

# THE POLICY SCIENCES CENTER, INC.

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August 9, 2011

Drs. John Holdren and Eric Lander, Co-Chairs  
Presidents Council of Advisers on Science and Technology  
725 17<sup>th</sup> St., NW - Room 5228  
Washington, DC 20502

Dear Dr. Holdren and Dr. Lander:

Economics is an unreliable science, but we have the brainpower and technology to do much better. I recommend that you convene a high-level panel of distinguished scientists and experienced practitioners to review and improve upon the unreliability of the models and data systems used by Dr. Summers et al. to design our economic recovery package.

When the space shuttle Challenger exploded, or when a bridge collapses, we know the proper scientific response.

The panel will be tasked to answer the question: Where did the science go wrong and how can we do better? The job will have two components: 1.) an urgent assignment to design and deploy R&D data systems to learn the sources and causes of scientific unreliability in the recovery process equations; 2.) a long term assignment to develop an R&D rapid learning system to improve models and data systems as a foundation to raise the rate of GDP/capita (by 1%/year) above the pre-crisis baseline.

I attach a discussion of four areas where rapid scientific improvement is possible.

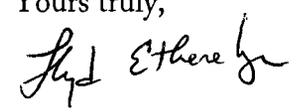
This is the second collapse of a bridge using the same models, methods, materials, and consulting engineers. The science - generously supported for many decades by NSF - also was supposed to be sufficiently in contact with reality to keep us from awakening to discover the worst global economic crisis since the Depression. We can stipulate that Dr. Summers et al. were brilliant and did the best that they could: we should test the hypotheses that the underlying science should be improved.

The Policy Sciences Center Inc. is a public foundation.

The Center was founded in 1948 by Myres S. McDougal, Harold D. Lasswell, and George Dession. It may be contacted c/o Prof. Michael Reisman, Chair, 127 Wall St., Room 322, P. O. Box 208215, New Haven, CT 06520-8215. (203)-432-1993.

URL: <http://www.policyscience.net>

Yours truly,

A handwritten signature in black ink, appearing to read "Lloyd S. Etheredge". The signature is written in a cursive style with a large initial "L" and a long, sweeping tail.

Dr. Lloyd S. Etheredge

August 9, 2011

To: Drs. John Holdren and Eric Lander, Co-Chairs - PCAST

From: Dr. Lloyd Etheredge - Project Director <sup>1</sup>

Re: **Better Science and Economic Recovery: Four Areas Where Rapid Improvement is Possible**

PCAST members may believe that somewhere - for example, at the National Science Foundation - academic scientists are being funded for creative, multi-disciplinary work that quietly, but continually, is improving macroeconomic models and data systems as quickly as possible. This image is false. The NSF system is dysfunctional. If there were to be an independent, blame-oriented panel it would quickly discover a legacy of blunt and angry and ignored communications, including by former CEA Chairs from both Democratic and Republican Administrations (who questioned whether there was something mentally wrong with NSF's Republican-era leadership). The scientific warnings extend back almost a decade to the enclosed letter from Bob Reischauer, former head of CBO, who began to warn in the late 1990s that older forecasting models, data systems, and methods were scientifically, eroding. In no other serious scientific field would an NSF Director be unresponsive to such a problem. The current head of the Social, Behavioral, and Economics Directorate - a legacy from the Republican/Bement period - is a historian experienced in light analysis of demographic data and with other agendas and interests.

Here are ideas in four areas where we can do better, and a high-level panel can get us moving:

**1.) Coefficient estimation.** We need faster and better ways to estimate coefficients. Traditionally, national datasets were expensive and economists accepted quarterly data. However, since the profession estimates coefficients by regression equations this method updates too slowly when the world is changing.

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<sup>1</sup> Government Learning Project, Policy Sciences Center. Contact: lloyd.etheredge@policyscience.net; 301-365-5241 (v). URL: www.policyscience.net

**2.) Better and Faster Data.** Several retrospective studies have identified that the greatest source of error in government macroeconomic forecasting arises from an astonishingly large degree of unreliability and error that are typical of the government's own data that are supplied for the forecast. Government economic data evolve across a cycle of estimates and revisions that can extend up to three years. In the current recovery, the latest revisions show a typically large error (20%, 5% drop v. 4% drop) in starting numbers that informed the design of the recovery package.

We should be more outraged about this component of unreliable science. Today, the banking system uses electronic transactions and clears most of the transactions of the entire economy reliably within a few days. Wal-Mart has terabytes of data and sales results from all stores and products, worldwide, updated every 24 hours. We can do better. We need an independent evaluation and a high-level panel to provide a roadmap and priorities and to tell people to get moving.

### **3.) The Psychology (etc.) of Downturns and Recoveries**

Much of econometric forecasting is designed to estimate normal periods and trends: the methods are not good at forecasting turning points, which is when new measures and refined analysis methods must be designed and deployed quickly to shape public policies. We need to set aside the hope that recessions are behind us and develop, instead, emergency measures that can be deployed to understand the psychology and other features of the decline and recovery processes. We resort to broad, general psychological terms ("confidence") and guess (probably correctly) that fiscal stimulus should be high and interest rates low. But even if confidence is the key term, we do not yet have a good theoretical model of how to do better than we are doing. The null hypothesis is that we are doing the best that we can and that nothing will make much difference - but this hypothesis and state of mind needs to be challenged.

A related point: We do not have a large N of these recessions/catastrophies. We should be capturing a lot more data that could help us, and other countries worldwide, in the future.

### **4.) Double-Value Recoveries**

The Obama Administration has provided bold leadership to think about double-value recovery policies - how should a stimulus package be structured to buy new infrastructure investments with

extra long-term benefits? The Journal of Economic Literature has a recent review article on productivity research which suggests another path to a better and faster recovery. There appear to be large variations in the productivity of firms in each business category: a plant at the 90th percentile in each category produced twice the output, for the same measured inputs, as a plant at the 10th percentile.<sup>2</sup> This suggests that, with timely information about best practices (which can be available) many companies that now have growing profits and retained earnings could be guided to make new, smart investments - from these funds or by borrowing at the very low interest rates - that both stimulate the economy and increase their own performance in the long run. A modest amount of additional data could be a catalyst to an exciting new dimension for the recovery process. [Jack Grayson would be an excellent consultant: his [www.apqc.org](http://www.apqc.org) initiative is mapping best practices across industries.] The panel can acquire the additional data that it needs and establish priorities for a rapid outreach program that is future oriented, confident, exciting and about creating a better future for each company.

### **Drawing Upon Financial Sector and Other Expertise**

There are several reasons to ask leading scientists from several fields and practitioners to constitute this panel, rather than academic economists alone. Three brief comments:

1.) Scientists in other fields, like meteorology or biology, are accustomed to modeling complex, adaptive systems with even more advanced models and equations than are standard in macroeconomic forecasting. Scientists in these fields also will be shocked and outraged at the unreliability and lags in acquiring data and will be a strong voice to upgrade data systems quickly.

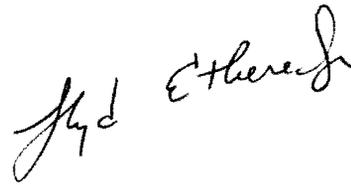
2.) Most academic economists left the field of macro-economic forecasting years ago. Government datasets have been stagnant and eroding in a changing world: there were just too many diminishing returns to continual reanalysis and - a much longer story - to fighting with an uninterested NSF and others. You will find fewer bold and creative specialists to recruit from the academic world than you might imagine: Dr. Summers did the best that he could.

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<sup>2</sup> Chad Syverson, "What Determines Productivity?" (June, 2011). The same mechanisms (+ low current interest rates) could stimulate recovery globally: Syverson reports data of even larger variations (e.g., 5:1) for China and India.

3.) We have brilliant people in the financial sector, with a fierce and rigorous respect for data - and able to make billions of dollars in highly competitive markets. We ought to ask them what additional data, processed how quickly, they would want if they were designing a state-of-the-art data and decision making system for a maximum-rationality national policy? Dr. Shaw may be able to advise you about their potential interest. It could be a brilliant package: Nobody will object to abundant financial-sector billionaires if their brainpower also is deployed on the side of speeding and sustaining GDP growth for everyone; and they probably will benefit from raising GDP/capita growth, in the US and worldwide, by 1% above the pre-crisis baseline, too.

Attachment: Letter from Bob Reischauer

A handwritten signature in black ink, appearing to read "Jy d Etherish". The signature is written in a cursive style with a large, looping initial "Jy".

**ROBERT D. REISCHAUER**  
President

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December 23, 2002

Dr. Lloyd S. Etheredge, Director  
Government Learning Project  
The Policy Sciences Center, Inc.  
P. O. Box 208215  
New Haven, CT 06520-8215

Dear Dr. Etheredge:

Thank you for your letter and thoughtful attachment. I am in complete agreement that the economic data we collect has significant deficiencies that limit our ability to understand the economy's problems and chart future policy.

We don't collect some information that is needed and gather much that we could do without. We collect other data in insufficient detail and almost always take too long to release the data for it to be useful in policy decisions.

As you know better than I, there are many reasons for this situation. What we collect and how we collect it reflects the forces at play in the first half of the last century and those forces do not want to give anything up. Congress has little interest in devoting more scarce budget resources to collect new and better information. Few economists who use the data appreciate its limitations. They have been raised on certain data sets and treat them as if they are part of the underlying environment, not subject to change. They put a premium on continuity and don't want discontinuity in the data sets they know and use.

I don't think I would be as critical as you are about CNSTAT/NCR. I don't think they would have much of an impact even if they had done the studies and made the recommendations you think warranted. Nor do I think universities (Yale or Harvard) or the Fed could make much of a dent in the problem. Rather, I think a presidential or congressional study commission is called for—one with a clear mandate and a promise that added resources will be devoted to strengthening the statistical system based on the commission's report. Unfortunately, the prospects for such an initiative rising to the top of policymakers' lists of things to do is very, very low.

Nevertheless, I wish you well in your efforts.

Sincerely,

