures from the OECD (Organization of Economic Cooperation and Development) confirm these figures, showing that as of 1987 the growth of R&D spending among Japanese companies was more than three times that for United States companies.

7. While United States Memories, a United States consortium designed to create a competitive chip supply in the United States died aborting; while we debate whether our antitrust laws should permit cooperative joint ventures needed given the huge costs of modern plants — \$200 to \$400 million for a single semiconductor fabricator plant; while we struggle to get brief extensions of the R&D credit, the rest of the world is passing us by. The Japanese government is coordinating a project called Sortec formed by all 13 of Japan's biggest electronic and semiconductor makers, in which the companies direct scientists and equipment to develop x-ray lithography. Is it any wonder our competitiveness is lagging when our R&D necessary to produce new products and processes is falling so far behind.

C. The direct and indirect effects of R&D make it imperative that the United States government foster more of it in the private sector.

1. While federal spending constitutes about 50 percent of the total nationwide investment in R&D, the federal government is not the principle performer of R&D. Industry performs 72 percent of all R&D, and universities, non-profit institutions, and colleges another 17 percent. Therefore, the federal government must encourage more R&D by the private profit and non-profit sector. The direct rate of return for R&D is around 30 percent—three times higher than the return on physical capital (OMB Data).

2. But the indirect effect on our economy is even greater because a given innovation does not stay with the innovator but is used in other industries to improve their industrial processes. The Office of Management and Budget estimated this year that over 40 percent of the R&D used in a typical manufac-

turing industry was developed in another industry.

3. By conservative estimates, R&D's contribution to productivity growth is at least .4 per year—nearly 20 percent of the total productivity rise since World War II. This would mean, using OMB's own calculations, a contribution of \$350 billion of additional GNP over 20 years or over \$1200 for every person in the United States.

D. There are compelling public policy reasons—which economists call “externalities”—for a stronger federal role in R&D policy. In short, this is one area where the market-place sends imperfect signals.

1. There are enormous risks to private R&D. One expert, Professor Mansfield, estimated that less than 20 percent of all R&D spending by the private sector results in a commercially viable product.

2. The company producing the innovation cannot capture the full economic value of its own innovation because of imperfect patent protection, back-engineering by competitors, and copying, both legal and illegal.

3. Society gets much higher benefits from R&D than those which accrue to the company or industry whose R&D produces the new product—by a factor of two or three to one. Because of this, OMB itself has stated that “not enough resources from the point of view of society would be devoted to R&D.”

One expert, quoted approvingly by the Bush Administration, has estimated that while private R&D investment yields a private rate of return of 25 percent, the rate of return to society and the economy as a whole is 56 percent—more than twice as much.

II. Signs of our problems in the new world economy are palpable.

— Our rate of productivity growth has been markedly reduced since the 1960s and is far outstripped by our competitors.

— Household incomes adjusted for inflation have been stagnant since 1973. As a recent study indicated) Frank Levy and Richard Michael, *Washington Post*, C1, February 4,

1990), from the end of World War II through 1973, the average family's income more than doubled from \$16,000 to \$33,000 in today's dollar. Poverty dropped from 32 percent (1949) to 15 percent (1970). The OPEC oil shock and a sudden drop in the growth of labor productivity stunted this growth so that the average family's income in 1987 was \$33,500—only \$500 more than 15 years ago. Even this masks the magnitude of our income problem as we have far more two-earner households than we did 15 years ago. In effect, for many families it takes two earners to make in inflation-adjusted terms what one could make a decade-and-a-half ago. Adjusted for inflation, the average weekly earnings of private non-farm workers are 3 percent lower now than 4 years ago.

— A study just released in January 1990 by the Bureau of Labor Statistics showed that the real earnings of most Americans fell during the 1980s—the second consecutive decade of loss—as the economy shifts from manufacturing to services. Thus, despite a steady expansion, real pay has not risen due to the restructuring of the economy. Since 1969, the 80 percent of United States private sector employees who are non-farm workers in production and non-supervisory jobs fell by 12 percent in real terms and by 9 percent since 1979.

— Hourly pay for production workers in our country was twice that of Japan as recently as 1985 and far above that of any other European country. Now after the decline of the dollar, it is lower in United States dollars than Japan's, West Germany's, France's, and even Italy's.

— We are spending at a rate of 3 percent more than we are producing each year, creating the illusion of prosperity by borrowing and importing the difference.

— A country cannot continue to run a chronic trade deficit without real consequences:

— The Tokyo Stock Exchange is now the biggest by far in the world, dwarfing the New York Exchange.

— Japan for the first time spent more money on foreign aid last year than the United States with all the foreign policy implications

this has. It is they who are putting in money to Eastern Europe and the Philippines. It is they who are the leaders in pushing debt relief.

— Nine of the 10 largest banks in the world are Japanese, almost a complete reversal from only a decade ago.

— The United States semiconductor industry is on its way to dependency for its basic infrastructure on Japanese and other foreign suppliers—from silicon, to etching equipment and quartz plates to wafer steppers. If the United States companies which supply components necessary for United States semiconductors die, efforts to revive the semiconductor industry itself, a vital part of our defense posture, will suffer. This concern was underscored by a United States firm's recent sale of its silicon wafer operation to a West German firm—leaving the United States without a major domestic vendor of wafers. Japanese firms in 1988 held the top three spots in the semiconductor equipment industry. If foreign corporations dominate the semiconductor equipment and materials industry, they will be positioned to make more sophisticated chips than their American competition.

— Japan makes 9 of the 10 TV sets, 3 of the 4 telephones used in the United States, and almost 1 in 4 cars driven here.

At the same time as Japan is developing new x-ray technology, called x-ray lithography, using ultra-fine x-ray beams to make chips more densely packed with electronic circuits than current state of the art, United States efforts are lagging.

While we still lead in microprocessors, we are losing our edge in computer chips.

III. CORETECH Policy

Our coalition—CORETECH—brought together for the first time industry and universities to work more closely together to enlist positive government cooperation for the development of a public policy agenda to promote research and development. We did so in recognition of the fact that countries like Japan have the ability to bring an R&D concept to commercialization in the marketplace faster

than the United States, in part because of better corporate-university cooperation than we enjoy here.

We did have a three-fold set of goals in our agenda.

— Develop permanent tax policies which encourage R&D in the United States—particularly the R&D credit and the basic research credit for universities and non-profit institutions—and which remove tax barriers to R&D here—especially Section 861.8 and its punitive provisions on the allocation of domestic R&D expenditures to foreign source income.

— Help develop a technical and scientific workforce which can compete in tomorrow's even more complex international economy.

— Rebuild our research infrastructure by encouraging the renovation and modernization of university- and non-profit research institute-based research facilities at which the bulk of our nation's basic research is conducted.

A. Our tax policy toward R&D is a metaphor for the difficulty our political system has with coming to grips with the competitive challenge we face.

1. The incremental R&D credit initially passed in 1981 has been under constant pressure and clouded by uncertainty, at the very time we need certainty and a stronger incentive for corporate R&D.

It was initially passed in 1981 but expired at the end of 1985. Although it was extended by the 1986 Tax Reform Act through the end of 1988—and a basic research credit was added—the credit's rate was cut from 25 percent to 20 percent. With the cooperation of industry, we narrowed and clarified the definition of qualified research so the credit could only be used for research undertaken to discover information that is "technological in nature," useful in developing a new or improved product, not to improve style or taste.

The 1988 Tax Act—TAMRA (Technical and Miscellaneous Revenue Act)—extended the R&D credit for one additional year, through the end of 1989, but the value of the credit was

significantly reduced. Prior to the Act, a firm could fully deduct R&D expenditures and claim the R&D credit. But the 1988 Act limited the amount of R&D a firm could deduct by an amount equal to 50 percent of the R&D credit claimed that year.

As of this time, the credit's value had been reduced an incredible 34 percent—from a 25 percent rate to an effective 16.6 percent rate (20 percent with a 50 percent deduction disallowance).

In 1989, the Omnibus Budget Reconciliation Act again extended the credit temporarily—in effect until the end of 1990 but for 9 months value. CORETECH worked with Treasury, the Hill, and Chairman Rostenkowski and Senators Danforth and Baucus on a new base period for the credit.

We agree with the academic and Joint Committee critique of the original base period, in which a firm could take only the R&D credit for expenditures above a rolling three-year average. This reduced the value of the credit, as the Congressional Research Service noted (CRS Issue Brief, February 7, 1990) for firms with moderate growth to the 3 percent to 4 percent range—dramatically below the statutory 20 percent rate. This was true not only because the credit was only incremental but also because credits were linked in the current year to increases in the preceding three years. As CRS explained, this "meant that each dollar of R&D investment in one particular year increased base period R&D for future years and hence reduced the amount of future credits that could be claimed."

The new base period, which we supported, will limit this negative impact by a new base period based on an R&D to gross receipts formula. (The new base is computed by multiplying a fixed base percentage—which is the ratio of a firm's R&D expenses to its gross receipts from 1984 through 1988—by a firm's average gross receipts over the preceding 4 years.) As CRS concluded in its analysis of the new base, "the most severe dampening effects of prior law's base period calculation has been remedied." (CRS-4)

But the value of the credit was further reduced by passage of a full 100 percent deduction disallowance—increasing to 100 percent the amount of R&D which cannot be expensed if it is taken as an R&D tax credit.

We also had to fight off proposals to require the capitalization of R&D expenses expended abroad.

I truly believe that at last there is a consensus to make the R&D credit permanent. We at CORETECH were greatly heartened by the support last year for a permanent credit from Chairman Rostenkowski, a two-thirds majority of his Ways and Means Committee and a large majority of the House, together with Chairman Bentsen and a majority of his Finance Committee with strong encouragement from the Bush Administration, favoring a permanent extension of the R&D and basic research credits. This was a significant breakthrough. Indeed, for a few short days, a permanent credit had passed the House of Representatives, with the new Rostenkowski base period, and the Senate Finance Committee. But it was the "shortest permanent credit" in American history as the permanent feature was removed when the Senate passed a stripped down tax bill given the fight with the Administration over capital gains.

The case for a permanent credit has been bolstered by several studies. Two Brookings economists, Martin Baily and Robert Lawrence, did an extensive study in 1985 which concluded that the R&D credit increased industrial R&D by 7 percent above what otherwise would have been expected and increased annual real GNP levels from \$1.2 billion to \$7.5 billion by 1986 and in a range from \$2.9 billion to \$17.7 billion in 1991. R&D, in part due to the credit, increased for the first time during a recessionary period.

In 1987, these same two scholars did another study which concluded that "the ratio of R&D spending to output" during the period when the R&D tax credit was in effect, grew more than twice as rapidly as it did in the comparable period prior to enactment of the credit.

In 1989, the United States General Accounting Office (GAO/GGD-89-114) confirmed that the R&D tax credit had stimulated up to \$2.5 billion in additional research spending between 1981 and 1985 and stressed its additional social value. It suggested additional R&D would be stimulated by changing the moving base to a fixed base—just as Treasury, Congress, and the industry worked out in the 1989 Omnibus Reconciliation Act.

I believe it is not coincidental that R&D spending is leveling off in the past year or two as the value of the credit has been reduced and short-term extensions create uncertainty about federal tax policy.

But even with the consensus emerging for a permanent R&D credit, yet another provision can further reduce its incentive effort. Under current law, a taxpayer's base period amount cannot be less than 50 percent of its current research expenditures, meaning the credit can only be taken on the remaining 50 percent. But under the permanent credit which passed the House and Senate Finance Committees last year, this base limitation is increased 5 percentage points each year until it reaches 75 percent in 1995. Thus, only the increment of 25 percent of current R&D spending is eligible for the credit.

While the initial base limitation was passed to both limit the cost of the credit and to assure the credit was given on the basis of real incremental R&D effort, the idea of raising the base limitation of 75 percent would significantly reduce the incentive effort for a substantial number of taxpayers. For example, for taxpayers subject to the limitation at 50 percent, the marginal credit incentive of the 20 percent credit, including the full deduction disallowance, is 6.6 percent. If the limitation is raised to 75 percent, the marginal credit incentive drops in half to 3.3 percent.

The General Accounting Office (GAO) in its positive 1989 report on the R&D credit, strongly criticizes this increase in the base limitation. As GAO put it, we "would not recommend raising the 50 percent limit further—to 75 percent for example—since this is

likely to reduce the marginal incentive to less than 5 percent for a large number of firms."

2. The continued struggle over a solution to 861 is yet again an indication of the perseverance of our R&D tax policies. At the end of the Ford Administration, Treasury issued Regulation 1.861-8 under which a United States corporation must allocate a percentage of their domestic R&D expenditures to income earned abroad. This prevents companies in an excess foreign tax credit position—paying more on foreign taxes than can be claimed as a credit in the United States—from fully deducting their United States R&D expenditures.

This is a direct penalty on United States R&D. Treating these domestic expenses as if the R&D were conducted abroad—on the tax theory that products marketed abroad result from domestic R&D efforts—invites companies to move their R&D abroad where they can receive the fully deductible benefit of the expenditures. Obviously, West Germany will not permit a deduction for United States R&D expenditures disallowed for United States income and allocated to German income when the R&D was not performed in Germany.

By treating American domestic R&D expenses as if they were incurred abroad, the 861 regulations encourage companies to actually move R&D abroad. Simply, if the tax code tells you that a portion of your domestic R&D will be treated as though it were performed abroad—where labor is cheaper and where foreign governments often offer economic incentives for relocation—then it might as well be! If the United States wants to maintain or, better yet, increase its research force in this country, the government should clearly treat salaries for American Ph.D.s and engineers, for example, as American expenditures—because they are.

Domestic R&D primarily benefits the United States, so there is little reason to treat it as if it were conducted abroad:

- U.S.-based R&D develops products that are predominantly used by Americans;
- Domestic R&D also produces American jobs, encourages collaboration between

corporations and United States universities (which often results in corporate contributions to American schools), and trains United States scientists; and

— Because there is a close link between basic research and eventual product development, domestic R&D results in more manufacturing of new and improved products within the United States.

A book could be written about the history of 861. Congress from the start recognized the negative effective of the 861 regulations.

— In the Economic Recovery Tax Act of 1981, Congress adopted a two- year moratorium on Section 861's application;

— Another two-year moratorium was adopted in the Deficit Reduction Act of 1984, after Treasury reported that a reduction in domestic R&D could adversely affect United States competitiveness;

— This moratorium was fully extended for an additional year by the Comprehensive Omnibus Reconciliation Act of 1985;

— A partial moratorium was adopted for 1987 by the Tax Reform Act of 1986; and

— In 1988, Congress extended the moratorium for four months—to May 1, 1988, for most taxpayers—as part of tax technical corrections legislation.

Responding to a specific congressional request, the Reagan Administration, then led by Treasury Secretary Jim Baker and Deputy Secretary Richard Darman, negotiated an agreement with congressional leaders, to which the United States high-tech industry acceded as a way of getting this decade-long issue behind us, called the "67 percent" compromise. Under this compromise, at least 67 percent of a company's United States R&D expenditures cannot be recharacterized as foreign and can be set aside against domestic income. This was later reduced to 64 percent and this compromise was also incorporated for a one-year period in the 1989 Omnibus Reconciliation Act.

It is long since time to put this issue to rest permanently and to remove the cloud 861 casts over United States R&D. The Bush Admini-

stration has proposed in its FY 1991 budget a permanent solution along the lines of the compromise already agreed to. We hope Congress will follow suit.

B. CORETECH also believes that proper R&D policy must encourage a well trained scientific and technical workforce. We published a CORETECH report late last year on this topic. We found that the education of our current and future scientists, engineers, and technicians was inadequate. We already have a shortage of scientists and engineers. As our workforce in the next century will increasingly be Black and Hispanic—groups severely under-represented in sciences—this shortage will become even more acute. We cannot stay on top of the world's technological ladder without the trained personnel to run our R&D facilities.

The number of science and engineering undergraduate and graduate students is decreasing. The proportion of American undergraduate students majoring in the natural sciences has been decreasing steadily since the 1970s. Only 9 percent of entering freshmen in 1987 showed an interest in majoring in engineering, compared to 12 percent in 1982. Of every 100,000 high school sophomores nationwide, only 850 will earn a bachelor's degree in the natural sciences or engineering.

More than half of the new Ph.D.s in engineering and nearly one-third in the physical sciences are awarded to foreign nationals.

At the same time, we face a serious shortage of faculty in key scientific and technical fields. There are currently 1,400 engineering faculty positions vacant—between 7 and 10 percent.

While this is occurring, there has been drastic decrease in federal financial support for doctoral students. From 1970 to 1986, the number of federally-funded fellowships and traineeships fell from 60,000 to less than 13,000. Is there any wonder that we have a competition problem when we are decimating our scientific and technological workforce?! This has occurred while Pell grants for undergradu-

ates have dropped dramatically (from covering 59 percent of total college expenses in 1979 to only 29 percent now) as have other college-level programs like TRIO grant programs.

We welcomed warmly the Reagan Administration's and the Bush Administration's commitment to begin to address these problems by doubling the budget of the National Science Foundation over 5 years. In the 1988 NSF Authorization bill, a 5-year authorization was passed which provides for a doubling by 1993. This is appropriate since only 3 percent of the \$64 billion in the federal R&D budget went to NSF in 1988. But congressional appropriations have not kept pace with a 5-year goal of doubling.

The Bush budget for FY 1991 is one of the strongest in history for encouraging a strong NSF and a better trained scientific workforce. It provides over \$1 billion for science and engineering education activities for five agencies.

CORETECH made five recommendations to remedy the scientific workforce crisis:

1. Focus appropriate attention and resources on federal mechanisms to bolster elementary and secondary science and mathematics education, recognizing that the foundation laid by early education is critical to the entire scientific and technical pipeline and that the primary responsibility for the United States' elementary and secondary education system lies with state and local government.

2. Substantially increase support for undergraduate and graduate education in the sciences and engineering and for modernization of university research facilities.

3. Expand programs to raise the percentage of women and minorities in our scientific and technical workforce.

4. Support, and stimulate, career-long continuing education programs.

5. Foster communication and collaboration among government, industrial, and educational partners to maintain the excellence of our scientific and technical workforce.

C. The third leg of our R&D policy triad is

modernizing R&D facilities. Our goal is to improve the physical infrastructure in which basic research is conducted on our universities and non-profit research institutes.

United States academic research facilities, in CORETECH's opinion, are in alarming condition. The world class research we need to stay competitive cannot be done in antiquated facilities, inadequate space, and outdated equipment.

The serious deterioration in United States university research facilities has been recognized by both the White House and the Congress.

In 1986, President Reagan's White House Science Council completed a major study and called for a 10-year, \$10 billion program "as the necessary minimum" to renovate and modernize scientific facilities and instrumentation.

CORETECH worked hard with Chairman Bob Roe and Senators Dodd, Kennedy, and Hatch to pass a bipartisan plan to take the first steps to deal with this R&D facilities challenge. The result was that in 1988 Congress created a matching grant NSF university/non-profit research institute modernization program as part of the NSF reauthorization bill. This program authorizes \$125 million for facilities modernization in 1990, \$187.5 million in 1991, and \$250 million in 1992 and 1993. Last year Congress appropriated \$20 million for this program and the Bush Administration sought \$20 million in the President's budget for FY 1991.

The challenge is indeed daunting. As the President's budget itself recognized: "Without the specialized R&D facilities such as the particle accelerator telescopes, research ships and planes, the process of gathering new knowledge would be greatly diminished. General purpose laboratories and research support facilities are also important, particularly where such facilities are used for the training of future scientists and engineers."

A NSF study showed it would cost approximately \$3.6 billion to undertake all the repairs and renovations needed in university research facilities for 1988 and 1989 alone. But

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universities can only budget a fraction of this need. They are repairing and renovating only 9 percent of their current space even though 39 percent is in need of attention—thereby deferring \$3.60 in needed repairs and renovation for every \$1 planned.

We believe Congress should fully fund the new NSF research modernization program and that it can do so while continuing to substantially increase the other important NSF programs.

Stimulate more industrial sector and university R&D by tax incentives to give the private sector the maximum flexibility on where to target their research. Invest in a stronger scientific and technical workforce for America so it can help do the additional R&D the tax incentives will provide. Modernize our research facilities so this added R&D can be done in state-of-the-art conditions. These together are a coherent R&D policy for America. These together can and will improve United States competitiveness and add to our national wealth.

Richard Grafmeyer

Richard Grafmeyer, Minority Tax Counsel for the Senate Finance Committee, offers an overview of tax legislation in Congress and the prospects for the success of any specific R&D modifications.

He states that he doubts the tax-writing committees will revisit the issue of the credit's redesign in the near future. He says the committees would like to wait until there is more statistical data on the effectiveness of the credit as an incentive to invest in R&D. Mr. Grafmeyer does reassure his audience that the Committee is listening to taxpayers who have specific problems with the current credit structure, but he reminds those present that everything is subject to budgetary constraints.

He says that Congress understands that planning for future R&D expenditures is difficult while there is uncertainty about the future of the credit and the allocation rules. He thinks this is why a permanent extension of both these items passed the tax-writing committees last year. Both were stripped out of the final bill, however.

Mr. Grafmeyer notes that Congress is operating under the assumption that there will be some kind of revenue package this year. He does indicate that any revenue bill will be required to raise five times the revenue raised by 1989's Omnibus Budget Reconciliation Act.

Ending on an encouraging note, Mr. Grafmeyer says that R&D issues are high on most members' "A" list.

I was sitting here listening to Xerox's audit problems earlier, and I will bet that none of you in this room can figure out why I left corporate tax departments to come work on the Hill. How I used to enjoy that.

I am here to tell you a little bit about the outlook for general tax legislation in Congress this year—specifically, what the prospects are for R&D. The best way to start is to look at last year's tax bill. Prior to last year's tax bill, we heard a lot of debate over whether R&D tax credits provide companies with the proper incentive to increase their R&D expenditures. We heard a lot of debate about the tax credit and allocation rules that were in effect prior to the 1989 Act — whether they favored fast growers, slow growers — it just went on and on.

I guess it is our belief, from a committee perspective, that the redesign of the credit that was agreed to in the conference agreement in last year's Budget Reconciliation Act, has finally put to rest, at least for a while, these debates of whether the credit is properly designed, who it benefits, and things like that.

Whether you disagree or not with how the credit was designed in the conference agreement in 1989, I believe that both committee staffs will be a little hesitant to revisit the issue of whether the credit really works again. I think from Congress' perspective we would like to wait a couple of years, get some more statistics in on how the new base period works, how it affects companies, and who is affected, who is gaining by it — just see how it is working.

If it looks like it is providing an incentive, obviously there is no reason to revisit it again. I think we want to wait a little bit and step back and take another look at it in a few years. I think we would like to let it lay and rest for a while.

Now having said that, there are probably some nervous people in the room thinking, "Well, I have some real issues with the design problem," and I don't want to preclude the fact that we are having people come in through the doors asking for some minor changes to the credit's design. As usual, there are always people who want changes in the tax laws, some of them very well deserved. For instance, we are hearing from companies who come in and say, "We have extraordinarily large downswings in income in those base period years that we have to work off of. This is obviously going to be a large detriment on the amount of credit we can take in future years." Other companies have said, as Stu was mentioning, that they have a real problem with the increase in the minimum base period from 50 percent to 75 percent. Again, we are listening to those things. The problem with those and other similar items is that they are all going to be subject to — as I am sure you have all heard before — revenue constraints.

In reality the extension of the credit itself and the extension of the allocation rules, as I think we have been beating to death here today, are all subject to the same thing. There are so many items competing for a very limited amount of federal tax dollars. Again, 1989 was the best example I can think of.

As we mentioned, the permanent extension of the credit and the allocation rules that were out there for a week or so are the best examples. The nine-month proration that ended up occurring was, again, a result of revenue constraints in conference. It is interesting to note that when the nine-month extension was being negotiated, as usual it was one of those late-night negotiations that is always joked about in publications and elsewhere. But I got a lot of calls both from without and within Congress assuming there was some sinister plot going on and that this really was another

way to lower the credit rate down from 20 percent to 15 percent. So I was busy the whole next day trying to reassure people that that wasn't the case. Again, that proration strictly involved revenue constraints, but I am sure there are some people out there who still believe Congress and its staff, especially in Joint Tax, had something to do with trying the lower the credit rate. Again, it was just a compromise.

As I am sure Congressman Anthony mentioned today — I missed his discussion — the staff up on the Hill and many of the members of both the House and the Senate fully understand the fact that to be really effective the credit and the allocation rules need to be made permanent. We understand that regardless of the studies that say how the credit works or how the allocation works and how it affects different companies, I think there is finally — and I won't say this is always the case, an understanding on the Hill that corporate tax departments and corporate finance departments really can't take the credit and how the allocation is going to work into account when they are trying to figure out financing and the budgets for long-term R&D projects if they don't know what the law is going to be in the next year or two. Believe it or not, I think Congress finally has gotten that through our heads, and we understand it. I think that is why we at least momentarily saw a permanent extension of both of those items.

There was a lot of discussion about that when it happened, but again, it was just one of those kinds of compromises that came out.

I don't think anyone felt very good about it. I do think that everyone understood the importance of permanently extending the credit and trying to do something permanent with the allocation rules.

Obviously, I have been talking a lot about revenue concerns and things like that, and I think it is appropriate at this point in time to go into a little bit of the big picture of where we may be this year.

The way I always like to start this is to look at what we did last year. Last year's bill raised \$5.6 billion for the fiscal year and \$24.6 billion

over the five years. If you have been following it in the newspapers and tax journals, we don't have a budget resolution yet, and I can't see one coming in the near future. But if we assume that eventually the tax committees will be given a target, approximating what the President has in his budget, which is around \$13-14 billion, that would be around \$60 billion over five years. Now, let's add to that the approximately \$11.3 billion over five years that capital gains would cost. I mention the fact that the President's budget targets exclude any capital gains for corporations which would obviously increase it even further. Then you have to add to that the approximately \$22 billion that it would cost over five years to extend permanently many of the expiring provisions, and the approximately \$5-10 billion that IRAs or Family Savings Accounts or other savings-type incentives will cost. If you add all of those together they come up to approximately \$100 billion over five years. That would be the size of the tax bill we would need to do if all those items I have mentioned that have gotten a lot of press are included.

That is a mere five times the size of last year's tax bill. I will tell you right now, that Congress takes a lot of hits for finding small items throughout the Code to try to raise revenue. There are not enough small items in the Code to raise that kind of revenue this year. That is why I think you see a lot of starts and stops going on right now, and basically everyone is unsure where we are going to go this year with these kinds of tax bills. I think it is not clear to all the members exactly what kind of tax bill there will be and, obviously, as it looks right now, even any kind of timing of a revenue bill this year.

I think, from our perspective, we are working under the assumption that we will have some type of revenue package this year — be it in the context of Reconciliation or, potentially, outside the Reconciliation process, which has been talked about a little this year. But the exact make-up of that and where we are all going, that is really up in the air right now, which of course the members just love, par-

ticularly because it adds confusion to everything that is going on throughout Congress, and makes them unsure of what we are going to be doing.

I want to mention a couple other topics. It seems like, at least from the last few speakers that I was able to hear, they spoke a lot about the importance of R&D in keeping America strong in the competitive worldwide marketplace. Again, the problem the staff, and the Senators and Congressman have is that we don't get the luxury of tunnel vision. We have to look at the broad perspective.

When we look at capital gains, we look at savings incentives; we look at things like educational assistance. And yet we hear from everyone who comes in to lobby those issues that those are the things that are absolutely, positively necessary to keep America competitive in the worldwide marketplace. Without those items, America is going to go right down the tubes.

Obviously, the problem we have is balancing all of these very equitable arguments and trying to come up with a solution. That is why I think in the last couple of years you keep seeing these short-term extensions. Again, it is not something everyone is pleased with, but we are just juggling these balls and trying to come up with the best types of tax policy we can. Obviously, when I describe a potential tax bill five times the size of last year's tax bill, it calls into question whether we are going to be able to do that size of bill this year.

Who is going to win out? It is probably too early to tell. I would say the R&D-type issues are way up there on the "A" list of most members, based on the discussions we've had within the committee. My personal opinion is that there will be at least a temporary extension of those credits and the allocation rules. But I still think that a lot of people, such as Senators Danforth and Baucus and the Finance Committee, will push as hard as they can to get a permanent extension, and I can imagine we will be looking at that.

Other changes to those types of rules are going to be totally revenue driven. It probably

will have nothing to do with whether people have equitable arguments for some of the changes they may want to have made. I guess

we would be less inclined to make any changes right now until we see where we are going. That is as brief as I can be.

Q & A

Q: Is the nine-month proration something that will be picked up in a new bill so that people get the remaining quarter, or is that specifically going to be cut off?

Grafmeyer: No. It is intended that we will pick that up at some point. Obviously, the big concern for folks here in this room is what happens if we don't do a bill until sometime in middle or late September when that proration is already gone. We went through this type of process before with educational assistance where we retroactively extended it. But from a corporate tax perspective, it made all your lives miserable. Again, we are aware of that.

A lot of this is involved in mega-politics way beyond the small issues of R&D, but I would say right now I can't imagine that we wouldn't pick up the other quarter.

Q: [Editor's note: There were difficulties in transcribing this question, which has thus been rephrased.] It is clear that revenue constraints will affect decisions regarding changes in the tax law. It is also clear, however, that staff or CBO or Treasury estimates are inaccurate. None of those organizations use a dynamic method of estimating revenues. Is it true that what you are telling us is we can't move ahead on new legislation without considering budget constraints, but the revenue estimates we have to rely on are inaccurate and may price the cost of the R&D credit and some of these other incentives much higher than they should be because the estimates do not take into account the return the economy gets from the investment in R&D?

Grafmeyer: All I can say is that is something that — more so in the last couple of years — we have heard more about and I think you have read more in publications about the revenue estimating process and how it works. I

think that is good for the system. I understand the dynamic part. The problem is depending on whose estimates of GNP and inflation rates you use, it really skews the numbers tremendously. It is just very difficult to do. I understand your concern. It is tough for me to sit here and try to address that and I appreciate it.

The other comment I probably didn't make when I spoke is that it is just not the R&D numbers we are concerned with when we talk about extending expiring provisions because those seem rather small when you compare them to items like capital gains. Capital gains, according to Joint Tax, is a larger revenue loser than the R&D extension. I think what happens is all the extenders — 13 or 14 of them — are almost hooked together as a package. That may be unfortunate for this group here, but a lot of the other people whose extenders may not be as popular as R&D is, obviously try to foster putting the extenders as a group. Even though the two R&D provisions may only cost \$1.4 billion or so in the upcoming fiscal year, when you put them all together with the other ones, it starts to be two or three when we get to the \$22 billion. That is also a dynamic that enters into it.

Eizenstat: I would just like to say even more broadly that having put budgets together myself, they are difficult and you do have to make very tough decisions. You have to be able to find the money.

We found \$167 billion for the S&L industry. We are finding \$800 million right now for emerging democracies. We are going to find \$400 million for housing in Israel for Soviet Jews. The money is there if the priority is there. I think what is needed is a sense of urgency about this priority and we will find the money.

Q: Stu, I would like to ask if you can tell

us the flavor on the Hill now that the Tax Reform Act of 1986 has molded the corporate tax environment. Now that the corporate rate has been lowered is Congress less willing to provide tax incentives like the R&D credit?

Eizenstat: No. I really haven't found that an argument at all.

I don't think that is our major problem. I do think that Rick is right. The major problem is that there are a lot of other things competing for the limited tax expenditure budget. But we are not faced with an argument that we have already lowered corporate rates, because I think it is recognized that this is a specific incentive geared toward research and development, and that general corporate rate reductions don't necessarily help that particular national priority.

Grafmeyer: One other thing I will just throw out to address that, too, is that there is a difference between the marginal rate and the effective rate. I think the Finance Committee is going to be having a hearing on this next week, which is especially important in that the Tax Reform Act — even though the rates may have gone down — because of a lot of other broad-based changes that were made — the effective tax rates for a lot of people in this room may actually have gone up. So, from a staff perspective that is why I don't think you hear that kind of bargain.

Moderator: I would like to thank the panel. We will have a short break, and then we will reconvene for our second session.

SESSION TWO

Mapping Out Sound R&D Policies for the 1990s

Panel Chairman: M.D. Menssen
Vice President, Taxes
3M

Anthony Billings
Associate Professor of Accounting
Wayne State University

Robert N. Mattson
Assistant Treasurer
IBM

Michael J. Graetz
Deputy Assistant Secretary for Tax Policy
Department of the Treasury

M.D. Menssen

Why would they take a controller and move him into tax for a company the size of 3M? There is really only one major reason for that, and I think it pertains to what we are talking about today. 3M wanted to get the operational part of the company closer to the tax division, or, as the tax people thought, it was to get the tax division closer to the operating people. As I listen to the discussion that is taking place on R&D, perhaps we need to do more of that on the R&D issue.

Now, we have a very well-known panel with a lot of knowledge, and we have a lot of people in the room with a lot of knowledge. It is very interesting to note on the subject of R&D how little research has been done on the tax side, and how few creative solutions we have come up with. I really challenge the panel here to think of some creative ways that we can solve the dilemma of the United States R&D problem in the '90s, because I do believe it is very acute.

War Story number one, and I promise this is the only one I will tell. I came into an operating unit in 1966. It was the electrical unit, and I am sure many of you have used electrical tape for various things around the home. This was a product that had its maturity. We have a few other electrical tapes, but for a three-year period, this product line had been going downhill in both sales and profits. 3M reorganized it, and they took a bunch of young Turks — young at the time — and put six new people in

charge of this operating unit. I happened to be the controller at the age of 32. We had decreasing sales and profits for three years. We had an R&D budget that was about 4 percent of sales — very low by 3M standards. We met, and at the first meeting the general manager of the division said to me, "Buck, your job is to find some way of getting the budget of R&D up to eight percent. We want to double our R&D budget and get some new products." So, I trot over to my boss, the corporate controller, and I say, "we would like to have another drop in our profit of about four percentage points because we want to put that money into R&D." I must remind you that this person was a P-51 pilot during World War II and he knew a lot of four-letter words, and I learned all of them that day.

The next trip was to go down to the manufacturing group because 50 percent of our costs were in manufacturing, and to meet with the manufacturing director and his plant managers. They were all either infantry, artillery, or marine officers during WWII, and I learned a few more four-letter words from them.

So, this thing about the Treasury coming up and saying every time we want something for R&D or some other issue, we simply have to raise taxes — I just don't believe it.

I went down to the factory during the next year and I was not the most popular person in New Ulm, Minnesota. We turned over rocks

and we looked under rocks. We came up in that first year with a decrease in our manufacturing costs from 50 percent down to 45 percent. It can be done. I think if Congress and Treasury have to take a course in turning over rocks, then I think they should take a course in turning over rocks. Now they can say, "Buck, we have the voters to face, and you simply could tell your people down there what to do at New Ulm, Minnesota." Those World War II officers were not too gentle either on a person who had just

gotten out of the Korean War, but we did our job and I think they simply have to get on with that.

What was the result of this increase in our budget, in the doubling of it? That division tripled sales and profits in six years. Is R&D long term? Not necessarily. Some of it is. But we can get this country rolling again, I think, in short order if we simply start putting some money into the R&D line. I think there should be a creative approach.

B. Anthony Billings

Professor Billings of Wayne State University, conducted a study of corporations and their R&D expenditures. He attempted to pinpoint the specific economic factors that motivate or restrain R&D spending. Professor Billings feels that in order to turn the current trend in R&D investment around, some degree of corporate integration is necessary. He says the incremental credit formula is not the answer.

Professor Billings' study indicates that those companies with considerable spending on R&D had higher profits than comparable companies that did not. He notes that industry spending generally determines the range of spending by particular firms. Professor Billings claims that as the R&D intensity of a firm increased, its debt-to-equity ratio decreased. Thus, he concludes that R&D spending has a positive effect on equity financing.

Billings presents the methodology used for his study. He explains in detail the variables he considered in setting up his three models, which represent three different time periods. On the basis of his study he ultimately concludes that while changes in the credit formula and the allocation of R&D have an effect on R&D intensity, the fundamental variable is the company's capital structure. He recommends corporate integration and says the billions it would cost would be a small price to pay for the benefits it would yield.

[Professor Billings' paper is available from the Foundation.]

I should tell you that my undergraduate taxation professor sits in the front row and I'm somewhat worried about the prospect of getting a grade on my paper. However, I should remind him that I got an "A" in his class by a few points. Hopefully, he will keep this in mind.

For the next twenty minutes or so I will talk to you about the study I conducted. I

started this at 3M and continued until about two weeks ago. The results concern the R&D intensity of a firm and what I consider to be the specific economic factors that motivate or, on the other hand, constrain R&D spending. I will conclude by saying that, based on my results, corporate tax integration may be needed to somehow turn the tide with respect to R&D.

We heard a lot today about tinkering with

the incremental R&D credit formula, and I like to think of that as being tantamount to putting a patient on a respirator when there is little or no chance of survival. I will tell you why. After the law that passed, I went to the data base having financial statements. I pulled 100 firms at random. I pulled data from 1984 through 1988, and I got estimates for 1989 through 1992. I set up a Lotus spreadsheet and looked at the available credit under the old law and under the new law. In each case, when sales remained constant for a number of years or when sales declined, the R&D credit disappeared.

Having a little bit of distaste for reality, I sought to construct my own numbers. What I did is for five years I kept sales constant. In another five years I caused sales to increase by five percent, and then for the subsequent five years I caused the sales to decline by five percent per year. The results were once again confirmed.

What can you gather from this? Maybe the incremental credit formula is not the answer. Some other approach is needed.

Let's talk briefly about how the United States stacks up with respect to the other industrialized nations, such as Japan and West Germany; then we will look at what has been done in the R&D area. I will talk briefly about the method I used to investigate, some of the questions I considered, and some of the results — particularly with respect to corporate tax integration. Let's discuss R&D with respect to how the United States compares.

National Science Foundation data shows that in 1965 the United States had 27.5 percent of global sales of technology in terms of products, as compared to 7.2 percent for Japan. But by 1986, the United States share had declined to 20.9 percent and the Japanese climbed to 19.8 percent. Over this same period, if we consider non-defense R&D spending as a percentage of GNP, the United States ranks significantly behind Japan and West Germany.

Countries such as the U.K. and France have traditionally spent well below the United States level. But by 1986 they were on the same level as the United States. How do we explain

this? I am not saying here that there is an association between exports of technology in terms of products and R&D spending. What I can say is that the economic literature discusses the theory called the product life cycle theory. What it suggests is this. In the early stages of production countries are able to export a significant amount of goods. In the later stages, production moves overseas. This is when saturation takes place. If we look at the sales of technology in terms of products and R&D spending, what can you conclude? There is some information there.

I next considered the literature on R&D and looked over the last 20 years at what had taken place. There are three basic lines of research. One line looks at R&D spending as a percentage of sales. These researchers divided R&D spending into two groups: one group with the lower spenders, the other group with the high spenders. The profitability of the high spenders and low spenders was compared. Studies differed as to whether or not R&D spending made a difference. By and large, the later studies confirmed that high R&D spenders generally enjoyed higher profits.

The second line of research tried to identify what I would call industry effects in explaining R&D. They found that the level of profit and liquid resources from operations pretty much explained the level of R&D. For example, measures such as gross profits, operating income for depreciation, and income before extraordinary items all explain R&D with a lag of up to four years.

Some studies have found that liquidity — that is cash flow from operations — has little or no effect on the R&D intensity of the firm. Studies have looked at industry facts, and on each occasion spending in the industry pretty much determines the spending by particular firms.

When one considers all these studies over 20 years, no study to date has considered the effect on the capital structure or federal taxes and how these variables affect R&D spending. So, during my time at 3M I collected data for 1987 for the top 100 firms. I ran a regression

model, and included a variable which is defined as follows: the long-term debt of the firm divided by total capital; then I included all the other variables included by prior research. What did I find? As the R&D intensity of the firm increases, the debt declines. The debt-to-total capital declines. Stated differently, R&D funding is a positive function of equity financing.

What I sought to do at that stage was to look at the broader, longer period of time. So, I went back to the year 1970 and I got a data base from the Compustat Industrial Manual. I collected data for all non-financial firms over the 1970s through the 1988 year. I came up with 2,700 firms with usable data. I then went back and dropped all firms with incomplete histories, meaning that for a few years they did not report or that they were involved in a merger. I was left with 700 firms. I then eliminated firms with missing data, and from the final sample I had 385 firms over 18 years with complete data.

I then sought to look at the debt position of the firm, profitability and liquidity as pointed out by earlier studies. After developing my models I noticed a paper published in 1988, which I missed in my first review of the literature, suggesting that for new debt and equity issues, for example, outside funding given insufficient cash flow from operations may also be significant in explaining R&D intensity. So, I included both variables in my model. I developed models over the 18-year period. I then sought to determine, given the various changes in the tax laws over these 18 years, how the results changed from one period to another. I referred to changes in Section 11 of the Code for differences in rates at the high and low end. I considered that criterion. I also considered changes in the law. For example, those changes that affected the tax base and not the nominal rate, *per se*. That was another criterion I could use. The third variable I considered was periods having homogeneous tax rates.

So, I had three possible factors to use in dividing my data over these 18 years. After

about one month of struggling with this data, I decided I would develop three separate models and I would test the phenomena three different times. That is what I did.

The results — much like I expected over the 18-year period for all three models — I pretty much confirmed what prior research had said about profitability. However, three novel results emerged. One, outside funding from operations — for example, funds from new equity issues — did not play a significant role in funding R&D in the 1970s, but by 1981 new equity issues provided significant sources of funding for R&D. What would you expect of debt financing? The debt variable had no effect at all on R&D. This means that new debt was raised each year because cash flow was insufficient. The third result, much like we found in the earlier study, was that as the debt relative to total capital increases, the R&D spending of the firm declines.

What does this mean with respect to R&D funding? It means that changes in the incremental credit formula and issues surrounding allocation of R&D may be quite important. But there is a more fundamental problem; the role that capital structure plays in explaining R&D. This has been ignored totally for the 20 to 25 years that we have been studying R&D.

So, what do we do? I think, in concluding, I would suggest that, all things being equal, corporate tax integration may be the most important change that could ever be made to remedy the problem. A lot of commentators are quite worried about the cost of tax integration. I have seen figures suggesting that as much as \$38 billion in revenues could be lost due to corporate tax integration.

If we consider the export sales that are lost and the revenue potential of the United States Treasury, I think it is a very small price to pay. In real terms, if we look to 1965, if we tabulate the lost sales in today's dollars, if we should for some reason be able to recapture the lost sales since 1965, we would be able to pay for corporate tax integration and many other measures that we are now concerned about. It is a bold approach and runs counter to what we have

heard from many of the speakers today, but I think if we look at the problem more closely,

we will all conclude that it is the way to go. Thank you.

M.D. Menssen

I would like to reinforce that last point and that we doing further study on that with Tony at 3M and that is that export market, and it doesn't take a whole lot of brainpower and you can ask any controller of any major corporation that does R&D; it isn't the same paper in the tape that we send overseas out of the United

States. It is the post-it notes and the memory technology stuff; the high-tech stuff that runs about 10 percent to sales that we ship overseas. I think we must remember that when it comes to whether or not we solve this problem of R&D.

Robert N. Mattson

Robert Mattson, Assistant Treasurer of IBM Corporation, provides the businessman's approach to R&D policy decision-making. He says that to understand the businessman's approach to mapping out R&D policies for the nineties, you have to examine trends in technology as well as the economic atmosphere in which these decisions will be made. He notes that R&D is an ongoing process. He says once you develop technology, you have to begin developing new technology so that you and not your competitor makes your old technology obsolete. Mr. Mattson also notes that R&D is incremental, which is why he disagrees with a time-line approach to the credit.

Mr. Mattson sees the climate for R&D development in the U.S. changing in recent years. He says that companies that once viewed each other as competitors for R&D innovation now pool their resources. He notes that the trend is to cooperatively develop technology on a worldwide scale. He also says that the U.S. joint venture provisions have not kept pace with this trend. Mr. Mattson explains how the companies involved in these partnerships reap the direct benefits of the technology, and how they reap indirect benefits as well.

Mr. Mattson makes several recommendations. Like Ed Harding, he says that R&D should be defined using a functional approach to determine what types of research qualify for the credit. He states that future R&D projects will have to be worldwide efforts to achieve success; thus, he sees Section 861 as counter-productive.

He also says that the cost of capital must be reduced, and believes integration could be one step toward accomplishing that.

John Akers, IBM's CEO, has said that "You can't manage an IBM for 90 days — if we're not investing with a longer term in mind, investors will be very unhappy four to seven years from now." IBM continues its heavy investment in research and development growing from \$5 1/2 billion in 1987 to nearly \$7 billion last year — a year when short-term performance was difficult due to restructuring the business.

A rational and sound R&D tax policy should be supportive of and encourage our nation's R&D efforts. The businessman's approach to mapping out sound policies for the 1990s and beyond starts with an inquiry of

how today's R&D activities will be changing in the future. For this we have to look at trends, not only in the technical nature of R&D activities themselves, but also in the economic arrangements which make these activities possible.

For our purposes today I have broken these trends down into three themes: First, that R&D today is and must be evolutionary and not revolutionary in nature. Secondly, that R&D has become global in effort, cooperation and funding; and lastly, that R&D benefits are dispersed beyond the business performing the activity. These are realities that must be recognized and from which appropriate tax policy

must be formulated.

For Corporate America, R&D is an ongoing and continuous activity with dedicated research scientists, engineers and technical people of all kinds working usually at research sites and laboratories.

However, R&D is not just scientists working on laboratory experiments and attempting by experimentation to make radical new discoveries or develop innovative processes or come up with a "super" invention never before heard of. Ralph Gomory, formerly IBM's Chief Scientist and now President of the Alfred P. Sloan Foundation, refers to an R&D "ladder" process. It is a process of building on knowledge step by step until the top of the ladder is reached and you have your radical discovery, innovative process or new invention. But once that is achieved, rivals begin to climb your ladder and exploit your knowledge and ideas. Then, in order for you to maintain your competitive advantage, you have to start building a costly new ladder.

"Innovation by Japanese companies is 15 percent faster and costs up to 20 percent less than that of U.S. firms — an unbeatable combination for winning market share and profits," says *Fortune*. It goes on to say that, "A few American companies are beginning to fashion themselves into tinkerer organizations.

Hewlett Packard, for example, is tying its research engineers more closely to the engineers who supervise the production lines and exploiting scores of small breakthroughs. H-P last year introduced its market-beating DeskJet printer, which it developed in just 22 months — less than half the time it used to take to get a complete new product to customers."

Peter Drucker in a *Wall Street Journal* article on "The 10 Rules of Effective Research" commented that every new product, process or service begins to become obsolete on the day it first breaks even, and your being the one who makes it obsolete is the only way to prevent your competitor from doing so. Thus, while a successful product is in manufacturing, a research and development team must be working on the next improved version. Take for

example the dramatic advances in the semiconductor industry. While 256K memory chips were being manufactured, development teams were working on the design and manufacturing process for a 1 megabit chip. When that was ready it went into manufacturing and the 256K chip was phased out. At the same time the development people were starting over again on the 4 megabit chip, and the process continues today. The same cycle of manufacturing, product improvement and new manufacturing is followed in many other industries. And the Japanese have mastered the cycle approach to technology.

Obviously, the process of incremental improvement to existing products requires teamwork on the part of scientists, product engineers and manufacturing technicians. Each member of the team must be well informed in the relevant sciences and technologies and keep up to date on what is happening not only in university laboratories but in other companies as well. Interdepartmental communication which permits a steady exchange of ideas between the basic research laboratory, the product development labs and the manufacturing function is essential for product and process innovation. Today, R&D must be an evolutionary-step-process to succeed in the competitive world!

The concept of teamwork in the R&D process goes beyond the confines of one's own company or any country's border. This brings me to the next point I want to make on the changing nature of R&D.

In the past, United States companies generally did not engage in cooperative research efforts. Research and development activities were treated as proprietary information and the results were not shared with anyone, not even with potential suppliers of equipment and material and especially not with competitors. This resulted in inefficiency, duplication of effort, and slow transfer of technology from development to manufacturing. Research projects were limited by the financial resources of individual companies.

Since the late 1970s there have been drastic changes in the position of the United States in the world economy and global technology. American companies are facing intense foreign competition at home and abroad and the pace of research has to be accelerated in order to keep up. The cost of research is rapidly increasing while at the same time United States government funding is being cut back. And investment spending in the United States is today the lowest of the major industrial nations.

In order to meet the foreign competition, cope with the high cost of capital, work with reduced R&D budgets and spread the inherent risks of R&D, U.S. companies are joining together in research consortiums, university partnerships and joint ventures. *Scientific American*, in its May 1989 issue noted that there are more than 75 research consortiums scattered across the country investigating everything from cement to semiconductors. Many companies confine their in-house R&D activities to applied research but obtain the results of basic research through networks of agreements with hundreds of universities. Many others are overcoming their past resistance to cooperative research and forming joint ventures to develop manufacturing processes, product improvements and new technologies.

This trend toward R&D alliances is moving quickly to a worldwide scale. Just last week it was announced that the National Science Foundation Network, the partnership that runs this country's biggest research and education computer network, has established a fiber optic cable link with the European Academic Super Computer Initiative Network, its European counterpart. Now researchers on both sides of the Atlantic will be able to collaborate on projects and share information in the form of text, charts and graphics with greater clarity and at transmission speeds much faster than existing satellite links. Incidentally, IBM is a partner in both the United States and European networks.

Joint ventures are being formed between United States and foreign companies to develop new products and processes. Some

United States companies are funding research at universities overseas, and conversely, some Japanese and European companies are funding research activities at American universities. The advantages derived from these arrangements are indispensable to firms that compete in the global marketplace. By expanding research activities overseas, U.S. companies gain access to customers and the rapidly evolving technologies needed to meet the customers' needs. It enables them to understand and meet local standards and comply with legal, financial and regulatory requirements. A local presence gives them the ability to attract and recruit foreign talent particularly skills which are not available at home. R&D has clearly become global in its deployment!

What about the dispersion of benefits! The commitment of resources to research and development is a high risk, long-term investment and a company that makes such an investment rightfully expects to reap the benefits in the form of increased markets and profitability. There is no doubt that successful R&D can be highly profitable, but the question is, who realizes the profits?

According to the conclusions of many economic studies on the subject, a firm will never be fully compensated for its development of a new product or process. The benefits will spill over outside the company to others in the same or different industries. R&D investments may lower a firm's costs or increase its production, but as a result of spillovers, the cost, productivity and demand for the products of other firms will also be benefitted. For example, improvements in semiconductor chips enhance the performance of such diverse products as computers, TVs, anti-lock brakes and telephone systems. *Fortune* in December 1989 quoted Ed Mansfield, Director of the Center for Economics and Technology at the University of Pennsylvania. Mansfield estimates that the return on R&D investment to the company making the investment averaged a healthy 25 percent. But as imitators reengineer and refine the pioneer's breakthrough

they and their customers reap returns averaging 56 percent.

Thus, it is necessary to recognize that there are additional social and economic rates of return on R&D, that is, benefits to the national economy and society in general which in total are far greater than just the rate of return to the investor in R&D.

These then are the realities that should be the starting point for the development of sound tax policies. Let's look at each of these three trends again but this time overlay what the appropriate tax policy should be to ensure that the technological innovations necessary for a healthy expanding economy are encouraged.

First, by recognizing the incremental nature of most R&D, a sound policy should ensure that when the tax code and regulations define R&D, whether for credit, deduction or other incentive purposes, a functional approach is the only sensible definition to use. R&D is R&D whenever, wherever and however performed! To use any other nonfunctional criteria such as a time-line or "significance" test, as was recently proposed in regulations, not only produces a technically incorrect result but becomes administratively difficult and is certain to lead to endless disputes and bickering between taxpayers and the Internal Revenue Service. And it defeats the tax provision's intended purpose to encourage R&D.

The Internal Revenue Service's decision in 1983 to revise the long-standing definition of "research and experimental expenditures" for purposes of Section 174 was undoubtedly driven by the newly enacted tax credit for incremental research and development expenditures.

However, in the Tax Reform Act of 1986, Congress adopted more restrictive rules for determining which research expenditures merit a tax credit, and in so doing removed much of the reason for revising the Section 174 definition in the first place. The tax credit rules specify, far more concretely than an ambiguous standard of "significance," which types of research qualify for a tax credit, and which do

not. There is no longer a reason, if ever there was, to introduce the uncertainty of a "significance" test into Section 174 where neither statutory language, the legislative history, nor the existing regulations supports such a test. Indeed, the broadly remedial purpose of Section 174 would be best served by a liberal reading of the statute that decreases rather than increases uncertainty of taxpayers engaging in R&D, as well as the Internal Revenue Service's administrative burden.

Secondly, the trend toward globalization means a more competitive marketplace, and to be a player in that market, a company must be able to cooperate and share resources with a variety of new United States and non-U.S. partners to achieve success. R&D for world class products in a world market will have to be undertaken anywhere in the world where the people, resources and knowledge exist and it will need to be done in the most efficient, least duplicative way. Our policy should be to strengthen the international competitiveness of U.S. companies by removing tax barriers to the movement of technology, eliminating complexity and inequity from the tax code and ensuring that foreign earnings will not be directly or indirectly subject to double taxation. In this connection, proposals such as the 1989 House provision to capitalize foreign-based R&D are economically counterproductive as well as discriminatory. Lookbacks and recomputations as in the uncertain "super royalty" provisions are not the real world and not the way most technical licensing arrangements are made. To apply such rules unilaterally will put United States companies at a major competitive disadvantage compared to their non-U.S. competitors.

And there has been a turn back to double taxation of foreign earnings. The most egregious examples of this anti-competitive position are the limitation on the use of foreign tax credits against the alternative minimum tax and unfair allocation of U.S. incurred expenses against foreign source income. When such allocations are made, the expenses incurred in the United States in effect are not deductible

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anywhere. From the standpoint of U.S. competitiveness in global technology, the ideal resolution of the issue would be complete repeal of the regulations which require the allocation of U.S.-based R&D expenditures, but recognizing the current budgeting constraints, we should at least have the 1989 (64 percent) direct allocation method enacted on a permanent basis.

Finally, in formulating a sound R&D tax policy for the future, the government must take into account the high cost of capital and recognize that those who take on the risks and commit the resources seldom realize fully the benefits and profits of successful research. Sound policy should encourage the necessary long-term investments by offering incentives which lower the cost of capital used for research and development. Recent temporary extensions of the R&D credit have considerably watered down its incentive effect by lowering the rate from 25 percent to 20 percent and denying deductions for part of the qualified R&D expenditures. The credit should be improved and made permanent. It should be

expanded to include start-up companies. Assets used in research are now depreciated over their approximate economic lives. Under no circumstances should those lives be lengthened, and indeed, consideration should be given to shortening them as an incentive to invest in them.

It should be recognized that the social rate of return on R&D investments, that is, the benefits to the national economy and society in general, is much greater than the rate of return to the investor in R&D. Economic benefits in the form of new jobs, increased productivity and enhanced competitive position in world markets will more than offset the tax revenue foregone by way of incentives. Let me conclude by saying that encouraging R&D activities is essential if our economy is to stay robust and America is to be competitive in the world marketplace. Future R&D tax policy should be developed to meet the specific goal of encouraging such activities. To do anything less, would in the long run cost jobs, impact productivity and further erode America's competitive position in the world of the twenty-first century.

M.D. Menssen

I would like to reinforce some of the things that Bob is saying from a controller's point of view. Treasury thinks that you ring the bell and all of a sudden at the laboratories at 3M or IBM, the R&D and the manufacturing begins. We have what we call "pilot plants," and I am sure every company in this world has pilot plants and that is where you do the transition from the laboratories out into the factories. It is a tug-of-war between the manufacturing person who is telling the R&D department, "Would you let go of that damn thing—I want to have it because I want to do my own R&D down here in the factory to get that thing to work." That simply does not work and the time-line approach doesn't work.

The second point on that I think Bob highlighted a little bit, but I would like to draw out a bit more, we all know the success story of 3M

and the Post-it note, and the supposed inventor of that was my tennis partner many years ago by the name of Art Fry. He would be the first person that would tell everybody in this room, "I was not the only inventor of Post-it notes." The R&D took place in engineering; they designed the equipment to strip-coat an adhesive.

R&D took place in manufacturing where they learned how to make something that we had never made before and strip on the adhesive.

R&D certainly took place in the marketing area when the marketing person asked the CEO's secretary, "Would you mind writing a letter to the CEO's secretary of the 500 major corporations in the United States and give them a sample and ask them if they would mind using it." I was in Europe and we did the

same thing and our sales skyrocketed.

It is rather interesting. If it wasn't for the secretaries of the CEO's of the 500 largest corporations in America and Europe, we would not be exporting the millions and millions of dollars that we export of Post-it notes today. I think Bob and I have discussed this, and obviously this has been the situation for a long time.

I hope you get your point across on that issue because it is irking the hell out of my fellow controllers back at 3M. Here is where the problem lies. We, as controllers, develop the problems for the tax people, because when you read the annual report there is a line there that says, "R&D" and they say you must know what R&D is. We had that definition according to 3M. The biggest problem I had in electrical was an AMP was spending 10 percent to sales

for R&D and we are spending 4 percent. When you cut through the difference in accounting on the thing, we were both spending about 7-8 percent; they just handled it differently.

Well, how does a controller handle the R&D line? We have a very simple solution because we don't have to deal with the voters. We simply say, "if you work in the laboratory — and those are very defined departments in 3M — you are R&D. If you don't work in the laboratory, you are not R&D." That is very simple. But, you can't translate that into regulations. It is simply impossible.

Michael J. Graetz

Michael Graetz, Deputy Assistant Secretary of the Treasury for Tax Policy, agrees with other panelists that R&D has historically promoted economic growth and productivity. He says it is important for the government to be supportive of R&D because companies that spend on R&D rarely capture the full returns of those expenditures.

Secretary Graetz also agrees with Stuart Eizenstat that tax policy is only part of the picture. He notes the Administration's commitment to R&D as illustrated by the significant portion of tax items devoted to R&D in the President's budget.

Secretary Graetz notes the budget estimates for all the R&D provisions are higher than were previously mentioned. He says the \$5.5 billion quoted earlier in the program is the cost for making the credit permanent and does not include making the 64 percent allocation solution permanent. He believes the 64-percent solution is the best approach available with respect to the Section 861 allocation issue.

The Administration is aware of the need for permanence with respect to R&D incentives, and Secretary Graetz reiterates the Administration's commitment to making both the credit and the allocation solution permanent. Rather than tinkering with the way that the deduction for R&D relates to the credit, he recommends concentrating on efforts to make permanent the provisions already in the Code. He personally thinks this should be the number one R&D priority.

With respect to the international issues related to R&D, Secretary Graetz notes the goal of the tax system in this area is to make U.S. business genuinely competitive in expanding world markets. At the same time, the U.S. has to be sure that it is getting its fair share of taxes paid by multinational corporations. International tax provisions must take into account both of these goals.

I will avoid repeating much of what has been said here, since much of what I was going to say has been said at least once, and in some cases several times. So, it is probably not worth repeating, although I will say I did learn a good bit today from the presentations that I have listened to. I am grateful for that. I think this is an important conference and I appreciate this group sponsoring this conference.

I do think it is worth emphasizing, and I think when Stuart Eizenstat is here quoting President Bush's budget, we know that R&D is

truly a bipartisan issue. I can quote Stuart Eizenstat and tell you that I agree completely with what he says about economic growth and the role of R&D historically in promoting productivity and promoting economic growth. It is genuinely important. I don't think there is any disagreement about what he described as externalities, which is the economists' term for the inability of those people who spend money on R&D to capture the full returns from those expenditures. I think it is universally agreed that there are spill-over effects from R&D, and

that those spill-over effects make it important for the government to be supportive of R&D and to spend money on R&D.

I would like to underline another thing that Stuart said, which is that the tax story is only part of the story. I commend to you for reading the chapter on R&D in the President's Budget and in the Economic Report of the President. President Bush has produced a budget which would reverse the trend of a decline of federal spending for civilian and non-defense R&D. There is about \$31 billion that has been requested for spending in the current budget on civilian R&D so that the commitment to R&D is there. Stuart mentioned the doubling of the NSF budget by 1993, which is another commitment that the Bush budget has made. So, I think that government support of R&D is something that we take seriously, and there is money being dedicated to it, despite all the talk about budget difficulties.

I want to remind you that there is a budget issue here. The revenue estimate that was given earlier in the day is not the one that I would have given for the President's proposals for R&D. The proposal to make the R&D credit permanent is estimated to cost \$5.5 billion during the budget period. That was the number that was given. But that number does not include making permanent the 64 percent solution — the 861 allocation rules — which is an additional \$6.3 billion estimate during that period. So, you are talking about a \$9.8 billion reduction in taxes in the President's budget. It is a serious amount of money in the current budgetary climate. It demonstrates the high priority that is being given by the Administration to having an effective R&D credit.

There has been a lot of talk — and I do want to say one thing about it today — about the decline in the value of the R&D credit. Again, Stuart Eizenstat mentioned the opposite piece of this, and I just think it is worth emphasizing that the history since 1981 is not all one of decline, because the redesign of the credit in the last year is extremely important. The estimates of the GAO were that the credit was producing three to four percent as an

effective tax credit rate because of the moving-average provisions.

Today, I guess John Magee was the first one to use a 13.2 percent number as the number under current law, and that is a quadrupling if one believes the GAO report. So, while there has been some restructuring of the credit in terms of both its amount and in terms of the offset for the deduction, there also has been some restructuring of the credit to make it work better, to make it more effective and to make it more generally available. I think that is an important point.

On the allocation issue, I just want to say that the one unmistakable thing that has happened since I have been at the Treasury, and I have mentioned this elsewhere, is that the international area represents the single biggest change from my prior tenure at the Treasury 20 years ago. The problems that we are facing in the international area are genuinely new, whereas most of the other tax problems that are being talked about are genuinely old. The taxation of capital gains, for example, has been up and down throughout the history of the income tax. That is true of most of the other issues that we are seeing. But the international issues have taken on both a new significance and a new sense of priorities, and allocation of R&D expenses is only one of the allocation issues I have seen in the last few weeks since I have been here. If I mentioned interest deductions, you would all nod your heads. If I mentioned state taxes and charitable contributions, these would also ring some familiar sounds for you. It is the case that we are struggling, and I am the first to admit it is a struggle, with problems about how to allocate expenses that produce income and are productive on a world-wide basis between foreign and domestic sources.

I think Section 861 and the 64 percent solution are about as good a solution as we are going to come to in that area. It is a fairly liberal solution. It is certainly liberal compared to the 1977 solution, and we have urged that it be made permanent.

Here I think that the most pressing ques-

tion before us regarding research and development in the 1990s is the need for some stability — the need to make both the credit and the allocation rules permanent. The Administration is committed to that and, as you have heard, there is a bipartisan sentiment for that, although Stuart's description of the shortest permanent tax credit that he has ever seen rings a familiar note because of the budgetary problems.

It is extremely important that we use our efforts to try to create stability and permanence with respect to the credit and with respect to the allocation rules — at least the structural problems that people have identified with the credit, including the relationship to the deduction. The relationship of deductions and credits is also an old issue. Those of you who have followed the history of the investment tax credit and the relationship of that credit to basis are familiar with the question of how one interrelates tax credits and tax deductions. Regardless of what you think of the merits of the 100 percent offset, it does create parity between direct government expenditures for research and development and the tax credit. So, it has some sound reasons to commend it. But, in any event, the structural changes that were recently made in the R&D credit create an opportunity for some stability in the area and I would urge everyone to work together toward permanence and towards stability as our number one priority in this area, rather than trying to come up with a perfect tinkering on the substance of the provision. I don't think that should be the priority.

I do want to make a comment about the international area, because it is interesting to have listened to John and others talk about the joint venture problem and so forth, which is not a problem that has been talked about. It is the 861 problem that has been talked about the most. We are in a widely developing international climate, and arrangements among multi-national companies are being created in the business community faster than the tax system is capable of dealing with them, or at least has seemed to be capable of dealing with them.

I want to repeat for you a comment I made recently at an International Fiscal Association meeting so that you understand the dilemma of the Treasury Department and the government's dilemma, therefore, with respect to international taxation. Simply put, there are two cornerstones to U.S. international tax policy. The first cornerstone is that U.S. citizens should be taxed the same whether their income is earned here or is earned abroad. The second cornerstone is that income in the United States should be taxed the same regardless of whether it is earned by a U.S. citizen or by a foreigner. Those two have long been cornerstones of the U.S. tax policy. The third cornerstone which I would add is that governments are entitled to set their own tax rates, which is simply a description of sovereignty. Other people have suggested that one should add reciprocity, so that bilateral negotiations can take place and that one country can make concessions to another country based on the concessions that it makes to us. Those are all important tax considerations.

It turns out that the first two principles can be satisfied only when taxes are equal throughout the world. You are not able to get both of those principles in operation unless taxes are equal throughout the world. I am reminded here of testimony that Eddie Cohen and I gave in 1971 before the Ways and Means Committee. We were discussing the problem of the taxation of married people and single people in the United States. We discovered that you could take three fairly non-controversial principles and in a progressive tax system — if you kept progressive rates — you could not satisfy all three. What that meant was you had to make some compromise in the taxation of married couples and single persons. Whatever compromise you made, you were criticized for. Prior to 1969, the compromise favored married couples in all circumstances. After the 1969 Act, there were situations whereby going to Haiti over Christmas and obtaining a divorce and coming home and remarrying in January, a married couple with relatively the same incomes could save taxes. I

remember writing a letter to an irate taxpayer saying that at least we had given single people a reason for not marrying that their parents could understand.

The reason that I mention this analogy is that there are genuine difficulties and genuine complaints that can be made regardless of which compromise the Treasury Department and the U.S. Congress make with regard to international taxation at any moment. That means that there will be genuine problems of international competitiveness and that one can point to some treatment of either some expenditure or some form of income abroad and rightfully suggest that U.S. companies are being disadvantaged by comparison. That is an argument that is always available to U.S. businesses. Therefore, the challenge to us — and the R&D example is a good instance of it — is to design a tax system which enables American businesses to be genuinely competitive in world markets and in the world economy. At the same time, we have to make sure that the tax pie is divided among those countries where multi-national entities are doing business in a fair or appropriate way so that the U.S. gets its fair share of those taxes.

I really think that we need to be creative about this, and I urge all of you to think creatively about it. I think in the future we are going to need multi-lateral solutions that we have not yet begun to think about. Bilateral solu-

tions are not going to work as well in the future as they have in the past and we really do need to try and put our heads together to come up with appropriate compromises.

The only other comment I would make is that I was interested in Professor Billings' findings about the role of new equity in funding research and development, because I had not seen that result anywhere in the discussions of corporate tax integration or of the American tax system's favoring or disfavoring of equity. It is timely because we at the Treasury, as many of you know, are studying the integration issue and are trying to understand it better, and there is no question that the U.S. tax system does have a bias against new equity as a source of corporate finance. To the extent that Professor Billings' finding is correct, I think it is an important finding because it suggests that there are other aspects of federal corporate income taxation less directly connected to research and development that are inhibiting our ability to have the appropriate level of spending on research and development. To the extent that we are thinking long term about tax policy for the '90s this is an important new insight. I am also grateful, as I would be under any circumstances, for 3M's hiring any professor during the summer. It will keep a few professors in the professing business, which in the tax area becomes more and more difficult each year.

Q & A

Moderator: Thank you, Michael. I know there are a lot of burning questions out there, and the man in the back, please speak.

[Note: Some inaudible comments have been excluded below.]

Q: I wanted to make a couple of comments, and the speakers can respond in any way they want. First of all, on Bob's point about the idea of research being incremental, it certainly is, and anything that tries to cut you off at a point in time is out of touch with reality. I would recommend anyone interested in this to look at the article by Michael Porter in the

current *Harvard Business Review* entitled "Comparative Advantage of Nations," where he discussed what brings it about. He talks about the nature of technological innovation and makes this same point.

Secondly, on the point about international taxation raised by many, I am afraid that as other nations have posed a competitive gap that, given the present U.S. tax rules for multi-national operations, we may be very near the point where the mere fact of being headquartered in the U.S. is sufficient under our rules to raise your cost of capital beyond competitive

levels. The first principle you mentioned, that all U.S. citizens should be taxed the same regardless of the source of income, might have been true in a prior day. I think that is what they call capital export neutrality. Today, where your leading industries are global, companies like our own and Bob's could not succeed or exist on a one-country basis or on an only U.S. basis. If we do not succeed in Europe and the Far East, as well as in the U.S., we will not survive at home.

I think there is going to have to be some give, and one of the main places that there is going to have to be give if we are to survive is going to be on that first point. I think we are going to have to move into multi-lateral negotiations. Another way to formulate this that I think has to be considered is that we are now so globally integrated and have such a large proportion of our income from overseas sources in key industries that it is time to consider carefully what the effective implications of that is for limitations on our U.S. tax sovereignty. In other words, we can decide to do what we want for our own political reasons on Capital Hill or we can decide we are going to create an environment in which our economy can succeed. Those two are becoming ever more inconsistent.

Comment: I think the point on stability is one that would be shared by perhaps everybody in the room, but you do get to the point of "stable as from when." I think on the foreign side if you were talking about stable as from the time when you were last here, it would be one thing, but I think if we mean stability as of today, if that means that Bob Mattson cannot take a full deduction for charitable contributions he makes to the American Red Cross, or cannot take the full contribution for taxes he pays to the State of California, or the full contribution for money that he pays to scientists working in a lab in the U.S., or can't take the full deduction of hiring Dr. Billings to do a study, whereas a company that is a U.S. subsidiary of a foreign multinational headquartered in another country could, in fact, take a full deduction for all those expenses — then I hope we

don't try to freeze that situation and think we have done something that is very good.

Comment [Graetz]: I will comment on that. I did not mean to suggest that we need stability when we have gotten something wrong, if that is the case you are describing. I think that the problem of taxing twice income that is earned multinationally is a serious problem, and I agree with you that we should try to avoid it. We need to try to tax at least U.S. source income once, and I think that is also a goal. What I was really referring to was the R&D credit in particular where I do think that our first priority ought to be stability on that issue. And that is why we have supported and will continue to support both making the credit permanent and coming up with a permanent solution to the 861 problem, which are the two problems that have been most pressing in that context.

Comment: There has been an issue that hasn't even been raised today. Secretary Baker, when he was Secretary of the Treasury, in an interesting book, *Tax Policy of the 21st Century* (Wiley & Sons), asks who would want to live or invest or run a business in the next century in a country that has very high tax rates. What they were really talking about in this conference was that the U.K., or maybe it was the U.S., began a tax revolution in the world. They began with the concept that marginal tax rates matter more than a lot; they matter most. As marginal rates came down, the tax rates of corporations and individuals came down. This resulted in an explosion of competitive analysis throughout the world, and as anyone who deals in the international arena knows, tax rates everywhere have come down. In Sweden this year they have come down from 50 percent to 30 percent. What scares me most about what is happening in the U.S. is that this year we may reverse the trend, because what good is a tax credit if it raises the corporate tax rate? What good are research and development incentives if they take it all away from you and penalize you with higher taxes on your cost of capital, because raising the corporate tax rate will certainly increase the cost of capital? I

think the scariest scenario that is coming in this country right now, and we have already begun to see it, is that there will be a general increase in the marginal rate of taxation in this nation—a reverse of a lesson I thought we had learned. The budget hysteria will cause that problem, and I think we may see a serious reversal or take-back of a lot of sensible stuff and our foreign competitors will attract investment out of the United States very rapidly as that occurs.

I think that is something we have talked about today, and I think that is something we have to watch. I see it as the most serious storm cloud in this legislative session.

Comment [Menssen]: One of the things that I think I get asked most commonly by Congressmen, being an ex-controller on this thing, is "Does taxation really come into play in the decision-making of where you put your plant and equipment?" You have to realize, I also wrote the book in conjunction with the University of Minnesota on capital budgeting for 3M. It was my specialty for all the time I was a controller. This question is always coming up. Do taxes really count in the decision? The answer to that is that at 3M taxes are the second largest expense. As a matter of fact, on a pre-tax basis, we spend more on taxes worldwide than we spend on raw materials in the United States. With that kind of expense, you have to take into account your taxation costs. It does make a difference where you put that plant and so forth.

Comment: If I may add one thing about the credit with respect to what he said [inaudible comment]. We may want to reexamine the credit formula before we embrace it. The formula does not work well for companies with declining sales. In fact, if sales decline for more than two years, the R&D credit is gone. What do we do for companies that are experiencing slow sales? They need R&D more than other companies.

Would you care to offer a reprise on whether or not we can afford to do the right thing? Under the assumption that the revenue estimates are absolutely correct. If that is so, I think we should recognize that on an average-

year basis, that comes to 15/100ths of 1 percent of the proposed fiscal 1991 budget, and a smaller percentage for the remaining four years over the five-year projection period. I can't believe for a moment, and I don't believe anybody in this room could believe that we could not, if we chose to place the right priority on R&D and domestic and foreign source income, find 15/100ths of one percent of other spending in the federal budget that could be sacrificed for this purpose. The whole approach to looking at structural tax policy from the point of view of budgetary constraints is paralyzing us, and we have got to break out of this. It is absolutely essential. We are going to be stuck with an unstable and very bad tax system.

A [Menssen]: My answer to the gentlemen here in the U.K. [Reference to U.K. is from prior inaudible question.] I don't know. This is an area where we need more research on the thing, but we are competing for sources of capital. We are competing for goods and services out there, and you have to link up the U.K., and say what the R&D companies are competing with over there for those source of funds. What is their cost of capital versus agricultural or something like that? That is where we got into on the study, and I think it is something that you would have to look at an individual country to find out what is hindering R&D. It might be a different solution or it might be a different problem than we have here. But I think too often in this creative area of R&D; we don't have really creative solutions and I think we simply have to.

I told our Chairman that we could get some money—let's float 20 percent debt. We will buy back our stock, float debt, take the money we got in tax savings and spend it on R&D. There are all kinds of rocks you can look under if you want to.

Then, Professor Billings comes up here and says if we do that we get into a problem on the turn-down of the economy and we have a bond covenant to take care of. There are a lot of ways you can skin this thing if it stays still long enough. There has got to be some creative solution to what we are doing.

Q: Is the “super-royalty” provision a serious factor in the transfer of technology, or is it because there is a lot of fear but there is not a lot of real impact?

A [Graetz]: I really don't know the answer to that. There has been a lot of concern about the 482 solutions, and I have heard a good bit about that with respect to the white paper and 482 regulations. The audit issue — you do hear stories about these kinds of audit issues — and that we need to improve and re-think the whole process of auditing throughout the system, but with particular emphasis on large corporations. I think we are aware that there are problems with the system. We are hoping to work toward solutions to them.

Comment [Mattson]: I would just like to add my support about the danger of having made progress in the 1986 Act in terms of getting an understanding of the importance of the incremental rate and what that can really do to people's thinking. I think it is very important that we not back up from that. At the same time, I think if we slip into the notion of getting our revenue by constantly redefining the tax base, we are also redefining the incremental rate on those items that happen to be swept into the tax base that weren't there before. That is what is behind some of the disaster situations in the taxation of foreign income. The real increase of incremental taxation arising

out of the combination of making an additional foreign investment when you come to give a charitable contribution is much bigger than anybody has anticipated. It costs a lot more for IBM to pay its state tax bill in California as a result of the changes that have taken place than anything we have ever seen.

Q: Is the Professor's study close to being published any time soon?

A [Billings]: We are in the stage of doing additional computations, and I would say in another month or two it should be ready. What we will try to do is get comments from various parties before we try to go to publication.

If I may make an additional point, the gentlemen spoke of integration in the U.K. versus the U.S. With respect to that question, the literature here seems to think the benefits of R&D tend to take up to six years to develop, and are much riskier than alternate projects. If we consider debt held by the firm, they receive a fixed amount regardless of profits. They are indifferent — at least minimum amounts of R&D would be okay with them. Equity holders, on the other hand, depend on paying the debt holders and excess that accrues from the holdings. They have much more incentive to spend on R&D.



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