

**Meeting Minutes  
of the  
Measuring Innovation in the 21<sup>st</sup> Century Economy  
Advisory Committee**

**September 12, 2007**

The second meeting of the Measuring Innovation in the 21<sup>st</sup> Century Economy Advisory Committee was held on Wednesday, September 12, 2007, at 9:00 a.m. The meeting was held in the Auditorium at the U. S. Department of Commerce, 14<sup>th</sup> Street and Constitution Avenue, NW, Washington, DC.

The following advisory committee members were present at the meeting:

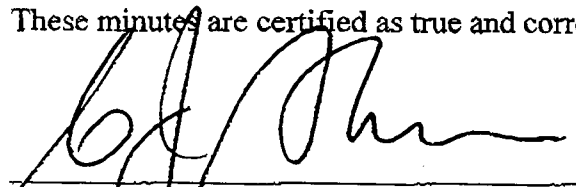
Carl J. Schramm, Chair  
Ashish Arora  
David L. Bernd  
James Blanchard  
Rajesh Chandy  
Art Collins  
Kathleen B. Cooper  
Luther Hodges, Jr.  
Dale W. Jorgensen  
Donald Siegal

The following Department of Commerce officials were present and participated in the meeting:

Cynthia A. Glassman, Under Secretary for Economic Affairs  
Elizabeth "E.R." Anderson, Deputy Under Secretary and Designated Federal Officer  
Patricia Buckley, Executive Director

The attached transcript and presentation materials accurately describe each matter that was discussed by the Advisory Committee at the meeting.

These minutes are certified as true and correct.

  
\_\_\_\_\_  
Carl J. Schramm  
Advisory Committee Chair

10-9-07  
Date

## U.S. DEPARTMENT OF COMMERCE

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MEASURING INNOVATION IN THE 21<sup>ST</sup> CENTURY ECONOMY  
ADVISORY COMMITTEE

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## PUBLIC MEETING

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WEDNESDAY,  
SEPTEMBER 12, 2007

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The meeting convened at 9:00 a.m. in the Auditorium at the Department of Commerce, 14<sup>th</sup> Street and Constitution Avenue, NW, Washington, D.C., Carl Schramm, Ph.D., Chair, presiding.

## COMMITTEE MEMBERS PRESENT:

CARL SCHRAMM, Ph.D., Chair  
ASHISH ARORA, Ph.D., Member  
DAVID L. BERND, Member  
JAMES BLANCHARD, Member  
RAJESH CHANDY, Ph.D., Member  
ART COLLINS, Member  
KATHLEEN B. COOPER, Ph.D., Member  
LUTHER HODGES, JR., Member  
DALE W. JORGENSEN, Ph.D., Member  
DONALD SIEGEL, Ph.D., Member

## ALSO PRESENT:

CYNTHIA A. GLASSMAN, Ph.D., Under Secretary for  
Economic Affairs  
PATRICIA A. BUCKLEY, Ph.D., Executive Director  
ELIZABETH 'E.R.' ANDERSON, Deputy Under Secretary for  
Economic Affairs and Designated Federal  
Official

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P-R-O-C-E-E-D-I-N-G-S

(9:06 a.m.)

OPENING REMARKS

DR. GLASSMAN: Good morning.

I'm Cynthia Glassman, the Under Secretary for Economic Affairs here at Commerce. I'm very pleased to welcome all of you to the Commerce Department and to the second meeting of the Measuring Innovation in the 21<sup>st</sup> Century Economy Advisory Committee.

First I'd like to introduce the people here on the stage with me. To my far right, and this is in alphabetical order, no other order, is Ashish Arora from Carnegie Mellon; then David Bernd of Sentara Healthcare; Jimmy Blanchard, formerly of Synovus; Rajesh Chandy from the University of Michigan; and Art Collins from Medtronic.

To my immediate left is the chair of the committee, Carl Schramm of the Kauffman Institution -

DR. SCHRAMM: Foundation.

DR. GLASSMAN: I'm sorry, Kauffman Foundation.

Next to him is Patricia Buckley of the Commerce Department who is the executive director of

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1 this committee. Next to her is my predecessor here,  
2 Kathy Cooper, currently at Southern Methodist  
3 University; then Luther Hodges of Santa Fe Hospitality  
4 and a former Commerce deputy secretary. Next to him  
5 is Dale Jorgenson of Harvard University; Don Siegel of  
6 the University of California at Riverside. And at my  
7 far left is E.R. Anderson, my deputy and the  
8 Designated Federal Official for the advisory  
9 committee.

10 My opening remarks are very brief because  
11 there is a full agenda to cover this morning.

12 I do, though, want to take a moment to  
13 talk a little bit about our work with the committee  
14 since the last meeting.

15 We've worked very closely with our  
16 committee chair, Carl Schramm, and the individual  
17 members of the committee as they have sorted through  
18 the many proposals.

19 I've been very impressed by the  
20 seriousness with which each of the committee members  
21 approached the work. Each member thoughtfully  
22 considered the proposals and helped narrow the field  
23 to the potential recommendations that we will be  
24 talking about today.

25 As the federal official who oversees the

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1 work of two major statistical agencies, the Census  
2 Bureau and the Bureau of Economic Analysis, I cannot  
3 emphasize too strongly how important measurement is,  
4 and I'm delighted to have found out first hand that  
5 all of the members of the Advisory Committee agree  
6 with me.

7 The innovation measurement proposals to be  
8 considered today are far reaching and diverse, and I  
9 look forward to the discussion.

10 I know that in the audience we have  
11 representatives from the major statistical agencies,  
12 as well as representatives from many firms and trade  
13 associations, all of whom are very interested in  
14 innovation measurement and in hearing today's  
15 discussion.

16 Secretary Gutierrez regularly speaks of  
17 the importance of the Committee's work and is looking  
18 forward to receiving the recommendations later this  
19 fall.

20 So let me turn now to the Committee chair,  
21 Carl Schramm, to proceed with the meeting.

22 Thanks.

23 CALL TO ORDER

24 DR. SCHRAMM: Thank you. I'm good at  
25 moving chairs on the stage but not the audio-visual

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1 stuff.

2 Thank you, Under Secretary Glassman.

3 As the Under Secretary said, we have been  
4 at work this summer. And what we're going to talk  
5 about today is the product of some of our  
6 deliberations, informed of course through our federal  
7 system by a public response through the comment  
8 process.

9 And I want to thank all of our members of  
10 the panel for their hard work in discussing these  
11 potential recommendations and fabricating these  
12 potential recommendations.

13 I think what we'd like to achieve this  
14 morning is an open dialogue, a frank and open dialogue  
15 about the state of the recommendations now, and what I  
16 thought I had - what I have in mind here is that we  
17 would talk about some guiding principles.

18 These guiding principles weren't guiding  
19 us when we first convened, and these guiding  
20 principles represent the fabrication of various  
21 thoughts from the public for the most part as to what  
22 they think the Committee might be guided to do.

23 So in a sense this is kind of the bonus  
24 round. The public has spoken, and this is what they  
25 think we ought to be guided by.

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1           And before we go much further, I think we  
2 ought to either adopt, modify or consider this pretty  
3 carefully at the outset, because the way these federal  
4 documents get constructed, these guiding principles  
5 come first. And some people just read the guiding  
6 principles. And of course the recommendations will  
7 come in their short form up front, and then they'll  
8 come in the long form way out back. And in between  
9 will be the good stuff which no one will read, that  
10 is, what the background is and the needs of the  
11 country for this type of evidence, and how we're going  
12 to somehow make it conform to whatever exists in  
13 international realms and so forth.

14           But of course that's what I call the good  
15 stuff. Everybody will be interested in the  
16 recommendations, but often these guiding principles  
17 are key.

18           So I thought we'd open with a general  
19 discussion of these guiding principles to receive the  
20 thoughts that any of you may have on them.

21           DISCUSSION OF GUIDING PRINCIPLES

22           DR. SCHRAMM: And maybe the right thing to  
23 do is to sort of go one by one.

24           Go ahead.

25           MR. HODGES: I just wanted to say that they

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1 seem to me to be very sensible guiding principles.  
2 Some of them were tied to the fact that everything  
3 that we do, everything that the statistical agencies  
4 do has to be balanced in terms of what their resources  
5 might be. They want to continue to improve the  
6 measurements over time, and so they shouldn't be  
7 static. We want to be able to compare our numbers,  
8 U.S. numbers, with other countries' numbers, and so  
9 there was a principle in there that related to trying  
10 to stay in touch with what other - what OECD and other  
11 countries were doing. All of those I thought were  
12 very positive and should be included in our guiding  
13 principles.

14 I think as a whole they do a very good job  
15 of saying what we need to be having in the back of our  
16 mind in coming forward with these changes.

17 DR. GLASSMAN: Dale?

18 DR. JORGENSON: Thank you. I want to focus  
19 on the general principle that starts the discussion of  
20 these guiding principles.

21 What this says, and I think it's extremely  
22 important for everybody to keep this focus as we  
23 proceed with our discussion, is that it's very  
24 important to have estimates of the resources that are  
25 devoted to and the value that is generated by

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1 innovation. But it is important to focus not only on  
2 measuring innovation activities like research and  
3 development, and the inputs into that like the work of  
4 scientists and engineers and scientific equipment and  
5 so on, but also to focus on results, the output of  
6 innovation, in other words, where is the impact of  
7 innovation to be seen on our economy?

8 That is the core principle it seems to me  
9 of this endeavor, and it seems to me that's an  
10 excellent starting point for our discussion.

11 MR. BLANCHARD: I thought it was good also  
12 that we had number six added. It added a subjective  
13 flavor of the possible unintended consequences of  
14 regulatory guidance and direction and supervision.

15 And it occurred to me that that item six  
16 could possibly be expanded to include legislative  
17 consequences - maybe both intended and unintended -  
18 that either encourage or stifle innovation.

19 DR. SCHRAMM: Thank you, Jim.

20 David?

21 MR. BERND: Before, we met with the  
22 Secretary and he talked about what's happening  
23 throughout the world, and the fact that the  
24 international market is expanding so rapidly, and I  
25 think the United States historically has looked more

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1 at competition within the 50 states. And I think the  
2 last guiding principle that we need to make sure that  
3 we emphasize is, that measuring innovation against  
4 international economies is more important to the  
5 success of the U.S. economy in the future.

6 And I think that's a really important  
7 guideline.

8 DR. SCHRAMM: Thank you.

9 Art?

10 MR. COLLINS: Well, first I'd like to  
11 compliment the staff. For those of you in the  
12 audience that didn't get the pre-reading, we started  
13 off with 69 of these proposals. And to get it down to  
14 13 is no small task.

15 I'd like to also piggyback on James'  
16 comment. I was very pleased to see a principle in  
17 here that takes a look at not only what helps to  
18 encourage innovation but also those blockages that get  
19 in the way whether they're regulatory, legislative, or  
20 any other item that gets in the way of innovation.

21 I would also just encourage us, as we  
22 gather information, to continue to ask the question,  
23 "Once we identify an information need, so what?" If  
24 we get the information it's only good if it leads to  
25 actionable items that will encourage innovation,

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1 promote innovation.

2 So I would have our acid test always be,  
3 when we come to gather information, whether it's  
4 existing or whether it's new, to ask the question, "So  
5 what? What is this going to lead us to do  
6 differently?"

7 DR. SCHRAMM: Art, I think that's a very  
8 good point. And in a sense that's what I think has to  
9 be in the good stuff; that is, before we get to the  
10 recommendations, the stage has to be set by way of  
11 text as to why it is we're doing this, to get the  
12 direction and the life the report takes, and it has to  
13 answer this "So what" question.

14 And oftentimes in situations like this we  
15 get wound up with the detail, and this question of the  
16 practicality and its application, I think, is all  
17 important for us to discuss in the text that is  
18 supportive.

19 MR. COLLINS: And cost.

20 DR. SCHRAMM: Yes. One of the first things  
21 that we hear up front, and too, Kathy, this has got to  
22 please you, is that we have to be conscious of how  
23 much this costs. As a former researcher, I always  
24 think of the cost to the taxpayer of collecting very  
25 important data on so minuscule of a budget. For us to

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1 announce that we're cost conscious at the outset, I  
2 guess we'll leave that in there. But I presume we'll  
3 be cost conscious. The government has always been  
4 pretty good, or the Congress has, at pinching its  
5 pennies very, very tightly over the collection of  
6 data. And had that not been our culture, we might not  
7 exist.

8 DR. SIEGEL: This is why I think the first  
9 principle is very important because we don't want to  
10 significantly add to the response burden of  
11 corporations, especially since many of the proposals  
12 that we're evaluating might involve collection of data  
13 from smaller firms, entrepreneurial firms. And I  
14 think as much effort should be made to link existing  
15 data sets and take advantage of existing programs,  
16 innovative programs that already have tried to address  
17 some of the issues that we're addressing here as well.

18 DR. SCHRAMM: Good point, that's a very  
19 good point, thank you.

20 DR. ARORA: I just wanted to say, first, I  
21 agree with Art, I think the staff has done just a  
22 fantastic job in organizing and distilling the large  
23 list of proposals we had.

24 I don't know whether what I'm going to  
25 suggest is a principle. But I've now been at Carnegie

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1 Mellon in Pittsburgh for some 17 years. And sort of  
2 the presiding, the reigning, intellectual threat there  
3 is we have to be very practical.

4 And so one thing that I would suggest we  
5 do as we think about recommendations is some sort of  
6 priority. So what are things that we think we can do  
7 right away at relatively low cost with relatively  
8 little effort?

9 And there are other things that would be  
10 really great to have but will take more time. And  
11 there may be yet more things that would be absolutely  
12 fantastic, but perhaps are going to take a  
13 significantly greater expenditure of resources.

14 And some sort of a prioritization scheme I  
15 would suggest might be useful in that. Thank you.

16 DR. SCHRAMM: So we could deliver a report  
17 with its own management plan, right?

18 DR. ARORA: Yes. We've all sat in  
19 committees where there is a long laundry list of  
20 mother and apple pie sort of stuff. And there is some  
21 good stuff there. And then if you put it all together  
22 it gets lost.

23 DR. SCHRAMM: Right. I'm sorry, excuse me.

24 DR. CHANDY: I, too, want to thank the  
25 staff for such a terrific job that they've done. I

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1 recognize the importance of guiding principle number  
2 one, and it is important.

3 That said, I think, I hope, we'll also be  
4 open to experimentation. In that sense I was happy to  
5 see guiding principle number seven that calls for  
6 pilot projects. And before, while large scale  
7 projects may be tricky, I hope we'll be open to  
8 looking into pilot projects that can help tell us what  
9 could be done on a large scale.

10 DR. SCHRAMM: Right. I think that's a good  
11 suggestion too. You know, maybe in the text we can  
12 actually begin to point funding agencies like the  
13 National Academy of Sciences towards some of that  
14 which we've thought about and encourage them in that  
15 direction.

16 Any other thoughts on the guiding  
17 principles? I'm going to offer two for your  
18 consideration. One is I want to build on what Art had  
19 said over number six and suggest that actually you  
20 might even think of expanding that. Art has added the  
21 question about the legislature, which I think is very  
22 important. And I don't think we should be shy, when  
23 it becomes clear, and as you read the next iteration  
24 of this, I would appreciate any thoughts you might  
25 have about specific statutory blockages, because some

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1 of them do exist, as you know from the National  
2 Academy document I circulated.

3 The particular blockage that concerns that  
4 group is the inability to get to IRS data that could  
5 prove very useful in judging firm formation which is  
6 so important to innovation.

7 And the second thing I might point out,  
8 because there is nascent research on this topic going  
9 on in four law schools funded by a particularly  
10 prescient foundation - and those law schools are  
11 Berkeley, Stanford, University of Southern California,  
12 and Chicago - around the question of how the law in  
13 general, case law in particular, is being used to stop  
14 innovation. And I think we may nod in that direction  
15 as well with number six, because it is a larger issue,  
16 Art, than just the legislative encouragement of  
17 caution to the point where it stops innovation. We're  
18 watching it seep through clearly in all kinds of  
19 areas. Once again the tired harangue about tort law,  
20 but it is a hugely important block towards innovation.

21 Yes.

22 DR. BUCKLEY: With the chair's permission,  
23 I'd like occasionally during the course of the morning  
24 to give you IBM's comments which they submitted in  
25 writing since Mr. Palmisano could not be here today.

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1           And one of the things they pointed out  
2 with regard to the guiding principles is that we need  
3 to start boldly, start with the positive, don't start  
4 the way these are ordered right now. We actually  
5 start with the two limiting factors, you know: be  
6 careful, and be cognizant of the cost. But this  
7 should be framed as a very forward-looking statement.

8           And as we go on, and what she mentioned  
9 was really important, was in setting up the  
10 priorities. But starting with a general statement of  
11 this is important, here's how we're going to go about  
12 it. And then we'll work out the details and what we  
13 can fit in later.

14           DR. SCHRAMM: So we have staff's permission  
15 to get a little bolder; that's how I read that.

16           DR. BUCKLEY: Well, IBM's permission.

17           DR. SCHRAMM: Okay, great.

18           Well, God bless IBM.

19           Okay, if we're at a conclusion of  
20 absorbing some of the thoughts on the guiding  
21 principles, which I think could set the tone of the  
22 document very well, I was proposing for the rest of  
23 the meeting, we would go through the specific  
24 recommendations as they stand now.

25

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## 1 DISCUSSION BY THE COMMITTEE OF PROPOSED DRAFT

## 2 RECOMMENDATIONS

3 Dr. SCHRAMM: And the only thing I would  
4 interpose by way of a thought to my fellow panelists  
5 is either at the beginning or the end I'd like to take  
6 some comments on the ordering of how they show up. I  
7 worked some with staff to do some of this ordering,  
8 but I'm hardly content that it's all right.

9 And my hunch is, as we chew on each of the  
10 recommendations, at the end of the day some will have  
11 taken on more gravity, and others will have given up  
12 some of the gravity that they appear to have.

13 So at some point I do want to encourage  
14 you to think about how we compose the document and  
15 what the order is.

16 MR. HODGES: Is there something magic about  
17 13? Do we want 13? Do we want 10? Or do we just  
18 want the ones that we want?

19 DR. SCHRAMM: No, I think Art was sort of  
20 onto it in the sense at some point just exhaustion  
21 overtook us bubbling 69 down to 13. We may be more  
22 energetic and get it down to 10, or we may be more in  
23 a parsing mode and get it to 14. But I don't think  
24 there is anything magic about this number.

25 MR. BERND: Mr. Chairman, before we start

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1 on these 13 proposals, I guess I'd like to know if the  
2 staff feels that if we do endorse these proposals  
3 they'll have enough tools to measure innovation in our  
4 economy.

5 Is this a complete enough list to do that?

6 And is it, secondly, is it, will it be compatible  
7 with, for instance, what the E.U. is doing?

8 DR. SCHRAMM: Patricia? This is Patricia  
9 Buckley.

10 DR. BUCKLEY: I think the recommendations -  
11 if they're implemented - will lead to a much better  
12 understanding of innovation.

13 I don't - there's nothing in here that at  
14 the end of the day you will say, oh, innovation, 67,  
15 last year it was only 65. In talking to your  
16 companies, innovation doesn't seem to occur like that.

17 And so, at the outset we were hopeful we  
18 could get something, and I think there are some  
19 measures that give us an overall view of changes in  
20 level of innovation, maybe changes in intensity of  
21 innovation.

22 Some of the recommendations would bring us  
23 closer in line with the international community.  
24 There are things that are being undertaken elsewhere.

25 But new things that we undertake, if they

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1 turn out well, it's great to share with our  
2 international colleagues, and maybe they can take it  
3 up. We've spent a lot of time studying what's going  
4 on abroad, so learning from each other is an  
5 incredibly important part of this operation.

6 DR. SCHRAMM: Yes, this is Cynthia  
7 Glassman.

8 DR. GLASSMAN: One of the important things,  
9 one of the very important things that will come out of  
10 this committee in addition to the potential range of  
11 measures, qualitative and quantitative, is a focus on  
12 the importance of measuring innovation. So even if  
13 this doesn't cover everything possible, and even if  
14 there is no magic number, if it says innovation is X,  
15 there has been as a result of the committee already,  
16 and I assume going forward, much more focus on the  
17 importance of measuring and thinking about measuring  
18 innovation.

19 DR. SCHRAMM: David, I think yours is a  
20 very good question as we start out. Because what I'd  
21 like to invite the panel to do is as follows.

22 Recall that the nature of these government  
23 commissions and panels is to gravitate to what is  
24 'acceptable' at a moment in history. And as I reflect  
25 on where we are now, we've taken in a huge amount of

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1 public comment. We've had 69 sort of thoughts about  
2 where we are. We're down to 13, and in a sense this  
3 is our last bite at the apple together before we get  
4 to a draft that we'll circulate for people to give us  
5 written comment. I'm speaking both of the panel and  
6 the public.

7           This is maybe our last chance to make sure  
8 that we're thinking expansively enough, and we have  
9 experts like yourself and our academic experts who I  
10 would encourage today, if they - I don't want to  
11 engage in flights of fancy, but on the other hand as  
12 you've seen already, we see sort of a prejudicial  
13 caution to worry about our budget. And who knows,  
14 maybe in the next five years America will be at 4  
15 percent GDP growth, federal coffers will be exploding,  
16 and someone will say, there is enough money to measure  
17 innovation correctly. Let's go back and find out what  
18 their dream was.

19           So if we have understated, this is the  
20 moment to reopen a broader horizon, okay.

21           Now everybody will appreciate we can't get  
22 to it. But maybe there will be somebody down the road  
23 who appreciates having it there, and can use it in  
24 congressional testimony or what have you, if we had  
25 the resources this is how we would ideally proceed,

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1 okay.

2 Art.

3 MR. COLLINS: Just, I can't remember who  
4 made the point on prioritization. Maybe part of the  
5 solution of what you just spoke about is to talk about  
6 in the perfect world what would be the comprehensive  
7 tools to measure innovation, both leading edge  
8 activities and the ultimate results.

9 But when you come back to the realities of  
10 a budget, of economics, you then prioritize and maybe  
11 we can only do the top X number, and the rest of it  
12 would be that we'd like to have information but it's  
13 not as critical.

14 DR. SCHRAMM: Right, thanks Art.

15 By the way, just for the benefit of the  
16 public and the record, since we last met the National  
17 Academy of Sciences has issued a report on the  
18 dynamics of - business statistics dynamics, I can't  
19 get the name of the publication correct. Art has it.

20 Understanding - thank you - Understanding Business  
21 Dynamics: An Integrated Data System for America's  
22 Future.

23 This is larger than the question of  
24 innovation, but the committee has had the benefit of  
25 this report, and I would recommend it to folks. It

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1 represents two years of careful deliberation by  
2 experts, and it is, of course, of the quality that the  
3 National Academy of Sciences generally produces. And  
4 it is a very worthwhile report, and I suspect it will  
5 have some informing influence on the work of this  
6 panel.

7 Now, why don't we turn to the meat and  
8 potatoes of today, and is it the pleasure of the panel  
9 to take up the issue of the order of the  
10 recommendations first, or should we work on the  
11 recommendations and then go back to the order  
12 question?

13 MR. COLLINS: The latter.

14 DR. SCHRAMM: Good, okay, great. The  
15 latter is we're going to do the recommendations, and  
16 then we'll go back and do the order.

17 But I'm going to be pretty severe in  
18 reserving sufficient time at the back end, because I  
19 think the ordering of this is very important. It will  
20 insinuate itself in how we do all the textual support  
21 for - and it is the way we tell the outside world  
22 whether they should read on.

23 Okay, so our very first one is the  
24 innovation data collection, filling gaps and refining  
25 data, and in the italic print down below we have the

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1 potential recommendation for the advisory committee to  
2 adopt.

3 I presume the audience has copies of this  
4 document, so I'm going to try not to read all this  
5 stuff into the record; it'll be more efficient that  
6 way.

7 Anyone have any thoughts on -

8 DR. COOPER: Without question, this is one  
9 that I would feel very strongly that we need to adopt.

10 We just began to improve our coverage of service  
11 sector data a few years ago, and we need to continue  
12 on.

13 What I wanted to ask is, I notice that  
14 there are, in most cases, three, four different  
15 components of each of these recommendations. Do you  
16 want to look at all of them? Do you want us to  
17 emphasize whether we think some part of it is more  
18 important than others? I guess in my book it would be  
19 one and two would be the components that are most  
20 important.

21 DR. SCHRAMM: I think it would be hugely  
22 helpful if the panel would talk to us about what we  
23 ought to emphasize here, and what we maybe discard  
24 even. And throughout the day I think we actually  
25 ought to tease ourselves by what it is we're not

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1 doing. What doesn't appear in the text right now?  
2 What would strengthen the text? Or maybe there is a  
3 recommendation 14 and 15 that just fell off and we  
4 didn't emphasize enough.

5 So I think, Kathy, you should talk for a  
6 moment about what you think are the more important  
7 aspects of this.

8 DR. COOPER: Well, certainly number one,  
9 improving the coverage of the service sector, and  
10 trying to get, I think, a pilot project to understand  
11 the innovation, investments and outcomes. I think that  
12 would be very helpful as well.

13 Certainly the third one is too, but I go  
14 back to Ashish's comment at the beginning, which is if  
15 we do as we think about everything, we might dilute  
16 what we otherwise want to get out of this.

17 But the service is number one, the entire  
18 thing, and certainly one and two as a component are  
19 very, very important.

20 DR. SCHRAMM: Dale.

21 DR. JORGENSON: I'd like to step back a  
22 little bit and give a bit of context here for this  
23 recommendation.

24 So the recommendation is to have a fully  
25 implemented annual survey of the service industries

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1 that would be comparable to the long-established  
2 manufacturing survey.

3 So, the manufacturing survey goes back  
4 about 50 years. It's been gradually extended in terms  
5 of coverage, but as you know, the manufacturing sector  
6 is maybe 20, 25 percent of the economy.

7 If we ask ourselves where is innovation  
8 taking place, we have had an explosion of innovation  
9 in the last five years entirely focused on the service  
10 sectors. And this has been very, very difficult to  
11 track.

12 Why? Because we don't have an annual  
13 survey that is fully comprehensive. The  
14 recommendation gives the following estimates: 55  
15 percent of the GDP is in the service sectors as they  
16 are defined for this purpose. That would exclude  
17 trade. It would exclude government services. It  
18 would be just the private services.

19 Of this, only 30 percent is currently  
20 covered by our statistical system. In other words,  
21 almost half of this dynamic innovative sector of the  
22 economy that is carrying innovation forward in the 21<sup>st</sup>  
23 century is missing.

24 Now this is not going to be cheap. This  
25 is a very expensive proposition. You've got to go out

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1 and find these service sector activities. You've got  
2 to test the vehicles that you are going to use to  
3 collect the data. You've got to develop an  
4 appropriate conceptual framework for capturing  
5 activities that are constantly evolving, constantly  
6 changing. But this is where the innovation is taking  
7 place.

8 And we've had an enormous outburst of  
9 innovation focused mainly around applications of the  
10 Internet that has largely gone unnoticed.

11 So, this has to be the major hole in our  
12 statistical system. If you think about where the gaps  
13 are as our statistical system relates to innovation  
14 it's got to be in the service sector.

15 So in terms of resources, it seems to me  
16 this is where the Census Bureau, the BLS, the people  
17 who collect the data on the prices and the levels of  
18 activity, really have to focus their attention.

19 You might say, well, everybody knows this  
20 so we're probably doing this, right? No. The House  
21 markup which is inside baseball for the initial stages  
22 of the appropriations process has already cut a major  
23 portion of the budget that would be required to  
24 implement a service sector annual survey with a  
25 deadline of 2010. That has been written out of the

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1 budget.

2           So this is an extremely urgent matter.  
3 This committee really needs to take a forceful stand  
4 that this is a top priority. This is where innovation  
5 is taking place in the 21<sup>st</sup> century. This is something  
6 that has been on the agenda of the statistical  
7 agencies and the Census Bureau and the Economics and  
8 Statistics Administration now for many, many years.  
9 And certainly both Cyndi and Kathy can testify to  
10 this.

11           It's something that we need to have done.  
12           It's something we need action to take place. So I  
13 think this has to be exactly as the outline suggests  
14 here, right at the top of the priorities. And we have  
15 to recognize the fact that this is going to have huge  
16 benefits. It's going to fill this enormous gap that  
17 has existed in our statistical system. But it's going  
18 to be a major cost. It's going to be something that  
19 is going to take real resources and real management  
20 and real money. And nobody should be deceived about  
21 that.

22           But it's top priority, very, very  
23 important, and I'm very pleased to see the position  
24 that this occupies in the agenda.

25           DR. SCHRAMM: Thank you.

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1 Other thoughts on number one?

2 MR. COLLINS: Just listening to Dale I have  
3 a question and a comment. And this goes back to the  
4 cost.

5 I'm not a statistician, but are there ways  
6 to statistically sample segments within, whether it's  
7 the service industry or the manufacturing industry,  
8 without sampling or requiring submission of data  
9 across the board that will get you into the ballpark  
10 of what's happening?

11 That's the question. The comment is that  
12 if you look at, and I agree with your premise to focus  
13 on the service industry. But I would submit that much  
14 of what has enabled the service industry to grow, not  
15 exclusively but a large part, is product innovation.  
16 Is the Internet a service or is it a product  
17 initially? Is a cell phone a product that enables a  
18 service industry to be much more effective?

19 So I think in studying the service  
20 industry, you will go back and find out that  
21 innovation - I come from the medical industry, and  
22 it's another good example - that ultimately product  
23 innovation that really is the genesis for much of the  
24 service industry to grow and expand.

25 So a question and a comment.

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1 DR. JORGENSON: Right. Well, let me just  
2 respond. I think that we do have excellent data on  
3 the manufacturing industries, including the medical  
4 products that you were alluding to in your example.

5 And what we're missing is information  
6 about how this is used and whether this results in  
7 innovation in medical practice. And of course we know  
8 that it does, but we know that there are barriers.  
9 And we've got to have a baseline annual survey that  
10 would be based not on a census, in other words, not on  
11 a survey instrument that would go out to every single  
12 provider, for example, but rather, a scientifically  
13 designed sample that would be very much like the  
14 manufacturing survey, which is also a probability  
15 sample.

16 So we have to think about the most cost  
17 effective way to do this, but we also have to focus on  
18 the fact that there is this huge gap in terms of the  
19 outcomes of all this excellent medical innovation and  
20 innovation in IT that is taking place in the  
21 manufacturing industries.

22 DR. SCHRAMM: I think this is very helpful,  
23 because the way I'm hearing this, because I'm going to  
24 be responsible for some of this, is that what we're  
25 doing here is helping construct the textual support

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1 for the recommendations.

2 So what I'm hearing is that we actually  
3 learned from the past in terms of how we seek to do  
4 sampling in this area.

5 Now another thing that resides in Dale's  
6 comments - I'll speak here just incorporating some of  
7 the thoughts that IBM has offered - and that is, IBM  
8 has been very engaged, and I think importantly  
9 engaged, very importantly engaged, in an ambitious  
10 project around what it calls the science of services.

11 This is not the first time - and Art will  
12 know this from medicine - it's not the first time an  
13 industry has been responsible for the creation of what  
14 I think will eventually be an academic discipline.  
15 And it's just hard for me not to say, isn't it  
16 interesting that our 804 schools that grant MBAs  
17 aren't the people who cooked this idea up. But  
18 anyway, sometimes heavily intensive research  
19 businesses like IBM push on these things.

20 And I say that as a predicate to think  
21 about what we're doing here. These data or whatever  
22 it is that comes out of this permit America to think  
23 about whole new ways of imagining how to manage  
24 businesses. It's not for nothing that IBM is  
25 interested in the science of services as it becomes

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1 more and more a service business.

2           Likewise we might think about something  
3 that let us fashion the phrase, the science of  
4 startups, since so much innovation is going on in  
5 smaller businesses.

6           If we look at just gross statistics that  
7 we can measure, every year the United States produces  
8 about 30 to 35 - and the number is going up -  
9 companies that cross over inflation-adjusted \$1  
10 billion sales marks.

11           The age of those businesses over the last  
12 60 years has been going down, i.e. the time that we  
13 can measure actually from the date of incorporation  
14 until the time they get to a billion dollars of sales  
15 is actually being compressed.

16           So these are gross data that tell us about  
17 innovation, because these businesses are like  
18 businesses have always been back to railroading,  
19 innovation. How we express innovation often is in new  
20 businesses.

21           And it may be that the result of what  
22 we're talking about, and we may speculate about this  
23 in the text, we may be pushing on towards the science  
24 of innovation, which we can't get to unless we have  
25 this type of data.

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1           So it may be in our supporting scaffolding  
2 of these recommendations that we speculate in this  
3 direction as to why these recommendations and the work  
4 of this panel are so important to the ongoing focus of  
5 how we steer the economy, particularly into the new  
6 innovative areas.

7           Thank you all for suffering that, but I  
8 think it's important that we talk a little ahead of  
9 time about what might be the tenor and the content and  
10 substance of our supporting documentation.

11           How about we move to recommendation two?  
12 So the first one we might think about is our service  
13 one. And the second one I always think about is our  
14 intangibles.

15           And I would say at the outset, I think we  
16 actually ought to chew on this a little bit, because  
17 this keeps striking me as something of an evanescent  
18 recommendation here, and it might be because it's  
19 intangibles, and it might be because it's intellectual  
20 property.

21           DR. ARORA: So I'd like to - I think this  
22 is a really good recommendation. Clearly the problem  
23 of measuring intangibles is a really really important  
24 issue to solve.

25           And here I guess the - my comment would be

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1 that there are intangibles and intangibles. There is  
2 stuff that we can measure more easily, and there are  
3 things that are clearly important but less easily  
4 measured and that will take more thought and effort.

5 So what I would suggest is a sharpening of  
6 the recommendations. And in particular what I'd like  
7 to suggest for our consideration is that we explicitly  
8 have a recommendation that we measure, first, how much  
9 companies spend on licensing technology, and second,  
10 how much they earn from licensing technology.

11 And the background is, we know both from  
12 research and from actual estimates from research  
13 publications from the Department of Commerce itself,  
14 that this activity has been growing over time. Some  
15 measures, as a rough order of magnitude, this is about  
16 \$100 billion now. We measure a little bit of it  
17 already when it crosses national boundaries. There's  
18 a UN report which suggests that this sort of  
19 international licensing activity has increased by a  
20 very substantial amount - I'm trying to remember the  
21 numbers, but the growth rate is exponential in the  
22 last decade or so.

23 And there are already businesses coming up  
24 - you mentioned startups - there are new businesses  
25 coming up with new business models whose model is not

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1 to actually make stuff but to produce the technology  
2 and the knowledge and monetize it in a variety of  
3 different ways.

4 To not go on and on, what I'd like say is  
5 that this is an important phenomenon, that this is  
6 important for understanding innovation in the American  
7 economy and perhaps in other economies as well, and  
8 that I think this is something that we can accomplish  
9 quite easily, as easily as one can do these things.

10 So what I'd like to recommend is two  
11 things. One is that we consider directly measuring  
12 licensing expenditures and revenues. And we do this  
13 not through the NSF R&D survey, because I don't think  
14 that's the appropriate place, but through the surveys  
15 of manufacturing and services, that's one.

16 So the first would be, you go to a company  
17 and say, "How much do you spend?" We currently ask  
18 them, "How much do you spend on cement or steel. How  
19 much do you spend on technology?" That's one. That I  
20 think is in my mind a no-brainer.

21 The second one is we actually collect data  
22 on licensing transactions themselves, so every time  
23 you buy - for example every time somebody buys a  
24 house, that's registered, I can go up to my county  
25 website and figure out who sold what for how much, and

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1 we have a really good idea of the prices of these  
2 transactions and what's going on there.

3 And, conceivably, if we considered  
4 collecting data on transactions involving principally  
5 intellectual property, we might be able to make  
6 headway on pricing intellectual assets. So, think of  
7 licensing as essentially renting intellectual  
8 property.

9 One way you can think about pricing a  
10 house is, you figure out what the rent is, and you  
11 look at the discounted cash flow on that.

12 So the second part - collecting  
13 transactions - I'm less certain about how exactly one  
14 would accomplish, but I would like us, in the spirit  
15 of being expansive, for us to consider this idea.

16 Thank you.

17 DR. SCHRAMM: Thank you.

18 DR. SIEGEL: Just a comment on that.

19 I agree with almost everything you said  
20 except the point you made about the RD-1 survey. My  
21 concern with relying on other Census establishment  
22 level surveys is that this is basically a corporate  
23 level activity, and the RD-1 survey is a firm level  
24 corporate survey, and it seems as though if we're  
25 thinking about the practicalities of implementing

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1 this, it would be easier to build on the existing  
2 survey and the R&D managers that have been identified  
3 that fill this out.

4 So my question to the folks in the private  
5 sector here is, could an R&D manager, or the person  
6 that fills out the R&D survey, would they know how  
7 much the company spends on licensing and how much they  
8 earn from licensing?

9 Because I think those are very important  
10 data points to collect.

11 MR. COLLINS: Well, I think that the answer  
12 is it depends. It depends on the company, who's  
13 filling it out. I think when you start to get into  
14 financial information and the nuances between in-  
15 process R&D and goodwill and what you have on the  
16 balance sheet, I don't think an R&D manager is going  
17 to be steeped in that kind of information.

18 I go back to the point I made before, and  
19 that is, can you - can you have a sample of whether it  
20 be large firms, small firms, startups, without going  
21 out expansively to everyone and get at least  
22 directionally what you need, and then limit the amount  
23 of time and effort and modify that sample size.  
24 Somewhere in here we said we ought to have some pilots  
25 and walk before you run, and I would encourage us to

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1 do that.

2 But the simple answer is, if an R&D  
3 manager is filling out the survey, I'm not sure that  
4 that individual will by himself or herself be able to  
5 have the information. But they probably could go to  
6 the organization and get it.

7 DR. SCHRAMM: Is that helpful, Don?

8 Patricia.

9 DR. BUCKLEY: I don't agree that the annual  
10 survey of manufacturers and the service annual surveys  
11 are necessarily the wrong places to look at this.

12 If we can approve our ability to aggregate  
13 those buying and selling of licenses are going to show  
14 up somewhere, in some establishment somewhere. It  
15 might be in the corporate headquarters, they might  
16 have it actually distributed out to the establishment.

17 So if we improve our ability to roll up,  
18 we'll be able to capture it.

19 The National Science Foundation has the  
20 expertise, and their natural constituency is the firms  
21 that say they do R&D. A lot of innovation,  
22 particularly in the service firms, doesn't occur in  
23 those types of settings. But take financial services,  
24 for example, where a lot of innovation occurs, and my  
25 guess is that they are acquiring it, and then making

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1 changes to it, and then selling it to other financial  
2 firms.

3 And so I think that's why this licensing  
4 idea is really a critical one. We can explore further  
5 the best location, but, again, in the spirit of being  
6 expansive, we don't want to limit ourselves to a group  
7 of firms that is already being looked at. And in any  
8 of these, they would be samples.

9 It's just a question - if you just want to  
10 get a gross estimate, you know, you can have a much  
11 smaller sample. Once you want to start breaking  
12 things down into different types of services or  
13 different types of industries, or if you want to look  
14 on the product side, then the number of observations  
15 you need increases.

16 So there will have to be some sort of  
17 weighting of what would be useful from a policy  
18 standpoint, from a business standpoint, that would  
19 help drive the sampling issue.

20 DR. SCHRAMM: Thank you.

21 Ashish, I'm going to ask you about the  
22 compatibility of American data as it stands now with  
23 world data.

24 DR. ARORA: My sense is no country does  
25 this systematically. There are a couple of countries

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1 that I'm aware of that require firms to file some sort  
2 of forms when they engage in these transactions,  
3 particularly when it involves overseas parties.

4 So I don't think we have concerns about  
5 compatibility per se. I could be wrong, but I think  
6 we'll basically be pioneering this if we do this on a  
7 systematic basis. This is my sense.

8 And my sense is that, sooner or later,  
9 everybody is going to get in on this act in terms of  
10 measuring these sorts of things.

11 DR. SCHRAMM: Okay, thank you.

12 Luther?

13 MR. HODGES: What do we mean about the  
14 firm's evaluations of its own intangible assets? I  
15 haven't heard anything about where somebody would  
16 respond to that question by putting their own value on  
17 it. That's one that I hesitated about on this.

18 Incidentally, I don't think we need  
19 "and/or" on all these. I think we basically are  
20 saying "and," while each one of these recommendations  
21 says "and/or." So far, I'm hearing "and."

22 That's a minor point. The other one is a  
23 question.

24 DR. SCHRAMM: I think we'd all benefit from  
25 any help the staff can give us on its thinking about

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1 these intangibles, their definition, and how we  
2 measure them.

3 Patricia.

4 DR. BUCKLEY: I think this speaks directly  
5 to the point that Ashish made. Valuing intangibles is  
6 very difficult. IBM has actually offered some  
7 suggestions on how it could be done. But what Ashish  
8 is pointing out is, let's take a subset of  
9 intangibles, those that are traded.

10 Now, once you've bought or sold something,  
11 there's a price attached to it, so we've got a  
12 valuation that we can actually track now. So it would  
13 be a first step in a much larger group of intangibles,  
14 which is the licensing of technology.

15 DR. SCHRAMM: Thank you. Other thoughts on  
16 recommendation two? Jim?

17 MR. BLANCHARD: One little thought that  
18 crossed my mind when I read it initially is just a  
19 concern about competitive and proprietary information,  
20 and I just wondered what you can share with us as far  
21 as the reflection of the staff on any concerns you  
22 might have had about that.

23 DR. BUCKLEY: The data collected by the  
24 Census Bureau is subject to very strict  
25 confidentiality standards. That having been said,

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1 businesses are sensitive about data they provide.

2 An example: the Justice Department was  
3 interested in doing a survey on cyber-crime a few  
4 years ago. The Census Bureau did a pilot study for  
5 them, and found out companies will not report those  
6 data. They don't care what type of guarantee you give  
7 them. Their lawyers would go nuts if they had someone  
8 saying, "Oh yes, we had X number of denial-of-service  
9 attacks. We had worms." Whatever.

10 Those types of data are very difficult to  
11 collect, because firms will not share them with you.

12 On things like this, if you're buying or  
13 selling, then it would be less sensitive. The valuing  
14 of your own-developed, own-use intangibles, I think,  
15 would bring about some confidentiality issues.

16 But once there is a dollar value and you  
17 are selling or buying something, I think it's less  
18 sensitive at that point.

19 DR. ARORA: Could I? In any case, people --

20 DR. SCHRAMM: I have to ask Patricia, have  
21 companies gotten so good at resisting hackers that the  
22 hackers are now going to the Defense Department?

23 I'm sorry.

24 DR. ARORA: This is off point, but the fear  
25 of liability is of course the major reason why nobody

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1 will talk about cyber-crime. I mean, I studied this  
2 as a sidelight, and it's a huge, big issue.

3 It's not even, by the way, obvious that  
4 they know, because it doesn't get reported up the  
5 chain of command. Because if you are the system  
6 administrator, you don't want to tell anybody about  
7 what bad stuff happened.

8 But the other point, just to get to James'  
9 point about confidentiality, people do report them in  
10 10Ks in any case if they are material events. And so,  
11 if they are financial flows, and if they have any kind  
12 of good accounting system, they are tracking them.  
13 You are paying something out to somebody. People are  
14 paying you money. Your financial accounting system  
15 has to be tracking that - those dollar flows.

16 It's just then a matter of getting it out  
17 in some more systematic way, and for the government  
18 agencies to collect them in some appropriate form.

19 So my sense is that it's hard to imagine  
20 that this would be - it's obviously confidential, but  
21 it wouldn't be sort of super-critical. People write  
22 press releases about it all the time.

23 DR. GLASSMAN: I think also there's a  
24 difference between how much you spend on something and  
25 what you're spending it on. And this, if I understand

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1 correctly, would not be collecting information on what  
2 is being bought on a specific patent or intellectual  
3 property, but how much is being spent on it; is that  
4 right?

5 DR. ARORA: That's why I differentiated  
6 this into two. The first, I think the easy one is  
7 right, you just ask, you know, what is the total  
8 amount?

9 Just as we ask people how much they spend  
10 on cement.

11 But there is a second proposal. If you  
12 are serious about measuring and valuing intangibles,  
13 at some point we've got to collect market data on what  
14 those things are worth. And at some point that means  
15 you have to, either as the government or as  
16 researchers, we have to say, okay, this was the  
17 intellectual property that you rented, licensed or  
18 sold to somebody else for this money, this amount of  
19 money. And eventually, we will start building up  
20 prices on what are patents worth, what are patent  
21 portfolios worth, those sorts of things.

22 Currently, when you get an infringement  
23 case, the courts come in and do a completely arbitrary  
24 job of saying, well, this is what it was worth. So  
25 somebody is making those kind of decisions.

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1 Collecting data like this might provide a  
2 more objective basis for thinking about what these  
3 things are worth.

4 DR. BUCKLEY: This recommendation will also  
5 benefit from the fact that the National Science  
6 Foundation, as part of their reworking of their R&D  
7 survey, is looking specifically at a licensing module.

8 So we can learn from what they're doing,  
9 and maybe apply it to a broader range of companies.

10 DR. SCHRAMM: Okay.

11 Let me propose that we move to  
12 recommendation number three, which I will characterize  
13 as the data sharing recommendation.

14 Dale?

15 DR. JORGENSEN: This is an extremely  
16 important recommendation about data sharing. And I  
17 think Carl already alluded to the fact that there is  
18 an extensive discussion of this in a brand new report  
19 by the National Research Council on understanding  
20 business dynamics.

21 For those of you who are familiar with  
22 this report - that would include members of the  
23 committee, obviously - the relevant section begins on  
24 page 87 and presents a comprehensive discussion of the  
25 history of this issue, and a set of recommendations.

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1           This isn't the only work that the National  
2           Research Council has done on this topic. Only last  
3           year, in 2006, the National Research Council devoted a  
4           whole study to this specific issue, and produced a  
5           report by the same people who wrote the report on  
6           business dynamics, Improving Business Statistics  
7           Through Interagency Data Sharing.

8           So this is a longstanding issue, and it's  
9           something the committee discussed at its first  
10          meeting. So let's just refresh everybody's memory  
11          here.

12          Our statistical system lacks something  
13          that almost every other statistical system in the  
14          world aspires to, and many have achieved, which is a  
15          comprehensive business and personal register that is  
16          the framework for collecting data throughout the  
17          economy.

18          So, this is a listing of all the places  
19          that you send questionnaires on any subject related to  
20          business, and all the people that you try to  
21          interrogate as part of the census of population, where  
22          you collect the information about their  
23          characteristics, how old they are, age, sex, family  
24          composition, all that sort of thing, plus all the  
25          economic information, the income and so on, which is

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1 collected as part of the Census in the survey of  
2 consumer finances.

3 So, lacking that comprehensive business  
4 register and personal register, our statistical system  
5 has a number of different registers, and when the data  
6 percolate up from the various collection efforts,  
7 needless to say, they don't agree, because they are  
8 sampling different populations.

9 So what is at issue here? What is at  
10 issue is a very esoteric point having to do with the  
11 authority of Section 6103 of the Internal Revenue  
12 Code.

13 What? The Internal Revenue Code? What  
14 does that have to do with this? Well, The Internal  
15 Revenue Service has responsibility for contacting  
16 every business and every personal taxpayer in the  
17 country. That's most of the population of businesses.

18 And what the section provides is  
19 limitations on data sharing. In other words, sharing  
20 information about tax data, and where the units are,  
21 and that sort of thing.

22 So I think that what we need to recommend,  
23 in order to remedy this longstanding problem, is that  
24 the Secretary of Commerce - we are, after all an  
25 advisory committee to the Secretary - that the

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1 Secretary undertake in collaboration with other  
2 cabinet members - but the responsibility should be  
3 with him - to propose legislation to amend Section  
4 6103 and the implementing regulations associated with  
5 it in such a way as to produce a comprehensive  
6 business register and a comprehensive personal  
7 register that would be rooted in the Internal Revenue  
8 Service tax records.

9 This is not something that is going to get  
10 everybody's support. Historically, the Department of  
11 Commerce and the statistical agencies have supported  
12 this idea. There is nothing new here. The Department  
13 of the Treasury has supported this idea, and after  
14 all, the Secretary of the Treasury is responsible for  
15 the Internal Revenue Service.

16 But the Joint Committee on Taxation, which  
17 is an agency of the Congress, has put obstacles in the  
18 way of this, and this issue has never been resolved.

19 The issue could only be resolved through  
20 legislation. That's why I emphasize that the  
21 secretary would have to propose legislation.

22 But I don't think it would be sufficient  
23 to propose legislation. I think it's also important  
24 that the people who are involved in this effort - the  
25 Secretary of Commerce, the Secretary of the Treasury

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1 in particular - also propose implementing regulations  
2 that would assure us that the goal would be achieved.

3 What is the goal again? The goal would be  
4 a comprehensive business register and a comprehensive  
5 personal register. So this is an issue that is at the  
6 very heart of our statistical system. There is  
7 nothing more important to the infrastructure for our  
8 system than anything related to measuring innovation  
9 than data sharing.

10 So I'm very pleased to see this  
11 recommendation with the prominence that it has here.  
12 I'm very pleased to have this timely report by the  
13 National Research Council that Chairman Schramm  
14 distributed to all members of the committee that deals  
15 with this issue in considerable detail.

16 And I think it's an issue that we should  
17 really support, and try to move forward as forcefully  
18 as we can, because I can't imagine anything more  
19 important to our statistical system.

20 DR. SCHRAMM: Thank you, Dale.

21 Kathy?

22 DR. COOPER: Yes, I just want to second  
23 Dale's comments on this issue. It's very, very  
24 important. The statistical agencies want to be able  
25 to cooperate, and I think it's very important that we

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1 be able to do this.

2 I think the recommendation does need to  
3 say, I think, specifically that legislation and some  
4 regulatory changes are needed, and so we probably need  
5 to have that in the recommendation.

6 I would also add that this third part of  
7 the recommendation that talks about outside  
8 researchers is very important. It's part of the  
9 reason why people push back on this. They get nervous  
10 about outside researchers having access to the micro-  
11 data, but we've all learned a great deal from the  
12 work, the research that's been done by these  
13 researchers, and we ought to make it more available.  
14 I think we all learned - from policymakers across the  
15 board to the private sector.

16 DR. SCHRAMM: Thank you, Kathy.

17 DR. ARORA: I completely agree. I think it  
18 would be helpful, when we have a tax, to have a  
19 compelling justification.

20 So, it's good to say this is really  
21 important, but it would be nice if we could somehow  
22 figure out a crisp way of saying, if you don't have  
23 this, these are the kinds of things you cannot  
24 measure. And a couple of really important examples  
25 like that would be very helpful in making the case.

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1 DR. JORGENSON: Yes, so the example I used  
2 you remember at the first meeting of the committee was  
3 that industry level data, produced by BLS and by BEA,  
4 the Bureau of Labor Statistics and the Bureau of  
5 Economic Analysis, ostensibly cover the same  
6 population. But when you get down to the level of  
7 individual industries, even manufacturing industries,  
8 that are carefully surveyed by the annual survey of  
9 manufacturers, you find that the data don't agree.

10 Why? Because we're not working from a  
11 common business register. We're not on the same page,  
12 so to speak. So, this is a very important example,  
13 and I think that, Ashish, you're absolutely right,  
14 it's important to illustrate this at the most  
15 fundamental level with the kind of difficulties that  
16 arise there.

17 In this NRC report, people make the point,  
18 and again, this is an example I used at the first  
19 meeting, that if you were a CEO trying to make  
20 decisions on the basis of two different reports of  
21 your income statement and balance sheet collected from  
22 two different statistical registers of your business  
23 organization, and you got inconsistent results when  
24 you got to the board room, it's something that would  
25 be a subject of consternation. I mean, you just can't

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1 run a business that way. And you can't run an economy  
2 that way, either.

3 So I think that's something that we really  
4 need to attend to.

5 DR. SCHRAMM: You know, before I recognize  
6 Art, I think that this is particularly useful as a  
7 discussion that we can build, again, I use this word,  
8 scaffolding, of text underneath the recommendations.  
9 And I would invite anybody on the panel who would like  
10 to, and indeed the public, and, does the public get  
11 another comments shot? Well, whether the public gets  
12 another comments shot or not, we could invite anybody  
13 who wants to to write to us.

14 And what I want to invite people to think  
15 about is, as we make recommendations to the Secretary,  
16 I think Dale raises a very important point about what  
17 might differentiate our product from the previous  
18 product, and that is, an emphasis that the  
19 recommendation about legislation also contain a  
20 recommendation about regulations. Because I think  
21 sometimes these proposals founder on just an impulse  
22 in Washington of privacy lawyers to stop stuff.

23 And if we anticipate some of those  
24 concerns, but build a very strong case about - I think  
25 yours is a brilliant suggestion - what we can't do

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1 with these data and the disability they impose on  
2 economic policymaking, like, I think the Federal  
3 Reserve is disabled by not having these types of data.

4 Excuse me. Art.

5 MR. COLLINS: I was going to agree with  
6 Dale that this number three is a very important  
7 recommendation. And I think you have to address in  
8 here the underlying question of confidentiality, both  
9 in terms of the individual pieces of data, the firm,  
10 and you are going to use it in the aggregate, but not  
11 allow it to go places it shouldn't go.

12 But I'm struck with this discussion, and I  
13 think it applies to a lot of these recommendations,  
14 it's really giving a very precise definition to, if we  
15 do this, what will we be able to do now, either in the  
16 aggregate, or more cost effectively, that we couldn't  
17 do before?

18 If I listened to you, maybe if we had  
19 number three implemented, we could do away, perhaps,  
20 with some of the surveys that are duplicative, save  
21 money, and everyone would like that.

22 Two, we would get better information, but  
23 the important point, then, is to take the information,  
24 then, what would we do with it, and really bring these  
25 recommendations alive on how they're going to benefit,

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1 whether it be firms, individuals, to better innovate.

2 DR. SCHRAMM: I think that's also a very  
3 good reflection on what we might do to differentiate  
4 our product, the tonal quality of, had the stuff  
5 existed already - I don't mean to paraphrase Art out  
6 of context - but the point is very well taken. If  
7 some of this had preexisted, some of the headaches  
8 that we face would not be here, but more persuasively,  
9 we could be further down the path of understanding how  
10 to achieve growth, for example.

11 DR. CHANDY: And as we seek to make the  
12 case for this recommendation, I think we will benefit  
13 from the experience, in recent years, of entities like  
14 the National Science Foundation, that have worked  
15 across agencies in trying to pull together this  
16 information, and the results from those, some of which  
17 were presented at an NSF conference a few months ago,  
18 provide some tantalizing glimpses into what could be  
19 possible.

20 So, in making that case, we could provide  
21 a positive picture of what could be possible.

22 DR. SCHRAMM: Right. Will you help us run  
23 that down, and I just want a reference for the benefit  
24 of the meeting.

25 I have particularly able assistance at the

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1 Kauffman Foundation, E.J. Reedy, who's out there some  
2 place. So if I look -- when I'm looking into the  
3 audience, I just want to see E.J. nodding that he  
4 caught the point, which I'm sure he has.

5 DR. SIEGEL: I have, just as an example,  
6 Ashish, a couple of years ago, Frank Lichtenberg and I  
7 conducted a study, and we figured out a way around  
8 this problem through a special agreement.

9 And the paper that we wrote, which I think  
10 should be cited here, shows that you get better  
11 estimates of the returns, that is, firm level returns,  
12 to innovation when you have these linkages. So there  
13 are some examples out there in the academic literature  
14 where people have gotten around this problem, and  
15 managed to link the data-sets, and then done a better  
16 job of estimating either returns to innovation, or  
17 whatever, outcomes.

18 DR. SCHRAMM: Again, Don, I'm going to  
19 invite you to help us, you know, bolster the textual  
20 foundation of these recommendations. As much of that  
21 as we can add, we may give some more legs to hopefully  
22 building a case to do something about this.

23 Okay? Well, that's terrific. At this  
24 point, I'm feeling that we may actually provide some  
25 particularly worthwhile recommendations.

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1                    Shall we move to number four?    And, I  
2                    think of this as our declaration as regards  
3                    improvements to the national income approach.    And  
4                    does anyone want to speak to this?    Dale?

5                    DR. JORGENSON:    This is an extremely  
6                    important recommendation, and I'm going to take a  
7                    little bit of time to explain why; not a lot of time,  
8                    but a little bit of time.

9                    First of all, going back to the guiding  
10                    principle, I mentioned that the recommendation should  
11                    not only focus on innovation activities and inputs,  
12                    but should focus on the results and the output of  
13                    innovation.

14                    And so, this idea of productivity is  
15                    really key, because the output of innovation that is  
16                    central to our economy is the impact of innovation on  
17                    economic growth.    So productivity is the economist's  
18                    vehicle for measuring that output.

19                    Let me explain again why this is such an  
20                    important issue in terms of the definition of economic  
21                    growth.    Economic growth is something that can occur  
22                    without any innovation whatever.    You can think of  
23                    people rolling out a plant that essentially produces  
24                    the same product using the same processes, and  
25                    replicating that all over the country, replicating

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1 that all over the world.

2 And that is something that is a very  
3 important part of the process of economic growth, but  
4 has nothing to do with innovation. What is really  
5 critical is the development of new processes, which is  
6 what Art was saying a moment ago, new processes and  
7 new products, and measuring the impact of those on  
8 economic growth.

9 And so when we think of how to capture  
10 that statistically, what we have to do is to compare  
11 the outputs of an industry, or a firm, or the economy  
12 as a whole, with the inputs.

13 No innovation is taking place if the  
14 inputs and the outputs are growing in the same  
15 proportion, and that has been the history of economic  
16 growth for substantial periods of our economy's  
17 history. If you think about the `70s, if you think  
18 about the early `90s, very little innovation was  
19 taking place. Of course, it never completely stopped,  
20 but most of the growth was of the nature that I  
21 described earlier, without innovation.

22 Then beginning in the middle `90s, we  
23 began to have a tremendous burst of innovation focused  
24 on the manufacturing sectors, especially those that  
25 were involved in the use of electronics, not only in

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1 computers and telecom equipment, which have attracted  
2 a lot of attention, but in every area, aircraft, in  
3 medical devices, throughout the whole economy.

4 And then, as I said earlier, there was a  
5 tremendous change after the dot com crash beginning  
6 around 2000-2001, when the shift occurred toward  
7 innovation in the service industries, focusing on the  
8 innovations that had been facilitated, again, as Art  
9 described earlier, by these earlier hardware  
10 innovations and software innovations, that made  
11 possible applications of the Internet, and successful  
12 applications throughout a very, very substantial  
13 segment of the economy. Maybe a quarter of the  
14 economy was really involved in innovation, rather than  
15 the narrower segment of IT and IT-related things  
16 during the late '90s.

17 Well, all of this is captured by this  
18 concept of productivity. But ask yourself the  
19 following question: when you have listened to reports  
20 of economic activity in the United States, and you  
21 remember that we have monthly reports, we have  
22 quarterly statistics, but monthly reports, the GDP  
23 growth rate last quarter - the most recent quarter  
24 would be the second quarter of this year - was 3.2  
25 percent. Well, you remember, then, it was revised to

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1 closer to 4 percent. And that's not the end of the  
2 story.

3 Every month, there is a new report that  
4 informs economic policymaking in this country, informs  
5 business policymaking. It's undoubtedly the most  
6 closely watched statistic in our entire system.

7 And it's not limited to economic growth.  
8 Obviously, the price statistics that are reported as  
9 part of this activity are also central to  
10 understanding inflationary trends, closely monitored  
11 by the Federal Reserve Board, which has, as its main  
12 responsibility, monetary policy oriented around that.

13 And all of these things are reported and  
14 followed by people in the business community, people  
15 in the political community, citizens around the  
16 country.

17 Where is innovation in this story? That's  
18 the question. And that's where the recommendation  
19 number four comes in. We need to have a system for  
20 economic reporting of innovation that has a single  
21 summary number that can be reported every month, will  
22 be revised, and will put innovation into the forefront  
23 of our statistical reporting system.

24 And so that's the purpose of  
25 recommendation number four.

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1           Now, recommendation number four builds on  
2 previous activities by the statistical agencies,  
3 specifically the Bureau of Economic Analysis, and the  
4 Bureau of Labor Statistics. Both of them have  
5 contributed enormously to the productivity figures  
6 that we have, but those figures do not provide a  
7 consistent picture that is part of the standard  
8 reporting that is needed in order to give innovation  
9 the high profile that is required.

10           We also have to think about what the  
11 statistical agencies are actually doing. Right now,  
12 for example, the Bureau of Economic Analysis is  
13 bringing up a new industry level data system that will  
14 integrate all of the disparate elements of our  
15 industry reporting system. And I don't want to go  
16 into all of the details here, but this is a momentous  
17 effort that has been underway for at least seven  
18 years, and is about to reach fruition.

19           So we're building directly here on what  
20 the statistical agencies are already doing.

21           It also links directly to what the  
22 international community is doing, because the OECD has  
23 had a productivity manual that has now been in place  
24 for six years, which is being implemented around the  
25 world. This system has been implemented for every

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1 member of the European Union, all 25 members, prior to  
2 Bulgaria and Romania. So all the major European  
3 countries, the UK, France, Germany, go down the list,  
4 now have a statistical system like the one that is  
5 proposed here as part of recommendation four.

6 The statistical system was released on  
7 March 15<sup>th</sup>. That was after our last meeting, so that's  
8 an event that I want everybody to be aware of.

9 The EU now has released these data, and  
10 the Commission for Economy and Finance in the European  
11 Union, which is like the Department of Commerce in the  
12 United States, has taken on the responsibility of  
13 producing these data on a regular basis for every  
14 member of the European Union, and has required that  
15 Eurostat, which is its statistical agency, take the  
16 responsibility for managing this project in  
17 collaboration with the individual statistical agencies  
18 and all the European Union members.

19 So item number four is bringing the United  
20 States into the conversation, and providing a way of  
21 elevating innovation to a very prominent place - the  
22 prominent place, I would say - in terms of our  
23 statistical reporting system.

24 So it's something that I think this  
25 committee needs to support very strongly.

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1           Unlike the service data collection effort,  
2           which I think is going to require major financial  
3           resources, this is an effort that is more an issue of  
4           organizational development within the statistical  
5           system. And that's why Steve Landefeld, the director  
6           of BEA, who is here today, and I have published a  
7           paper on this topic, in which we describe a new  
8           architecture for the U.S. national accounts that will  
9           make this possible, integrating the efforts of BEA,  
10          which is the Department of Commerce's premier  
11          statistical agency, with the work in BLS, which is in  
12          the Department of Labor, and most importantly, with  
13          the Federal Reserve Board of Governors, which has a  
14          very important role in the statistical system.

15          The efforts of all these agencies need to  
16          be knitted together in order to produce a satisfactory  
17          set of innovation accounts that will produce regular  
18          statistical reports, like the GDP, that will say, last  
19          month, the Department of Commerce estimates that  
20          innovation in this country proceeded at, whatever the  
21          rate it was.

22          Last quarter, it was probably somewhere  
23          close to a full percentage point, almost a quarter of  
24          the economic growth that took place in that quarter  
25          was due simply to innovation.

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1           That's the number that I would like to see  
2           reported on a regular basis. When I turn on the  
3           business news going home at night, I want to see the  
4           Secretary of Commerce, or Cyndi, or her counterpart,  
5           come before the microphone and say that the GDP went  
6           up, and innovation was a fourth of that, or a third  
7           of that, or whatever it happened to be. That's a  
8           report that I would like to listen to on a regular  
9           basis.

10           DR. SCHRAMM: Thank you, Dale.

11           Art.

12           MR. COLLINS: I must admit, I'm not an  
13           expert in total factor productivity, but from what  
14           you said, it sounds like it makes sense.

15           The only concern I have is, I also listen  
16           to the business news reports, and it's not only  
17           important to understand that the economy grew in the  
18           last quarter, and I'd like to know what the  
19           innovation was in the last quarter, but I'm also  
20           interested in the leading economic indicators, and  
21           what I don't see here is, maybe I'm just missing it,  
22           is some measurement of what is a forward looking  
23           projection. Are we doing the right things today that  
24           will impact productivity, impact innovation, in a  
25           year, in five years, in a decade?

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1                   And so that's the piece I'm missing.

2                   DR. SCHRAMM: I think that's a very good  
3 point. And following up on what both Art and Dale  
4 have said, again, I'm off in the land of trying to  
5 develop the supporting text.

6                   I think both these comments go to a point  
7 you've made, Rajesh. We could think about describing  
8 the world as it might have been, had we done this.  
9 And I think, reflecting on GDP growth through a  
10 partial lens of innovation, it could be one of the  
11 most powerful advances in economic theory, actually,  
12 because it would invite a good deal of theory, and it  
13 would actually create a more nonpartisan platform, in  
14 some regards, about some other issues, for example,  
15 high school reform around math and science, and so  
16 forth, if we could tie these together.

17                  And I think, also, once we had these data,  
18 we could actually move into where Art is pushing us,  
19 and that is, at the moment, we really don't know how  
20 to weight. I guess we know intuitively that this is a  
21 leading indicator, as opposed to a lagging indicator,  
22 but we wouldn't even be able to begin to know how to  
23 weight it, or what the relationships would be as the  
24 component factors that might be the leading sub-  
25 component of an innovative trend.

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1           Maybe what Art is saying is, in the last  
2           quarter, patent filings were apt to be connected to  
3           it, are up 3 percent, which suggests that GDP will be  
4           up another fraction of a percent four quarters from  
5           now.

6           So we need all these data before we can  
7           actually get to the point of pushing this notion of  
8           developing subsidiary indicators around it. It's a  
9           very good point, and I think we have to make sure we  
10          have this captured in the text.

11          DR. CHANDY: And I think that will be  
12          relevant when we discuss recommendation number 13,  
13          about drivers and impediments of innovation. And  
14          some of those could well be the leading indicators of  
15          innovation. So there is probably some opportunity  
16          for cross-linkages. And those weights, once we've  
17          figured out what drives innovation, we'll also have a  
18          sense for how much to weight different factors, for  
19          instance, patents, and where. So patents may mean a  
20          lot in, say, pharma; it may not mean as much in many  
21          other industries. So, we'll be able to do those  
22          weights once we get a handle on the drivers, as well.

23          DR. ARORA: Just to build on that, there is  
24          this open question about how does innovation proceed  
25          in an economy, and how does economic growth happen.

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1           And there is a beautiful paper that I read  
2           which had this analogy of: if it's like yeast, it's a  
3           rising tide, it's happening everywhere in small  
4           amounts; but if it's like mushrooms, then it's  
5           pockets of innovation that are then going to spread  
6           out. It starts somewhere and spreads out. Some of  
7           Dale's work has suggested it is the latter.

8           There is a popular conception, for  
9           example, if you take a long view of innovation, that  
10          the first industrial revolution was cotton textiles.  
11          This is the popular conception. But we really have  
12          very little factual basis to say: it is like this, or  
13          it is not like this.

14          So is this, in fact, an Internet  
15          revolution? Well, we all think so, but we don't  
16          know. Many people that I talk to think that at  
17          particular historical junctures it was their industry  
18          that was driving the economy. So was it really the  
19          internal combustion engine, or was it plastics?

20          So there are these questions that, as  
21          scholars of innovation and technical change, we think  
22          about, and we sort of wrestle with. But it's also  
23          critically important for policymaking, for thinking  
24          about what is going to power the economy.

25          And so, I think it is really important

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1 that we have this more disaggregated view of the  
2 process of innovation.

3 The only caveat I would add, and this is  
4 just speaking to the choir, I guess, is that we need  
5 to be really careful that we are measuring all the  
6 inputs right. Because sometimes you might see some  
7 sector as being very innovative, but, in fact - and  
8 this builds on Art's comment - they may simply be  
9 getting the innovations from somewhere else, and we  
10 are not doing a good job of capturing that. And that  
11 could be a problem.

12 DR. SCHRAMM: Great. Maybe that is the  
13 title of this chapter: Yeast or Mushrooms. That'll  
14 get us no place.

15 Do we have other thoughts on this? Since  
16 we're at -- I'm sorry, Patricia?

17 DR. BUCKLEY: IBM had one question  
18 regarding this proposal. And that involves timing.  
19 When you are in the middle of an innovative process,  
20 or getting ready to launch a project, you might see  
21 productivity decline.

22 So how do you see the timing issues?  
23 Could this be misinterpreted, that you see a  
24 reduction in productivity, and that's because people  
25 are gathering for a big leap forward?

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1 DR. SCHRAMM: Dale? We're going to try and  
2 accelerate into a break here. And I think we should  
3 absorb that comment from IBM. My hunch is that  
4 springs from the work of today's modern cycle of  
5 economists about slowing us down. And I think we  
6 should reference that. Would you like to say  
7 something?

8 Okay, since we've already got  
9 recommendation 13 in the bag, we're doing very well,  
10 I think, time-wise. We're at 10:30, and the general  
11 sense here is that we should pause for five minutes,  
12 and then come back to work.

13 Thank you.

14 (Whereupon, at 10:36 a.m. the proceeding  
15 in the above-entitled matter went off the record to  
16 return on the record at 10:52 a.m.)

17 DR. SCHRAMM: Let's get back to work.  
18 Perhaps it's because our next task is to talk about  
19 satellite accounts that no one wants to come to  
20 order.

21 I wish I could promise that we will make  
22 this a very compelling discussion, this satellite  
23 accounts business. But I'm probably prejudicing the  
24 panel thinking that this should be recommendation  
25 number 88.

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1           We have everyone here except Luther. So  
2           let's get back underway. In many ways,  
3           recommendations five and six relate to recommendation  
4           four, and I was rather hoping we might make quick  
5           time of five and six. Does anybody have a discussion  
6           about the satellite accounts? Notwithstanding my  
7           comments, this is very important.

8           MR. BERND: Information question: four,  
9           five and six, are they within the total domain of the  
10          Department of Commerce to implement these changes?  
11          Are these easier recommendations than some of the  
12          others?

13          DR. BUCKLEY: Four is not. Four would  
14          require cooperation - Dale could probably speak  
15          better - would require cooperation, particularly with  
16          Bureau of Labor Statistics.

17          Dale, is that correct?

18          DR. SCHRAMM: And the Fed, right? Five and  
19          six are in the ambit of the authority of the Commerce  
20          Department.

21          Dale?

22          DR. JORGENSEN: I'd like to make a couple  
23          of background comments about this innovation  
24          satellite account. As it says in the prose here, the  
25          satellite account is something with very specific

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1 meaning in the context of the national accounts. It  
2 means something that is not integrated with the core  
3 national accounts.

4 So think of the core national accounts as  
5 the ones that are reported every month, including the  
6 GDP and the price index for GDP and so on. That's  
7 the core account. So what we're talking about here  
8 is something that would not be integrated with the  
9 core account but would be a satellite maintained with  
10 information that's consistent with the core account  
11 but going beyond it, and having information as it  
12 says here that is perhaps less reliable, needs  
13 further development, et cetera.

14 So what would this look like? Well, first  
15 of all, BEA has a successful example already in  
16 existence that covers part of the scope of this  
17 account, and that is the the research and development  
18 satellite account that was developed by Sue Okubo,  
19 who is here at the meeting from BEA, and her  
20 colleagues at BEA.

21 So that's an example. The R&D data are  
22 not yet of sufficient scope and reliability to  
23 incorporate into the core accounts. They may  
24 eventually be. But they can be maintained as a  
25 system of national accounts that is consistent with

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1 the rest of the national accounts, and they provide  
2 relevant data for innovation, in this case research  
3 and development.

4 So what else would be in the national  
5 innovation satellite account? Well, the other things  
6 that would be in there have been the subject of a  
7 great deal of research recently, and the most  
8 influential single piece of research in this  
9 dimension is a piece of research that was done by  
10 Corrado, and Sichel, two economists at the Federal  
11 Reserve Board, and Charles Hulten, who is a professor  
12 at the University of Maryland.

13 That was the subject of a front page story  
14 in Business Week at the end of last year; it got a  
15 lot of attention, and has resulted in similar efforts  
16 around the world.

17 Now the key feature of that research was  
18 that it was an accounting system just like an income  
19 statement or a balance sheet. It had double entry.  
20 It had everything in current and constant prices so  
21 you could distinguish growth rates from growth of  
22 nominal magnitudes.

23 Everything looked like an accounting  
24 system, and it's something then that could be  
25 regarded as a satellite accounting system that had

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1 all the characteristics of an accounting system  
2 except for completeness and reliability, and that  
3 would be the starting point.

4 So, that would include things like the  
5 activities related to research and development and  
6 activities related to other forms of intellectual  
7 property creation. Let me remind you that although  
8 R&D is very important, it's about equally important  
9 to a combination of music, videos and movies, maybe a  
10 little bit less important from the point of view of  
11 overall economic activity. But, nonetheless, that  
12 creates intellectual property.

13 And then all the other things that relate  
14 to innovation like business process development,  
15 brand recognition development, and so on.

16 So, all of these things are things that  
17 could be put into a satellite account. So, I  
18 construe this proposal as essentially building on the  
19 very important research that has already been done in  
20 this area, especially the work of Corrado, Hulten and  
21 Sichel. And I would like to see this adopted.

22 But it shouldn't be regarded as a  
23 substitute for number four. Number four is something  
24 that would be integrated with a core system of  
25 accounts, and would put innovation into the core, but

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1 this would be something that would integrate a lot of  
2 relevant information about innovation in a form that  
3 could be construed as an accounting system and would  
4 be a very valuable device, but not as one that would  
5 be regularly reported.

6 So I think this is a very important  
7 recommendation, and I think that we should support  
8 it.

9 DR. SCHRAMM: Thank you. Other thoughts on  
10 this recommendation?

11 Kathy, do you want to say something?

12 DR. COOPER: Well, the only thing that I  
13 would say is, I'm not as clear on the second and  
14 third components of the recommendation. But it  
15 certainly seems worthwhile to me for us to take hold  
16 of number one, the first part which is understanding  
17 the data needs for an innovation satellite account,  
18 identifying those data needs.

19 I don't know how difficult it would be for  
20 the Bureau of Economic Analysis to actually conduct  
21 and put together this satellite account. But I think  
22 it certainly is worthwhile to identify those needs  
23 and see.

24 DR. SCHRAMM: Thank you.

25 Let's move then to the next recommendation

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1 and take any comments that might exist on the NIPAs.

2 Dale, should this stand as a separate  
3 recommendation?

4 DR. JORGENSEN: As a separate  
5 recommendation?

6 DR. SCHRAMM: Yes, from four. I'm trying  
7 to relate this to number four.

8 DR. JORGENSEN: Well, again this would be -  
9 I'm sorry, I missed something here, are you talking  
10 about six or five?

11 DR. SCHRAMM: I'm sorry, six.

12 DR. JORGENSEN: You're talking about six?

13 DR. SCHRAMM: As to four, I'm sorry, excuse  
14 me.

15 DR. JORGENSEN: Okay, so six is an issue  
16 related to publishing data on firms as opposed to  
17 establishments. So again we have to think of the  
18 issue here as the surveys, especially the  
19 manufacturing survey and the service survey that are  
20 already in existence are based on establishments.

21 So this is a recommendation also to  
22 publish data on firms. I think that maybe Ashish and  
23 Don would address this, or Rajesh. Not me.

24 DR. ARORA: I just wanted to chime in and  
25 say I think this is absolutely essential. We had a

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1 foretaste of this one. We were discussing where we  
2 should go to collect licensing data. Should it be  
3 the establishment? Should it be the firm? And I  
4 think the answer is, we need to have data at both  
5 levels. As Patricia said, we need to be able to roll  
6 up the data that we collect from the establishments  
7 into the aggregate form level.

8 And I'd like to make just one other point  
9 about services and manufacturing.

10 In fact, even within manufacturing firms a  
11 great deal of service activity takes place as Art had  
12 mentioned. And one way to sort of try to get at that  
13 and see where they're innovating is to be able to  
14 link both establishments, and then to roll it up at  
15 the firm level.

16 So I think it's something that absolutely  
17 should be done.

18 DR. SCHRAMM: Rajesh?

19 DR. CHANDY: I agree. It relates to the  
20 unit of analysis. We have a wealth of information at  
21 the establishment level from existing statistical  
22 efforts. In order for us to identify, for instance,  
23 what leads to innovation, well, a lot of the things  
24 that lead to innovation are at the firm level. So if  
25 Art conducted a strategic effort at Medtronic, well,

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1 that would pervade many establishments within  
2 Medtronic. So unless we study what's happening at  
3 the Medtronic level, we may well end up with wrong  
4 conclusions about what happens at Medtronic.

5 So it relates to the unit of analysis, and  
6 I think it's very important. It also relates to a  
7 point I suspect we'll talk about later on making use  
8 of publicly available data. That information for  
9 publicly held firms is generally available at the  
10 firm level. And in order for us to be able to make  
11 linkages there, again, it would be useful to have  
12 firm level data.

13 DR. SCHRAMM: Don.

14 DR. SIEGEL: Yes, I'd like to second that  
15 and say this is important because many of the  
16 indicators of the outcomes of innovation that we  
17 would want to relate to inputs or resources, such as  
18 profit and share prices, are available only at the  
19 corporate level.

20 So it's important to have these measures  
21 at the firm level as well. But just one caveat is -  
22 and again this is a defense of collecting the data  
23 also at the establishment level - it's hard to  
24 disaggregate some companies into industries. Because  
25 they are so highly diversified, you have to be

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1 careful to not - to kind of do the disaggregation  
2 wrong.

3 But having the data at the firm level will  
4 be very useful for the analysis of the outcomes of  
5 innovation.

6 DR. SCHRAMM: Great. Other thoughts on  
7 six?

8 Do I have a sense that this should stand  
9 by itself?

10 MR. BERND: Couldn't you combine?

11 DR. SCHRAMM: That's my inclination, yes.

12 DR. BUCKLEY: This reordering we were  
13 talking about might take care of it. Because when we  
14 step back and look at the order in which these should  
15 be presented, I think in the course of the discussion  
16 we're seeing things flow into place. Like this  
17 speaks to how something internal to the Census Bureau  
18 is actually done.

19 Some things speak to things at BEA. So we  
20 might want to group those types from new or major  
21 changes.

22 DR. SCHRAMM: We may need a coach as we  
23 write this in terms of whose authority and which  
24 pockets of the government people watch over.

25 Actually I think in a sense we will have

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1 to - this will almost be a presentation question as  
2 well. We don't want to dilute, for example, the huge  
3 emphasis on number four, number three, by trying to  
4 consolidate these things. So let's hold that  
5 discussion then for prioritization.

6 Let's go to number seven. Seven is  
7 actually very interesting in the sense that it begins  
8 to push us towards a practical/theoretical question  
9 that I think it's important for the committee to  
10 offer guidance on relative to the composition of a  
11 measure of inside-the-firm innovation.

12 And this one always taxes me, because I  
13 think we're out in terra incognita with this. We  
14 have as a panel gone out and talked to firms about  
15 how they do this, and I would say it's easy to say  
16 there is no consensus even among the firms  
17 represented on this panel about how they proceed with  
18 measuring internally and let alone a view about what  
19 the timeframe is and so forth. Notwithstanding that,  
20 I don't think anyone would disagree that this is a  
21 very important area to talk about and to make a  
22 recommendation about.

23 So I think any guidance we can get would  
24 be great.

25 DR. CHANDY: Yes, I think there is one

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1 element - at least my sense is - one element of  
2 general agreement among the firms, and Patricia and  
3 Cyndi, having spoken to many firms, you can correct  
4 me on this, is that there is a sense that this type  
5 of data is useful and can be put together.

6 The tricky thing is with defining what  
7 constitutes innovation and what constitutes new. And  
8 this is an area where we have to be careful not to  
9 make the perfect the enemy of the good. And I would  
10 argue that it's not entirely terra incognita, in the  
11 sense that, as the notes here indicate, the Europeans  
12 have been doing this for a few years, at least three  
13 or four iterations of this. So there is a lot one  
14 could learn. In some cases some countries have  
15 stumbled through the process, and there is a lot we  
16 could learn there.

17 Also, academics have done a wealth of  
18 studies that look at the pros and cons of various  
19 ways of measuring percentage of sales of new  
20 products, and again, we can aggregate some of those  
21 insights. And a lot of firms tend to collect this  
22 kind of information.

23 So combining the academic insights, the  
24 insights from other countries that have done this, as  
25 well as insights from firms that have done it, I

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1 think we can come up with a workable and actually  
2 useful metric.

3 And this actually pervades the entire  
4 exercise in some ways, because this would be a metric  
5 of innovation output.

6 And to go back to the imagery that Dale  
7 had noted, a few years from now we would be driving  
8 along and there would be an announcement in the news  
9 about one-fourth of GDP coming from innovation.

10 Well, how do we get at that one fourth?  
11 It has to be based on metrics like this, and it has  
12 to be based on output measures.

13 Last note, there also exist measurement  
14 approaches. Just as you don't have to survey every  
15 single firm under the sun in order to get a  
16 scientifically valid insight about innovation  
17 activities, similarly you don't have to have the  
18 perfect measure in order to get some insight on  
19 innovation activity as well. By examining multiple  
20 measures one can get a sense for how to parcel out  
21 some of the errors and inaccuracies associated with  
22 them. And there is a wealth of research on that.

23 DR. SCHRAMM: Dale.

24 DR. JORGENSON: I would like to suggest  
25 that we choose item number one on this list as our

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1 recommendation. So let me just read that.

2 This is an assessment of the feasibility  
3 cost and burden, reporting burden that is, of  
4 developing measures of innovation intensity,  
5 including a review of other countries' experience in  
6 this area.

7 That's what I would like to see as our  
8 recommendation, because I feel that this is an area  
9 where we need some further information to inform  
10 decisions.

11 We're talking about a major data  
12 development effort here if we're really going to do  
13 this seriously. And there have been a lot of  
14 efforts in the international community. There is a  
15 regular innovation survey of this type run by the EU;  
16 another one associated with OECD for countries that  
17 are not members of the EU. And as it says here, the  
18 U.S. could build on their experience.

19 But the Census Bureau has carried out  
20 many, many studies of this type on a pilot basis  
21 covering various aspects of innovation, and some of  
22 the issues that Rajesh just alluded to.

23 So I think that what would be very helpful  
24 would be to have a report that could go to the  
25 Secretary that would sum up the experience that has

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1       been accumulated at the Census Bureau, and make  
2       recommendations about whether or not to proceed with  
3       an EU-type survey.

4               There is a draft already in existence by a  
5       very fine Census Bureau economist, B.K. Atroscopic,  
6       which was circulated about the time of our first  
7       meeting. Unfortunately it wasn't circulated in time  
8       to reach every member of the committee. So that  
9       could be the basis for this report.

10              But I think that that would be very  
11       valuable to include as part of our discussion, and I  
12       think we ought to focus on item number one. That's  
13       my bottom line.

14              DR. SCHRAMM: Yes.

15              DR. CHANDY: I agree that item number one  
16       would be very helpful, and a report by Dr. Acrostic  
17       that Dale mentioned actually provides a very nice  
18       summary of what exists out there.

19              I would urge our committee to also  
20       recommend item number two which is pilot studies,  
21       because at this point we have a fair sense for what  
22       the pitfalls are in other countries.

23              The challenge is in implementing it at the  
24       scale and at the level of data cleanliness if you  
25       will that we would expect in this country. And for

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1           that I think it would be useful to have a study that  
2           includes many industries in the United States.

3                   DR. SCHRAMM: This is the first time we've  
4           directly approached this, the second time this morning  
5           that inferentially we've come to the thought about  
6           some studies that would be necessary.     And I'm  
7           wondering if we might not, in order to make this  
8           recommendation and a couple others to follow, a bit  
9           more forceful, and actually then to lend force to the  
10          notion of studies and to somehow avoid that which all  
11          these reports do, and that is, say further study.

12                   What I'd like to do to differentiate our  
13          product is potentially even fall back and take  
14          suggestions from a number of you as to specific  
15          research that might follow what we do.

16                   This could be helpful to people in the  
17          government.     It could be helpful potentially to the  
18          National Science Foundation.     It could be helpful to,  
19          you know, a number of younger professors potentially  
20          who are interested in this, which the number must be  
21          at least three or four across the nation.

22                   And it might be a very good idea to sort  
23          of lay out not a research agenda but actually specify  
24          four or five specific questions that could be  
25          researched.

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1 I see one around firm measurement. I see  
2 one around these time horizons, okay. I see one  
3 around potential pilot studies. We could incorporate  
4 by reference these studies that exist that compare  
5 where we stand relative to where EuroStat stands,  
6 which might be very useful historically, that type of  
7 international comparison has sometimes been very, very  
8 productive in spurring the Congress.

9 So it may be a valuable appendix, or  
10 potentially even recommendation 14, as to follow-on  
11 research with some specificity.

12 MR. COLLINS: Carl, I agree with that. If  
13 I look - jumping ahead to number eight, if you go down  
14 to the potential recommendations for consideration,  
15 number one is exactly the same, only they include in  
16 it a potential pilot study. So if you are talking  
17 about percentage of sales from new products, or you  
18 look at market share, which by the way I'm a great  
19 proponent of, somebody's got to want to buy your  
20 service or product, but maybe we wrap some of those  
21 together in an assessment of the feasibility cost for  
22 developing measures, and consideration of a pilot  
23 study.

24 DR. SCHRAMM: Right.

25 DR. JORGENSEN: I'd like to second that. I

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1 think that's an excellent way to look at it.

2 DR. CHANDY: I agree, especially since some  
3 of the challenges involving definition and actual  
4 implementation are virtually identical.

5 DR. SCHRAMM: We're starting to bleed into  
6 a discussion of number eight, and that is totally  
7 understandable, because it does get us exactly into  
8 another one of these, how do we conceive of the  
9 appropriate measurement unit if you will.

10 But this is my sense, not to impose myself  
11 here, this I think is a very strong recommendation  
12 that requires - and I'd like to invite the panel right  
13 now to talk a little bit about the scaffolding that  
14 might go under this. If we do anything with this one  
15 it seems to me we actually ought to strengthen it.

16 MR. COLLINS: Well, just from a practical  
17 standpoint, and I'm sure other CEOs could comment on  
18 this, if you look at how do you ultimately measure the  
19 value of innovation, and that innovation could be  
20 technical innovation, it could be innovation in  
21 manufacturing that would give you a cost advantage, it  
22 could be innovation in marketing a brand, et cetera,  
23 you basically then bring it back to, are you either  
24 creating a new market that didn't exist, or are you  
25 gaining market share, and ultimately doing that in a

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1 profitable way.

2           So, if I look at both recommendations  
3 seven and eight, at least from the way we look at our  
4 business, we have enough information to say that if  
5 we're not continually innovating in terms of new  
6 products, and they represent an increasingly - or not  
7 increasingly but a very large proportion of our  
8 revenues - we won't be successful in the near or  
9 longer term; and secondly, in my estimation, the  
10 single greatest measurement of whether your innovation  
11 is of value to your consumer is if someone is buying  
12 it relative to whatever else is available, and that's  
13 market share.

14           So I just really endorse particularly the  
15 market share as the ultimate determinant of whether  
16 you are being successful in the consumers' eyes.

17           DR. SCHRAMM: Dave.

18           MR. BERND: I was going to say number eight  
19 looks to me like it's a little too narrowly defined,  
20 because you can have increasing corporate share in a  
21 market that is shrinking, or you could maintain market  
22 share with innovation while others are losing market  
23 share.

24           So I think this definition is too narrow,  
25 we need to think about widening that. There are

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1 different product life cycles we're dealing with, and  
2 different market sizes, and different products, and  
3 there's innovation in all three of those areas it  
4 seems to me.

5 DR. SCHRAMM: Yes.

6 MR. BLANCHARD: I just wanted to add one  
7 comment back on number seven. I'd hate to see us  
8 eliminate three and four as well. I guess we all have  
9 our favorites on this list.

10 But four in particular is the  
11 encouragement of firms to develop their own measures  
12 of innovation. I have a strong sense of this one  
13 because of the very fact of being on this panel,  
14 having had the discussions with Cynthia and the team  
15 at Commerce have prompted us to literally go to the  
16 drawing board and create some metrics that we had not  
17 previously had before.

18 And I don't know what the power of our  
19 suggestion is in this item seven, but I sure would  
20 hate to see us eliminate that piece, just because of  
21 the personal experience we've had, and I think the  
22 value it's brought to us.

23 DR. SCHRAMM: I was thinking as you were  
24 talking, Jim, that actually we might migrate a couple  
25 of these ideas over to eight to strengthen it. I'll

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1 give you a thought, how I'm thinking about this. A  
2 few minutes ago I said it might help a few young  
3 professors who are interested in this, and  
4 specifically talking about how data is compiled.  
5 There really are people who pay attention to data,  
6 statisticians.

7 I think in a sense number eight helps  
8 potentially a group of professors out there - when I  
9 say that I'm talking about people who conceive of  
10 things that would be valuable to research, that's what  
11 I really mean.

12 And this report will actually have a word  
13 - innovation - on the cover. And there are professors  
14 out there - the number should be much larger - who are  
15 concerned about innovation, and the more specific  
16 issues about how innovation is measured and understood  
17 inside firms.

18 And in a sense I think the scaffolding  
19 that comes up under number eight is an encouragement  
20 to the research community to get to questions like are  
21 suggested and develop methodologies and so forth, a  
22 much wider circuit of interest in this question of  
23 innovation inside the firm.

24 MR. COLLINS: You know, Jim, listening to  
25 you, and I couldn't agree with you more, perhaps one

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1 recommendation to consider is, should everything we're  
2 doing here actually - or your point, go into a guiding  
3 principle. Because ultimately I think what we're  
4 recommending is - whether it's a firm or it's an  
5 individual - it should encourage them to come up with  
6 their own metrics and focus on innovation. Maybe we  
7 should move it up into the guiding principle that  
8 overarches everything we're talking about.

9 DR. SCHRAMM: I think that's a good idea.  
10 And I also think, Art, that it may be part of what we  
11 articulate in the studies that might follow.

12 Think about it this way: If we encourage  
13 firms to go develop measures, we do conceive of things  
14 from industry to industry to industry, and the best  
15 practice of measuring in one industry, we ought to  
16 have some way at least of getting that information out  
17 into the hands of other firms that may come to the  
18 party late or what have you, that this type of  
19 information could help guide how they begin to measure  
20 innovation inside their own firms.

21 I'm not being particularly articulate on  
22 this topic, but I think if we get to writing this we  
23 might make this even more powerful, talk about it in  
24 the guiding principles, and then actually talk  
25 potentially of a way to encourage research around this

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1 so that when firms start out on this mission  
2 themselves there is some guidance around - I mean we  
3 offer it right here, you're growing in a growing  
4 market, or growing in a shrinking market, what the  
5 consequences are.

6 DR. ARORA: Just a note of caution. My  
7 experience in using government statistics is that they  
8 are really useful for a variety of things but the  
9 categories don't change quickly.

10 So, long ago when I studied the chemical  
11 industry, everything I was interested in was in the  
12 category "not elsewhere classified." And this  
13 included all the stuff that was innovation. You had  
14 details on how much carbon black was being produced,  
15 but not how much in terms of polymers, which were the  
16 big things in those days.

17 So my concern here is that when you think  
18 about market share, if you do this formally, if you do  
19 this seriously, as I think Dale pointed out, we are  
20 going to define what markets are, and those categories  
21 are going to get locked in, and somebody like me, you  
22 know, years later, will go back and try to see, let's  
23 figure out what was going on, and it's all in the "not  
24 elsewhere classified" category.

25 So I'm a little bit unsure about - while I

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1 think it's true as Art said this is a big deal, firms  
2 measure what they're doing by looking at market share  
3 - is this something that the government should collect  
4 on a systematic basis? And how quickly do we  
5 anticipate being able to change the categories to be  
6 able to response to innovations in the economy is  
7 something we should think about.

8 DR. SCHRAMM: I think that's a very, very  
9 good point. I'm not quite sure how we manage that  
10 point. But my own deeply occluded memory of working  
11 as a professor a long time ago in a different part of  
12 the economy, health care, everything is "other." It's  
13 very, very difficult in health care to measure  
14 productivity. And I think that's a very, very good  
15 point, and you might try in the scaffolding of this  
16 recommendation to talk a bit about how government data  
17 series have to move a little faster.

18 At our first discussion we did have that  
19 discussion about where is all the software falling,  
20 and where is Google in the national accounts and so  
21 forth. So we may actually want to articulate some  
22 concern about the speed with which we conceive of  
23 this.

24 DR. COOPER: Well, I understand what you're  
25 saying there in terms of things changing. It's very

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1 difficult over time to keep the classifications  
2 similar enough so people make comparisons and that,  
3 too, government statistics are criticized for.

4 I guess I looked at this group of seven,  
5 eight and nine together. And I kept thinking to  
6 myself, well, what is the comparative advantage of  
7 what the government does versus what the private  
8 sector could do.

9 I could see since Europeans are collecting  
10 - or OECD, I'm not sure who is collecting it - but  
11 they are collecting some innovation intensity indices.

12 We might go along that road. And certainly I would  
13 think that we need to continue to have the discussions  
14 with other government statisticians on how we might  
15 better measure it over time.

16 But some of these things could perhaps be  
17 better done and more nimbly done by the private  
18 sector, by industry groups. I can think of an  
19 organization that would look mainly at large  
20 companies, NFIB, to look at small companies and be  
21 able to get a lot of information that way that might  
22 be more useful, or certainly an add on.

23 At any rate I kind of think of this as, it  
24 may not be to our government's comparative advantage  
25 to do this as quickly as one might want, other than

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1 the two things that are already being done, and we  
2 would want to tag on to what the Europeans have done,  
3 because we want to have something that is compatible  
4 internationally. Just a thought.

5 DR. SCHRAMM: Yes, that's a good thought,  
6 that's a very good thought. I'll give discussion to  
7 some of our folks who work at the government here, but  
8 let me just speculate if I might.

9 You know, it might be great to imagine the  
10 imagery of a window, and that is, there are various  
11 trade groups that understand what the needs of the  
12 trade group are in measuring the performance of a  
13 brand new industry, for example.

14 And it might be that our federal  
15 statistical agencies have a more porous or  
16 approachable or pliant way to hear about this. It's  
17 one of the reasons why I'm a little concerned that we  
18 start this report by talking about our sensitivity to  
19 public budget issues.

20 It just seems to me that's the wrong tone  
21 to set right at the very beginning. If we think about  
22 this in terms of economic growth, that's what  
23 fundamentally our task is here, and we are talking  
24 about innovation as the central core of economic  
25 growth, and we now have Dale's somewhat empirically-

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1 based speculation that a quarter of GDP growth is now  
2 innovation, and my hunch is that it may be a touch  
3 bigger.

4 But the task is, we'd love to see it at  
5 half, potentially. With those thoughts swirling, what  
6 better way to spend money? You can't do damage  
7 measuring. There's a lot of things you could ask the  
8 government to spend money on. It's not so clear that  
9 all of it is good. None of this is potentially bad.  
10 And I think to Kathleen's point, the private sector in  
11 many places is doing a great job of measuring a number  
12 of things around innovation. That's been the case  
13 forever in the auto industry for example. Companies  
14 exist that measure and they share and they are  
15 supported pretty handsomely by the various product and  
16 sub-assembly companies. And it's not the government's  
17 job to displace that.

18 There would be moments when some of these  
19 things bleed out beyond the industry and it's  
20 important to gather that.

21 I don't know quite how we say that to the  
22 government. How would we say that?

23 DR. COOPER: I think they understand. I  
24 was thinking not necessarily just a trade group, but  
25 an organization such as the Conference Board which

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1 puts out some broad statistics for larger business; or  
2 NFIB for smaller businesses.

3 DR. SCHRAMM: Yes, Cynthia?

4 DR. GLASSMAN: I just wanted to point out,  
5 coming from the government at this point in my life,  
6 that the recommendations for this committee do not  
7 have to all be things the government can do. They can  
8 certainly be recommendations to the private sector, to  
9 the academic community.

10 And there are clearly things that the  
11 private sector can do better than the government. So  
12 please don't feel that everything has to be something  
13 that the government is supposed to be able to do next.

14 We value the private sector very much, and  
15 you bring a lot to the table which is why a lot of you  
16 are at the table.

17 MR. HODGES: Would it be fair to say that -  
18 as I started to say, we might have less than 13. If  
19 we sort of give emphasis on the bigger projects, have  
20 them do one, two, three and four and so on, as major  
21 recommendations, and maybe summarize in the "why  
22 innovation matters" or some other chapter to try to  
23 express as we are all struggling with, combining some  
24 of these later ideas into a general essay on it or  
25 something like that, and just have fewer

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1 recommendations that are hard hitting, with the most  
2 important one being the one dealing with legislation,  
3 so we can make certain things happen.

4 DR. SCHRAMM: Well, I sort of see a natural  
5 here, Luther, of sort of combining seven and eight, as  
6 one way to do this.

7 Patricia, did you want to say something?

8 DR. BUCKLEY: Yes, one way of handling this  
9 might be to say, the recommendation from the committee  
10 is, we need a measure of innovative intensity. Here  
11 are some that we've considered. We think they might  
12 vary by sector. We think that they might be basically  
13 squishy, where it's not the government defining your  
14 market for you and deciding your market share; it  
15 would be a question of going to you and saying, "In  
16 the markets in which you compete, are you increasing  
17 market share? Are those markets generally  
18 international, national, regional or local? "

19 But these are not the questions we usually  
20 ask in government because they are sort of squishy.  
21 So the home for it might not be the Census Bureau, but  
22 some other agency that would keep track. The point is  
23 to understand whether firms are losing or gaining  
24 ground. And I was an antitrust economist for awhile,  
25 and defining a market is really, really complicated,

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1 when somebody else is doing it for you.

2 But if we want to know what businesses  
3 think about what they're doing on innovation, we could  
4 ask them something softer. Not we, necessarily the  
5 government, but maybe other interest groups, trade  
6 associations or other types of organizations.

7 DR. SCHRAMM: We must have lunch sometime  
8 over the Herfindahl-Hirschman index.

9 Now then, in a way, Patricia sets the  
10 platform to move to number nine, which on its face is  
11 in many ways our most hard-hitting recommendation; at  
12 least it's our most clearly stated short  
13 recommendation.

14 And I think, Dale, you've already spoken  
15 to this in your remarks before on number four. In  
16 some ways this would be, not to presage the  
17 conversation we're going to have in a few minutes, so  
18 one of my thoughts about moving this way up front.  
19 But does anybody want to offer thoughts on that? I  
20 think to some extent we've covered it.

21 Okay, how about 10?

22 This was one that actually I think we  
23 could put in a section on research, because this is  
24 actually the committee recommending research, and I  
25 think it's a very important area, and again goes to

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1 the question, Kathleen, of public-private  
2 partnerships.

3 DR. GLASSMAN: This was one that just about  
4 every company and every academic on this panel brought  
5 up as something very important in driving innovation,  
6 but it was very difficult for any of them to  
7 articulate how they would measure it. That's why a  
8 research project by somebody, not necessarily the  
9 government but maybe the private sector, would be a  
10 useful recommendation.

11 DR. SCHRAMM: I think, Cynthia, that's a  
12 good way to talk about it. I think when we get down  
13 to the writing I'm going to actually turn to a number  
14 of our academic folks to help us actually try as much  
15 as possible to get some specificity in a list of  
16 projects.

17 Again, you've heard me say this before,  
18 the more I've worked in this foundation world, and  
19 Kauffman Foundation is the largest single funder,  
20 private funder, of economic research in the United  
21 States right now, I wonder from time to time how it is  
22 that I'll say younger professors, because it's too  
23 late to rescue older professors, how it is they set  
24 their research agendas.

25 We have a great depth of things that

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1 strike me sometimes as largely irrelevant, and we come  
2 to lacunae, such as these questions, and there is  
3 almost nobody working in these vitally important  
4 areas. So it might be a useful thing for us to get  
5 to.

6 DR. CHANDY: I think the good news there is  
7 that there is - this is an area that is flourishing  
8 now in terms of academic research. As part of the  
9 recommendations we may also want to consider just what  
10 has been done before we undertake new research,  
11 because there has been a fair amount done, especially  
12 in the recent past. Concepts such as open innovation  
13 are very, very popular. The idea there is that you  
14 are looking for innovation not just within but  
15 anywhere in the world. And with new methods of  
16 accessing ideas from around the world, all kinds of  
17 possibilities are becoming available. And academics  
18 are aware of that, I think, so we could review.

19 DR. SCHRAMM: But I'd like to actually push  
20 a little harder. And that is, I read pretty  
21 extensively about this. And yes, open innovation, you  
22 can read book after book after book on open  
23 innovation, and after you are through reading book  
24 after book after book and the 10 things you should do  
25 this morning to get there, right, as an economist I

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1 keep asking, "So where's the beef?"

2 As someone who is interested now in  
3 measuring, you can only go so far with Professor X or  
4 Professor Y. We are trying to manage the economy, and  
5 that begs a completely different approach to a lot of  
6 this research.

7 Now I've revealed my true colors here on  
8 this.

9 DR. SIEGEL: To follow up on what you said,  
10 there is a large academic literature on this; I've  
11 written a review piece on it. And NSF has sponsored  
12 some workshops on this, and NSF has collected data on  
13 research joint ventures, not just the establishment of  
14 the ventures, but also tried to measure some of the  
15 outcomes. But that's where the problem is. The  
16 problem is, there are very poor data on the outcomes  
17 of these collaborative efforts at any level of  
18 aggregation, and it's not even clear that the  
19 companies know what happens in the aftermath of these  
20 projects.

21 So there are some really serious data gaps  
22 if you want to measure the outcomes of collaborative  
23 relationships unless you go to the firm level, and you  
24 use firm level indicators of performance.

25 But again, a lot of this is not - it's not

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1 that type of phenomenon. It's below the firm level,  
2 and it's very difficult for researchers to truly get  
3 an estimate of the returns of these collaborative  
4 relationships without better data.

5 DR. SCHRAMM: Well, it'd be good to have a  
6 specific outline of some of these questions, which you  
7 fellows know with some specificity, again as a spur to  
8 other people to advance the frontier of knowledge.

9 Dave?

10 MR. BERND: Though I think this is  
11 important, I think collaboration and partnerships are  
12 means to get to an end; some innovation is done  
13 entirely internally, some are done through  
14 collaboration and partnerships.

15 And I don't know if this is more of an  
16 input than an output, and if it really deserves to  
17 have its own separate category. Maybe it's better as  
18 a subcategory.

19 DR. SCHRAMM: I'm just thinking out loud  
20 here on this issue of collaboration. I know there are  
21 people who think there is research on this. From my  
22 reading of the research, it is not persuasively done  
23 methodologically. On the question about what the  
24 change has been in terms of exits for new firms to  
25 IPOs versus strategic acquisitions, there has been a

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1 profound sea change, a revolution in how that goes.  
2 But you can observe that. Nobody knows what really  
3 happened. And the reason I light on that particular  
4 example is, as the number of new firms increases  
5 hugely because of the exit into strategic  
6 acquisitions, the indicator to me is that our  
7 companies are basically turning there for innovation.

8 But that's about as far as anybody can go,  
9 because we don't have a fleshed out literature about  
10 what this phenomenon is, let alone any recommendation  
11 as to how one would from a policy perspective  
12 encourage this. And it is a central issue in business  
13 today.

14 Jim.

15 MR. BLANCHARD: I wish I could offer you a  
16 solution to the question you raised. But just from an  
17 intuitive sense, I don't really know what your  
18 structure would be as far as your basket that you  
19 refer to as research, but my sense would be, let's  
20 give this a prominence, let's push it harder, as you  
21 said, rather than shrink it back and hide it in a  
22 basket with something else.

23 This is a powerful source of innovation in  
24 the economy, and again, I don't know how to structure  
25 it for this report purpose, but let's push it harder

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1 rather than pull back on it.

2 DR. SCHRAMM: I think what happens with  
3 these reports about let's do some research on all the  
4 leftover questions, and what I'm trying to say is,  
5 instead of having the leftovers, whatever this is,  
6 maybe even a specific recommendation, if we figure out  
7 there are six or seven important questions, and  
8 stimulate research that way.

9 Now let's try ourselves to do a discussion  
10 on number 11.

11 DR. SIEGEL: I just want to make one  
12 general statement about this. I think it's very  
13 important in part because I think one of the  
14 fundamental flaws with the nature of statistics as  
15 it's collected today by the government is, they do a  
16 very poor job of covering embryonic industries.

17 And I think it's been fairly well  
18 documented that startups play a very important role in  
19 the development of an industry in its embryonic phase  
20 that is. So this recommendation would be very  
21 important, and might help us identify industries  
22 earlier than we do now.

23 DR. SCHRAMM: Kathleen?

24 DR. COOPER: I would agree with that. It  
25 shows up under research, but I think of it partly as

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1 data, encouraging the Census Bureau to continue with  
2 this data collection and looking at the longitudinal  
3 business dynamics, and making it more public.

4 I guess what we're really saying here is,  
5 continue to publish reports, but just raise their  
6 profile and make sure that they have the funding to  
7 continue along these lines.

8 And I certainly agree with what Don said,  
9 that the more we get people, individual researchers,  
10 involved in looking at these datasets, the more we're  
11 going to learn about the innovation process.

12 DR. SCHRAMM: This also relates directly to  
13 four, Dale, the question of data sharing specifically.

14 The only data we can get on young firms and firm  
15 creation is housed at the IRS, and number three, we've  
16 got to get to that.

17 Thoughts on 11 over here?

18 Let's move then - I'm sorry. Art.

19 MR. COLLINS: I was just going to - I was  
20 looking at three and I was asking, if you do three,  
21 can it help you accomplish four, or do you need a  
22 whole new approach for startups?

23 DR. JORGENSON: Well, I would say that they  
24 are complementary. The Census Bureau has done a lot  
25 of work on this issue of business dynamics. It's very

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1 fully documented in this excellent National Research  
2 Council report that we received.

3           And the only thing that I would add to  
4 what is described here in the statement of item 11 is  
5 that I think it's very important to emphasize that  
6 this research has been limited by the unavailability  
7 of service data. In other words it covers a part of  
8 the economy in which innovation is very well  
9 documented, namely, the manufacturing sector. But the  
10 development of these longitudinal databases for  
11 service industries has to be preceded by improvements  
12 of the basic data collection, the basic survey data  
13 that would go into the longitudinal datasets. And I  
14 feel that that's something that should be integrated  
15 into the discussion of item 11, just as an additional  
16 element that would emphasize the critical nature of  
17 the gaps in service sector data.

18           Because the innovation that is taking  
19 place in the economy is clearly focusing more and more  
20 on service industries, and all the issues that are  
21 listed here are very relevant to service industries,  
22 all these people that are starting new and innovative  
23 services, and failing or succeeding as they may be,  
24 are going about their work undocumented and  
25 unobserved, and integrating this into this framework

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1 that has already been applied so successfully to  
2 manufacturing I think would be a very positive step.  
3 But it lies ahead of us. And I think it's important  
4 to emphasize that so people can appreciate where the  
5 gaps are.

6 DR. SCHRAMM: Thank you.

7 Yes, Patricia?

8 DR. BUCKLEY: In order to tie to the goal  
9 here on innovation metrics, does the committee feel  
10 comfortable identifying this as sort of a measure of  
11 innovative environment - the occurrence of startups  
12 that not only come into being but grow rapidly. But,  
13 as a measure over time it's a measure of the  
14 innovative environment that happens more. How are we  
15 going to tie this to innovation, I guess is my  
16 question?

17 MR. COLLINS: I think that is a great lead  
18 in to point number 13. Because when you get to 13 you  
19 are talking about both drivers of innovation, which is  
20 environmental, and also, the impediments to innovation  
21 in our broader sense.

22 So I think the environment is a critical  
23 part of innovation. The question is, if we do 13 are  
24 we going to get that?

25 DR. ARORA: My response would be that

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1 that's a question that can be answered with data. If  
2 we had these data, and we had some measures of outcome  
3 - let's say we had disaggregated TFP - then we could  
4 answer the question empirically, are these in fact  
5 leading indicators? Are they a lagging indicator of  
6 something? Or are they just sort of uncorrelated?

7 And to my mind that's an empirical  
8 question. I don't think this can be answered through  
9 introspection.

10 DR. SCHRAMM: Well, it sure seems to me  
11 that 13 and 11 are both independent, and independently  
12 important, and should hold status as independent  
13 suggestions.

14 DR. ARORA: I was responding directly to  
15 Patricia's question to us.

16 DR. SCHRAMM: You know 13 keeps begging for  
17 us to comment on it, doesn't it?

18 DR. ARORA: I understand. I was simply  
19 responding directly to Patricia's comments about  
20 whether we - whether I am comfortable saying this is  
21 an indicator of the innovative environment.

22 And my prejudice is yes, but that's a  
23 prejudice. I'd like to see some scientific basis for  
24 that.

25 MR. HODGES: I would hate to see us have as

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1 a major recommendation that the Secretary convene  
2 another workshop on this subject.

3 MS. BUCKLEY: So would the Secretary.

4 DR. SCHRAMM: Why don't we move to 12? I  
5 think in some regards we've got some of 13 covered,  
6 because we have about 16 minutes left, and I want to  
7 reserve a little time to talk about this question of  
8 how we put the deck together.

9 So 12 is easier access to publicly  
10 available firm data. Who stands against this?

11 Any thoughts on this?

12 MR. COLLINS: The only caveat again is  
13 making sure that we draw the line between what is  
14 confidential and what is not. I think if it's sharing  
15 publicly available data, if it's information that  
16 firms have provided without restrictions of  
17 confidentiality, I don't think anyone is going to  
18 disagree with that. But you just have to make sure  
19 what is confidential, and should be confidential, is  
20 kept confidential.

21 DR. SCHRAMM: I think, Art, particularly  
22 when we get to recommendation three and even I think  
23 recommendation 11, I'd assure you that our text will  
24 talk at some length about the confidentiality of these  
25 things.

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1           When I read this, I'm sort of reminded of,  
2           again, the days when I was a professor, there were  
3           data series that were collected over in HHS around  
4           what used to be - the bureaus have all changed their  
5           name - but they used to study health services  
6           research.    And these data series were sometimes  
7           collected.   And our civil servants, who also wanted to  
8           establish academic reputations, would husband these  
9           data series and sometimes hold them three and four and  
10          five years away from the professors who could do them.

11                 And I think in a sense this speaks to this  
12          question about, when it's public data it ought to be  
13          publicly available.   It may also have a little tone in  
14          here of speed, and the urgency of this.   We are  
15          talking about innovation, so this should join the  
16          ranks of such measures as unemployment and GDP as Dale  
17          had recommended earlier of urgency when we get this  
18          done.

19                 Now we are getting the cart a little ahead  
20          of the horse here, because we are recommending  
21          cultural issues to the government when we don't have  
22          the basic data.   But it might be worth at least  
23          sounding this gong.

24                 Anything else on 12?   Well, let's conclude  
25          with a discussion of how you think we might stack

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1 these various recommendations.

2 MR. COLLINS: What are you going to do with  
3 13?

4 DR. SCHRAMM: Pardon?

5 MR. COLLINS: You've just -

6 DR. SCHRAMM: I was presuming we had taken  
7 some comments on that. But do we have further  
8 comments on 13?

9 MR. COLLINS: Other than to say I think  
10 this is really important. It's not simply what you do  
11 to encourage innovation, but it's also what gets in  
12 the way of innovation.

13 So I think it's very important. We talked  
14 about it earlier, but just emphasizing whether it's  
15 regulatory, legislative, or any other item, what are  
16 those blockages to an innovative environment, and to  
17 bring innovation forward?

18 I'd just stress the importance.

19 DR. SCHRAMM: I think we may in fact, in  
20 order to do that, move some of that that concern up  
21 into the guiding principles, so that we mention it two  
22 or three times.

23 DR. CHANDY: The way number 13 is currently  
24 worded, at least the text of it, there seems to be an  
25 emphasis on government-policy-related impediments and

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1 drivers.

2           The research I've seen on the role of  
3 government relative to individual firms says almost  
4 invariably that really the action lies at the level of  
5 the firm, that the impact of government initiatives on  
6 innovation tends not to be huge, and really what  
7 happens within the organization, how they organize,  
8 how they lead, how they measure, all of these have  
9 much greater impact than others.

10           So the variation within countries in  
11 innovation is substantially greater than variation  
12 across, especially nowadays that we're studying the EU  
13 experience and vice versa among other things.

14           So among the developed economies in  
15 particular these policies tend to converge. So I'm  
16 not sure we'll see a whole lot of variance besides  
17 natural experiments where one law was passed.

18           So are we precluding a discussion of firm  
19 level drivers and impediments? Because that's the way  
20 the text reads.

21           DR. SCHRAMM: It does read that way. And I  
22 think you are absolutely right, the macro data  
23 indicates country to country data. In many regards  
24 there's very little government can do - I shouldn't  
25 say in many regards, but the reality is growth rates

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1 in the United States with less government intrusion  
2 and government policy would indicate relative to other  
3 economies that less is more, and that really seats the  
4 discussion then internal to the firm.

5 And the data suggests that if you want to  
6 grow an economy you don't run around doing  
7 infrastructure build-out to make it look like the  
8 American economy, which is generally the policy of  
9 many ill advised economists, consultants to the State  
10 Department.

11 DR. CHANDY: Right, and many countries  
12 have learned from that, and we ourselves have learned  
13 from that.

14 DR. SCHRAMM: It's the human capital  
15 component that is much more powerful in explaining  
16 differences.

17 MR. COLLINS: Well, let me just - we can  
18 move off it, but I will give you one example, back to  
19 your human capital, is it a government policy on  
20 immigration? That is a government policy. Is it  
21 precluding talented individuals from coming into the  
22 United States that support innovation? I would say  
23 yes. And you could probably pick off a whole series  
24 of these.

25 So I couldn't agree with you more that

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1 ultimately a firm has to deal with its resources, and  
2 properly organize and manage, but I would not in the  
3 aggregate pass by what could be both positive and  
4 negative on what's done - and I'm saying broadly  
5 governmental.

6 DR. SCHRAMM: Now, you know, Rajesh, I've  
7 asked the panel to think about things we haven't  
8 talked about. And in fact this report is very light  
9 on exactly this question of human capital, and the  
10 nexus between innovation and the production of human  
11 capital, and where it sits and how it's incentivized  
12 from inside the firms and so forth.

13 And I would invite the panel as we adjourn  
14 to think more about exactly that. We may in fact not  
15 have spoken about an important recommendation that  
16 stands silent here.

17 We do have a prejudice here to talk about  
18 the institutional changes that spring from data, but  
19 we might think about what we might be missing relative  
20 to the human capital perspective, which we measure  
21 that type of input, so different. And equally poorly,  
22 almost, by the way, if not more poorly.

23 DR. GLASSMAN: If I could just add, it  
24 relates to 13 but it also relates to the comment that  
25 Carl just made. In talking to all of the CEOs before

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1 the first meeting, they uniformly talked about the  
2 importance of the culture and the willingness to take  
3 risks as important drivers of innovation.

4 And we didn't mean to leave that out, and  
5 that would certainly be part of the background. But I  
6 think that's what you are talking about. It's  
7 obviously very difficult to measure. But it's a very  
8 important driver based on what we heard.

9 DR. SCHRAMM: That's a very important  
10 point. And I think actually we might make sure that's  
11 some of the scaffolding under number 11. Because if  
12 we do not incorporate those factors and simply relate  
13 government policy to innovation outcome, it may appear  
14 spuriously that government policy actually has an  
15 impact on innovation outcomes, when in fact a lot of  
16 that variation could be explained by exactly those  
17 internal factors like culture and risk taking, et  
18 cetera, that are unique to the firm.

19 So it would be useful if we were to do the  
20 analysis of what are the drivers, and figure out  
21 weights and so on, it would be useful to incorporate  
22 those, again messy as they may be.

23 You know I have a sense we're at the edge  
24 of a particularly robust and rich discussion that  
25 actually could inform us, and we don't have it here,

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1 i.e. the human capital factors.

2 The way we measure this is very, very  
3 feeble, and we don't talk about it in the context in  
4 which we're talking about. Because we're at the  
5 Department of Commerce and we're talking about the  
6 BLS, we're talking about Treasury data, and talking  
7 about the Federal Reserve data.

8 But when some of you folks got your  
9 degrees, the last time the government knew about that  
10 was graduation statistics sent in from the university.

11 So the fact you got a Ph.D., you disappeared over the  
12 hill. We know how many Ph.D.s were produced in 1956,  
13 and how many came out in 1973, and how many came out  
14 and in what disciplines, including almost all others  
15 by the way, because some of the disciplines are so  
16 poorly metricized, to coin a stupid word, over in the  
17 Department of Education. I think we might make some  
18 noise in this direction about the importance of  
19 measuring skills and so forth into this.

20 It sounds to me like we're going to have a  
21 little bit of correspondence on this issue.

22 Dale?

23 DR. JORGENSON: I wonder if we can talk a  
24 little bit about priorities, because we have just a  
25 few minutes left.

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1           So what I think we ought to focus on is  
2 the guidance that was given to us by the Secretary.

3           So item number one, a conservative  
4 approach should be taken on the initiation of any new  
5 data collection.

6           Item number two -

7           DR. SCHRAMM: Are you at the guidelines?

8           DR. JORGENSEN: What?

9           DR. SCHRAMM: Are you at the guidelines?

10          DR. JORGENSEN: I'm looking at the  
11 guidelines.

12          DR. SCHRAMM: Those are not from the  
13 Secretary. Those are not from the Secretary.

14          DR. JORGENSEN: Where are these from?

15          DR. SCHRAMM: These are sort of cobbled  
16 together from the ether.

17          DR. JORGENSEN: Okay, the ether. So the  
18 ether says conservative approach.

19                 My feeling is that the big ticket items as  
20 far as money is concerned are all in the beginning  
21 here, the innovation data collection. And I think  
22 that is very important.

23                 I have already expressed my positive views  
24 about undertaking this. But we've got to recognize  
25 that there are very important resource issues here.

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1 And we have to say up front we think that this is  
2 something that is going to pay off. It's got to be  
3 done in a cost effective way, but plans are underway  
4 and so on.

5 But I think the fact is that this is  
6 expensive, and if we want to think about what is going  
7 to have an immediate impact, and what is actually  
8 going to raise the profile of innovation, it's the  
9 items four through six.

10 And I think that therefore we ought to  
11 reverse the order of those two in the report, and  
12 focus on the development of things that are really  
13 going to get innovation a prominent priority in the  
14 statistical reporting system ASAP. That's what we're  
15 here to try to achieve.

16 So that's what I would recommend in terms  
17 of the priorities.

18

19 WRAP UP AND NEXT STEPS

20 DR. SCHRAMM: We only have a few minute  
21 left, and it occurs to me that one of the big issues  
22 is how we prioritize.

23 But this we can handle rather  
24 mechanically. And if I could ask everybody just to  
25 send me, upon reflection on the plane going back, how

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1 would you order these things, I can just count up and  
2 basically just get a weight and come to that, okay.

3 So in the last few minutes let me talk a  
4 little bit about process, and what might happen. And  
5 that is, I think what happens next is, we are going to  
6 collect all of the thoughts today - and by the way,  
7 just editorially, I think today has been an  
8 extraordinarily rich conversation. I just feel that  
9 as we close our business today the task of bringing  
10 this together, while it's going to be complex, our  
11 ability to get to a really good report is pretty easy  
12 to see for me.

13 Now the task, of course, between now and  
14 then is to write all this and to reflect the richness  
15 of this and the potential of all this. So I think the  
16 next steps are basically, we are going to take all  
17 this, but first thing to do is take an order from the  
18 Committee.

19 I would invite the Committee also to think  
20 very hard on your way home and through the weeks ahead  
21 about the things we haven't covered, particularly this  
22 issue of human inputs. And think about it also in  
23 terms of how firms go about measuring this.

24 Because our discussion has been limited to  
25 issues about whether firms are growing in a growing

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1 market, and some issues that I don't mean to devalue  
2 by saying they are sort of mechanical issues. They are  
3 not. And they are not just bookkeeping issues. These  
4 are central issues to strategy, and the sense in which  
5 they ask those questions is to actually bring a more  
6 empirical view to business strategy than is often  
7 used. And I think we are going to try and make that a  
8 particularly rich part of the report.

9 But to offer thoughts about this human  
10 capital perspective in particular, and any other holes  
11 that might occur to you as you write about this, and  
12 particularly as you write about the ordering of our  
13 recommendations.

14 And then we'll take all that in and go to  
15 work on writing a report. Now what I'd like to do is  
16 not present this report fully gestated but rather  
17 along the way share things with you and certainly  
18 about what it looks like, what the order of the  
19 recommendations are, if there are new orders, and if  
20 there is in fact a consolidation of orders.

21 So the next thing you will see from us is  
22 actually the 10 or the 14 recommendations as we start  
23 to write, and I think we will work hard on getting the  
24 wording of these recommendations ironed out as we move  
25 a few points from here to there and so forth. We are

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1 going to try to work very hard on the specific  
2 wording.

3 Then I think it falls to anybody who wants  
4 to, but to a certain number of our colleagues to do  
5 their best to give us some thoughts as to specific  
6 research that might or might not become a specific  
7 recommendation, or might go in as an appendix.

8 But my own inclination is actually to call  
9 it out as a recommendation, because it may be more  
10 forceful.

11 And the last thing I think I'd like to ask  
12 you to do is, you might write to me in the vein of  
13 what Dale helpfully talked to us about earlier, what  
14 is the most forceful type of thing we could say - I'm  
15 referencing, Dale, your very clear notion that what we  
16 ought to say is, "The Secretary should recommend  
17 legislation and regulations as regards to data  
18 sharing."

19 Now that is a forceful declaration, and if  
20 there are issues related to other aspects of this that  
21 you think we would do well to be quite forceful about,  
22 I would take as much coaching as you want to offer. I  
23 am basically the amanuensis for this panel. This is  
24 not my report. So I'm not jealously guarding this.  
25 So as much force as you want to talk to me about in

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1 terms of what we emphasize and so forth would be  
2 particularly welcome.

3 Now I'm also hoping that the staff can  
4 convey all of what we did today to our missing  
5 colleagues so we don't find we suffer the absence of  
6 their input on all of these frontiers, and I think  
7 that may require your communicating by telephone or  
8 helping me communicate by telephone, and potentially  
9 even doing a memo that summarizes these last four or  
10 five points. And that might actually be even better  
11 if we did a memo to everybody and just summarized  
12 these last few points.

13 We are going to try and have all this done  
14 by probably - we are going to shoot for the end of  
15 October so we can present this to all of you and then  
16 to the Secretary at some point in November.

17 And I'm going to ask you one other thing  
18 to keep open here. The charge of this panel is  
19 actually not indefinite but it's lots longer than  
20 November; i.e. we're ahead of time, which is great.  
21 That's seldom preceded in government-citizen  
22 conversations. But what this does, the Secretary has  
23 suggested, is, if you have great ideas about how we  
24 might together come together again or in subgroups to  
25 advance some of what it is that we come up with by way

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1 of recommendation, the Secretary would encourage us to  
2 potentially meet again or to develop an action agenda  
3 which we haven't talked about today.

4 So I think we'll include that in the memo  
5 that we send out as a summary inviting and reminding  
6 what it is that lies ahead of us, and the tasks I'm  
7 going to ask you all to do by way of writing back to  
8 us.

9 So I don't have a particular view of us  
10 getting together and marching to Congress with  
11 pitchforks over data revolutions, but I'm certainly  
12 open to the continued life of this group if it would  
13 be useful to the interests of the United States.

14 So with those few thoughts we are almost  
15 specifically on time. I think it's 12:04. So shall  
16 we stand adjourned? Thank you.

17 (Whereupon at 12:06 p.m. the proceeding in  
18 the above-entitled matter was adjourned.)  
19  
20  
21  
22

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