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OVERSIGHT OF THE OFFICE OF FINANCIAL RESEARCH AND THE FINANCIAL STABILITY OVERSIGHT COUNCIL

HEARING

BEFORE THE

SUBCOMMITTEE ON
OVERSIGHT AND INVESTIGATIONS

OF THE

COMMITTEE ON FINANCIAL SERVICES

U.S. HOUSE OF REPRESENTATIVES

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OVERSIGHT OF THE OFFICE OF FINANCIAL RESEARCH AND THE FINANCIAL STABILITY OVERSIGHT COUNCIL

Thursday, July 14, 2011

U.S. HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON OVERSIGHT
AND INVESTIGATIONS,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 3:25 p.m., in room 2128, Rayburn House Office Building, Hon. Randy Neugebauer [chairman of the subcommittee] presiding.

Members present: Representatives Neugebauer, Fitzpatrick, Posey, Hayworth, Renacci, Canseco, Fincher; Capuano, Baca, and Carney.

Ex officio present: Representative Bachus.

Also present: Representatives Grimm, Hensarling; and Maloney.

Chairman NEUGEBAUER. Today, we are going to have a hearing on the oversight of the Office of Financial Research (OFR), which is a newly created entity from the Dodd-Frank Act. It is affiliated with the Financial Stability Oversight Council (FSOC). And I am sure that our witnesses will articulate a little bit more of that relationship.

One of the things that I think we have tried to do in this committee is we are trying to figure out what the puzzle is going to look like when it is completed. One of the things I have said about Dodd-Frank, with nearly 300 different rulemaking opportunities, is that we are trying to—as we are issuing all of these rules, and we are standing up all of these entities, we are really putting together one of those large puzzles, those 250- to 300-piece puzzles.

I think the bad news is that we don't know what the puzzle is actually going to look like when it is completed. And so one of the things that we have tried to do in our committee is to bring some sunlight on some of these parts of Dodd-Frank as we are approaching the first anniversary of that entity next week, but also to make sure that we begin to try to understand what the puzzle is going to look like.

One of the things that is kind of interesting about OFR is that it really kind of looks like the twin of the Consumer Financial Protection Bureau (CFPB). They have a lot of similarities. One is that they are overseen by one Director.

They are tucked into the Federal Reserve (Fed) and have limited oversight capacity from Congress. And they have some very broad

powers. Some of those powers will be discussed as we get into the hearing.

I think one of the things that I find a little bit troubling is, first, we have all of these entities that really give one individual a lot of power. And second, that there is no real opportunity, in many cases, for oversight. And in many cases, also, there is no real appeals process for the actions and the rulings of this individual.

Obviously, this other issue that is going to be discussed today is then what is the cost and the benefit of standing up such an entity. So I look forward to the hearing today, and hopefully we will shine a little bit of light and learn a little bit more about the OFR.

With that, I yield to the ranking member of the subcommittee, Mr. Capuano.

Mr. CAPUANO. Thank you, Mr. Chairman.

Mr. Berner, I would like to welcome you to the committee. I think that there are some serious questions here. I fully expect you will have appropriate answers for them. I know that some of these things you may not have any answers for, because we are in the new world.

I am looking forward to hearing from you. I think that there are a lot of questions that we will all have. I have no doubt that you will have some of the same questions yourself.

That is the way we are going to go.

So I am looking forward to your testimony, and thank you for coming.

Chairman NEUGEBAUER. And now, the vice-chairman of the subcommittee, Mr. Fitzpatrick.

Mr. FITZPATRICK. Thank you, Mr. Chairman.

If there is one thing consistent about the Dodd-Frank legislation, it is that what looks good on paper often makes for bad policy and practice in reality.

The mission of the Office of Financial Research makes it sound like a rather benign entity. Its mission, to act as the research arm for the Financial Stability Oversight Council, is sensible enough.

However, as this subcommittee has examined the OFR, a couple of troubling issues have emerged.

Any time an agency is given such free reign to collect and store information on the private sector, it deserves extra scrutiny. The government has a role to play in protecting investors and consumers, but good intentions cannot be the catch-all excuse for government overreach.

If we expect the private sector to pull us out of this recession, then we cannot, at the same time, grind them under the boot of the government. We can and must strike a balance between proper oversight and excessive regulation.

Today's hearing is an important part of striking that balance. Protecting the taxpayers means not only examining financial institutions, but examining the examiners. After all, money is coming out of the economy to pay the salaries and expenses of these new agencies. And the public deserves to know that this is money well spent.

I look forward to the testimony, and I yield back.

Chairman NEUGEBAUER. Now, the gentlewoman from New York, Mrs. Maloney.

Mrs. MALONEY. Thank you, Chairman Neugebauer and Ranking Member Capuano. I am very pleased that you are having this oversight hearing. I believe this is an important part of Dodd-Frank.

During the hearings that we had during the financial crisis, I asked a number of the heads of these organizations, some of whom failed, some of whom took TARP money in order to continue to exist, what one reform did they think was the most important.

And they said, collecting data. This was the private sector that let us know, in real-time, at the end of the day what the exposures were internationally and nationally on financial products.

They felt that that was the most important reform that we could make. So I think it is important. I look forward to the testimony, and I thank you for having the hearing.

Chairman NEUGEBAUER. Thank you.

And now the vice-chairman of the full committee, the gentleman from Texas, Mr. Hensarling.

Mr. HENSARLING. Thank you, Mr. Chairman. I certainly appreciate you calling this hearing.

I had the opportunity to serve on the conference committee for Dodd-Frank. And of all the provisions in the 2,300-page behemoth bill, perhaps none was more overlooked and underappreciated than the creation of the so-called Office of Financial Research.

I offered an amendment during the conference to strike its existence. I am very concerned about its existence. We will now have an entire new agency based on the premise that if we have sufficient numbers of unelected, unaccountable bureaucrats, who have unlimited information about our personal buying habits, coupled with an unlimited budget, that somehow they can prevent any type of economic downturn within our society.

I think the premise is false. Frankly, I think it is dangerous. I think that this office represents a hacker's dream and a civil libertarian's nightmare. And I do not see a compelling reason for its existence.

Essentially, the Federal Government will be able to track what Americans buy, who they buy it from, and when they buy it, with their subpoena power.

Staffing—there are no limits to the number of employees that the Director may hire, since the Director has the authority to set salaries without regard to the general schedule, and no limit to how much the Director can pay these employees.

The new agency will not be subjected to the Congressional budget or to the appropriations process, or the Executive Branch oversight or its budget. And the agency can levy whatever assessments it deems necessary to fund itself.

So, Mr. Chairman, if ever there was an agency that was crying out for a hearing, it is this one. And I congratulate you for calling this hearing. I yield back the balance of my time.

Chairman NEUGEBAUER. I thank the gentleman. And now the other gentleman from Texas, Mr. Canseco.

Mr. CANSECO. Thank you, Mr. Chairman.

The 2008 financial crisis was caused in large part by accommodation of misguided government policies and the failure of the financial regulators to step in and use their authority, which was more

than sufficient. It was more than sufficient to halt the incredible risk that was building up within the financial industry.

And despite this government failure, which led to an economic meltdown that we are still trying to climb out of, the authors of Dodd-Frank gave government a dramatically increased role in our financial markets, an example of which is the Office of Financial Research.

The OFR is, at its core, a testament to the belief that government can make anything right or accomplish any goal if only it is given more authority. Throughout history, mankind has proven itself incapable time and again of being able to consistently and accurately predict crises, especially when they relate to financial markets. And there is no aspect of this agency that would change that.

Aside from OFR's misguided mission, I have great concern over the structure of the agency, which operates with very little oversight and accountability. And I thank the chairman for holding this important hearing.

I yield back.

Chairman NEUGEBAUER. Thank you.

Mr. Fincher?

Mr. FINCHER. Thank you, Mr. Chairman.

And I thank the witnesses for coming today.

In today's technologically advanced world, more and more Americans are making financial transactions over the Internet, entrusting that their personal information is safe and secure.

As we have heard over recent months though, that is not always the case. With the recent cyber attacks on Citigroup, the IMF, and even the Senate and the CIA, I am concerned about some of the information-collecting duties of the Office of Financial Research under the Dodd-Frank Act.

It seems as though the government is trying to reach even further into our personal lives than ever before in the name of financial security.

While we are all in favor of taking precautions to prevent another financial meltdown in this country, I am not completely convinced that more government is the answer to this problem, and that our personal information will be secure as a result.

The last thing people need in this country, when unemployment is at 9.2 percent, is for their financial information to be at risk.

So I look forward today to hearing your testimony and explanation of some of these things. Thank you.

I yield back.

Chairman NEUGEBAUER. I thank the gentleman.

Mr. Grimm?

Mr. GRIMM. Thank you, Mr. Chairman.

First of all, thank you for holding this hearing.

And also thank you, Mr. Berner, for agreeing to testify today.

As a former Special Agent of the FBI, I am keenly aware of the danger that computer hacking and cyber crimes poses to the U.S. financial institutions on a daily basis. As recently as May, a massive cyber attack hit a large U.S. bank where over 360,000 credit card numbers were stolen.

Even with advanced IT departments and very, very qualified staff, banks are unable to prevent every attempted breach of their computer systems.

The Office of Financial Research is going to have a digital repository of large amounts of data for a majority of U.S. financial institutions. I am extremely concerned that a repository of this nature would be a treasure trove for everyone from an ordinary hacker who is seeking to steal and quickly—whatever—to a sophisticated terrorist organization.

So I am very interested in hearing your testimony today.

And with that, I yield back. Thank you.

Chairman NEUGEBAUER. I thank the Members.

Our first panelist is the Honorable Richard Berner, the Counselor to the Secretary of the Treasury.

Mr. Berner, thank you for being here. I enjoyed your visit the other day in our office and I look forward to your testimony.

You are recognized for 5 minutes.

STATEMENT OF THE HONORABLE RICHARD BERNER, COUNSELOR TO THE SECRETARY OF THE TREASURY, U.S. DEPARTMENT OF THE TREASURY

Mr. BERNER. Thank you, Mr. Chairman, Ranking Member Capuano, and members of the subcommittee. Thank you for inviting me here today.

I recently joined the Treasury Department as Counselor to the Secretary, as you noted. The Secretary has asked me to help him set up the Office of Financial Research. And in that capacity, I am pleased to come here today to testify on the mission of the OFR, on the progress we have made in launching it, and on the initiatives we have under way to achieve our objectives.

First, some background. As some of you noted, the financial crisis made it clear that the regulation and oversight of the financial system was deficient in many respects. We underestimated the way shock spread across the financial system with severe consequences to the economy.

Likewise, the crisis also revealed the deficiencies in data and analysis. We lack timely and accurate information needed to monitor threats to financial stability and to develop the tools needed to mitigate them.

The Dodd-Frank Act addresses many of these shortcomings. It created the Financial Stability Oversight Council to identify and respond to threats to financial stability in the economy and to promote market discipline. It also created the OFR to function as a shared provider of data and analysis for the FSOC and its member agencies.

The OFR is working to satisfy its statutory mandates and mission: first, to collect data on behalf of the Council and to provide them to the Council and member agencies; second, to standardize the types and format of data collected and reported; third, to perform applied and essential long-term research; and finally, to develop tools for risk measurement and monitoring.

As Dodd-Frank requires, the OFR will leverage existing resources to avoid duplication.

I am pleased to report that we are making significant progress towards these goals. Today, I will first discuss OFR's work on improving financial data. Next, I will discuss the Office's research strategy. And I will conclude with an update on staffing and on information security.

The OFR's promise is to collect and make available more and better financial data, while reducing the regulatory reporting burden. That is a tall order, but we believe that three aspects of the OFR's approach will make that promise a reality.

First, the OFR will fill in information gaps, not duplicate.

Second, by collaborating with Federal financial regulators, the OFR can create economies of scale, lower operating costs, and eliminate redundant reporting requirements.

Finally, and most important, the OFR will promote standards for financial data. Standardization will improve the quality and transparency of financial data. For example, standards will provide a more transparent picture of firms' activities, improving market discipline. They will improve the ability of regulators and firms to manage counterparty risk, assure the integrity of business practices, and lower processing costs.

The Legal Entity Identification initiative, or LEI, will standardize data and uniquely identify parties to financial transactions. It is moving forward, and quickly, with support from both the industry and from global regulators. The OFR is working with financial regulators around the world to define consistent requirements for the LEI.

The private sector and standards organizations have also contributed. A global coalition of them has developed a recommendation for potential solution providers. That work is driving the initiative forward.

The Dodd-Frank Act lays out principles and gives appropriate authority to the OFR for data collection. We will be thoughtful in interpreting those principles. And we will exercise that authority responsively.

Let me be clear: The OFR will not collect data for collection's sake. The OFR will collaborate with FSOC member agencies to collect data they need for analysis and policy decisions. That collaboration will decide how to fill data gaps sufficiently.

That work is already under way and staff are cataloging data used and collected by financial regulators.

The OFR will pursue its research agenda, as statute and the FSOC require. It will produce and sponsor financial research aimed at developing the tools we need to assess threats to financial stability.

The search for an OFR Director is ongoing. Meanwhile, a high level of talent is coming into the OFR. We are hiring professionals with deep industry experience in data management, technology risk, and risk management to establish the data center. We are also making progress in building the OFR's research team.

Finally, preserving the security and integrity of OFR's data is a critical objective. The OFR will adopt best-practice information and security measures. We are pursuing them in three ways. First, the OFR is developing policies on post-employment restrictions to prevent misuse of valuable data.

Second, the OFR is developing robust governance policies and systems of controls, restricting use of data and information systems.

And third, the OFR is establishing information systems that protect data from unauthorized outside access and limit OFR's employees' access to sensitive information content consistent with their responsibilities.

Mr. Chairman and members of the subcommittee, the Dodd-Frank Act created the OFR to help the FSOC promote financial stability and limit the effects on the Nation's economy of financial crises. Better data and analysis can't prevent financial shocks, but we believe our efforts will help reduce their frequency and magnitude.

Those efforts will also help us improve the quality and scope of financial data, and promote and produce research that helps policymakers identify and address threats to financial stability.

Thank you for your attention. And I will be happy to answer your questions.

[The prepared statement of Mr. Berner can be found on page 48 of the appendix.]

Chairman NEUGEBAUER. Thank you very much. And I appreciate again your being here.

Are there statutory limits on OFR's ability to—how much you can levy these financial institutions once you get to that point? I know the first 2 years is funded by the Fed. But after that point, the statute calls for the OFR to assess, as you guess, some sums if necessary. But as you read the legislation, is there a limit to what those assessments could be?

Mr. BERNER. Mr. Chairman, thanks for your question. That is something that I think is of concern to us to make sure that those assessments are not a burden on the financial services industry.

Chairman NEUGEBAUER. But there is not a limit. Is that correct?

Mr. BERNER. Mr. Chairman, I am not aware that there is a limit under the statute. But we plan to exercise our responsibility to make sure that principle I just laid out is really stuck to.

Chairman NEUGEBAUER. So as I understand it by reading the legislation, there is no statutory limit on your budget either. In other words, you could make that agency as large as someone wanted to make it and make whatever assessments are required to support that organization. Is that true?

Mr. BERNER. Mr. Chairman, let me try to answer your question this way. The—

Chairman NEUGEBAUER. No, it is kind of a yes-or-no question. Are there statutory limits?

Mr. BERNER. Mr. Chairman, let me put it to you this way. The statute requires that the OFR's budget, what the OFR will spend appear in the budget itself, and that the OFR is subject to oversight, both by you and the Congress, and we plan to report to you and the Congress, to make sure you know what we are spending and what we are spending it on.

And in addition, the OFR is subject to oversight by the Government Accountability Office, and by the Treasury's Inspector General Office.

Chairman NEUGEBAUER. But I just want to be clear, to get back to the original question, I appreciate that additional information, but there are no statutory limits on your budget?

Mr. BERNER. Mr. Chairman, I think the answer is—

Chairman NEUGEBAUER. Yes or no. Which one do you think it is? How do you interpret it?

Mr. BERNER. I am not aware that there is a statutory limit in the statute itself.

Chairman NEUGEBAUER. And also, I think under the OFR, you are allowed to actually start setting out RFPs for ongoing risk financial research. And so basically, are there any limits to the amount of research that you could be funding or the amount of outsourcing to the universities that could happen there? Is there any limit to the funding of those either?

Mr. BERNER. Mr. Chairman, let me tell you that we are in the process of developing our budget for Fiscal Year 2012 and for Fiscal Year 2013, and that budget will restrict the amount that we spend in the OFR on outsourcing for research or in providing research that is produced internally.

Chairman NEUGEBAUER. Yes. I appreciate that. And you know what, I think the point I am trying to make here is that this OFR and agency has very broad powers, very broad authority, with really very few checks and balances.

Basically, you are going to determine your own budget. It is not a budget that has to be approved by Congress.

You can levy assessments to whatever level is deemed necessary, and you can do this ongoing research.

And the final question too is there is, as I understand, really no limit to what information that you could require from a company. In other words, basically the laws says that you can ask for the information, and if the company refuses to give it to you, you can actually subpoena that company. Is that your interpretation?

Mr. BERNER. Mr. Chairman, I think what the OFR is designed to do is to, as I mentioned in my testimony, fill in the gaps between the data that we already have among the FSOC and its member agencies. So our goal is to collect data only where we think it is missing, and as we need it to fulfill our mandate of looking for threats to financial stability across the financial system.

We are not interested in duplicating information. We are not interested in collecting data for the sake of collection. And we are not interested in creating a big database just to have a big database.

Chairman NEUGEBAUER. Certainly, that might be your perspective. But obviously, we don't have an acting Director. It is just another position that the President has not filled. So you are actually in the same capacity, I guess, as Ms. Warren, in that you are standing up for an entity that actually doesn't have an acting Director. Is that correct?

Mr. BERNER. I am acting on behalf of the Secretary to set up the OFR.

Chairman NEUGEBAUER. But you have not been nominated by the President for this position?

Mr. BERNER. I have not been nominated. No. And the President must nominate somebody to fill that position.

Chairman NEUGEBAUER. I see my time is up, so I will yield to the ranking member.

Mr. CAPUANO. Thank you, Mr. Chairman.

Thank you, Mr. Berner.

Mr. Berner, would you have any objection to working with this committee or the rest of the Congress in trying to tighten up any of the statutory issues that might come up today?

Mr. BERNER. Thank you for your question. I think that is a really important one, because we want to make sure that the Congress and this committee, in particular, understands that we want to be accountable to the Congress. We want to be completely transparent in what we do.

We want to provide all the information that you require in order to look at our activities. And we want to meet with your staff and make sure that they fully understand all the issues that we are dealing with, so that we have a full and accurate—

Mr. CAPUANO. If Congress gets concerned at some future time that your assessments are too high, and we decide we want to put some kind of statutory limit on it, you would work with us to try to accomplish that, if necessary?

Mr. BERNER. Congressman, we want to make sure that the things that we do, including the assessments we levy on the firms to fund the OFR after the funding from the Federal Reserve expires are reasonable and are sensible, and only what we need to do our job.

Mr. CAPUANO. Are you the only Federal Government agency that has subpoena power?

Mr. BERNER. I am not aware of the subpoena power of other agencies, Congressman, but I know that the OFR does have subpoena powers in certain circumstances.

Mr. CAPUANO. But you are not the only Federal agency with subpoena power, are you?

Mr. BERNER. No, that is absolutely correct.

Mr. CAPUANO. That is what I thought.

I think that some of the—a couple of my questions have already been answered. Some of them were in the introductory comments. Data security, I think, is a reasonable commentary to make.

And again, I will withhold my judgment until we see what you get and see what information you have. But, I would hope and presume that has to be on the top of your list, as far as concerns as you move forward. Is that a fair statement?

Mr. BERNER. It is a fair statement, Congressman. It is at the top of our list. We want to make sure that any data that we have or, for that matter, that the FSOC has is absolutely secure. And we are well aware of the threats and risks out there, as some of you have discussed, we want to make sure—

Mr. CAPUANO. Are you working with any private companies that have had their data breached to learn from their lessons?

Mr. BERNER. Absolutely. We are trying to learn from their lessons and from breaches that have occurred, to some extent, in government as well. And somebody mentioned the IMF breach. We want to make sure that we can learn from all those experiences, and make sure that it doesn't happen again.

I want to assure you that at the Treasury Department, we handle a large volume of confidential and sensitive data. We have not had any breaches. That is no guarantee, of course—

Mr. CAPUANO. Right.

Mr. BERNER. —that couldn't happen in the future. But we put that at the top of our priority list.

Mr. CAPUANO. And the other issue that was raised to me anyway was the fact that some sort of—I guess, I would like to ask the question, can you guarantee without question, absolutely, that the OFR will be absolutely positively able to see the next economic threat?

Mr. BERNER. No, Congressman, I can't guarantee that.

Mr. CAPUANO. Gee, I am shocked. Is there anything in the law or anything that you are aware of that will prohibit, prevent or hinder any of the other regulatory agencies from doing their job?

Mr. BERNER. There is nothing in the law—the Dodd-Frank Act, as you know, Congressman, was set up to enable us to do our job better. And that is the point.

And I would say that now what we need to do is to fully implement the Act in ways consistent with your goals and objectives, the goals and objectives we all share of having a safer and more resilient financial system.

Mr. CAPUANO. So nothing has happened in the Dodd-Frank Act or anything that you are aware of, or anything in your agency, that would hinder the Fed or the SEC or the CFTB or any of the other agencies that have any oversight or any responsibility for the economy? Nothing would hinder them from possibly being able to see the next threat even without your assistance. Is that a fair statement?

Mr. BERNER. I think it is fair to say, Congressman, that we are all trying to work together to make sure that, as best we can, we can anticipate those threats. We are not going to be perfect, but anticipate those threats.

And for the FSOC members, among them the Fed and the other agencies you mentioned, to try to put in place regulations that will strengthen our financial system and that will limit the impact on the economy of any financial shock when it occurs.

Mr. CAPUANO. The reason I ask is because I think it is a fair statement. No one wants to take away anybody else's ability or hinder anyone from seeing the next threat. I would argue that the Fed might be able to do it. The OCC might be able to do it.

Who knows? And the truth is, who cares, as long as somebody sees the next economic threat coming along or at least we increase the likelihood.

And I would suggest the OFR doesn't guarantee anything, but it simply increases the likelihood that we might be able to see the next economic threat coming.

And with that, I see my time is running out. I yield back.

Chairman NEUGEBAUER. I thank the gentleman. And I would just point out that was a very good question about security. I noticed today that 24,000 Pentagon files were stolen in a cyber breach.

I ask unanimous consent to enter into the record the testimony of the U.S. Chamber of Commerce—they were not able to attend.

Without objection, it is so ordered.

Now, I will recognize the chairman of the full committee, Mr. Bachus.

Chairman BACHUS. Thank you, Counselor Berner, for your presence here today. I just want to go through a thought process with you.

Obviously, the OCC, the FDIC, the Federal Reserve, the MCUA, they all collect data. The State banking regulators collect data. The CFTC, the SEC, the State security regulators, if you determine that you need data, certain information, will you first go to those agencies and see if they have that information?

Mr. BERNER. Thank you, Mr. Chairman. That is a great question because I think it speaks to the philosophy that we have about data collection.

First, we want to take stock of the information we have across all of the members of the FSOC, which include the agencies that you just mentioned.

We are not in the business of duplicating data collection. We want to make sure that we make the best use of the data that we have and to make that we can share in a way that is responsible among the member agencies. Only then, will we go and look to fill the gaps in the data that we think are missing.

Chairman BACHUS. Okay.

Mr. BERNER. One of the things in the financial crisis that was really important is the way we missed interconnectedness or the way that various parts of the financial system reacted and the interplay among those parts in the financial system. That is where we are going to try to look for the missing gaps and fill in those gaps first.

Chairman BACHUS. All right. So a sort of a precondition will be that information didn't already exist—

Mr. BERNER. That is correct.

Chairman BACHUS. —or it is not collected by another agency.

Mr. BERNER. Yes, sir.

Chairman BACHUS. The relationship you have with FSOC, are they going to gather information independently or are you the agency which gathers information if they request, or how do you see that relationship?

Mr. BERNER. Mr. Chairman, that is a very good question. I think the answer is, we don't quite know yet. It is going to be dependent on the information and questions.

So, for example, in exercising their supervisory responsibilities, I have no doubt that the supervisory agencies will continue to collect information from the relevant institutions. And for markets, there are new data being collected for markets in a variety of ways that we all want to take advantage of.

And who actually collects the data will be a decision that we will make jointly, to make sure that we do it in the best way and the most efficient way, and in the most secure way possible, while minimizing the cost to the taxpayer.

Chairman BACHUS. That Council is actually made up of different agencies?

Mr. BERNER. Right.

Chairman BACHUS. But does that agency itself independently have the power to collect data?

Mr. BERNER. You mean the FSOC—

Chairman BACHUS. FSOC.

Mr. BERNER. —Council itself? Or the Council itself, I think derives its power from the statute. The council itself has decision-making powers and potentially can collect data.

But the OFR was set up specifically to assist the FSOC in collecting data and performing research, so that they could turn their attention to the important decisions that they have to make across the financial system.

Chairman BACHUS. I see. Let us just suppose, which will come one day, you look across the agencies, you look elsewhere and you think that data is not available. And let us say FSOC says to you, we would like to have this data. Will there be any rulemaking process where you will actually say, we propose to collect this data in this form?

And then those companies which are sources of that information will be able to come in and have a 30-day or 60-day or 90-day period to say, we think it ought to be limited to that. Would there be any of that?

Mr. BERNER. Great question, Mr. Chairman. There will be a lot of that, in fact. And one good example of that is the way that we put out a proposed rulemaking on the Legal Entity Identification system.

We want to make sure that what we do is consistent and actually helps industry in doing their job. The interesting thing that we found is that there is very strong support for data standardization in the industry, precisely because it is going to help them collect their own data for their own management purposes.

They can use those same data to report to the financial regulators. So it actually improves the transparency and quality of the data and reduces its cost.

Chairman BACHUS. You will receive an appropriation, is that correct? Or do you raise all your own funds? I know you have a $74 million—

Mr. BERNER. Mr. Chairman, as the chairman of the subcommittee pointed out, for the first 2 years, we are funded by the Federal Reserve. Subsequent to that, we will devise a process whereby our funding will come from the most important institutions in the financial system.

Chairman BACHUS. Yes, that was really what I was driving at. I don't know whether a community bank is going to be saddled with it. You would probably want the largest, most systematically important institutions to bear the burden.

Mr. BERNER. That is correct.

Chairman BACHUS. Thank you very much.

Mr. BERNER. Thank you.

Chairman NEUGEBAUER. I thank the chairman.

And now, the gentleman from Delaware, Mr. Carney.

Mr. CARNEY. Thank you, Mr. Chairman. Thank you for holding this hearing today.

Because I am a freshman, I wasn't around when this legislation, Dodd-Frank, was passed. So I don't have a full understanding of how it was anticipated this agency would work.

Could you explain that a little bit for me? You are a research entity that is part of the FSOC? The FSOC is comprised of other agencies that were mentioned. I assume they have research departments themselves.

How do you see yourselves working with those other research departments in the other agencies that are part of the FSOC?

Mr. BERNER. That is an excellent question, Congressman. The answer is that we are collaborating very closely with other FSOC member agencies and with the research staffs. And that—

Mr. CARNEY. Do they all have research—

Mr. BERNER. Many of them do. Not all of them do. And their research staffs and the focus of their research is obviously dependent on the responsibilities that they have as agencies. So the Federal Reserve is focused on things related to monetary policy, but has recently set up their own Office of Financial Stability. And it sounds like there is some overlap.

Mr. CARNEY. Yes, right.

Mr. BERNER. They have a small staff. And they will tell you that they have a small staff. They are working closely with us to make sure that in the work we do, we communicate with each other. And there is certainly some overlap because there are always many opinions about—

Mr. CARNEY. So what is your focus is going to be opposite the rest? Systemic kinds of risks or—

Mr. BERNER. Our focus, Congressman, is to look at risks across the financial—

Mr. CARNEY. Across—

Mr. BERNER. Right.

Mr. CARNEY. So they are looking in one particular stove pipe and you are going to try—

Mr. BERNER. They may be. So the SEC or the CFTC, for example, might be looking at specific risks related to their responsibilities. We would be working with them to look at how those risks or developments really affect what is going on across the financial—

Mr. CARNEY. And you mentioned in answers to other members' questions that the information that you would be seeking would be to fill in gaps where information did not exist. Could you give me an idea what those gaps might look like or what that information might look like?

Mr. BERNER. Sure.

Mr. CARNEY. Because all these other agencies have a lot of information themselves, I assume, with the same kind of concerns that have been raised by Members today?

Mr. BERNER. They absolutely do. And it is an excellent question. So it is worth repeating, because I think the answer is, we don't know where all the gaps exist. If we did, then we would have a much better idea of the kinds of data that we need to collect.

In an effort to find out where the gaps are, we are working with the other FSOC member agencies to take stock of the data that are out there among all those members. That—

Mr. CARNEY. So is this data that you would pull down from banks or financial institutions? There is the concern, and I have the same concern, about shielding personal information from a hacker. We heard—

Mr. BERNER. Right.

Mr. CARNEY. —in some of the opening statements the concern about a hacker's paradise.

Mr. BERNER. The OFR is not going to be—

Mr. CARNEY. Those are concerns that these existing agencies have right now.

Mr. BERNER. Sure.

Mr. CARNEY. Right.

Mr. BERNER. The OFR is not going to be collecting personal information. That is not our focus. Our focus is to look at data that we collect from financial institutions about their transactions, their positions, their exposures, in order to try to assess risk across the financial system. We are collecting data from markets, from the new swap data repositories, for example.

Mr. CARNEY. So it is not consumer personal information; it is more business information.

Mr. BERNER. Financial transactions.

Mr. CARNEY. Right.

Mr. BERNER. Exactly.

Mr. CARNEY. So when you talk about the protection of that information, we are really talking about institutional concerns more so than individual consumer concerns?

Mr. BERNER. Primarily, that is the concern. You asked for an example of the kinds of data we might collect. The exposure of one financial institution to another is something that supervisors currently do collect, but it is incomplete.

We and the other agencies responsible for looking at those issues are looking at ways we want to make that information more complete. That is an example of the gaps that exist in information today.

Mr. CARNEY. We have had representatives from some of the regulators and those agencies come here before the full committee to talk about some of the tensions among those agencies. Do you anticipate some turf problems with the offices of research in those agencies as well? Or do you see less of a problem there?

Mr. BERNER. I must say, Congressman, it is a very good question. But what I have learned in the short time that I have been at the Treasury is that people are very willing to cooperate. And what is really important is that we build a level of trust among all the people involved, so that they don't perceive people as intruding on their jobs or their responsibilities. Rather, that we all have a lot of work to do and we are just collaborating to solve problems.

And that extends both to data collection and to research.

Mr. CARNEY. Thank you. I see my time has expired. Thanks very much.

Chairman NEUGEBAUER. I thank the gentleman.

Mr. Grimm?

Mr. GRIMM. Thank you, Mr. Chairman. I will make my questions brief.

First of all, as someone who investigated a myriad of crimes, specifically financial crimes for years, I can tell you that when you are going after something that is unknown, like gaps that are uncertain, it is like finding a needle in the haystack. So I think you have more than your work cut out there. And I am not so sure that is the best structure that I would recommend.

But I am more concerned about financial data, the positions of major institutions, whether they are long, short, what they are holding, I think that is extremely valuable information, not only from the basic wrongdoer domestically, but throughout the world. That would be information that could, if in the wrong hands, cripple our markets and certainly hurt our country.

A few years back, the FBI, while I was an agent, spent over $170 million on an IT project, which was called Virtual Case File (VCF). And it was to upgrade our system, basically track criminal cases, and so on. It wasn't very sophisticated. But after all that money spent and years of time, it was never implemented. They were never able to get it to work.

Before I left the Bureau, they started the second project. It was called Sentinel. And Sentinel was over $400 million spent and years of time. And as far as I know, that still hasn't been implemented. You are talking well over 10 years, $570 million-plus spent and the FBI hasn't been able to get it right to date, to get a system, an IT system that is fully protected to the level that they feel comfortable.

So, I guess, now, the GAO has estimated that by this time next year, $108 million will have been spent implementing the database at the OFR. And it looks to me like these IT projects, whether it is VCF or Sentinel, and now OFR, they don't have a good track record.

I just would like you to explain why you think OFR is going to be different? Why do you think they can be successful where the FBI hasn't been?

Mr. BERNER. Congressman, it is a great question, because, like you, I am most concerned that we safeguard not just our data but also taxpayers' funds. And so that is really important.

I think what is different about this, if there is something that is different, is that we have the collaboration and cooperation of the industry. Because the industry perceives what we are trying to do as something that will actually be a benefit for them, both in terms of the way they report data to the regulators, which is required under statute and under a regulation, and which is something that they want to continue to do.

And they want to collect the same data.

Mr. GRIMM. If I could though, I think you are making a different point. I am speaking more of the IT itself. How do you protect it? Assuming everyone is cooperating and they give you the data, and you have this database with some very important information. How do you—they are going to be spending over $100 million to create a system that keeps it safe, so that people can't hack in, that there are safeguards so that those working there can't take information out.

All of that is part of it. But my experience in the government, which is limited to the FBI, but I think it is a good example, is that

after $500 million spent and over 10 years, they have yet to implement a system that works.

What makes the OFR different, regardless of how cooperative everyone in the world is being? Everyone has been cooperating with the FBI, too.

Mr. BERNER. Congressman, it is certainly a valid concern. And what I was trying to say before was the industry has a big stake in making sure that the data they provide to us remain secure as well. And they have a lot at stake in making that happen.

And so we are working together with the industry to make sure that in the transmission process, in the collection process, and the storage process itself, the data will be secure and their confidentiality is protected.

Mr. GRIMM. Okay. At this time, I will yield back.

Chairman NEUGEBAUER. I thank the gentleman.

And now, the gentlewoman from New York, Mrs. Maloney.

Mrs. MALONEY. Thank you, Mr. Chairman and Mr. Ranking Member.

During Dodd-Frank, the goal was outlined in this legislation to determine what data gets collected, how it is analyzed and stored, and how it is ultimately presented to regulators. And you mentioned you were working on the data element. Could you get to us in writing, because it is highly technical and would take a long time, what data elements you believe you are going to need for this project? I know it is a work in progress, but where you stand and where are these elements. Are they already at the Federal Reserve or the FDIC or whatever?

And then another item you mentioned is who collects the data. I recall that during Dodd-Frank, we specifically placed restrictions on the industry from collecting and storing the data on itself and then analyzing its own data and the market trends.

Is that still the position of Treasury in the Oversight Council, that there be an arms' length relationship with firms or entities that should be preserved, in other words, maintaining strict requirements to prevent either real or perceived conflicts of interest?

Mr. BERNER. Congresswoman, you have two involved questions. And you, I think, appropriately ask me to provide you in writing with the details on the data elements that we are going to be collecting. And I would love to do that.

We will get you all the information you need on the implementation, what I called the LEI before, and how that will help us collect better data at lower cost.

As far as the conflict-of-interest question, we want to make sure that the OFR and the data that it collects fulfills its mandate. And part of that mandate is to collaborate fully with other FSOC member agencies. So I think that kind of collaboration is going to be essential to our success.

Mrs. MALONEY. Where do you plan on storing this data? Do you plan to put it in existing Federal data centers, like in the IRS or at the Federal Reserve? Are you planning to have a new, separate data storage facility?

Mr. BERNER. Congresswoman, it is a great question. And the answer is, we don't fully know yet. We are in the process of setting up our data centers using existing facilities.

As you I am sure know, some facilities have been decommissioned. We are taking advantage of those facilities even before we collect any data. And we are using that experience to make sure that we test and put through their paces the policies and the protocols that we need to safeguard data even before we collect any sensitive data.

We will use existing facilities and collaborate with other agencies, to the extent that is possible, to make sure that we are not duplicating efforts elsewhere among the members of the FSOC.

Mrs. MALONEY. And I noticed we have two leaders in academia on the next panel. What role has the academic community played up to this point in determining how the OFR would be created and how data would be collected and interpreted?

Do you have any contracts with institutions? If so, which institutions of higher learning? What role is academia playing in the determination of how this is done?

Mr. BERNER. That is a very important question, Congresswoman. I am glad you asked it.

Experts from academia and from the industry and from elsewhere in the government are all playing important roles in helping providing guidance for us in the way that we go about fulfilling our mission.

Specifically, we have contracts now with two academics, one from MIT, and one from the University of Florida. Those contracts are in the public domain. They are out there to help us develop the systemic risk monitoring tools, to monitor threats to financial stability.

That is one project we are working on. And we can get full information on those contracts to you and what we are working on, to make sure that we fulfill our mandate.

Mrs. MALONEY. Are you contracting with the private sector in any way to help implement this or is this done in-house by Treasury?

Mr. BERNER. Congresswoman, we are taking a look at all the avenues available to us in fulfilling our mandate. So if we can find private solutions, we are looking for them.

When we talk about the LEI, for example, that is a public/private initiative to make sure that the industry provides input, that they provide comment, that they can have a role in guiding the way that we collect data and the way that we standardize data, to make sure that they were doing it in a way that they find most useful.

Mrs. MALONEY. And since we are now in a global market, do you see this just for American institutions or do you see it as gathering information, so at the close of day, you will know the exposure globally and the threat globally to financial stability?

Mr. BERNER. I am glad you asked that question too, Congresswoman, because we do live in global markets and we are dealing with global institutions. And those threats, as I think recent events illustrate, can arise anywhere in the world.

So we are collaborating with global regulators. And we are looking to collaborate with them both in terms of research and in collecting data, again so we don't duplicate efforts in which they are already engaged, but so that we learn what they are doing and so that we can share data.

The LEI is, again, a good example of that global collaboration. And it is one that is extremely important for its success.

Mrs. MALONEY. During our many hearings, I spoke to the heads of firms that have failed, and some that almost failed. And uniformly, when asked, what do you think would be the single most important thing to prevent this from happening in the future, they said a centralized database that could see exposure, risk, leverage, in a place where you could follow it.

It is a huge challenge, but it could have great benefits. I wish you well. Thank you.

Mr. BERNER. Thank you.

Chairman NEUGEBAUER. I thank the gentlewoman and now the gentleman, Mr. Fitzpatrick.

Mr. FITZPATRICK. Thank you, Mr. Chairman.

Counselor Berner, thank you for your time today.

The Office of Financial Research will be requesting sensitive and confidential data from financial companies. And the security of the data, of course, will have to be considered even before OFR makes its first request. So can you tell the committee what processes are currently in place, or in place as of today, to govern who will have access to that information?

Mr. BERNER. Congressman, it is a terrific question, because it is central to the way that we want to go about collecting data.

If you think about the fact that the OFR is going to be an agency that helps the FSOC member agencies in fulfilling their mandate, each of them, to the extent they have supervisory responsibilities, already collect data from their respective institutions.

And so we are not going to take away what they are doing. We are going to complement what they do. And the way we are going to complement that is to make sure that we have protocols and procedures in place so that people will have access to data appropriate with their responsibilities and with what they need to know.

Those protocols and policies are in the process of development. We want to make sure we do that in a way that is consistent with safeguarding the data and yet, making sure that we can all look across the financial system to assess where risks might be arising to financial stability.

Mr. FITZPATRICK. So the procedures and processes are not currently in place. They are being written at present?

Mr. BERNER. The procedures and processes are being developed in collaboration with other FSOC member agencies.

Mr. FITZPATRICK. Will there be penalties for unauthorized disclosure of any of that confidential information? The OFR is going to have powers, including subpoena powers and other requesting powers, to compel the production of these documents. Will there be penalties in place for the unauthorized disclosure of those documents?

Mr. BERNER. Congressman, it is my understanding that there already are penalties in place for disclosing, in an unauthorized way, any sensitive information. And so, that will become—if events like that do occur, and we certainly are going to make sure and try our best to prevent that, but if they do occur, then that will be a matter for the authorities to deal with.

Mr. FITZPATRICK. Can you guarantee the confidentiality of the information?

Mr. BERNER. I am here to tell you today, Congressman, that we are going to make data security and guaranteeing or assuring confidentiality our top priority. And I want to make sure that we do everything we can to communicate to you and to your staff all of the policies and procedures we are putting in place, so that you can understand what we are doing, and make sure that we are doing it in the right way.

Mr. FITZPATRICK. So the procedures, they are currently being written within the OFR. Are there plans by the office to publish for public comment, for instance, the criterion for the information request?

Mr. BERNER. If there are data requests in the way we are collecting data, just as we have done with the LEI, then we will put those things out for comment by the public.

Mr. FITZPATRICK. Sir, you acknowledged in the testimony here today that there is no limit on data collection except in your words, you said, "excluding the collection of data for data's sake." There is no limit on assessments, no limit on funding for research.

The only limit you articulated so far today was the generic pledge to be reasonable. It would be more comforting to hear a specific strategy plan with specific goals and metrics. So when might we see that plan?

Mr. BERNER. It is a good question, Congressman. We are in the process of developing that. And we want to make sure that you have every opportunity to review it with us.

We are in the process of reviewing that for Fiscal Year 2012. And we want to make sure that we go over that with you or your staff so you have an opportunity to discuss it with us.

Mr. FITZPATRICK. So for Fiscal Year 2012, perhaps by the fall of this year, we will see the specific plan of the Office?

Mr. BERNER. Perhaps by then. That seems like a reasonable date.

Mr. FITZPATRICK. Okay. Nothing further.

Chairman NEUGEBAUER. I thank the gentleman.

The gentleman from Florida, Mr. Posey.

Oops. Not here, all right.

Mr. Renacci?

Mr. RENACCI. Thank you, Mr. Chairman, and thank you, Counselor Berner, for being here.

I also, as my friend, Mr. Carney said, was not here last year when this new Office of Financial Research was put together. But let us make some assumptions.

First, let us assume that gathering all this data is good. But my next assumption would be, let us put you on this side of the table instead of that side of the table. If you needed to gather all this information, and you knew that there were a number of other agencies out there that had all this information, wouldn't it be easier to pick one of the other agencies?

Because you are telling us—one of the things you have said is you are going to have to go out and talk to other agencies.

Wouldn't it be easier to have one of the other agencies just have this as one of their missions and have one of those other agencies

do it, than set up a whole other agency with unlimited oversight, unlimited budget, and unlimited reach?

Mr. BERNER. Congressman, the statute set it up to set up the OFR—

Mr. RENACCI. No, no, I understand what the statute did. I am asking you a question, I am putting you on my side of the table now.

In a time when we are spending too much money, we have overriding debt, let us say we need to gather this information. Wouldn't it have been better to put this in the hands of one of the other agencies that are already there?

Mr. BERNER. Congressman, I am not sure I can speak to that hypothetical. All I can say is that didn't happen when those agencies were presumably all working together. And I think that is one of the reasons that the framers set up the OFR to be an agency that would collaborate with the other FSOC member agencies to make sure that the data were collected and shared in an appropriate way, not to duplicate efforts, but to coordinate and collaborate in a way that hadn't been done before.

Mr. RENACCI. Again, I understand why you answered the way you did. But I think the simple answer is, in a time where we don't have the money and we want to get this information, it is easier to take the overhead from another organization and just make that their mission, instead of putting burdensome assessments.

One of the things you testified to earlier is you want to see assessments that are not burdensome. My concern with that is any assessment to any financial institution becomes a burden, because it takes jobs away from those financial institutions.

So, again, if we are already assessing it with other agencies, and now you are going to add another assessment through this agency, it becomes burdensome, no matter what it is. So what we have to do here in the Federal Government, even if we need data like we are talking about—that is what I said.

I am not even saying we don't need the data. I am saying, let us make the assumption we need it. We need to make sure we can do it in a more efficient way than setting up another entity.

You also said you want to collect data only where you think other agencies are missing that information. So, again, you are going to have to go through all these other agencies. Wouldn't it be simpler for the other agencies just to get the information that they need, that they are missing again, without setting up?

I don't expect you to answer that, because I think we are going to go back to the statutory requirements that you are under.

The ranking member said that if their assessments are too high, you would be willing to work with Congress.

I am almost to the point where I would like for your organization to start working with Congress now to realize that maybe we don't need some of these extra burdensome entities and assessments, because this is the time to do it, not once the horse is out of the gate.

One of the problems with the government that I have learned is once there, it is very hard to pull it back.

But you said something else to the ranking member. You said that there is nothing that this agency will do to hinder the other agencies or guarantee that you will find anything.

That tells me—and I don't want to put words in your mouth, and I don't want to restate what you were thinking when you said that. But it says that this agency is just another piece of government that doesn't hinder the other agencies, but really doesn't guarantee it is going to get anything done either.

Is that what your—where were you at when you said that?

Mr. BERNER. Congressman, I was simply trying to make the point, when the ranking member asked his question, that nothing that we are going to do is going to hinder what the other agencies do. On the contrary, what we are going to do is complement their efforts, so that working with them, we will come out with a better outcome.

Mr. RENACCI. I know I am running out out of time. So I will yield back the remainder of my time.

Thank you.

Chairman NEUGEBAUER. I thank the gentleman.

And now the gentleman from Texas, Mr. Canseco.

Mr. CANSECO. Thank you, Mr. Chairman.

Mr. Berner, please give me a brief answer, because we are sort of limited in time on these things. Do you view the OFR as an essential tool in helping the FSOC carry out its duties to identify and reduce systemic risk?

Mr. BERNER. Yes, Congressman, I do.

Mr. CANSECO. Thank you. So you believe that for the FSOC to function properly, it needs the OFR data to support it?

Mr. BERNER. Yes, it needs it. From whatever source, it needs more data than it currently has.

Mr. CANSECO. FSOC has already been engaged in proposed rulemaking regulations regarding systemically important financial institutions. Is that correct?

Mr. BERNER. That is correct.

Mr. CANSECO. Okay. So are you of the opinion then that the proposed rules coming out of the FSOC could be flawed because they lack the proper input from the OFR?

Mr. BERNER. Congressman, the OFR is working closely with the FSOC member agencies to try to provide them with the information, so that they can make decisions intelligently. And—

Mr. CANSECO. Is the OFR up and running at this time? Is it functioning the way it is supposed to be? Is there an officer already in charge?

Mr. BERNER. As you point out, Congressman, there is no Director. But the OFR is up and running. The OFR is providing information to the FSOC and collaborating with FSOC member agencies to make sure that we make the best use of the data that we already have.

We have come a long way in assessing what I said earlier, namely trying to understand which data we have available. And those data are being used by FSOC member agencies already.

Mr. CANSECO. What criteria is the OFR going to use in deciding the information it truly needs from what companies and from what companies it intends to get it?

Mr. BERNER. Congressman, it is a great question, because the answer is that we are going to try to look across the financial system to find out where the threats to it exist. And so, the presump-

tion is that it is largely going to arise from the most important institutions in the financial system, from those institutions that are most connected, and from those institutions which satisfy the criteria in the statute for being systemically important.

And so, those are the institutions where we will look first.

But I want to emphasize that this crisis was not just about institutions. The financial crisis that we have just been through also reflected what was going on in markets. So we can't just collect data from institutions. We have to collect data from markets and market transactions. And that is a very important part of the OFR's functioning.

And it will be also a very important part of what the FSOC does in trying to assess systemic risk or trying to assess threats to financial stability.

Mr. CANSECO. Are you planning on publishing these criteria for public comment, lifting at least some of the opaqueness that currently surrounds the OFR?

Mr. BERNER. Congressman, it is an excellent question, because we are committed to being as open and transparent as we possibly can be. We don't want to put those things out prematurely, before we thoroughly discuss and vet them.

But when we have a pretty good idea that we are doing things in a way that we are satisfied with, we are going to put them out and make sure that people understand them.

Mr. CANSECO. Do you know if the OFR is planning on conducting robust cost-benefit analysis on its proposed methods for collecting this data?

Mr. BERNER. Congressman, we want to make sure, as I indicated earlier, that the way we collect the data is cost-efficient, that it actually reduces the reporting burden for industry, and that it provides benefits to both industry and regulators, and to make sure that cost-benefit calculation is very favorable.

Mr. CANSECO. Mr. Berner, I understand that in the statute there is a provision that prohibits the Director of the OFR or an employee who had access to the data center from working in the financial industry for 1 year after they leave the agency. Is that correct?

Mr. BERNER. Yes, that is correct.

Mr. CANSECO. And to your knowledge, does this prohibition apply to academics involved in projects funded by the OFR or part-time workers or contractors who may not be considered employees as defined by the statute?

Mr. BERNER. My understanding, Congressman, is that anyone who has access to sensitive data will be prohibited from being employed to use those data for commercial advantage. And so what is very important here is what we were talking about earlier, namely data security. Anybody who is a contractor to the OFR doesn't get access to all the data that the OFR or the FSOC member agencies will have.

Mr. CANSECO. So, therefore, anyone who is exposed to that data or who has any kind of access to that data?

Mr. BERNER. The principle should be that anyone who is exposed to sensitive data, and we are going to make sure that the exposure

is consistent with their responsibilities, will have suitable restrictions on them, yes.

Mr. CANSECO. Do you think that 1 year is a suitable timeframe or should it be longer or shorter?

Mr. BERNER. One year seems to be a reasonable timeframe, given that most data, after a years' time, become less and less relevant for any commercial benefit. Obviously, we are going to have to take a look at that over time. But to us and given our experience, my experience in the financial services industry over 3 decades, that seems like a reasonable timeframe.

Mr. CANSECO. Thank you, Mr. Berner.

Chairman NEUGEBAUER. I thank the gentleman.

I wrote to GAO, and I asked them to provide testimony for the record on the cost of Dodd-Frank implementation. I would like to ask that, without objection, it be entered into the record.

Mr. CAPUANO. Mr. Chairman?

Chairman NEUGEBAUER. Yes?

Mr. CAPUANO. Mr. Chairman, if I may, I have no objection with that report, but that report, as you know I have expressed, is a little limited. It is one one-sided.

I would like to also enter into the record a letter that I have sent to the GAO and some other documents, showing that there is a little bit broader aspect that we would like to push through.

Chairman NEUGEBAUER. Without objection, it is so ordered.

Mr. CAPUANO. Thank you, Mr. Chairman.

Chairman NEUGEBAUER. And now the gentleman from Frog Jump, Tennessee, Mr. Fincher.

Mr. FINCHER. Thank you, Mr. Chairman.

I kind of want to echo the comments made by Mr. Renacci and read something from the summary.

"Beginning in July of 2012, the OFR is funded by assessments on large bank holding companies. The OFR's budget is not subject to Congressional appropriations and the OFR can levy assessments it deems necessary to fund itself."

A couple of questions, is there a cap on salaries within the OFR on how much people can make?

Mr. BERNER. It is a good question, Congressman. There is a set of salary guidelines. And those are consistent with the pay scale of other Federal financial regulators. So, if you will, there is a cap on salary.

Mr. FINCHER. What is that cap?

Mr. BERNER. My understanding is that cap—I don't have the numbers at my fingertips, but we will be happy to get you those data.

Mr. FINCHER. Thank you.

And what is the definition of "large bank?" The chairman of the full committee, a few minutes ago, said something to the effect of the community banks not having to shoulder funding the OFR's budget. What is the definition of "large bank?" Can you explain that?

Mr. BERNER. Sure. The statute requires that any bank holding company with assets more than $50 billion will be subject to supervision by the Federal Reserve. But I want to point out, Congressman, and this is very important, I am glad you raised the question.

The assessments and the determination of who is supposed to be eligible for supervision by the Fed will not be limited to bank holding companies. There are a certain number of non-bank financial services companies who will also be subject to that determination. and that determination has yet to be made.

Mr. FINCHER. Okay. The Dodd-Frank statute says that the OFR shall announce regulations in the section, including the type and scope of the data to be collected. When will you make known these rules?

Mr. BERNER. Congressman, it is an excellent question. We are in the process of developing those protocols and procedures. And we will make them known as expeditiously and in as timely a fashion as we possibly can.

Mr. FINCHER. It really just seems to me, coming from the private sector being a freshman, a business person, that we keep looking to Washington and more government for the answers. And we have multiple agencies to, again, deal with data collection.

And in a place and time in this country's history that financially we are in such a bad position, to keep spending the amount of money that it seems that we are going to spend in the OFR—I know the intent is for the right reason, that we make sure that we are protected in the case of problems down the road.

But I hope we are doing the right thing, spending the American taxpayers' money. It seems like in an open-ended project. So I am very frustrated.

I understand, again, the intent, but Washington, too many times, is not the answer. It is the problem. And the private sector, they don't want to have much faith in us. And I just hope we are doing the right thing.

So with that, I appreciate your being here and I yield back.

Chairman NEUGEBAUER. I thank the gentleman. And Mr. Berner, we thank you for your testimony. We appreciate your time.

With that, we will dismiss this panel and receive the second panel. Thank you for coming.

Mr. BERNER. Thank you, Mr. Chairman. Thanks for having me.

And I look forward to further hearings and to further communication with you and your staff.

Chairman NEUGEBAUER. Thank you.

I will just remind the second panel that your full written testimony will be made a part of the record. We will recognize each one of you for 5 minutes.

The first person we will recognize is Mr. Dilip Krishna. And you are recognized for 5 minutes.

STATEMENT OF DILIP KRISHNA, VICE PRESIDENT OF FINANCIAL SERVICES, TERADATA CORPORATION

Mr. KRISHNA. Thank you, Mr. Chairman.

Chairman Neugebauer and members of the subcommittee, my name is Dilip Krishna, and I am here today representing Teradata Corporation. Thank you for the invitation to offer testimony today.

Teradata is among the world's largest companies focused solely on analytics and data warehousing. Our technology provides businesses and governments with the ability to leverage detail-level

data, enabling them to quickly recognize emerging trends and take appropriate corrective action.

The recent economic crisis has taught us that our financial institutions are truly a national asset. Responsibly managed financial institutions, of which there are many, are the bulwark of our economic system. At the same time, the irresponsible behavior of some in the industry has cost the American taxpayer dearly.

Effective oversight of the financial system is critical to our Nation's success. At the same time, we want smaller, more efficient government that continues to allow the same high level of innovation and leadership that has propelled the prosperity of our market-based system for over 2 centuries. Teradata's experience over 30 years has shown us that technology is the catalyst that can create smaller but smarter governments generating immensely valuable results while lowering costs at the same time.

Financial oversight critically depends on a deep understanding of the situation at all times. Known risks must be monitored and unknown risks is covered.

An efficient, integrated store of information is critical to both functions. These competing needs lead to conflicting demands on the information store, industrial spent robustness versus lab environment flexibility. What is exciting about today's information technology capabilities is that both of these needs can be satisfied by the same analytic system.

The role of financial oversight is critical to making our systems safer and robust data and analytic capability is an important first step.

The Office of Financial Research mandate is broad and vague. Our experiences have shown, however, that a data warehouse for financial risk analytics is critical to proper oversight. I offer the following comments in regard to successfully developing a data warehouse based on the practices that Teradata has learned from working with the world's largest corporations.

Most large corporations have developed such repositories for their own business purposes. The common principle employed by our successful efforts is to think big but start small. Starting with a small, well-scoped initial phase, you can lay the foundation for an ambitious long-term program. The data warehouse can start by creating a standardized reference data environment, which would be useful not only to regulators but to the financial community as well.

Risk analysis in the financial sector requires the use of details, position, and transaction data on a periodic basis, and the data warehouse can also serve this need by integrating the information into the repository.

The key principle here is to avoid making the perfect the enemy of the good. While there are many barriers to perfectly standardizing data, none of these barriers are formidable enough to prevent the data warehouse from using what is already available for gross systemic risk computations. In fact, the very act of periodically refreshing and integrating this data will break in the system and improve its quality over time.

A data repository such as this would contain much sensitive data with the implications not only to financial institutions but poten-

tially to private citizens as well. Therefore, data security technology must be taken very seriously in the effort. The good news is that the technology required is available today, and the innovations and technology are rapidly changing the landscape of American business.

Chairman Neugebauer and members of the subcommittee, the time has never been better for leveraging information technology to create a strong system of financial oversight that is also cost-effective. Smarter government leads to smaller government and a savings for the Nation's taxpayers.

The choice is ours. We can embrace proven technology to strengthen the financial system, or we can ignore it, raise taxpayer money, and possibly face future catastrophe.

Again, thank you for the opportunity to testify this afternoon. I look forward to answering your questions.

[The prepared statement of Mr. Krishna can be found on page 58 of the appendix.]

Chairman NEUGEBAUER. Thank you.

Our next witness is Mr. Alan Paller. He is the director of Research at The SANS Institute.

Mr. Paller?

STATEMENT OF ALAN PALLER, DIRECTOR OF RESEARCH, THE SANS INSTITUTE

Mr. PALLER. Thank you for allowing me to testify today.

As we sit here today, Federal computers are being broken into. They are being taken over—data has been taken from them and they are being turned into zombies so they can be used for further attacks.

You, a few minutes ago, talked about Bill Lynn's speech earlier today when we learned that 24,000 very critical documents that include satellite data and avionics—the data we didn't want to lose—were lost in March. So that is happening as we speak.

In a minute, I will tell you about a few more of them but first, the reason I know about these things is we run the main cybersecurity school where we train the NSA, the FBI, DOD, the banks, and the insurance companies in 70 countries. We have 120,000 alumni.

We also run the early warning system for the Internet. I hear a lot about those attacks, but I use data that is publicly available. So what I am going to tell you is an accurate but incomplete picture of what is going on.

I want to answer four quick questions: one, who is doing the attack; two, what are they looking for and how effective are they; three, how do they work, because it is useful to know how they work in evaluating whether something that you are doing is at risk; and four, are the financial practices, the practices of the banks a lot better than what is going on in the government? So let us do those quickly.

Who is doing it? Primarily, the attacks against the Federal Government are by spies, most of them paid for by nation states. There is a little bit of organized crime against government, but most of the organized crime is going against Exxon and Google and the other companies.

And what are the spies after? Primarily, it is military information like what you heard about earlier today. But there is also what General Alexander, who heads the Cyber Command, likes to call remote sabotage tools. Once they get in, they actually burrow deep and leave a tool there that pops up to ask for instructions randomly over a period of years, so it is an in-place tool that can be used to change the data on computers whenever that is needed.

And then their third goal is financial information and trade information that is used in negotiations between countries. Other countries that have the interest of their companies at heart like to steal information from our companies so that when negotiations happen, they know more about our playbooks than than we do. So that is what they are after.

How bad is it? You heard the one today, another comment like that came from General Lord who ran cyber at the Air Force who said, "China has downloaded 10 to 20 terabytes of data from the NIPRNet. They are looking for your identity so they can get into the network. There is a nation state threat going on." So it is a big loss, not a small loss.

And the kinds of things they have taken, I mentioned a few but they got the—the F-35 strike fighters are our most expensive systems, $300 billion. They got a lot of avionics information from that, that other countries are already using.

So it is a massive amount of data. And what is interesting about that is they didn't get it from the DOD, they got it from the contractors. This attack today was also from the contractors. And that is important because a lot of what we do in government has been outsourced for IT, and it is the contractors who are losing the data.

And I have one more example. A lot of people think it is just DOD, but the Commerce Department got hit very badly. There is a division of Commerce that decides which technologies are too sensitive to export, called the BIS Division, and that was what they got into.

So there are a lot of attacks, but notice it is usually a spying thing. The reason you see attacks against the NASDAQ and again the IMF, say, is that financial data is also a target of attackers, but we don't have really good data on what they were after and what they were going to do with that data.

I want to add two more things. One is, how do they work? And let us say they decide you have critical data that they want from you and they get to know your staff director, and they spend a lot of money finding out what he is working on. And then they fake an email that looks like it came from him to the people who do the system administration work for you.

And because it appears to come from the boss and it has critical data in it, it fools them into opening the email. The email has an attachment that takes advantage of an error that they didn't fix on their computer, bad hygiene. They just didn't fix it on their computer. That forces the victim's computer to call out to the attacker's computer to get instructions.

Those instructions are what to gather and how to gather it. They gather it up and then they burrow deep and stay there so they can come back later. That has happened to Presidential campaigns, Congressional offices, and lots of Federal agencies.

When you hear a witness say, "We haven't had any breaches," you should translate that into, "I have not been told of the breaches that we have had," because saying, "We have not had any breaches" in a major Federal agency isn't credible.

I want to close with a couple of ideas. One is that banks do a better job because of two things: there is a lot of money at stake; and there are consequences. I go into detail on that in my written testimony.

And finally, don't decide to act just because there are cybersecurity problems. If you choose not to do something that is important because there are cybersecurity problems, you have to stop doing everything. It might be a better idea to take advantage of the fact that this is important, and if you agree it is, then do a better job of doing cybersecurity, and I try to lay out what that means in my written testimony.

Thank you for your attention. I am happy to answer questions.

[The prepared statement of Mr. Paller can be found on page 74 of the appendix.]

Chairman NEUGEBAUER. Thank you.

Our next witness is Dr. Nassim Taleb, distinguished professor of risk engineering at the New York University Polytechnic Institute. Dr. Taleb?

STATEMENT OF NASSIM N. TALEB, PH.D., DISTINGUISHED PROFESSOR OF RISK ENGINEERING, NEW YORK UNIVERSITY POLYTECHNIC INSTITUTE

Mr. TALEB. Mr. Chairman, Ranking Member Capuano, members of the subcommittee, thank you for giving me the chance to express myself.

I have been sitting here listening, and what I heard was data, data, data, and just data was a great thing.

In "The Black Swan," my book that sort of matched the testimony, I write that if you give bookmakers 30 pieces of data, they will bet with more confidence. And they will predict much, much—the predictability will drop over 10 pieces of data. Okay?

There is something called too much data.

In the 1970s, my coauthor—also did that. If you have very sophisticated economic technique, they tend to work on your computer very well, much better than simple techniques. But guess what, they degrade when it comes to the real world.

And I am very interested in the real world, not in what happens on computers or in research papers.

I am here primarily as a practitioner of risk, a risk-taker, a trader, who became later on a scholar because, of course, I lost a lot of hair worrying about my trading position, 20 years of trading. So I retired and became a scholar.

So I am here partly as a trader, say 75 percent as a trader and 25 percent as a scholar. And I have seen all these people with great ideas, econometric methods, and so on who work on a computer. And, of course, they tend to take a lot more risk, which is the reason I faxed Fannie Mae in 2003, and they answered, we have 15 Ph.D.s on our staff. And I told them, "You can have 15 million—on your staff. It is not going to help you manage your risk much better."

If you take a lot of risk, you can't predict.

So what is the problem with what is going in this proposal? It looks like a new version of the central planner, what I call the omniscient Soviet-style central risk manager. Of course, the central planner did not work, as we know, and this has not worked.

Financial risks are not like the risks of cyberspace and things like that. They are not that tractable. Financial risks belong to a completely different category that you cannot map quantitatively, like history, people study techniques. They think that the great techniques, that work of statistical physics, can apply to finance. So far, these things don't work outside their computers.

So what I am saying is, first, these risks became completely unpredictable, so we can have seven or eight more of these offices, and they are not going to predict any better. The details are, of course, in the appendix I gave you.

Second, this measure has side effects. Get someone a risk measure and he will take more risk. This has been shown in a lot of experiments. If I give a German judge a die and make him throw the die before sentencing, high number of this to high and longer sentencing on short numbers. You give people numbers, they take more risk for sense of security and beyond.

Also, maybe the main point is that what we need is to move away from measuring and trying to predict events and measuring risk and doing these kind of fancy things that have never worked. You have how many people who did analysis of the sort the gentleman before this panel was discussing, how many?

All right, 10,000, 20,000? Did they see the crisis coming? No, they all just got caught.

Did they see the crash of 1987 coming? No, they all got caught. So almost all, all right. Definitely a smaller number than random escaped. So what we need is less is more.

A very simple rule of thumb: Less is vastly more. And it is very hard to tell people who love data that less is more, that less is effectively more in so many domains. What we need are just very simple methods of robust defying portfolios.

The simplest one for me is to remove the agency problem. When you fly, when you get on a plane, you prefer the pilot to be on board, right? It is a very simple rule of thumb that increases your safety. What—like the same was max, a very simple small rule of thumb rather than grandiose plans, particularly that these have never worked in the past.

If people look at our track records and then predicting these quantitative methods, a horrible record, that was my book, "The Black Swan." And now 4 years later, people are starting to repeat my argument a little bit too late.

Thank you.

[The prepared statement of Dr. Taleb can be found on page 82 of the appendix.]

Chairman NEUGEBAUER. Thank you.

And our final witness, Dr. John Liechty, the director of the Center for the Study of Global Financial Stability at Penn State University.

Dr. Liechty?

STATEMENT OF JOHN LIECHTY, PH.D., PROFESSOR OF MARKETING AND STATISTICS, AND DIRECTOR OF THE CENTER FOR THE STUDY OF GLOBAL FINANCIAL STABILITY, SMEAL COLLEGE OF BUSINESS, THE PENNSYLVANIA STATE UNIVERSITY

Mr. LIECHTY. Thank you, Mr. Chairman, Ranking Member Capuano, and those members of the subcommittee who have chosen to brave it out, tough it out until the end. I appreciate you being here.

I have a couple of things I would like to—

Chairman NEUGEBAUER. Would you pull your microphone just a little closer to you?

Mr. LIECHTY. Sorry, is that better? I appreciate you coming, if you didn't hear it already.

There are a couple of things I would like to just highlight. I was actually involved in the legislation, in thinking of the idea, of advocating to folks on the Hill and actually helping negotiate the final version of what came out of this legislative process.

I am a private citizen. I got involved in this because I went to an OCC workshop that happened in February of 2009, and we had just had the financial crisis and people at the workshop were talking about statistics and financial risks. I am a statistician. That is my training.

During the workshop, people were talking about individual institutions and trying to keep individual institutions safe. It is kind of like we have just gone through a major car wreck, a big pile-up on the freeway and people are saying, "Well, let us look at each individual car. Let us make sure the oil pressure is fine. Let us make sure the brake systems work, but let us not worry about how fast they were going or how close together they were with the road conditions that might be changing." All we are going to do is worry about these individual institutions.

So I looked at that group, and I didn't know a lot about the data and what is available. I figured the Fed have the data, to be honest. I raised my hand and said, "I am a statistician. Let us start with the data." We can take that data and begin to try to understand this system. If you think about science, science starts off first trying to describe a phenomenon, and then trying to explain how the pieces work, then trying to predict it. And eventually, if we are really good, we start doing engineering to try to control it.

In my view and assessment, I would fall in with Professor Taleb, in that we are at the beginning stages of describing. We really don't understand a lot of the dynamics. We have a system where we look at what the markets produce in terms of prices. That is the equity markets, some of the bond markets, the derivative markets. But we don't see very much of what is going on underneath, right?

And so a group of us said this is a compelling national need, and I don't want to take my time to read it, but I have a letter that was signed by six Nobel Laureates sent to the Senate Banking Committee advocating that we need to have better data and better analytics for the regulatory community. If it is possible, I would like to submit that for the record.

Chairman NEUGEBAUER. Without objection, it is so ordered.

Mr. LIECHTY. Thank you.

What kind of data can we gather? I agree that we want robust methodology, but I disagree that we cannot move forward scientifically to the degree that we cannot begin to quantify.

I think the analogy is better put in terms of thinking about the National Weather Service and where we were with hurricane modeling 50 or 70 years ago when we didn't have good weather data, when we didn't have a sustained scientific effort trying to understand how the different particles interact and the models that would be taking the data from satellites in order to understand and begin to build the science needed to see when hurricanes might be forming and when they might be making landfall.

I know there are weaknesses in that analogy, but I think it is an interesting place to start in terms of thinking about how we are going to attack the problem with financial stability.

I will describe a couple of effects. Take the hamburger effect. This is kind of an example to illustrate the value of this type of financial data. When we think about the FDA and how we process and keep track of food safety, if somebody gets a piece of hamburger that makes him sick, what can we do? We can track that all the way back to the farm where that cow was produced and grown.

We can understand what the risks are because we can see the disease, the contamination and how far it went, and how it flowed through the system, right?

When we go and look at mortgage-backed securities and their derivatives and other asset-backed securities which were being used as money equivalent in the repo market in 2008, we do not have the ability to trace through the market to go all the way back and say where these loans came from.

What happens in the hamburger marketplace is if somebody gets sick and you can't trace back where the core cows are at that might be causing the sickness, everybody walks away from the hamburger market. And that is what happened to one of the major funding sources providing liquidity, short-term funding. In the broader marketplace, that is substantial.

Another example of where we could create benefit from better data would be what I will call the long-term capital effect. When long-term capital management was on the verge of going down, the Fed pulled major financial players into a crisis management meeting.

I heard this story from a friend who was at one of the major investment banks involved. Their guy got pulled in, and they calculated that they had a $100 million exposure to long-term capital at that time, which is a body blow but it wasn't a death blow.

Their guy came back from a negotiation and said, "We are in for $180 million to cover the $100 million exposure." And my friend said, "Why is that?" And it is because of the network effects. If they say no and we let them go down—we let long-term capital go down, we don't know which of our trading partners might go down, partners where we have much bigger exposures, that could take us down.

Both of these effects not only helped bring about the financial crisis, they helped exacerbate it and make people want to run to what they felt was safe—U.S. Treasuries, right? They could not

trade these products, they didn't know how to price them so they didn't really know where the contamination was coming from, and they didn't know how to value the trading books of their partners because they didn't know how much of these mortgage-backed securities that they held. They didn't know if somebody else teeters on the edge, how that is going to propagate through the system. There is data that is not being collected but is essential if we want to have a safe and secure financial system.

I gave up, I assure you, plenty of consulting money to try to get this legislation through. I did it for five reasons—Joseph, Jacob, Sam, Matt, and Tom. Those are my five boys. I would like them to have a safe, secure financial system going forward.

With regard to where they could have put the OFR, they could have put this in the Fed or the OCC. There are a lot of places that could have been given the OFR. In the end, there was horse trading in the Senate and it ended up in Treasury. Could there have been a little better overhead? Yes, there could have been a little better overhead.

But the thing you have to realize—I am sorry, I have gone over here. The thing you have to realize is there are substantial industry savings that will far outweigh the cost of the OFR. I would be happy to answer any questions. I apologize for getting a little excited.

[The prepared statement of Dr. Liechty can be found on page 66 of the appendix.]

Chairman NEUGEBAUER. I thank the gentleman. I recognize myself for 5 minutes for questions.

Mr. Taleb, before the financial crisis occurred, you wrote in your book "Black Swan," and I think I quoted here, "The Government-Sponsored institution of Fannie Mae, when I looked at its risk, seemed to be sitting on a barrel of dynamite, vulnerable to the slightest hiccup. But not to worry, the large staff of scientists deemed that these events were unlikely," I believe you say.

First of all, can you tell us why you wrote this? And secondly if you claim that no one can predict the process, how are you able to predict it?

Mr. TALEB. I have a very—first of all, the risk of Fannie Mae, you can see on an abacus. You don't even need to have centralized, you can look at it. You can look at their books. You can see it on an abacus. You don't need data. I think it takes no time to figure out.

But I have a very simple rule on which I built my entire career. If a pilot is overconfident, he will crash a plane. So if someone thinks that he has the answer, if he thinks he can predict, particularly in a domain like finance that is hardly predictable or rather unpredictable, then he will take vastly more risks than a regular person and he will crash that plane.

So all I did was use that simple rule by saying those who claim to see the future will blow up, and the word blow up means have lose vastly in excess of what you think you can have. Fannie Mae was one of my targets and, of course, many targets and seems to play out in 2008, and that is the same principle.

And I think that what will happen with this committee, not with the committee, with the effects of the OFR is they will give people

a false sense of confidence. They will tell people to take more risk, to make the system more vulnerable and will have more blow-ups. And after the blow-up, they are going to say, while the government was supervising and they didn't tell us that the incident will take place because I know they are not going to be able to predict the crisis.

Believe me, I am certain because these things, like the big event that convinced me was the crash of 1987, when I was a trader, and I saw people crying.

There is absolutely no reason for a 23 percent drop, 23 standard deviation at the time. Something huge should have happened every 10 trillion, trillion, trillion years and happen for no reason. Then I realized that there are two kinds of people, those who focus on robustness and those who try to outsmart the system, like most academics like LTC and Variety; they think they can predict and calibrate the risk based on that.

There are two kinds of people. Second category, they usually blow up.

Chairman NEUGEBAUER. There was a lot of data already out there pre-crisis. And actually, a lot of people were beginning to recognize how this thing was getting pretty big. And some of these were some of the prudential regulators who were supposed to be regulating these entities.

So there are two points I would like to make here and get your comments on; one is, that sometimes people have the data, but two things have to happen. One, somebody has to interpret the data that you can put all of these information into a computer and you can give it, and then someone gives it the parameters. But then someone has to put those parameters in there and to determine what the thesis of what will be a bad event.

The second piece of that is, is that, the one that computers spits out these analogs or algorithms, or whatever they are called, that somebody then has to interpret. But the third piece of that is that somebody then has to take an affirmative action.

Mr. Liechty, I hear what you are saying but the question is, if people don't act on the data that they have, what is the value of the data?

Mr. LIECHTY. That is an excellent question.

The point is, I don't think anybody has ever had this data before. People began to see that there were pressures in the financial market, in the housing market. They began to see that there were balance sheet imbalances. There were people who were making subprime loans and that could lead us towards—there were a number of signals that were leading us towards understanding that there was the build-up of an asset bubble.

But I don't believe even if we had this magic data in order to see the entire marketplace and understand how we could go forward, that would have been enough. I think this is a new science problem that we have to address and that we want to address by simply saying, "Well, nobody can do it. Nobody has done it in the past." We haven't really put the effort in, yet.

Chairman NEUGEBAUER. Mr. Taleb?

Mr. TALEB. I would like to disagree. I don't know the protocol, but I would like to say the following: I have on my laptop 20 mil-

lion pieces of data, 20 million. I could perform all the analytics you want on my laptop here.

Twenty years ago, we had nothing. We had no laptops even. It was Moore's Law working everywhere. The same has applied to financial data. We have so much data, it is not even funny.

Predictability is decreasing and we got more data. So it is not like we didn't have this. We have more data than ever in history today. And tomorrow, we will have more than today, and it is growing exponentially. So I do not agree with this argument that we need more data or the problem was lack of data.

Chairman NEUGEBAUER. My time has expired, unfortunately, so I recognize the ranking member, Mr. Capuano.

Mr. CAPUANO. Thank you, Mr. Chairman.

Dr. Liechty, can you guarantee me—guarantee me that if OFR is up and running, we will not have another economic crisis?

Mr. LIECHTY. I cannot guarantee that.

Mr. CAPUANO. I didn't think so.

Mr. Paller, can you guarantee me that if I put you in charge of the data on my little BlackBerry here, that no one will ever be able to break into it?

Mr. PALLER. Nope.

Mr. CAPUANO. Mr. Krishna, could you guarantee me that no one could ever break into my BlackBerry, if I gave it to you?

Mr. KRISHNA. Absolutely not.

Mr. CAPUANO. Mr. Taleb, could you guarantee me if I made you the Chairman of the Fed or OFR, or any of the other agencies, could you guarantee me that you could foresee the next economic crisis?

Mr. TALEB. To the contrary, I guarantee that I would not see the next economic crisis, because it is—

Mr. CAPUANO. I think that is a fair guarantee for all of us.

The reason I asked this is because, I guess, the next question I have is, there are no guarantees in life. All of this is simply an attempt based on the last problems we have been through to decrease the likelihood, at least, that we will repeat the same mistakes. I don't think anybody would have any doubt that there will be other issues, and someone will come up with something new tomorrow that we can't foresee.

That is not what this is about. This is simply about trying to decrease the likelihood that there will be another crisis which, of course, there will be. But, at least, that the next one may not be as deep, or at least won't be the same issues.

Is there anything wrong with trying to gather more data? Even if you don't use it, even if others might use that same data to come up with different conclusions, because I totally agree with what the chairman says, all the data in the world doesn't mean anything unless you can now analyze it. And all the data in the world or even 3 pieces of data—if I put 5 economists in the room, I am going to have 15 different opinions on what it does.

But I would like to know the problem. What is wrong with trying, within human capabilities, to gather as much data as possible and to try to keep our security on the economic system?

Mr Liechty, is there anything wrong with trying this?

Mr. LIECHTY. I don't think there is anything wrong with it. I will take the point Mr. Taleb raised about people getting risk measurements that they could then say, "I can take more risk."

And I would say that we have actually have had people take tremendous amounts of risk because we have had, for example, rating agencies, which have been giving AAA ratings to financial companies which are offering and issuing bonds, these special purpose vehicles where the agencies themselves have no real sense of what the underlying risks were. They don't understand the tail. They don't understand how the behaviors might cascade through the system. And I agree that can be very dangerous.

You have new agencies and they collect all of this data, but there are very strict rules about what data this agency can give out. It is not as if this agency can collect data and then turn around and give risk metrics and risk inputs to the market participants. It is going to be used in making good decisions about macroprudential regulations, about when you have concentrations in the marketplace, when you might have marketplaces that can't handle certain amounts of flow under different stress scenarios. These things lead to liquidity failures and freezings of the markets. That, I think, is useful.

I think it also will help encourage the market participants to do what they really need to do, which is to start building their own systemwide view of the marketplace and begin to build their own ways in measuring systemwide risk and pricing and trading, and making sure that we don't have instruments that have a lot of what you could call tail risk—

Mr. CAPUANO. Mr. Taleb, I can see you are anxious. Go right ahead.

Mr. TALEB. I have had to face this question for about half of my adult life, and let me give you the typical answer I give people.

If your pilot happens to have lost his maps, and you are flying toward the Himalayas and someone says, "Look, I have a map of Saudi Arabia," should he use it? No.

The data can increase not only risk-taking, but can get you in trouble. This is what—so just—

Mr. CAPUANO. But I need to follow through the illogical conclusion. You are not suggesting that we never collect an ounce of data on anything because any data raises risk?

Mr. TALEB. I am not. No, I am not saying that. I am saying that data beyond a certain threshold—

Mr. CAPUANO. What is the level?

Mr. TALEB. Sorry?

Mr. CAPUANO. How much?

Mr. TALEB. Beyond a certain minimum—

Mr. CAPUANO. Twenty million data?

Mr. TALEB. We passed that threshold a long time ago, which is data—

Mr. CAPUANO. So we should give data back?

Mr. TALEB. No, we have data that if you could supply people with the data and analytic—

Mr. CAPUANO. How is then?

Mr. TALEB. —that are going to take a lot more risk.

Mr. CAPUANO. How is it then that over the last 3 years that I have asked many different panels to tell me how much money was in hedge funds, nobody could do it, if there is so much data out there? How come nobody today can tell me how much money is in sovereign wealth funds? How come nobody can tell me today what the leverage points are on those sovereign wealth funds? And if there is so much data out there, how come I can't get the answers to relatively straightforward questions?

Mr. TALEB. I am sure that these people don't want to commit but you can get a lot of data on sovereign wealth funds and a lot of analysis on it.

Mr. CAPUANO. I think—

Mr. TALEB. But my point—

Mr. CAPUANO. Yes.

Mr. TALEB. No, no. My—

Mr. CAPUANO. I get data.

Mr. TALEB. Yes, of course, I am getting more data was noise—because of noise, it is going to degrade it. So you are going to get several more guesstimates of guesstimates of guesstimates.

The point is that giving sterile information like knowing how much there is—and these funds and sovereign funds, may lead you to start taking more risk, and that is my point.

Mr. CAPUANO. I understand that. And guess what?

Mr. TALEB. Yes.

Mr. CAPUANO. When I look both ways as I cross the street, it encourages me to cross the street because I have taken on that risk.

Mr. TALEB. Exactly, because that does not—

Mr. CAPUANO. So I shouldn't look both ways before I cross?

Mr. TALEB. No, because that is not general information.

Mr. CAPUANO. I should never cross the street.

Mr. TALEB. No, that is an analogy. Again, you should not cross the street blindfolded. And actually I answered this, and I answered from my book, "The Black Swan."

Mr. CAPUANO. But the data comes in and when I take that blindfold off, all of a sudden I see traffic. Oh, my God—

Mr. TALEB. There is too—

Mr. CAPUANO. —there is too much data, I cannot cross the street.

Mr. TALEB. Because that is not sterile.

Mr. CAPUANO. There is a line.

Mr. TALEB. Because that is not sterile information.

The point is that, in a natural habitat, we are very good at selecting information and at making our own filtering in the natural habitat. In finance, we haven't been doing finance for 200 million years. We have been looking—we have had eyes for hundreds of millions of years.

So finance is not a national domain for us. The data is different. The statistical property is different.

Mr. CAPUANO. I don't suggest that it is easy.

Mr. TALEB. Yes, I know. But I am saying, that inferring, that more data equals, okay?

Mr. CAPUANO. No, no, no. Let me—

Mr. TALEB. It is a big fallacy.

Mr. CAPUANO. That is not my suggestion. More data equals more security. My comment is that maybe there was a time, but I

haven't seen a time on any factor that data, i.e., knowledge, is a bad thing. It can be used badly. It can be interpreted poorly. We can make mistakes with it, but I have never seen a time in human history when more information was considered bad except in the Dark Ages.

And I am going to be honest, I understand fully well. Where the comment can be made, the data is inappropriately translated. That happens all the time, and it will continue to happen forever and ever.

But I have to be honest. You are the first person I have ever heard tell me that I should get less information in my life—

Mr. TALEB. I am—

Mr. CAPUANO. —and therefore, simplify it because I will take no risk. I appreciate the comment and I appreciate your position. You have had a lot of success with your own view, but I guess—

Mr. TALEB. Okay.

Mr. CAPUANO. —information is good.

Mr. TALEB. I am not the first person to say there is a whole literature called anchoring. If you make people flip a wheel of fortune, and they know that this data is random, it will automatically impact—

Mr. CAPUANO. But I also know that if you keep people without any information at all—I get that. Information brings risks. I get that.

Mr. TALEB. No, no. Information—

Mr. CAPUANO. And I understand that.

Mr. TALEB. No, no, that data—if I ask someone his Social Security number, their last four digits, and then how many dentists are there in the Washington phonebook, the numbers will be correlated.

If I put the question in reverse, the numbers will not be correlated. So data has an impact on decision-making and my point to that, given particularly when it's stale data, as we have in finance.

Chairman NEUGEBAUER. I thank the gentleman for his questions.

Mr. Fitzpatrick?

Mr. FITZPATRICK. Thank you, Mr. Chairman.

Mr. Krishna, you were in the hearing room earlier today when Congressman Grimm was talking about two projects of information technology in the Department of Justice, both of which came in wildly over budget, blew the budget, a higher cost than expected. One was never implemented, I think he said, and the second project has not yet gone live.

In your experience, what is the principal reason that IT projects never get implemented, and many of them, if not most of them, end up costing much more than originally anticipated?

Mr. KRISHNA. Thank you, Congressman, for that question. I think there is one word that I would use and that is "scope."

IT projects are notorious for going over budget. There are statistics that show that as little as 30 percent of all IT projects that are begun are actually completed, and we are not talking about completed within the budget, absolutely completed.

So the question is, what makes these projects successful? And the one-word answer, as I mentioned, is scope. Keeping the scope

tight, narrow, specific, and then addressing a project that goes off and builds to that scope.

We worked with a lot of financial institutions, building these sorts of data repositories, and the ones that are successful start off small. They certainly have large visions, large mandates out there, but they start off very small and try to address a simple need first and then build based on that foundation.

Mr. FITZPATRICK. So as an IT professional, from the IT perspective, would you be concerned about an agency of the Federal Government that has no limits, either in the statute, no limits declared yet, no plan yet prepared from the scoping point of view?

Mr. KRISHNA. We are certainly concerned about any mandate that is too broad and too wide. In fact, when the Dodd-Frank conference discussions were occurring, Congressman King and Congresswoman Maloney had worked on amendments that would tighten the focus of the Office of Financial Research. Teradata definitely supported those notions. Unfortunately, they have not been adopted.

We certainly believe that a narrow tight scope for such an effort is important, at least, in the first stage.

Mr. FITZPATRICK. Professor Taleb, you have mentioned in your written testimony that the rationale behind the OFR is a Soviet-style of thinking, not a direct quote but basically that is what you had indicated. Can you expand on that?

Mr. TALEB. Yes, this idea that top-down, you can see the risk top-down is—and the problems with it is the debate is very old. The debate was central planner but it is called omniscient central planner who can see everything and, of course, has the ability to set prices. That is an old debate and, of course, that went away and now we are repeating the same experiment by thinking we should have a centralized omniscient risk manager who can see risks.

I have discussed what I call "etrogenie," which is a side effect. Like any drug has a side effect, I have discussed the side effects and it has appeared in conversations before. And I think the side effects are so very severe. Of course, we have direct costs. Cost overruns are almost certain in technology, particularly with government projects.

But we have side effects that are vastly worse than the cost overruns.

Mr. FITZPATRICK. I am also concerned about the big central planning, and as Mr. Paller and Mr. Krishna's comments, the very broad scope of what the OFR is tasked to do here.

Professor Liechty, do you have any concern about the broad powers that have been granted to OFR in terms of the ability to collect all kinds of information? Do you have any concern about that scope?

Mr. LIECHTY. It is a very good question. I would take the exception to a Soviet-style approach. I don't think you can understand a system unless you collect data about the system. Before you can monitor, you have to measure. That is the fundamental rule. Somebody has to collect that data.

In the street, they could do that if they wanted to. If they are not moving in that direction, that is fine.

The OFR actually has very limited authorities. We specifically said when we were negotiating about the OFR, that we did not want the OFR to have any regulatory authorities. When I say limited, I mean that it cannot set any capital requirements. They cannot make any prescriptions in terms of the health of financial companies and how the marketplaces work.

The only thing the OFR has the authority to do is to set standards and to request data from a set of companies as defined in section two of the Dodd-Frank Act.

Mr. FITZPATRICK. But, Professor, I think you have indicated that tools are not yet in place to do that. I want to just quote your written testimony. We discussed the science behind predicting a financial crisis. And you said, and this is a direct quote—"Is it true that the science and the tools have not yet been developed? But that is a call to action not a cause for despair."

So what assurance can you give us, Professor, that the science and the technology will ever catch up to the mission of the OFR, and more importantly, what happens if it doesn't?

Mr. LIECHTY. Maybe I can reflect back on the National Academy workshop, which was organized in November of 2009, and I put this in my written testimony also. The basic thrust to that was that we have good starting points for the science, we have good starting points for the models, but we are not there.

It is going to be an additive ongoing process, potentially multidecade effort in order to gain the kind of understanding that we need.

If you look back at the impact that—go back to the weather analogy and the impact that hurricanes had across America, historically, and there is a long history. And you look at the response that we have had from the government's perspective to try to understand hurricanes, to collect the data, and to do the science, it started with Thomas Jefferson and culminated in legislation in 1970 when Richard Nixon actually created NOAA.

The legislative reaction began to get the science in place to be able to understand the dynamics of the weather system and to be able to forecast, to predict, and to safeguard the people. I think the science will get there.

To be very candid with you, I am not sure how fast it will go, but I believe we can do it.

Chairman NEUGEBAUER. I thank the gentleman. And now, Mr. Renacci?

Mr. RENACCI. Thank you, Mr. Chairman.

Mr. Krishna, you actually started off the testimony with probably the line that summarizes this whole thing: Technology can lead to smaller and smarter government. We need to get smaller and smarter.

With that, Mr. Liechty, I can tell you that it is interesting to have all the information in the world and, in some ways, I agree with Mr. Taleb that in my past life, I would go into a company and I would have to analyze the risk of either acquiring or operating that company.

You reminded me of a new testimony, as I walked into a room one time, like this, filled with information, filled with information for the last 10 years and the next year all of everything that com-

pany has done. And I can tell you, the more information that was sitting in the room, the more scared I was.

And guess what I learned from that? I learned that on the reverse side, when somebody would come in to one of my clients and want to see what the risk was, I would tell them to fill the room up with information. Because the problem is, it is not about the information you have, it is about access to the right information, and that is the problem.

So you could have rooms full of information, you could have all that information but you have to have access. And the problem I have even with your hamburger analogy is, you might find out that you have bad meat at a farm and you might go down there and figure out the process that occurred. But while you are trying to fix that, there is another problem going on. So you are fixing that problem but there is another problem.

So it is not only access that has been able to move through information and been able to move in the direction to fix things. I am not too sure just having this information is the answer.

But what I am sure of, and I am going to ask you the question—what I am sure of is that there is a cost to getting this information.

And it is interesting because all of you who have talked about information, whether it is a room full or just the right access information, the question is—and I am going to lead back to what the ranking member said, he made a comment, if you have all the information stored—and I may change this a little bit, because if you had all the information stored at a central location, can you guarantee me that you will reduce the likelihood—and I am changing what it was said, the likelihood of an economic failure?

Because if you can't do that, should we give an organization unlimited oversight, unlimited budget, and unlimited reach?

Keep in mind, I am all for information. I just want to know if we should be setting up a whole other organization with unlimited oversight, unlimited budget, and unlimited reach, knowing that we possibly cannot even predict the likelihood of another economic failure. And I would first start with you, Mr. Liechty.

Mr. LIECHTY. Okay. Thanks. May I address the cost issue just briefly?

I was unaware of how the financial systems' back offices worked when I started this effort. But I very quickly became educated about this. They are in disarray. They have very poor standards. They spent billions of dollars in backroom operations just clearing and settling trades because they have a lot of mismatch between identifiers and standards as reported from the industry.

So when we proposed the idea of an Office of Financial Research and pulling together standards for reporting transaction data, the basic trust is there. Banks, clean up your back offices, get everything reported. There is only one bank I know in the world that puts every transaction they do in an electronic format the data that happens, and that is Goldman Sachs.

Everybody else has things on spreadsheets and different systems. They cannot get a comprehensive risk position. So they are like the room mentioned where you walk in and you see all these boxes, you have no idea, and you say, I am scared.

You walk into Goldman, they have it all together and they can pull it right together for you. We would like to see that throughout the industry. We think that would be useful and valuable, right? But more importantly, it would reduce their operating cost.

One of the major banks who work with us said it would reduce their operating cost by 20 to 30 percent. We are talking about multi-billion—

Mr. RENACCI. I am not sure if I will agree with that, but I am running out of time. And I want to switch over to Mr. Krishna, I have a question for you.

I heard, I think one of you testified and it might have been you, if the information is out there, banks have it. A lot of this information is already out there. Wouldn't it be easier—again, and you would only hear me in any one of my arguments arguing about information on getting it.

But wouldn't it be easier to challenge one of the organizations we already have set up to come up with—and I might be simplifying this, a computerized program that can access some of this information and get it very easily then set up a whole other organization and a whole other big brother government organization that goes forward and cost the taxpayers more money?

Mr. KRISHNA. Congressman, you are right. It would certainly be possible for any one of these agencies to collect the data and to implement it. There is no particular reason for one or the other agency to be chosen, in my opinion.

The only criteria, and I would think this goes back to your earlier comments is if the data is out there but it cannot be processed, that is the real problem. So any one of these agencies, if they had the processing capability and the technology exists, the will to do it is all that is needed. If they had that, they could absolutely accomplish the same tasks.

Mr. RENACCI. You would agree, though, there are computer programs out there that can take this information, bring it together, and access it in a formable way that you can understand.

Mr. KRISHNA. I would certainly agree with that. In fact, I would even direct you to a new piece of legislation that is being proposed by Chairman Issa, which deals with the same problem in other domains in the Federal space. The same approaches can absolutely work regardless of where the action is set within the government.

Mr. RENACCI. Again, I like your idea. Technology can lead to a smaller and smarter government—let us work toward that. Let us eliminate extra government agencies that aren't needed. Let us get the information we need. It sounds like we can do it somewhere else.

Thank you.

Chairman NEUGEBAUER. The gentleman from Texas, Mr. Canseco, is recognized for 5 minutes.

Mr. CANSECO. Thank you, Mr. Chairman. And I would like to, first of all, associate myself with Chairman Neugebauer's statements that he made, as well as those of my colleague, Mr. Renacci.

I served on a bank board for quite a number of years in Texas. And well before the 2008 crisis, we knew what was coming down the road. I think that it was also known here in Washington and in this very room, but politics got in the way. They had all of that

information but they weren't able to really look at it until panic ensued.

But with that said, I really believe that what we have is a lot of information out there in the public sector and a lot of it is also within the realm of the government; it is just out there.

And there are many other people who predict it, and it is best within the private sector rather than in the public sector because the public sector may be provoking panics or provoking other things that are not necessary and are better placed within the private sector where individual investors or individual people within the economy can make the appropriate decisions.

Let me ask a question, Mr. Taleb, in your opinion, does the government have a good track record of predicting financial crisis?

Mr. TALEB. No. Let us look at facts. I don't know what details you want me to show you but the government agencies, say the New York Fed, they have data about New York banks. They know the exposures, you can extrapolate. Did they predict the crisis? Of course not. They predicted the opposite.

The Fed, same thing, and then the theory, the great moderation. They concocted a theory that we had a huge build-up of hidden risk of an events that was obvious. And you don't need a lot of data or you can figure it out just from what is out there.

There was a lot of risk and not only that, the government didn't see the crisis coming but they have made opposite statements; with the New York Federal Reserve, they saw the opposite.

So, can governments predict crisis? No.

Mr. CANSECO. Yes.

Mr. TALEB. Okay.

Mr. CANSECO. And then you would agree with me that really it is nothing more than an opinion until it becomes true and then it is a prediction.

Mr. TALEB. Okay. Has it happened in history to see regular—how many regulators have their eyes on the last few crisis that they predict no. So I don't know why, suddenly, by fiat now we are going to have an agency capable of doing that.

Mr. CANSECO. Thank you.

Is there any aspect of the OFR that makes you think that the government will now be able to predict financial crises with precision as supporters of the OFR claim?

Mr. TALEB. That is the—

Mr. CANSECO. So obviously, the answer is no.

Mr. TALEB. Suddenly, yes. And so, suddenly, yes, just like by fiat tomorrow, starting, say, January 1, 2012, suddenly, governments will be able to predict. This is what I am reading here is it is a denial of there is something in forecasting. Because a lot of people think—about 90 percent of people think that they drive better than a median driver. And forecasters already think they are better forecasters. The best way to do it is to show them their track records.

If you showed the government the track record of government and their own track record in forecasting, I think that would mitigate these ambitious plans and bring us back to reality and, probably more modest tricks to reduce risk.

Mr. CANSECO. Mr. Taleb, you were asked in an interview with Business Week last July, what are the sources of potential danger

or fragility that you are keeping an eye on, and your answer was, the massive one is government debt.

So to your knowledge, will the potential danger caused by the debt we are facing in this country be a focus of the OFR or will the agency only focus on risk within the financial institutions?

Mr. TALEB. I think you cannot dissociate, because what happened is the private debt has been transferring. We have a form of capitalism called the socialization of losses but not, of course, privatization of gains.

So we have this debt bank, debt moving into government debt. So, of course, the financial crisis now would be in a form of governments having borrowed too much worldwide and we have seen that in Europe. And I think that is the big problem, and instead of doing all these projections, we should probably try to get that under control.

Someone asked me, how does someone lower his personal risk? And I say, 95 percent of your risk is gone. The financial risk is gone, if you don't have debt. The rest is peanuts. It is the same statement.

If you lower government deficits, you reduced massive amount of risk in the economy. Then the rest will be just peanuts.

Mr. CANSECO. Thank you, sir.

Mr. Liechty, can you give us an example of a regulator that was able to predict and therefore prevent a financial crisis before it occurred?

Mr. LIECHTY. I don't think we are advocating predicting financial crises. We are advocating trying to understand the system so we can minimize the chance of crisis happening; to mitigate the impact of those crises. But to your question, I can't.

But I don't think that is the right answer. I could give you a different analogy, if you would like.

Imagine—okay. I will try my third analogy and see if it works.

Now, imagine that you had people in a shopping mall and you were trying to predict the behavior and the flow of people within the shopping mall. Why do they go to a shopping mall? All kinds of reasons, just kind of like trying to predict the price in the marketplace, right? It is very hard. They come in, the best you can do, typically, is some kind of statistical analysis.

But if you know the structure of the shopping mall and suddenly there is an explosion and a fire in one part and you know the position of everybody who is in that shopping mall, you would have a very good idea of what they are going to try to do in these extreme situations, and you can understand and predict when that is going to actually cause problems—exactly which person is going to fall, which person is going to get hurt, or how they are going to get hurt, and how the systems can be brought down, that may be not very hard to predict in this scenario.

But certainly understanding the system like that would help in understanding how to manage that kind of a crisis, for example, when Lehman Brothers failed, they really had no idea of the interconnection to that institution and how its failure would propagate over into commercial paper market.

Mr. CANSECO. Let me interrupt you there and ask you this, because I think, it is very important what you are saying. Right now,

would you consider the debt crisis that we have in this country as a predictable crisis?

Mr. LIECHTY. It is a predictable crisis, I think it is a political negotiation that makes me very nervous.

Mr. CANSECO. No. Is it a crisis that this country is in debt?

Mr. LIECHTY. Is it is a crisis this country is in debt?

Mr. CANSECO. And as deep as—

Mr. LIECHTY. —a crisis. Let me—

Mr. CANSECO. No, but is it a crisis?

Mr. LIECHTY. A working definition of crisis is when the financial markets are disrupted to the point that the government has to intervene to keep them going. There can be a small crisis. There can be firms who have fought and failed, but when we have a systemic event, it is because we don't have commercial paper markets because we don't have access to mortgages. If the government defaults on their debt—

Mr. CANSECO. Or you don't believe that the government, right now, is in a debt crisis?

Mr. LIECHTY. I think—

Mr. CANSECO. We are at $14.3 trillion in debt.

Mr. LIECHTY. I am not a macroeconomist, I am not—

Mr. CANSECO. Okay.

Mr. LIECHTY. I don't feel comfortable or qualified to give you—I certainly say if we default on the debt on August 2nd, that makes me very nervous.

Mr. CANSECO. But is the fact that this government owes $14.3 trillion, is that a crisis for this country?

Mr. LIECHTY. It is a very dangerous situation.

Mr. CANSECO. It is. It is a crisis, so it is predictable, right?

Mr. LIECHTY. I think the crisis that we would like to predict is how a default could propagate.

Mr. CANSECO. Right. And therefore, we need to do something about it. Is that right?

Thank you. Mr. Chairman, my time has expired.

Chairman NEUGEBAUER. The members of the subcommittee would like to thank the witnesses from both of the panels for your time today. We understand and recognize that your time is very valuable. The information, your testimony, has been helpful to us as we do our jobs here at the committee and in the Congress, so we appreciate that.

The Chair notes that some members may have additional questions for this panel, which they may wish to submit in writing. Without objection, the hearing record will remain open for 30 days for members to submit written questions to these witnesses and to place their responses in the record. The meeting is adjourned.

Thank you.

[Whereupon, at 5:38 p.m., the hearing was adjourned.

A P P E N D I X

July 14, 2011

Opening Statement
Chairman Randy Neugebauer
Oversight & Investigations Subcommittee

"Oversight of the Office of Financial Research and the Financial Stability Oversight Council"

July 14, 2011

As you all know, when you construct a puzzle it is best to lay all the pieces out on a table and use the picture printed on the box as a guide. When discussing implementation of Dodd-Frank I like to use the construction of a puzzle as an analogy. You can think of all of the rulemakings and new regulatory mandates as pieces in a 250 piece puzzle. Unfortunately, implementation of Dodd-Frank is occurring without knowledge of what the end goal is – or following the puzzle analogy, without the picture printed on the box. This hearing today will focus on one piece of the Dodd-Frank puzzle, the Office of Financial Research (OFR) - a piece that is projected to cost the American taxpayers $108 million by this time next year.

OFR is less talked about than the Consumer Financial Protection Bureau (CFPB), but for all intents and purposes they are identical twins. OFR is just as powerful and intrusive as the CFPB, the other independent agency created by Dodd-Frank. And similar to CFPB, OFR is not accountable to Congress, can raise its own money, and is led by a powerful Director appointed by the President and confirmed by the Senate.

The extremely broad mandate of OFR is deeply troubling and Orwellian in nature. It has sweeping authority to collect information and compel financial companies to provide "all data necessary to carry-out [its] duties." This broad mandate is fully backed by subpoena power and limitless assessment authority to fund its operations. As a result, OFR will have unprecedented, real-time access to a wealth of personal and proprietary corporate data – all in the name of an unattainable and fundamentally flawed goal of "preventing" the next financial crisis.

OFR's mandate also duplicates existing data collection efforts by prudential regulators. Without strong leadership from the Department of the Treasury – as Chairman of FSOC – to limit overlap and duplication, businesses will be faced with another layer of compliance costs that will undoubtedly harm the growth of the U.S. economy. To date, FSOC's deficiencies in Dodd-Frank rulemaking coordination leave little hope that OFR is capable of leading an efficient and coordinated data collection effort that they will promise before our Committee today.

And finally, OFR - through exercising its broad mandate- will control a central database with a treasure trove of proprietary corporate data and personal information of U.S. consumers. Recent hacks into the CIA, Senate, and IMF show that government cyber defense systems are far from impenetrable. The information collected by OFR will be the most sensitive financial data available and I am very concerned about the vulnerability of that data. Armed with this sort of information, an individual or group could manipulate financial markets for profit. More ominously, if an individual, group, or hostile nation were able to obtain the financial data collected by OFR, the potential for systemic harm to the U.S. economy could be catastrophic.

In closing, the creation of OFR is indicative of the mentality by some of my friends on the other side of the aisle: that 1) unfettered access to information will allow the government to prevent the next financial crisis; and 2) that government can take the risk out of risk taking. I cannot disagree more. I look forward to hearing from our witnesses today and I hope that through this hearing we send an important message regarding the need for strong leadership by the Chairman of the Financial Stability Oversight Council.

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EMBARGOED UNTIL DELIVERY

Testimony of Richard Berner, U.S. Department of the Treasury
House Financial Services Subcommittee on Oversight and Investigations
Hearing on "Oversight of the Office of Financial Research and the Financial Stability Oversight Council"
July 14, 2011, 2:00pm

Introduction

Chairman Neugebauer, Ranking Member Capuano and Members of the Subcommittee, my name is Richard Berner. I recently joined the U.S. Department of the Treasury as Counselor to the Secretary, advising him on financial matters. The Secretary has asked me to help him set up the Office of Financial Research ("OFR" or "Office"). In that capacity, I am pleased to testify on the mission of the OFR, on the progress we have made in launching it, and on the initiatives that we have underway to achieve our objectives.

History

First, some background. The financial crisis made clear that the regulation and oversight of the financial services industry was deficient in many respects. Regulators underestimated the extent of leverage and maturity mismatch. We overlooked threats to financial stability that spread horizontally across interconnected institutions and markets. Nonbank financial institutions and activities were inadequately regulated. Consequently, we underestimated the size of risk and the way shocks could spread across the financial system and impair its functioning, with severe consequences for the economy.

Likewise, the crisis also revealed the deficiencies in the data available to monitor the financial system. Financial data we collected were either too aggregated, too limited in scope, too out of date, or otherwise incomplete. Regulators and policymakers thus lacked the timely and accurate

information needed to monitor emerging threats to financial stability, to develop tools needed to mitigate them, and to respond to events during the crisis. The crisis demonstrated the need to reform the data collection and validation process, and that standardizing the way we describe financial data would be critical to improving their utility to regulators and market participants.

Mandate and Mission

The Dodd-Frank Act addresses many of these shortcomings. It created the Financial Stability Oversight Council ("FSOC" or "Council") to identify and respond to threats to the stability of the U.S. financial system and economyand to promote market discipline. It also created the OFR to function as a shared providerof data and analysis for the FSOC and its member agencies.

The OFR is working diligently to satisfy its statutory mandates and mission:

- To collect data on behalf of the Council, and to provide them to the Council and member agencies;
- To standardize the types and format of data collected and reported;
- To perform applied and essential long-term research; and
- To develop tools for risk measurement and monitoring.

As Dodd-Frank requires, the OFR will not duplicate efforts that already exist in the Federal financial regulatory community. Rather, the OFR will leverage existing resources in information, research, human capital, and technology whenever possible in order to enhance existing capabilities and to reduce existing overlap among FSOC members. Put simply, we aim to create the "connective tissue" needed to fill gaps in both information and analytics.

I am pleased to report that we are making significant progress towards these objectives. In my testimony today, I will discuss how the OFR's plans and projects already underway will further that progress. First, I will discuss OFR's work on improving financial data. Next, I will discuss the Office's research strategy. I will conclude my testimony with an update on important tangible aspects of building the Office: staffing, and information security.

Improving Financial Data

On data, the OFR's promise is to collect and make available, to regulators and to the public, more and better financial data while reducing the regulatory reporting burden. That's a tall order, but three aspects of the OFR's approach will in our view make that promise a reality. First, as I have already discussed, the OFR will not duplicate data collection efforts; rather it will fill in the information gaps in the regulators' data toolbox I described earlier. Second, the OFR will collaborate with and provide data services to Federal financial regulators, creating economies of scale, lowering operating costs, and eliminating redundant reporting requirements across the regulatory system. Finally, and most important, the OFR will promote standards for financial data that will make it easier for firms to link and aggregate information at a variety of levels for a variety of needs. As a result, they will be able to use the same basic data both for reporting to regulators and for managing their business.

Benefits of Data Standardization

Standardization is important for improving the quality and transparency of financial data. It will make for more consistent and complete reporting, so data available to regulators will be more accurate, more comparable across firms and industries, and easier to use. Data standards will

also facilitate firm risk management, because risk managers will be able to aggregate individual transactions and positions into a complete and accurate picture of the enterprise. They will improve market discipline by giving market participants a more transparent pictureof firms' activities. Finally, standardization will improve the ability of regulators to respond quickly as needed to new developments that could affect financial stability.

A linchpin for data standardization is the legal entity identification (LEI) initiative, which is moving forward quickly withsupport from both the industry and global regulators. In November of 2010 the OFR team launched and sought public comment on a public-private initiative to create a global standard for uniquely identifying parties to financial transactions. This will improve the abilities of regulators and firms to manage counterparty risk, assure the integrity of business practices, and lower processing costs for financial transactions. For example, an international group of securities regulators and supervisors of payment and settlement systems recently recognized the value of an LEI inidentifying risks in derivatives transactions, a key contributor to the recent crisis.

In the United States, the OFR is working with the SEC and CFTC to ensure that a new LEI standard will help satisfy their requirements for swap transaction reporting, and FDIC needs for its resolutions work. We are also working with U.S. and foreign financial regulators to define consistent requirements for the LEI, including an acceptable operating model and governance structure.This is a good example of the way the OFR is facilitating collaboration and consistency across the members of the FSOC and international regulators.

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The private sector and International Organization for Standardization (ISO)have made significant progress in advancing the LEI initiative. Key financial trade associations and their members formed a global coalition to solicit input from various market participants, debate andproduce a common set of requirements for an LEI,and develop a recommendation to provideto regulators for potential solution providers. This coalition published their recommendation this week. That work and their continued dedication will propel the initiative forward. ISO—which has deep expertise in developing standards for the financial sector and has broad international representation from industry and regulators—is part of the solution that financial trade associations recommended. ISO has put forward a new standard called ISO 17442 and is moving forward in implementation so as to be consistent with public and private requirements.

We believe that a multilateral forum, such the Financial Stability Board, could bring these work streams together and establish a dialogue among regulators and industry to establish a global LEI embraced by all. We are working to make that a reality.

We see the LEI initiativeas a template for future standardization efforts. Given the positive response from domestic and international industry and officials, we have begun looking at other ways in which the OFR could encouragedata standardization – such as across financial instruments -- which will allow for less costly and more accurate data collection.

Data Collection

The Dodd-Frank Act lays out broad principles and gives appropriate authority to the OFR for data collection. We will be thoughtful in interpreting those principles and we will exercise that

authority responsibly. Collaboration with FSOC member agencies to determine the scope and format for data collectionand to eliminate redundancies is critical.

Let me be clear: The OFR will not collect data for the sake of collecting data; rather the scope of the data we collect will be drivenby the analytical frameworks developed to address policy needs. Where there are gaps preventing us from conducting that analysis, the OFR and FSOC member agencies will determine how to fill them efficiently.

Work to identify such data gaps is already underway. Staff at the OFR and FSOC member agencies are cataloguing data used and collected by financial regulators. The results of this project will help the OFR,the FSOC, and its member agencies identify data gaps and potentially redundant data calls. With this information, we will be better able to coordinate, simplify, and harmonize future data collection in a manner consistent with the President's Regulatory Review Executive Order. Going forward, the FSOC Data Committee will be the venue for discussions of data-related issues in the FSOC, where member agencies will lay the groundwork for future projects to improve access to and the quality of financial data.

Research

The OFR will prosecute our research agenda in support of its statutory requirements. The OFR will produce, promote and sponsor financial research aimed at developing the analytical tools we need to assess threats to financial stability. The OFR is supporting the work of the FSOC in assessing potential risks and by providing data and analysis in support of the FSOC's work to develop further guidance regarding determinations of whether nonbank financial companies

should be subject to supervision by the Federal Reserve and heightened prudential standards. The OFR is working to establish forums and networks to allow experts within and outside the regulatory system to contribute to its mission. Later this year, the OFR and the FSOC will host a conference that brings together top academics in finance, economics, and computer science along with members of industry and the regulatory community to discuss systemic risk monitoring and potential responses. The OFR is working to establish fellowship and visiting scholar programs. In addition to its research on topics related to financial stability, the OFR will work with academia and the private sector to promote best practices in risk management through publications and forums.

Building the Office

Staffing

First, the search for an OFR Director is ongoing. In the absence of a Director, the Secretary of the Treasury has authority to direct the planning and implementation of the Office. The Secretary is actively engaged in that effort and, as his advisor, I meet with him and other senior leadership regularly to report progress and receive direction.

In the meantime, the high level of talent among the first employees of the OFR is an important measure of our progress. We are hiring professionals with deep industry experience in data management, technology, and risk management to establish the OFR Data Center, the organization's operations arm. As I noted earlier, thatarm will be responsible for standardizing reporting, developing data, analytical tools and IT solutions to support the work ofthe OFR's research arm, the Council, and its member agencies. Their extensive industry experience will

help ensure that the organization will collect data in a systematic, structured, and non-duplicative way, with clear benefits to and inputs from industry and regulators.

Two examples are John Bottega and Dessa Glasser. Mr. Bottega is Chief Data Officer for the Markets Division of the Federal Reserve Bank of New York, and he recently joined the OFR on assignment as Senior Advisor to assist in establishing the OFR Data Center. Mr. Bottega has over 30 years of experience managing and transforming reference data functionsand is a recognized thought leader in the data management field. Ms. Glasser is the OFR's Chief Business Officer and is responsible for information standards, business analysis, project management, relationship management, and data administration. Ms. Glasser has over 20 years of experience in the financial services industry, including risk management, business development, analytics and systems. Ms. Glasser holds a Ph.D. in Economics and is widely published in fixed income and equity analytics and portfolio management. Both Mr. Bottega and Ms. Glasser have extensive experience building organizations with significant data and analytical needs.

We also are making progress in establishing the OFR's research team, which will include academics and analysts from a variety of disciplines. The interdisciplinary research team will add significant capacity to the Council's ability to measure and analyze both factors contributing to and threats to financial stability.

Mark Flannery, who recently joined as Senior Advisor, is an example of the research talent helping to build the Research and Analysis Center. Professor Flannery is the Bank of America

Eminent Scholar in Finance at the University of Florida. Healso has extensive experience building research teams in the public sector and in evaluating risks in the financial system and developing policy responses at the FDIC and the Federal Reserve Bank of New York.

Information Security

The OFR will adopt information security measures that are consistent with current best practices in both government and private industry. We are well aware of the threats to data security from the "black hat" hacker community. Preserving the security and integrity of OFR's data is a mission-critical objective that we are prosecuting in three basic ways.

First, the OFR is developing policies on post-employment restrictions. By limiting where an OFR employee may work after separation, dependent on their access to sensitive information while employed by the OFR, these policies will prevent misuse of valuable and confidential data.

Second, the OFR is developing robust governance policies and protocols that include rules restricting use of data and information systems as well as systems of controls for issuing and monitoring user-level permissions for data accessible to the OFR.

Third, the OFR is establishing information systems that protect data from unauthorized outside access and limit OFR employees' access to sensitive information consistent with their responsibilities. Systems to ensure the integrity of data will be in place and tested well before the OFR collects any sensitive information. We are looking at alternative approaches to

organizational design that could include the complete physical separation of systems and processes designated for handling confidential information from those for handling non-proprietary information.

We will not compromise our data security goals, and are prioritizing our efforts to achieve them in a cost-effective way.

Conclusion

Mr. Chairman and members of the Subcommittee, the Dodd-Frank Act created the OFR to help the FSOC promote financial stability and limit the effects on the nation's economy of financial crises. Better data and analysis cannot prevent financial shocks, but we believe our efforts will help policymakers and market participants understand their origins, and thus help reduce their frequency and magnitude. Those efforts will continue to deliver on our mandate toimprove the quality, integrity, and availability of financial data and to promote and produce research that helps us identify and address threats to financial stability.

Thank youfor your attention and I will be happy to answer any questions.

Statement of Dilip Krishna,

Of Teradata Corporation

Testimony Before the

House Financial Services
Subcommittee on Oversight & Investigations

On

July 14, 2011

In

Rayburn House Office Building, Room 2128

At

2:00 P.M.

A Hearing entitled:

"Oversight of the Office of Financial Research and Financial Stability Oversight Council"

Chairman Neugebauer, Ranking Member Capuano, and members of the Subcommittee, my name is Dilip Krishna representing Teradata Corporation. Thank you for the invitation to offer testimony today before your Subcommittee.

Teradata, the company I represent, is among the world's largest companies focused solely on data analytics and data warehousing. Our technology allows business and government to leverage detail-level data for both tactical decision making and strategic insight, to recognize emerging trends and respond quickly and appropriately. As an example, many of Teradata's customers apply analytic techniques to detect and respond in seconds to fraudulent activity, allowing them to save hundreds of millions of dollars per year. In many cases, Teradata's customers have used analytic technology to completely transform the way they do business.

Our government customers within the US include the Centers for Medicare and Medicaid Services, the U.S. Air Force, the US Transportation Command, the US Department of Justice, the US Postal Service, the USDA Risk Management Agency and the States of Texas, California, New Jersey, Iowa, Oklahoma, Maryland and Missouri to name a few. Over 50% of the world's largest financial companies use Teradata for strategic purposes including risk management and customer management, with an extension to tactical areas such as customer service enhancement. A Teradata database has been implemented in more than 900 major corporations in every business sector so that on any given business day in almost every industry throughout the world, well over a million users access a Teradata warehouse as they make decisions.

Teradata's Position – Using Technology for Financial Oversight

The recent economic crisis has taught us that our financial institutions are truly a national asset, the abuse of which is to the detriment of every American. Responsibly managed financial institutions, of which there are many, are the bulwark of our economic system. At the same time, the irresponsible behavior of some in the industry has cost the American taxpayer dearly and eroded our nation's position globally.

Thorough and effective oversight of the financial system is therefore critical to our nation's success. At the same time, we all want efficient government that will contribute to our competitiveness globally and ensure a leadership position internationally. And critically, we need to ensure that the emerging system of financial oversight continues to allow the financial sector to provide the high level of innovation and leadership that has propelled the prosperity of our market-based system for over two centuries. Teradata's experience over the past 30 years has shown us that information technology is the catalyst that can create smaller, but smarter governments. All around us, we see evidence that the proper use of technology can generate immensely valuable results while at the same time cost-effectively improving efficiency, productivity and customer service. Now is the time to apply technology to address this most important issue of systemic oversight.

The good news is that a vast amount of work has already been done with technology in finance. Technology has advanced to the point where the technical challenges of oversight of large, complex financial enterprises to manage risks is now feasible. In fact, large banks and other financial institutions around the globe routinely use data management and analytics technology for financial risk management.

Use of Data and Analytics in Financial Institutions

Financial institutions have been using analytical information technology to improve the efficiency of their businesses for quite some time. Information technology makes it possible for companies to collect, merge and analyze very large amounts of customer data in real time to better and more efficiently serve their customers, leading to

competitive advantage. Technology has also made it possible for financial firms to manage their risks effectively while managing substantial growth and consolidation in their business lines. For example, banks are able to serve a growing number of customers even as they keep a tight control on fraud through the use of advanced, real-time information technology that combines data on current activity and provides insight into and comparisons with historic trends and behaviors. Systems have also been developed that give them a view to their firm-wide risk exposure on a frequent basis.

It may well be asked why, with all these advanced systems, these financial firms experienced such unprecedented losses during the economic crisis. The answer is simply that like any other tool, technology can only be useful if it is employed properly. I will explain in more detail later in my testimony, but this is especially important in the implementation of the Office of Financial Research.

Transparency and Financial Oversight

Transparency is the cornerstone of financial oversight and relies on two principles:

1. The goals of information disclosure are well understood: Clearly determined goals of disclosure enable financial institutions to easily disclose the right sort of information required for oversight. At the same time, regulators and by extension, the public at large can get an unambiguous understanding of the strength of the regulated institutions. It is critically important that the information be timely and accurate so that appropriate action may be taken if warranted.

2. The information assembly line is robust: Data needs to be complete and detailed while it is transformed into useful information as it moves from the transaction systems to the point of disclosure. Confidence in the reported information can only be gained when there is confidence in the robustness of the assembly line (for example, via knowledge that all changes during the process of creating the information are fully audited and controlled).

The Information Assembly Line

Information is knowledge derived from raw data. Data collected from across the financial sector for the purposes of oversight must be interpreted before it is useful. A series of steps is required to cleanse data before it can be used and interpreted. Once data is conformed in this manner, it can be analyzed in ways consistent with the goals of financial oversight.

The process is similar to that within a factory assembly line. The raw material is data that is collected from across the financial landscape, including data already being submitted by financial institutions to regulators as well as relevant market and statistical

data from a number of sources. Data then needs to be cleansed and otherwise modified so that data from all sources are brought into parity. This can be likened to a manufacturing process where raw material is processed to deliver finished goods – in this case the output is information. Another similarity is that in the manufacturing process, the product quality depends heavily on the quality of the raw materials. Data quality and a solid data foundation is a critical but often overlooked component of this information assembly line. A fortunate departure from this analogy is that the "raw material" of input data is still available after processing, so it can be re-used repeatedly for any other analysis that is conceived in the future.

The finished goods must be stored in a warehouse before being distributed – the Enterprise Data Warehouse. The data warehouse then serves to distribute information both for monitoring and predictive analysis. For example, statistical analysis software can be used to reduce large amounts of data to easily interpretable figures. Financial models can be developed to run periodically against data in the warehouse with the results of these models being used in a monitoring process. Finally, information must be distributed to regulatory authorities and other information consumers. This discipline, called Data Visualization, specializes in aggregating and presenting information in tangible ways that can bring trends and patterns to life.

This data assembly line is becoming accepted as a common way of creating processed information for improved decision making from multiple sources of data. Technology firms from across the industry espouse the same vision, and their customers in every industry are responding by implementing this vision in their enterprises.

Information Needs of Financial Oversight

Financial oversight critically depends on a deep understanding of the situation at hand at all times. There are two broad aspects to be addressed – monitoring and predictive analysis.

An efficient system for monitoring known risks is essential if we are not to repeat the painful and costly lessons of history. We have learned a lot from past financial crises, and financial technology provides us with tools to automatically detect, and in some cases compensate for, situations similar to the ones we have seen before. A monitoring system expects to see the same data within pre-defined periods of time such as every day, every month or every quarter. The mathematical models that are run against this data must be consistent to enable periodic comparisons. Unexpected deviations in the output of these models act as warning indicators. Once warnings are seen the system must allow the ability for rapid, flexible research into the root cause of the problem so proactive steps may be taken while still impactful. Data used for monitoring must be prepared to "industrial-strength" standards of quality and timeliness.

But just monitoring *known* risks is not enough. Regulators will only fulfill their mandate if they are able to look for and head-off *new* risks that have not been encountered before. This is especially critical in the dynamic and ever-changing environment that is the norm in the modern financial landscape. Therefore, it is very important for an oversight mechanism to also constantly be on the lookout via Predictive Analysis for risks that are not known. Predictive risk analysis can be likened to scientific research. Economists and regulators looking for new problems use a "test-and-learn" process. That is to say, they first have a hunch of what can go wrong. Then they use information to either confirm or invalidate their hypothesis. The information system must therefore have immense flexibility and agility to answer their questions "at the speed of thought". Furthermore, the system must serve up this information *without having a pre-conceived notion of what they will want to know about*. The system must also be able to incorporate information from new sources on demand.

A robust and efficient information assembly line is critical to both functions. However, these two requirements of oversight have conflicting needs – industrial-strength robustness vs. lab-environment flexibility. What is exciting about today's information technology capabilities is that both of these needs can be satisfied by the same analytic system to at once support a complete, robust oversight environment that is also cost-effective. Leading financial companies are using such systems to stop fraud in real-time (via monitoring) as well as enabling users (via predictive analysis) to develop newer, more effective models to stop the next-generation of fraudsters, both tasks being performed *on the same system with the same information* which reduces conflicting viewpoints and connects the dots between transactions, trends and risk.

The Office of Financial Research

The Office of Financial Research has been tasked with a pivotal role in financial oversight by creating a robust data and analytic capability to the regulatory community and the Financial Stability Oversight Council. Systemic risk, as we have seen all too clearly, can threaten not the financial system but indeed, the underpinnings of the global economy as well. Yet individual financial institutions cannot realistically possess the knowledge of the overall economy to predict and prevent systemic risk. Not only would this be prohibitively expensive to these institutions, but it would also require them to know potentially sensitive information about one another.

Therefore, it only makes sense that a governmental entity, with a clearly determined mandate and public accountability, be responsible for the task. The Office of Financial Research is eminently suited to the job of collecting data and conducting research under the financial reform act. The Office has been given a sufficient mandate to enable it to achieve the data and analytic capability required for financial oversight and the authorities – under Section 154 of the Act – to achieve this goal. I believe that the Office of Financial Research, in short, is a critical component to the task of making our financial system safer.

During the Dodd/Frank debate, Teradata along with a group of other IT companies and interest groups worked with Congressman King and Congresswoman Maloney on several amendments to clarify the OFR's structure and direction. Unfortunately those amendments were not accepted and regardless of the outcome, Congressman King and Congresswoman Maloney, both members of the Full Committee, have worked tirelessly to promote the use of technology in financial oversight. Additionally, Chairman Issa has been a leader in this area as well and is currently proposing a DATA bill which addresses many of the same concerns for the need to employ information technology more strategically, beginning with streamlining Federal IT systems and harmonizing procurement processes.

Now that the OFR has been established in the Dodd/Frank legislation, it is important to understand that a journey of one thousand miles begins with a single step. That first step must be where we are today. And where we are today is this: The Research and Analysis Center, the entity responsible for developing a viable systemic risk analysis framework for the Financial Stability Oversight Council, depends upon the Data Center for establishing a strong data foundation upon which to build its analytic capabilities. I offer the following comments in support of the establishment and development of the Data Center based on practices that Teradata has learned from working with many of the world's largest data warehouses.

Several financial institutions have, for their own risk management and financial reporting purposes, developed data repositories similar to that envisioned for the OFR. The common principle employed by the most successful of such efforts is to "Think big but start small". They combine an ambitious long-term agenda with a small, well-scoped initial phase of the program that is targeted to deliver to a specific need. The mandate of the Office is nothing if not ambitious – what is needed now is for it to rapidly deploy a tightly scoped initial version of the Data Center. The initial version must be designed to deliver real value to its stakeholders, but also build a solid foundation – with the flexibility to evolve toward the longer term vision and future, undetermined needs - upon which the full potential of the Data Center can be realized.

The first task of a data resource like the Data Center is to quickly become useful. Data problems abound so the area is rich in opportunities for usefulness. Robust financial reference data is necessary for accurate risk analysis and reporting, but this has been consistently difficult to create and maintain across the industry. The failure to do so is one of standardization, not technology. The Office has been given the authority, as well as the responsibility, to mandate these standards. In our opinion, this is a critical first step to the process of making the Office a critical and useful tool of public policy. The benefits of proper, standardized reference data go well beyond allowing the Research Center capabilities in systemic risk analysis and monitoring, however. The Office can supply this data – most of which is of a non-competitive nature anyway – to financial

institutions themselves to improve their risk management efforts and make the system doubly secure.

A key principle is to avoid in setting these standards is making the perfect the enemy of the good. The vast majority of issues surrounding reference data are not controversial. In fact, much of the financial instrument and financial company reference data is already available via data vendors. I would urge the Office to leverage existing databases to the extent possible, with the main focus of initial effort being to quickly create a single declared set of reference data available for the use by the Research Center as well as financial institutions themselves providing the appropriate security safeguards are put in place. This single authoritative source of reference data can then be perfected over time.

But reference data is not enough. Risk analysis in the financial sector requires the use of detailed positional, and in some cases transaction, data on a periodic basis. The same principle must be applied to this data as well. There are many barriers to perfectly standardizing position and transaction data across all the major systemically important financial institutions. None of these barriers, in our opinion, are formidable enough to prevent the Office from using what is available for gross systemic risk computations. In fact, using position and transaction data for risk analysis will act as a catalyst for improving the quality of such data over time.

If the Data Center is to fulfill its mandate in the long term, it must be collect all the data it requires on a regular basis. In our experience, data analysis efforts can only be successful if disciplines are in place to integrate and aggregate data on a periodic basis. In fact, this practice is the essential lubricant for a well-oiled data machine. Therefore I would strongly argue against any suggestion that the Office should restrict itself to standard-setting to the exclusion of physically collecting data on a periodic basis wherever such data is available – whether from member agencies or from financial companies themselves.

A data repository such as this would contain much sensitive data. Specifically, positions and transactions submitted by financial institutions could have far-reaching competitive consequences if placed in the wrong hands. The malicious potential use of data collected on private citizens can also be significant. Therefore, data security must be taken very seriously by the Office. The so-called "CIA Triad" is a useful framework for a security program, and encompasses Confidentiality (preventing access to unauthorized data), Integrity (preventing modification of unauthorized data) and Availability (preventing disruption of access of data to authorized users). The importance of data security cannot be over-stated – I would strongly suggest that effort to secure data collected by the Office should be at least on par with the effort to collect the data itself.

Leveraging Information Technology for Financial Oversight

The good news is that the technology and best-practices required to achieve all these goals is available. The age of Big Data has arrived with the result that all aspects of technology and techniques necessary to create an efficient information assembly line are being perfected at this time. For example, there are a number of high-performance offerings that deal with the quality of raw data. Technology for data warehousing has developed to the extent that it is not uncommon to see systems processing truly massive amounts of data, yet are able to react in seconds to customer activity. Finally, analytics and visualization technologies have also advanced significantly so that complex calculations can be completed and presented extremely rapidly, in time-scales considered impossible just a few years ago. Not only are the capabilities improving at a tremendous rate, but costs are also dropping precipitously. Indeed, these changes are rapidly changing the landscape of American business. Many of today's most successful companies – in a range of industries including Manufacturing, Finance and Social-networking - base their very businesses on such data technology.

Chairman Neugebauer and members of the Subcommittee, the time has never been better for leveraging information technology to create a strong system of financial oversight that is also cost effective. *Smarter government leads to smaller government – a savings for the nation's taxpayers.*

I believe that the Office of Financial Research will play a critical role in preventing the kind of catastrophic systemic failure as we experienced in 2008. However, the Office will need to start playing a relevant role quickly. The best way for it to do so is to leverage tried-and-true data management methods and analytic technologies to rapidly form the nucleus of a database of reference, position and transaction data to support the practice of systemic risk analysis.

Again, thank you for the opportunity to testify this afternoon. I look forward to answering your questions.

Testimony
Before the Subcommittee on Oversight & Investigations in the House Financial Services Committee
United States House of Representatives

For Release on Delivery
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9:30 a.m. EST
Wednesday
July 13, 2011

Oversight of the Office of Financial Research & Financial Stability Oversight Council

Statement of

John Liechty
Professor of Marketing and Statistics,
Director of the Center for the Study of Global Financial Stability,
Smeal College of Business, Penn State University

Mr. Chairman and Members of the Subcommittee:

I would like to thank you for the opportunity to appear before you to discuss the importance of ensuring that our financial regulators and more importantly our financial market participants are given the ability to understand, monitor and ultimately reduce system-wide risks to our financial system.

There are three main points that I would like to make in my testimony:

Financial stability requires transparency – the ability for regulators to both see through the counterparty network and the ability to see through asset backed, financial products to the underlying assets is an important fundamental component that is needed in order to be able to monitor the stability of the financial system. Transparency will require universally accepted identifiers and reporting standards – in essence it will require banks to get their back-offices in order. The investments required to improve transparency will not only result in improved macro-prudential regulation; they will result in improved risk management and substantial operational savings for the industry.

We face a significant scientific task - not only do we not have the data in place, we have not done the science needed to understand system-wide risks to the financial system. In many ways, financial regulators are like the weather services, before the National Oceanic and Atmospheric Administration (NOAA) was established. NOAA was given the mandate to i) collect new data, ii) develop new models for identifying extreme events and improving weather forecasts and iii) conduct the science necessary to understand the weather systems and build these next generation models. The Financial Services Oversight Council (FSOC) and the Office of Financial Research (OFR) face similar challenges and have been given a similar mandate.

We cannot afford to fail – we live in a leveraged economy where the resilience and growth potential of the economy depends on having both an innovative and stable financial system. Innovation often leads to instability, unless the appropriate infrastructure is in place to provide stability. The FSOC and OFR offer a way forward to build this infrastructure. The risk that we live with, if we fail to have the proper oversight to provide a stable system, is not just the devastating economic impact that would come from another financial crisis of the magnitude of the 2008 crisis, but more importantly the political reality that will follow. If we can't get this right and there is another crisis, then there is a very real risk that the political response may result in a response that adversly affects the finanical market's ability to innovate.

Origins of the Office of Financial Research

Before providing details on these three points, I would like to give a brief narrative about the origins of the Office of Financial Research. The idea for an OFR was born at a February 2009 workshop, which was sponsored jointly by the Office of the Comptroller of the Currency and the National Institute of Statistical Sciences. As a participant at this workshop, I was part of a small group of academics and regulators who came up with the idea of creating a National Institute of Finance.

The workshop was focused on financial risk and statistics and while the title sounded promising and the workshop was held shortly after the crisis of 2008, the discussions were all about understanding risks to individual institutions and ignored the broader system-wide risks. As a participant, I asked

about the availability of data on the entire financial system, in order to begin to model and understand the potential threats to financial stability. I was told that no one had data on the entire system and that it was unlikely that this type of data could be collected, without new legislative authority and additional resources. I joined a small group of workshop participants on the second day of the workshop and we sketched an outline for a National Institute of Finance, which would have the authority to collect system wide data, the capability to analyze this data and responsibility and resources to engage in the science needed to be able to credibly model the financial system during times of stress.

This group evolved into the Committed to Establish the National Institute of Finance (see www.ce-nif.org), which eventually included over 130 academics, practitioners and financial regulators from the US. This was a volunteer group of concerned citizens who saw a compelling national need and helped organize a legislative response. The group never formally organized and never raised any money. It actively engaged the main regulators, policy makers and legislators and eventually succeeded in having the Office of Financial Research (which is very similar to the proposed National Institute of Finance - see S.3005: The National Institute of Finance Act of 2010), included in the Dodd Frank Act of 2010; for more details, a short description of this effort was detailed in the Sep. 15, 2010 Wall Street Journal article, "How a Street Watchdog Got its Bite".)

We have been flying blind

In his opening, verbal remarks to the Senate Banking committee on June 18, 2009, while introducing the legislative framework, which eventually became the Dodd-Frank Act of 2010, Secretary Geithner made the following admission.

" If this crisis has taught us anything, it has taught us that risk to our system can come from almost any quarter. We must be able to look in every corner and across the horizon for dangers *and our system was not able to do that.*" (emphasis added)

This remark is especially relevant as Secretary Geithner had previously served as the President of the Federal Reserve Bank of New York and was intimately involved in the efforts to advert and then minimize the impact of the 2008 financial crisis. Our regulators and senior policy makers did not have any real idea of the impact of letting Lehman Brother fail and, potentially even more troubling, they did not even have an awareness of the large concentration of credit default swap position that AIG Financial Products held until the very weekend that Lehmann Brother's was failing. They were in essence flying blind.

The first step that regulators need to take to ensure that they are able to monitor financial system is to make sure that they can measure the system. The back offices of most financial institutions are in disarray. While many financial institutions are highly sophisticated and employee exceptionally talented individuals, their efforts have largely been on making money and not on improving their operations. To illustrate, there are very few financial institutions that can routinely capture all of their transactions in an electronic format. As a result comprehensive risk reports (reports which reflect all of a firms positions) are time-consuming to produce and intermittently available to senior managers.

There are obvious concerns about the level of reporting that will be required from industry by the members of the FSOC and the OFR and there is a clear desire by everyone to ensure that these reporting burdens are kept at a minimum. There are essentially three different types of data that can be requested by regulators. The first level is accounting data – essentially balance sheet information that summarizes cash flows. It is important to note that when financial products (e.g. derivative products) are represented in accounting summaries, there reported value reflect the firms valuations (based on market data and internal models). While this is often reasonable, particularly with respect to assets that are traded in liquid markets, there are clear limitations to this type of data. For example, accounting summaries do not reflect how cash flows might change in the future, under different market conditions (they simply take a weighted average over possible events). For example, bank liquidity backstops or contracts to provide short-term liquidity to Structure Investment Vehicles (SIVs) were routinely valued at near zero. This was clearly a gross understatement of their value once Lehman brothers collapsed. Accounting summaries, on their own, are not likely to be sufficient for understanding systemic risk.

The other types of data that could be required by regulators and the OFR would include internal risk reports and transaction and position data. The only risk system outputs that are currently being reported are the stress-test reports that are required from the Systemic Important Financial Institutions (SIFIs). Currently, there are no regulators that routinely require detailed transaction and position data. The OFR is required to collect transaction and position data, in addition to other data that either the FSOC or the Director of the OFR deems necessary to be able to assess the stability of the financial system. To the extent that the OFR needs accounting data to fulfill its mandate, it will need to work closely with each financial institution's primary regulator to avoid dual reporting. With regards to detailed transaction and position data, the OFR will be collecting data that has never been collected in a systematic manner by regulators; hence these data collection efforts will not represent a dual reporting burden. In fact, if the OFR effectively uses its authorities, it will not only be able to provide the FSOC with this detailed data, which is essential to monitoring the financial system, it will facilitate changes throughout the financial system that will result in dramatic improvements in risk management and deliver substantial operational savings to market participants.

Creating a single, consistent source of identifiers (unique ids) for legal entities and financial products is a and important step to improving data management in the financial markets. A second important step would be the creation of a universal set of data models or reporting standards for legal entities and transactions and positions. Once these identifiers and reporting standards are established, the OFR has the authority to require a wide range of financial firms to adopt them. This adoption would have the effect of requiring firms to in essence, clean up their back offices and would result in a number of important benefits. First, firms would have an electronic copy of all of their transactions reflected in their central IT systems, at the time that they are settled and they would be able to routinely produce risk reports that reflected all of their firm's exposures. Second, it would be relatively straightforward for firms to provide an electronic cc to the OFR when transactions settle - allowing the OFR to build a comprehensive view of the financial system and then share this data with the members of the FSOC. Third, it would result in dramatic operational savings for the industry. The universal identifiers are needed in order to allow OFR to build a consistent counter-party network; they are also essential for helping market participants reduce order matching errors. One major market participant, who was involved with the effort to create the OFR legislation, indicated that the adoption of universals identifiers and reporting standards would result in somewhere between a 20 to 30% savings in their annual operating expenses. Multiplied across the entire industry this would result in billions of dollars of operational savings.

The Science of the Financial System is Not Complete

On November 3, 2009 the National Academy held a workshop titled Technical Capacities Necessary for Systemic Risk Regulation – participants included two Nobel Laureates and a range of academic, practitioners and regulators. (The complete list of participants can be found in the workshop proceedings – see www.nap.edu/catalog.php?record_id=12841). Following are extracts from the workshop proceedings:

> "It was widely acknowledged at the workshop that the United States currently lacks the technical tools to monitor and manage systemic financial risk with sufficient comprehensiveness and precision."
>
> "Market efficiency will be enhanced by improved intelligence about what is going on in the system as a whole."
>
> "Existing capabilities to value individual instruments and manage firm-specific risks and capture system-wide exposures are not a sufficient foundation for systemic risk management."

As a participant at the workshop, I was struck by the recurring theme that while we have some good starting points for how to model the broader finical system and identify systemic risk, we do not have a mature scientific framework and an accompanying set of tools that will allow us to understand the financial system, especially when it is under stress. The prevalent view at this workshop, was that we need to engage in a concerted scientific effort that involves collecting data, developing theory and models which will result in new insights and then lead to a refined data collection effort and a subsequent refinement of theory and models.

Understanding our financial system is one of the great scientific challenges of our generation. This is a challenge that is extremely important and that will take an ongoing concerted effort – an effort that the OFR is mandated to help lead.

Existing modeling approaches include network models, statistical models of asset returns (which drive Value at Risk type calculations), derivative pricing models, and dynamic equilibrium models. While all of these models have varying degrees of utility, they all have serious deficiencies – especially when the system experiences times of stress.

The next generation of models needs to account for a richer conceptual framework such as the following shock propagation framework. Fundamentally, any systemic risk model needs to not only include a model of how the financial system becomes stressed, it needs to provide an understand of how these stresses could result in a substantial disruption to the intermediation markets that are essential to the functioning of the broader economy and that would potentially require an intervention by the government. For example the freezing of the commercial paper market, the breakdown in the market for mortgage backed securities or the sudden and sustained collapse of equity prices on electronic exchanges.

There are at least three important elements of a systemic crisis that must be incorporated into next generation models of the financial system and ultimately into an effective systemic-risk monitoring system:

1. *The origin of a shock.* There must be a clear idea of the potential buildup and origin of stress or shocks that could potentially trigger a systemic event. These *primary shocks* could come from endogenous events arising from herd behaviors by market participants, such as *Aggregation Risks* where market participants have similar exposures (e.g. pervasive holdings of mortgage backed assets, heavy reliance on short-term funding) or *Crowded Trading Risks* where market participants use similar trading strategies (e.g. high frequency stat-arb trading or portfolio insurance), both of which can lead to asset bubbles – especially in the presence of leverage; These primary shocks could also come from exogenous events such as *Environmental* or *Geopolitical Risks* (e.g. BP's oil spill, changes in government policy, terrorist attacks, wars) and more traditional *Economic Risks* (e.g. interest rate risks, disruption due to new technologies, resource constraints or sudden shifts in demand).

   These risks are predominantly market risks, where the sudden loss in the value of assets can cause market participants to become distressed. They could also contain credit risks, where a group of market participants suddenly reveal that they are insolvent or when the credit rating of market participants are downgraded by a rating agency (which could trigger margin calls), but these events could be viewed as a delayed revelation of market risk.

   Currently we have very little understanding of how firms group together based on their exposure to exogenous events or traditional risks. In addition we have a poor understanding of how herd behavior can lead to a sudden collapse in the value of assets (e.g. the build up and especially the bursting of an asset bubble). Mapping the market with respect to traditional risks and understanding and measuring how and when endogenous shocks might arise should be two key priorities for the OFR.

2. *The propagation of shocks.* There must be a clear idea of how shocks propagate through the system. This understanding is based on knowing the interconnections between market participants and how a set of distressed firms can subsequently cause other firms to become distressed. For example firms can be connected through *Interbank Lending* in terms of a break down in short-term funding (especially for Broker Dealers), through the *Derivatives Counterparty Network* both in terms of margin or collateral calls and in terms of hedges disappearing because of insolvent counterparties and through *Book Correlations*, in terms of firms holding assets similar to the assets that distressed firms are selling.

   Understanding shock propagation includes understanding *Domino Risks*, how the insolvency or illiquidity of one institution could cause the insolvency or illiquidity of counterparties and counterparties of counterparties and so on. It can include *Roll-Over Risks*, where distressed firms won't provide or can't find short-term funding, potentially causing new firms to become distressed or causing fire-sales respectively. It also includes *Cascading Fire Sale Risks*, where the supply of assets exceeds the demand, resulting in liquidity failures for a particular market. These liquidity failures can cause a cycle of continued fire sales, where existing and newly distressed firms continue to sell in order to meet margin calls, redemptions or regulatory requirements. Ultimately, the propagation of shocks through the network is a complicated interaction between market risks, liquidity risks and credit risks.

The problem that is most likely the hardest scientific problem that will be faced by the Office is the problem of modeling the *reaction function* or the sequence of actions that firms will take in response to a primary shock and then subsequent actions taken by all of the firms in the network in response to the shock propagating through the system. Mapping the *Domino Risk* - or how the insolvency and/or illiquidity of a group of firms can cause a cascade of insolvencies and/or liquidities through the system is interesting, but it is a static problem that ignores the fact that firms will react to the failure of counterparties and market stress. Once a primary shock occurs, the problem of understanding how the shock will propagate essentially turns into a game-theoretic problem. If the shock is substantial enough, it is likely that vast numbers of the market participants will be forced into similar behaviors, which could substantially reduce the complexity of the game being modeled. Gaining a better understanding of the network, which will require the collection of new data and gaining a deep understanding of the reaction function should be key parts of the OFR's effort, if the OFR is going to be able to develop a realistic understanding of how shocks propagate through the financial system.

3. *The breakdown of intermediation markets.* There must be a clear idea of the structure of the financial system, especially of key intermediation markets that are essential to the broader economy, and a clear idea of when the propagation of a shock can cause a breakdown in one or more of these markets, where one critical mechanism that needs to be understood is the *Flight to Quality* where market wide panic results in runs on key markets as investors hoard cash and market participants stop trading, which stops firms from changing positions and adjusting hedges. The markets that need to be understood can include the formal, standardized capital markets such as exchanges and clearinghouses; they can also include informal or loosely organized markets such as interbank, repo, over the counter (OTC) and securitization markets.

In order to understand when a markets can fail and how dependent the economy is on different intermediation markets, it is essential that the OFR develops a clear understanding of the market structure – the size and capacity of different markets or connections between critical activities in the economy and financial system and then the dependence of the economy on these markets – and an understanding of the capacities of these markets. These efforts should focus on gaining an ability to understand liquidity risks that are inherent in the market structure. In what would need to be an ongoing effort, the OFR should routinely document the 'plumbing of the market' and understand how much stress it can take. These efforts will allow the OFR to help identify not only liquidity risk, but also potential operational risks and security threats to the financial system.

In addition, in order to understand how market wide panics can arise, the OFR needs to make efforts to help develop a deep understanding of investor behavior and successfully integrate realistic behavioral elements into the OFR models.

The Risks of Leaning on the Past

In a recent Financial Times article, Alan Greenspan said he feels financial markets are "unredeemably opaque", see *Understand the Financial System First and then Regulate It*, FT April 1, 2011. I have been in a public meeting where Chairman Greenspan essentially threw up his hands and said that even with all of the intellectual and research capacity at the disposal of the Federal Reserve System, he does not feel that markets can be understood sufficiently to identify and preemptively respond to asset bubbles (and presumably other types of systemic risk). Instead he argues that we should be ready to apply monetary policy to help markets recover after an asset bubble has burst and rely on market discipline to ensure that participants will not engage in activities that might threaten the entire system.

With regards to market discipline, it is clear from the past crisis that we cannot rely on market discipline alone to provide stability. Waiting until after the crisis to respond is unacceptable and responding in a disorganized fashion during a crisis, which is what happens when regulators and policy makers are unprepared, is both foolish and dangerous. It is true that science and the tools have not been developed yet. But that is a call to action, not a cause for despair. In some ways, those who take Chairman Greenspan's views are rooted firmly in the past; it is like hearing an explanation of why prediction was from a director of the National Weather Service 50 years ago, after yet another devastating hurricane had made landfall without any warning. We can do better and we must .

In order to develop the science and models that the FSOC and other macro-prudential regulators need, we need to break from the research efforts of the past and take new approaches. We need to move from small science efforts, which are dominated by a single discipline, and hence a particular conceptual framework, to large science efforts that incorporate teams of scientists from a variety of different disciplines and that bring a rich set of perspectives and frameworks for understanding our financial system. The OFR offers a vehicle to catalyze this needed change in the way that the science of financial markets is approached.

In closing, the last financial crisis cost the U.S. taxpayers trillions of dollars and lead to unacceptably high levels of unemployment. Citizens from all ranges of life were incensed that financial companies, which had engaged in reckless and self-serving activities were rescued, while the rest of the economy suffered and paid the price for their excesses -- a price that is still being paid today. The crisis demonstrated that our system needed reform and it provided the political focus to make legislative changes possible. In some sense we are in a race against time. We need to do all that we can to ensure that the next crisis is as far in the future as possible, because if we have another crisis in the near future it will be hard to argue to an enraged population that we have the essential structure in place, we simply didn't have enough time to understand the system properly and build effective safeguards based on that understanding. I would conclude by respectfully calling on the Administration to nominate a Director for the OFR forthwith. Until that happens, the OFR will be limited in its ability to become established and help provide the insights that we need.

Testimony of Alan Paller

Director of Research, The SANS Institute

Before the

Oversight and Investigations Subcommittee of the House Committee on Financial Services

Hearing on

"Oversight of the Office of Financial Research and the Financial Stability Oversight Council"

July 14, 2011

Chairman Neugebauer, Ranking Member Capuano, Vice Chairman Fitzpatrick, and members of the Subcommittee, as we sit before you today, the computers of federal government agencies and their contractors are under constant attack. Government computers are being infiltrated and taken over by malevolent organized crime groups and by nation-state actors; they are being infected by malicious code; and they are being retasked to gather and redirect sensitive information so that it can be mined and repurposed. The losses from such data theft is massive. Unfortunately, this is generally unknown by the public or by members of Congress because agency and contractor personnel keep these damaging attacks a secret in order to avoid the embarrassment associated with public disclosure.

I have the honor of running SANS, the largest cybersecurity school in the world, with 120,000 alumni working at institutions ranging from the NSA, the FBI and DoD, to banks, insurance companies, colleges, hospitals, and high-tech organizations in 70 countries. I also oversee the Internet Storm Center, an early warning system for the Internet, and guide the annual compilation of the most dangerous new attack vectors. These responsibilities give me direct and indirect access to information about nonpublic cybersecurity attacks as well as to the promising practices and tools available to help mitigate the threats. In my testimony today, I will frequently use data from secondary sources. I can assure you that these data provide an incomplete but very accurate picture of what is happening in cybersecurity.

In the next few minutes I'll very briefly answer several questions:

- Who is attacking the computers of U.S. government agencies and contractors?
- What are they after, and how much information have they already taken?
- How do the attacks work, and why don't current defenses stop them?

- How do cybersecurity practices differ in federal government agencies and contractors from common practices in the private financial industry?

Who is carrying out these attacks?

Teams of spies, paid by national governments, are behind most of the damaging attacks on U.S. government computers. Some are employed by the sponsoring foreign governments as civilian or military personnel; others are private contractors who also may be conducting cybercrime and economic espionage against nongovernmental organizations, either independently or on behalf of their government sponsors.

Organized crime groups also target government agencies but do far less damage to governments than they do to other commercial organizations. For example, they generally steal credit card data and other personal information and sell the data and/or extort money in return for not revealing the theft to the company's clients.

What are these attackers after, and how much information have they taken?

The nation-state-sponsored attacks have three primary objectives:

- Theft of military technology and other military secrets.
- Placement of malicious computer code on sensitive computers to gain access to additional data and to change data — to change what people believe is real. General Keith Alexander, Commander of the US Cyber Command, calls these malicious programs "remote sabotage tools." These malicious programs are also being placed on computers inside power plants and communications networks.
- Theft of critical financial and technical data that can be used to gain unfair advantage in international negotiations involving other companies and governments.

Government is not the only target of these nation-state-sponsored attacks. An epidemic of intellectual property cybertheft is plaguing U.S. corporations and their law firms, especially those doing business with Asian nations. Unfortunately, US companies were never told of the scale or virulence or effectiveness of these attacks. But British companies were: The head of MI-5 (the UK Security Service) sent a letter to the managing directors of the 300 largest companies in the United Kingdom in late 2008. The letter said that if their companies were engaged in any negotiations or business with a major Asian power, they were being attacked with the same cyber weapons being used against military targets. As MI-5 reported, the attackers' goal is to gain an economic advantage by gaining valuable intellectual property — that is, to give their home-country companies or government officials a leg up in negotiations or even to eliminate the need to negotiate at all through the use of cyber theft. That letter also warned British companies that their law firms were also being targeted. Many hundreds of US companies have also had their systems penetrated and their data stolen and remote control software installed. You've heard about the Google attack but there are hundreds more. Some of the largest US law firms have also been deeply penetrated; their entire databases of all client records and client communication have been stolen.

> Most cyberattackers seek financial and business planning data from such powerhouse corporations as Exxon or Google, but the recent attack on the International Monetary Fund and the 2010 attack on NASDAQ show that financial data held by governments and quasi-governmental organizations are also high-value and vulnerable targets.

How much information have they taken? These cyberattackers appear to be highly effective. General WIlliam Lord, Director of Information, Services and Integration in the Air Force's Office of Warfighting Integration, hinted at the extent of the losses when he inadvertently provided some classified information to a journalist. While giving a talk in a classified meeting in August 2006, General Lord left the room to take a lengthy call. While he was out, the meeting turned to some unclassified items, and a newspaper reporter joined the meeting. Upon his return, General Lord, who did not know that journalist had joined the audience, reported that "China has downloaded 10 to 20 terabytes of data from the NIPRNet. They're looking for your identity so they can get into the network as you. There is a nation-state threat by the Chinese."

Here are just a few key examples of the types and scope of information lost in such attacks:

- Nation-state-sponsored attackers gained access to technical plans for key components of the $300 billion F-35 Joint Strike Fighter — America's most expensive weapons system. Importantly, this breach was not in the DoD itself, but against a defense contractor.
- According to Time magazine, another attack involved "a huge collection of files that had been stolen from Redstone Arsenal, home to the Army Aviation and Missile Command. The attackers had grabbed specs for the aviation-mission-planning system for Army helicopters, as well as Falconview 3.2, the flight-planning software used by the Army and Air Force.."
- The IMF attack this spring demonstrates that sophisticated attackers are after governmental financial data. As the New York Times reported on June 11, "The global agency [IMF] has highly confidential information about the fiscal condition of many nations. As such, the IMF's files contain 'political dynamite' that could affect global markets."
- A senior official of the Commerce Department, testifying before a House Subcommittee in April, 2007, reported that the computers of the Commerce Department's Bureau of Industry and Security (BIS) were taken over by attackers believed to be stationed in China. The BIS division at Commerce decides which American technologies are too sensitive to export. BIS has data on what each technology is, why it is too sensitive, who makes it, and the other details that another nation would need to replicate the technology. When asked whether he knew how widely the infection had spread inside the Commerce Department or whether he was confident they had gotten rid of it, the witness said, "no."

Sadly, similar losses are occurring in nearly every major federal agency and in many smaller ones

How do the attacks work, and why don't current defenses stop them?

The vast majority of the data theft attacks are made in six steps:

Step 1: The attackers fool a person – usually a person with more access than the average user – to cause that person (the "victim") to open an attachment to an email. I'll show you how and why that works in a moment using your own office as an example.

Step 2: The attachment runs a hidden program that exploits a weakness on the victim's computer.

Step 3: The victim's computer is forced to contact the attacker's computer, and as a result is given detailed instructions for what to search and where to look.

Step 4. The victim's computer, now completely under the control of the attacker, gathers sensitive information, compresses it, and sends it to a site controlled by the attacker.

Step 5. The victim's computer gets additional instructions to spread its infection to other computers that then are also forced to contact the attacker's computer for instructions.

Step 6. The malicious software programs on these systems bury themselves very deep and erase any evidence of their existence. They sit, nearly idle, checking only infrequently with the attacker's system for additional instructions.

This sequence of steps works in attacks against government agencies and against large government contractors, all of which process an enormous amount of information collected by and on behalf of the federal government. They also work against many corporations.

Cybercrime is also lucrative for terrorists. Imam Samudra, the Bali Bomber, who exploded a bomb and murdered 200 young vacationers from Australia and New Zealand in October 2002, used cybercrime to get money to buy bomb-making supplies. In his autobiography, written while on death row, Samudra gave Al Qaeda recruits detailed instructions for using cybercrime to "make more money in a few hours of work than a policeman can make in three to six months of work." He went on to say, "Please do not do that for the sake of money alone! I want America and its cronies to be crushed in all aspects." [from "Hacking: Why Not!" a chapter in the jailhouse autobiography of Imam Samudra]

Security awareness training is ineffective in stopping these nation-state, because the attacker can send hundreds of emails and only has to fool one person. And, when the attackers are working for a nation-state with a large budget, they can spend as much as $200,000 or more to gather intelligence about a single intended victim and can thus craft an email that can be utterly convincing as having come from a trusted colleague. For example, a cyberattack against a congressional office may target the one person with administrative rights to all the servers in the office. The attackers would likely spend weeks or months (and a lot of money) to get close to this staff person, to learn something that is happening in the office that would not be known outside, and then to send a counterfeit email that appears to be from that person's superior. The

employer-employee relationship, combined with the inside information used in the email, provides an overwhelming incentive to open the email attachment.

In addition to gathering information directly from the government computers, cyberattackers also seek to infect government and other websites so that visitors have their computers infected and lose a lot of sensitive data or become zombies. Government computers have been caught two ways in this type of attack. As one example, a Department of Homeland Security website was infected and subsequently tried to infect every visitor to the site—a site visitors should have been able to trust. The second way that government computers are affected is that government users may be pointed toward infected websites and their computers made into zombies that can be used to gather data inside an agency network. A particularly virulent example occurred several years ago when the American Enterprise Institute website, a policy-oriented site often visited by White House personnel and other national leaders, was infecting so many visitors that the US Computer Emergency Response Team put out a warning to all federal users. Sadly, many nonfederal users were never alerted; some of them only came to know their systems were infected if they were overwhelmed and stopped functioning.

Finally, cyberattackers take advantage of the high volume in federal systems. One such case involved the IRS. Many websites offer to submit electronic tax returns for individual taxpayers, and some of these advertise through Google to draw in customers. Several of those sites were run by organized crime groups that took the data from individuals, filled out the tax returns, and submitted them—but with one important change: the criminals substituted foreign bank routing data for the taxpayers' banking information. The attack was like illegally tapping an oil pipeline, only in this case, the pipeline had electronic cash running through it.

Users cannot be expected to foil such attacks. The only powerful way to make these attacks less effective is to follow the lead of intelligence agencies and some careful financial institutions by configuring the technology to protect the users. Although many federal cybersecurity professionals know what needs to be done, it doesn't seem to get done. The great shame is that doing security right can cost less than what we spend now to do it wrong. The waste was documented by a Senate oversight subcommittee chairman, who pointed out that billions are being paid to contractors, at the rate of more than $1,000 per page, for millions of pages of useless reports documenting out-of-date and generally less important security problems.

A much better approach is continuous automated monitoring, which means daily monitoring and correction of vulnerabilities in software and other security flaws. This has already been documented by the Office of Management and Budget as massively more effective than the out-of-date reports, but agencies just keep paying their contractors to keep producing paper reports.

Almost every federal agency outsources the bulk of its information processing to contractors—many of which have already lost sensitive data to cyberattacks. Two such attacks were disclosed this past Monday. Defense contractors have lost so much unclassified data that Secretary of Defense Robert Gates created a new DoD program to force contractors to disclose attacks, to learn from them, and to use the knowledge to try to improve defenses. The program, which is entirely voluntary, has done some good, but the contractors are reluctant to make more important changes needed to protect their systems. A new regulation

has just been proposed to force all DoD contractors to do a better job protecting their unclassified networks, but press reports say the contractors are complaining loudly and, as a result, the contractors expect to be relieved of much of the responsibility for protecting the data they keep for the government.

As I mentioned earlier, the people who know about these attacks won't tell unless compelled to do so. This secrecy allows agencies and contractors to avoid embarrassment, but it also means that critical security problems are not being fixed because the public and Congress do not know about the attacks and do not demand action. A related challenge partially caused by the secrecy, is the national shortage of people with deep technical security skills needed to make the technology more secure. This shortage plagues government and industry and is so severe that contractors at one intelligence agency will steal the skilled people from another contractor at the same or another agency, in a practice Bloomberg News labeled "fratricide" this past March. Another important aspect of this shortage is that the majority of people now working in the federal government as security professionals, and many who work for government contractors, lack the critical skills to identify or fix the type of software security flaws that routinely lead to the loss of critical data and lack the forensics and reverse engineering skills to find malicious code that has managed to penetrate their systems. Many of these "soft-skilled" people are very good at writing reports; they just are not good enough at securing computers.

How do cybersecurity practices differ in federal government agencies and contractors from common practices in the private financial industry?

One useful rule of thumb in cybersecurity is that the quality of security is proportional to the amount of money at risk. Financial institutions, because they can lose a lot of money very quickly, have better security practices than most other organizations. They implement rigorous configuration control and automated continuous monitoring and mitigation. Most federal agencies don't have those controls in place, despite a common awareness of the value of such measures.

The primary cause of this difference is the lack of consequences for federal workers and contractors who oversee and audit systems that lose critical data. It's almost unheard of for a federal worker or a government contractor to be disciplined in the aftermath of a damaging cyberattack. Banks have a long tradition of conducting after-incident analysis and meting out appropriate penalties. The tradition began with the first huge cyber heist from a bank. In 1994, a Russian named Vladimir Levin used stolen access codes and passwords to steal more than $10 million from Citibank. In the aftermath, the top internal auditor with security responsibilities left Citibank, directly as a consequence of his missing the key risk, according to his colleagues. In federal agencies, there are no consequences for auditors who fail to see or act on the risks. Inspectors general in federal agencies rely on out-of-date checklists, often keeping their agencies from making critically needed changes. Yet, I do not recall any oversight hearing at which the IG was asked why his or her office missed the risk that led to huge losses of critical information.

The Bottom Line

In sum, cyber attacks against government sites are very hard to stop, but federal agencies could do a far better job than they are doing. As long as security remains so lax inside government, there is great risk that any data gathered by government would be easy prey for financial criminals and nation-states bent on cyber mischief. This concern applies particularly to small agencies that may lack the scale to implement first-class cybersecurity protections. For example, if the Office of Financial Research moves data from well-protected financial sites to less well-protected government or contractor sites, they will put that data at risk.

If you choose to empower OFR to gather sensitive information from financial institutions then you would sleep a lot better at night if they implement world-class cyber defenses that would include the following:

- Continuous (daily) monitoring of the twenty key controls in the Consensus Audit Guidelines (the "CAG") and the exclusive use of tools that strictly adhere to the automation and interoperability requirements of the security configuration automation protocols developed by NIST and NSA.
- Implacable adherence to operating system and software configurations defined in the Universal Gold Master configurations approved by the DoD's Joint Consensus Working Group.
- Rigorous multi-factor identity validation of every user without exceptions.
- A team of at least eight "hunters and tool builders" who use constantly updated scripts to monitor OFR system logs and network information continuously to find evidence of penetrations and then reverse engineer, and eliminate malicious programs that make it through the perimeter.
- Software code analysis and penetration testing for all software that accesses sensitive information and any that allows access to the systems, such as web sites.
- Auditors who verify these defenses are in place and substantial consequences for auditors if they miss well-known problems.
- If the risk to the nation's financial system is great enough, determine whether the collected data should be treated as, and protected as classified data.

Biographical Information

Alan Paller is founder and research director of the SANS Institute, a graduate degree granting college and security training and research institution with more than 120,000 alumni in seventy countries. At SANS, he oversees the Internet Storm Center (an early warning system for the Internet), NewsBites, (the semi-weekly security news summary that goes to 210,000 people), @RISK (the authoritative summary of all critical new vulnerabilities discovered each

week), and the publication of the "Seven Most Dangerous New Attack Vectors" being discovered each year. He also leads a global security innovation program that identifies people and practices that have made a measureable difference in cyber risk reduction, and illuminates those innovations so other security practitioners can take full advantage of them to improve security in their enterprises.

He has testified multiple times before both the US Senate and House of Representatives. In 2000 President Clinton recognized his leadership by naming him as one of the initial members of the President's National Infrastructure Assurance Council. Under President Bush, the U.S. Office of Management and Budget and the Federal CIO Council named Alan as their 2005 Azimuth Award winner, a singular lifetime achievement award recognizing outstanding service of a non-government person to improving federal information technology. In May of 2010, the Washington Post named seven people as "worth knowing, or knowing about" in cyber security. The list included General Alexander who heads the US Cyber Command, Howard Schmidt, the White House Cyber Coordinator, other national leaders, and Alan.

Earlier in his career Alan helped build a software company, took it public, and merged it into a larger company listed on the New York Stock Exchange. His degrees are from Cornell University and the Massachusetts Institute of Technology.

Report on the Effectiveness and Possible Side Effects of the Office of Financial Research (OFR)

Nassim N. Taleb, PhD
Distinguished Professor of Risk Engineering, NYU-Polytechnic Institute
and author, The Black Swan

INTRODUCTION

Mr. Chairman, Ranking Member, Members of the Committee, thank you for giving me the opportunity to testify on the analytical ambitions and centralized risk-management plans of Office of Financial Research (OFR).[1 2]

I am here primarily as a practitioner of risk —not as an analyst but as a decision-maker, an eyewitness of the poor, even disastrous translation of risk research into practice. I spent close to two decades as a derivatives trader before becoming a full-time scholar and researcher in the areas of risk and probability, so I travelled the road between theory and practice in the opposite direction of what is commonly done. Even when I was in full-time practice I specialized in errors linked to theories, and the blindness from the theories of risk management.

Allow me to present my conclusions upfront and in no uncertain terms: this measure, if I read it well, aims at the creation of an omniscient Soviet-style central risk manager. It makes us fall into the naive illusion of risk management that got us here —the same illusion has led in the past to the blind accumulation of Black Swan risks. Black Swans are these large, consequential, but unpredicted deviations in the eyes of a given observer —the observer does not see them coming, but, my some mental mechanism, thinks that he predicted them. Simply, there are limitations to our ability to measure the risks of extreme events and throwing government money on it will carry negative side effects.

1) Financial risks, particularly those known as Black Swan events cannot be measured in any possible quantitative and predictive manner; they can only be dealt with nonpredictive ways. The system needs to be made robust organically, not through centralized risk management. I will keep repeating that predicting financial risks has only worked on computers so far (not in the real world) and there is no compelling reason for that to change—as a matter of fact such class of risks is becoming more unpredictable.

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[1] The author Thanks Daniel Kahneman and S. Ammous for helpful discussions.

[2] The ideas presented here are from the author's book, Taleb, N.N. (2007,2010) *The Black Swan*, 2d Edition, Random House and Penguin, and the enclosed paper Taleb, N. N. (2009) Errors, Robustness, and the Fourth Quadrant, *International Journal of Forecasting*, 25.

2) This type of venture has side effects. The very method of model-based quantitative risk management causes increases in risks, particularly hidden risks. Such risk management techniques as you are proposing have in the past caused iatrogenics —that is, harm done by the healer.

3) Finally, risks need to be handled by the entities themselves, in an organic way, paying for their mistakes as they go. It is far more effective to make bankers accountable for their mistakes than try the central risk manager version of Soviet-style central planner, putting hope ahead of empirical reality.

I will now expand on each of these points.

I- The Measurability of Financial Risks

a- The risks of Black Swan events are not measurable

People in finance use the term "measure" very loosely. You can use science to "measure" the length of the table but the same term should not be applied to something that does not currently exist but should take place in the future. Alas, we cannot "measure" the risk of future rare events like we measure the temperature. What are called tail risks are not possible to measure, neither mathematically nor empirically. Further, the rarer the event, the harder it is to compute its probability --yet the rarer the event, the larger the consequences[3].

- The past is not a good predictor of these events —large jumps and crises do not have predecessors (See the author's The Black Swan, 2nd Ed.). This applies to the latest crisis. Furthermore, the type of randomness we have with economic variables does not have a well tractable, well known structure, and can deliver vastly large events --and we are unable to get a handle on "how large". Conventional statistics, derived on a different class of variables, fail us here.

- Even if by some miracle we were given the right model, the smallest imperfection in the rounding of a parameter would cause massively divergent results. Small variations in input, smaller than any uncertainty we have in the estimation of parameters, assuming generously one has the right model, can underestimate the probability of events called of "12 sigma" (that is, 12 standard deviations) by close to a trillion times —a fact that has been (so far) strangely ignored by the finance and economics establishment[4].

- The same limitations apply with even more force to the newly minted —and overhyped— methods based on "complexity theory" or new buzzwords like "agent-based models". These models are interesting descriptions of the world, but their predictions do not seem to work outside of research papers (i.e. in hindsight and past back-fitting) nothing has worked so far. The same theoretical and practical limitations apply.

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[3] See Taleb N.N. and Pilpel, A., 2007, Epistemology and Risk Management, *Risk and Regulation*, 13. . See P. Triana, 2009, *Lecturing Birds on Flying: Can Mathematical Theories Destroy the Markets?*, J. Wiley.

[4] These "12 sigma" events and other large deviations are not just more common than people think, but they represent a large share of the total variance.

- A more technical point: the outcome of bank exposures is even less predictable than the variables on which they depend (say, GDP growth or other economic indicators). Just as the payoff from a loan is even more unpredictable than the health of a company, the payoff of a derivative is even less predictable than the underlying securities (because of lumpiness)[5].

b- These risks have not been predicted in the past

- Had the last crisis been predictable, or the risks been measurable, then central banks with access to all manner of information, and thousands of PhDs on their staff, would have been able to see it. Their models failed in 2007-2008 (as well as in previous crises). The same applies to the thousands of regulators we have worldwide.

- In addition there are many econometric laboratories and tens of thousand of research papers — and these do not appear to deliver in the real world.

- It has been argued that economic prediction is largely the result of individual overconfidence (Part II of The Black Swan); it is no different from the situation in which 90% of drivers think they are in the top 50% in driving abilities. Likewise, people tend to mispredict —ignoring that others have also mispredicted in the past, under the belief that they will get it right.

- We can correct such overconfidence, the blindness to one's relative performance, with the method of "debiasing". It consists in letting people know the prediction of others in similar situations and establish a so-called reference case prediction[6]. Such method often markedly corrects overconfidence and I would like to apply it here in this situation. There has been tens of thousands of scientific papers on prediction that have not replicated outside the papers. Had the last crisis been predictable within these quantitative methods, then central banks with access to all manner of information, and thousands of PhDs on their staff, would have been able to see it. They failed. So please ask yourselves why you believe that the next attempt will succeed.

II- Sterile Information and the Central Planner Effect

Information's side effects (anchoring)

- Some may use the argument about predicting risks equal or better than nothing; using arguments like "we are aware of the limits". Risk measurement and prediction —any prediction — has side effects of increasing risk-taking, even by those who know that they are not reliable. We have ample evidence of so called "anchoring" in the calibration of decisions. Information, even when it is known to be sterile, increases overconfidence.

- Numerous experiments provide evidence that professionals are significantly influenced by numbers that they know to be irrelevant to their decision, like writing down the last 4 digits of one's social security number before making a numerical estimate of potential market moves.

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[5] Taleb, N.N., 2011, A Map and Simple Heuristic to Detect Fragility, Antifragility, and Model Error (June 4, 2011). SSRN: http://ssrn.com/abstract=1864633

[6] For a description of the method of debiasing, see Kahneman, D., 2011, *Thinking Fast and Slow*, FSG.

German judges rolling dice before sentencing showed an increase of 50% in the length of the sentence when the dice show a high number, without being conscious of it.[7] Further Mary Kate Stimmler has shown the following effect with investments: if you give people a quantitative derivations, one simple, one complicated equation that provide the exact same end calculation, those with the complicated formula will end up taking more risks.

- Aggregating information —again the central planner concept—would be costly, both directly and indirectly. Direct costs will be high. Indirect costs should be even higher than direct costs, just as the side effects of some medicine cause severe harm. People cannot gain access to sterile information without acting on it and producing theories from it (the narrative fallacy, in The Black Swan).

III- Conclusion: What do we need?

- I believe in the effectiveness of less is more heuristics: simple rules of risk management[8]. THese consist in:

  - Removing the agency problem on the part of bank managers and staff who have upside and no downside.

  - Reliance on simple, "hard", non-probabilistic risk measures, based on time-tested heuristics. The more complicated the rule, the more likely it is to fail.

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[7] See Birte Englich and Thomas Mussweiler, "Sentencing under Uncertainty: Anchoring Effects in the Courtroom," Journal of Applied Social Psychology, vol. 31, no. 7 92001), pp. 1535-1551; Birte Englich, Thomas Mussweiler, and Fritz Strack, "Playing Dice with Criminal Sentences: the Influence of Irrelevant Anchors on Experts' Judicial Decision Making," Personality and Social Psychology Bulletin, vol. 32, no 2 (Feb. 2006), pp. 188-200. See also, Stimmler (2011), doctoral thesis, U.C. Berkeley.

[8] The author, has done some work along these lines, with a "Ten steps for a Black-Swan Robust Society" , republished in *The Black Swan* (2nd Edition).

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Errors, robustness, and the fourth quadrant

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Abstract

The paper presents evidence that econometric techniques based on variance – L^2 norm – are flawed and do not replicate. The result is un-computability of the role of tail events. The paper proposes a methodology to calibrate decisions to the degree (and computability) of forecast error. It classifies decision payoffs in two types: simple (true/false or binary) and complex (higher moments); and randomness into type-1 (thin tails) and type-2 (true fat tails), and shows the errors for the estimation of small probability payoffs for type 2 randomness. The fourth quadrant is where payoffs are complex with type-2 randomness. We propose solutions to mitigate the effect of the fourth quadrant, based on the nature of complex systems.
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Keywords: Complexity; Decision theory; Fat tails; Risk management

1. Background and purpose

It appears scandalous that, of the hundreds of thousands of professionals involved, including prime public institutions such as the World Bank, the International Monetary Fund, different governmental agencies and central banks, private institutions such as banks, insurance companies, and large corporations, and, finally, academic departments, only a few individuals considered the possibility of the total collapse of the banking system that started in 2007 (and is still worsening at the time of writing), let alone the economic consequences of such breakdown. Not a single official forecast turned out to be close to the outcome experienced—even those issuing "warnings" did not come close to the true gravity of the situation. A few warnings about the risks, such as Taleb (2007a) or the works of the economist Nouriel Roubini,[1] went unheeded, often ridiculed.[2] Where did such sophistication go? In the face of miscalculations of such proportion, it would seem fitting to start an examination of the conventional forecasting methods for risky outcomes and assess their fragility—indeed, the size of the damage comes from confidence in forecasting and the mis-estimation of potential forecast errors for a certain classes of variables and a certain type of exposures. However, this was not

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[1] "Dr. Doom", *New York Times*, August 15, 2008.

[2] Note the irony that the ridicule of the warnings in Taleb (2007a) and other ideas came from the academic establishment, not from the popular press.

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the first time such events have happened—nor was it a "Black Swan" (when capitalized, an unpredictable outcome of high impact) to the observer who took a close look at the robustness and empirical validity of the methods used in economic forecasting and risk measurement.

This examination, while grounded in economic data, generalizes to all decision-making under uncertainty in which there is a potential miscalculation of the risk of a consequential rare event. The problem of concern is the rare event, and the exposure to it, of the kind that can fool a decision maker into taking a certain course of action based on a misunderstanding of the risks involved.

2. Introduction

Forecasting is a serious professional and scientific endeavor with a certain purpose, namely to provide predictions to be used in formulating decisions, and taking actions. The forecast translates into a decision, and, accordingly, the uncertainty attached to the forecast, i.e., the error, needs to be endogenous to the decision itself. This holds particularly true of risk decisions. In other words, the use of the forecast needs to be determined — or modified — based on the estimated accuracy of the forecast. This in turn creates an interdependency about what we should or should not forecast—as some forecasts can be harmful to decision makers.

Fig. 1 gives an example of harm coming from building risk management on the basis of extrapolative (usually highly technical) econometric methods, providing decision-makers with false confidence about the risks, and leaving society exposed to several trillions in losses that put capitalism on the verge of collapse.

A key word here, *fat tails*, implies the outsized role in the total statistical properties played by one single observation—such as one massive loss coming after years of stable profits or one massive variation unseen in past data.

- "Thin-tails" lead to ease in forecasting and tractability of the errors;
- "Thick-tails" imply more difficulties in getting a handle on the forecast errors and the fragility of the forecast.

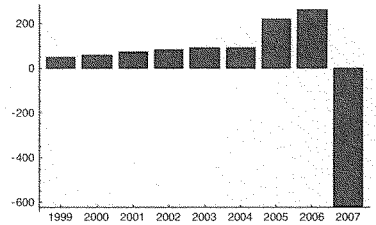

Fig. 1. Indy Mac's annual income (in millions) between 1998 and 2007. We can see fat tails at work. Tragic errors come from underestimating potential losses, with the best known cases being FNMA, Freddie Mac, Bear Stearns, Northern Rock, and Lehman Brothers, in addition to numerous hedge funds.

Close to 1000 financial institutions have shut down in 2007 and 2008 from the underestimation of outsized market moves, with losses up to 3.6 trillion.[3] Had their managers been aware of the unreliability of the forecasting methods (which were already apparent in the data), they would have requested a different risk profile, with more robustness in risk management and smaller dependence on complex derivatives.

2.1. The smoking gun

We conducted a simple scientific examination of economic data, using a near-exhaustive set that includes 38 "tradable" variables[4] that allow for daily prices: major equity indices across the globe (US, Europe, Asia, Latin America), most metals (gold, silver), major interest rate securities, and main currencies — what we believe represents around 98% of tradable volume.

[3] Bloomberg, Feb 5, 2009.

[4] We selected a near-exhaustive set of economic data that includes "tradable" securities that allow for a future or a forward market: most equity indices across the globe, most metals, most interest rate securities, and most currencies. We collected all available traded futures data—what we believe represents around 98% of tradable volume. The reason we selected tradable data is because of the certainty of the practical aspect of a price on which one can transact: a nontradable currency price can lend itself to all manner of manipulation. More precisely we selected "continuously rolled" futures in which the returns from holding a security are built-in. For instance, analyses of Dow Jones that fail to account for dividend payments or analyses of currencies that do not include interest rates provide a bias in the measurement of the mean and higher moments.

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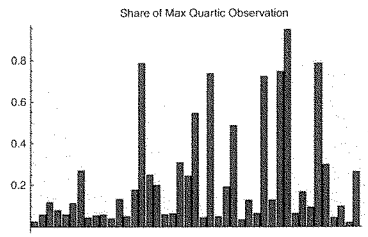

Fig. 2. The smoking gun: Maximum contribution to the fourth moment kurtosis coming from the largest observation in ~10,000 (29–40 years of daily observations) for 43 economic variables. For the Gaussian the number is expected to be ~0.006 for $n = 10{,}000$.

We analyzed the properties of the logarithmic returns $r_{t,\Delta t} = \text{Log}\left(\frac{X_t}{X_{t-\Delta t}}\right)$, where Δt can be 1 day, 10 days, or 66 days (non-overlapping intervals).[5]

A conventional test of nonnormality used in the literature is the excess kurtosis over the normal distribution. Thus, we measured the fourth noncentral moment $k(\Delta t) = \frac{\sum r_{t,\Delta t}^4}{n}$ of the distributions and focused on the stability of the measurements.

By examining Table 1 and Figs. 2 and 3, it appears that:

(1) Economic variables (currency rates, financial assets, interest rates, commodities) are patently fat tailed—with no known exception. The literature (Bundt & Murphy, 2006) shows that this also applies to data not considered here, owing to a lack of daily changes, such as GDP, or inflation.

(2) Conventional methods, not just those relying on a Gaussian distribution, but those based on least-square methods, or using variance as a measure of dispersion, are, according to the data, incapable of tracking the kind of "fat-tails" we see (more technically, in the L^2 norm, as will be discussed in Section 5). The reason is that most of the kurtosis is concentrated in a few observations, making it practically unknowable using conventional methods—see Fig. 2. Other tests in Section 5 (the conditional expectation above a threshold) show further instability. This incapacitates least-square methods, linear regression, and similar tools, including risk management methods such as "Gaussian Copulas" that rely on correlations or any form of the product of random variables.[6, 7, 8]

[5] By convention we use $t = 1$ as one business day.

[6] This should predict, for instance, the total failure in practice of the ARCH/GARCH methods (Engle, 1982), in spite of their successes in-sample, and in academic citations, as they are based on the behavior of squares.

[7] One counterintuive result is that sophisticated operators do not seem to be aware of the norm they are using, thus mis-estimating volatility, see Goldstein and Taleb (2007).

[8] Practitioners have blamed the naive L^2 reliance on the risk management of credit risk for the blowup of banks in the crisis that started in 2007. See Felix Salmon's "Recipe For Disaster: The Formula That Killed Wall Street" in Wired. 02/23/2009.

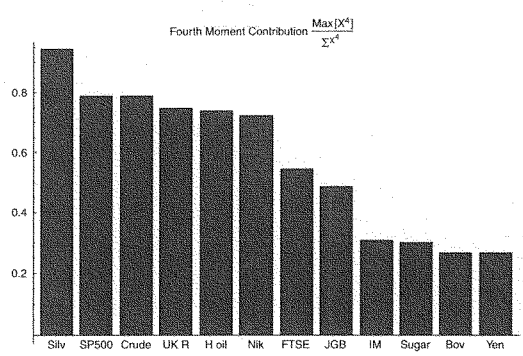

Fig. 3. A selection of the 12 most acute cases among the 43 economic variables.

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Table 1
Fourth Noncentral Moment at daily, 10 day, and 66 day windows for the random variables.

	K (1)	K (10)	K (66)	Max quartic	Years
Australian Dollar/USD	6.3	3.8	2.9	0.12	22
Australia TB 10y	7.5	6.2	3.5	0.08	25
Australia TB 3y	7.5	5.4	4.2	0.06	21
BeanOil	5.5	7.0	4.9	0.11	47
Bonds 30Y	5.6	4.7	3.9	0.02	32
Bovespa	24.9	5.0	2.3	0.27	16
British Pound/USD	6.9	7.4	5.3	0.05	38
CAC40	6.5	4.7	3.6	0.05	20
Canadian Dollar	7.4	4.1	3.9	0.06	38
Cocoa NY	4.9	4.0	5.2	0.04	47
Coffee NY	10.7	5.2	5.3	0.13	37
Copper	6.4	5.5	4.5	0.05	48
Corn	9.4	8.0	5.0	0.18	49
Crude Oil	29.0	4.7	5.1	0.79	26
CT	7.8	4.8	3.7	0.25	48
DAX	8.0	6.5	3.7	0.2	18
Euro Bund	4.9	3.2	3.3	0.06	18
Euro Currency/DEM previously	5.5	3.8	2.8	0.06	38
Eurodollar Depo 1M	41.5	28.0	6.0	0.31	19
Eurodollar Depo 3M	21.1	8.1	7.0	0.25	28
FTSE	15.2	27.4	6.5	0.54	25
Gold	11.9	14.5	16.6	0.04	35
Heating Oil	20.0	4.1	4.4	0.74	31
Hogs	4.5	4.6	4.8	0.05	43
Jakarta Stock Index	40.5	6.2	4.2	0.19	16
Japanese Gov Bonds	17.2	16.9	4.3	0.48	24
Live Cattle	4.2	4.9	5.6	0.04	44
Nasdaq Index	11.4	9.3	5.0	0.13	21
Natural Gas	6.0	3.9	3.8	0.06	19
Nikkei	52.6	4.0	2.9	0.72	23
Notes 5Y	5.1	3.2	2.5	0.06	21
Russia RTSI	13.3	6.0	7.3	0.13	17
Short Sterling	851.8	93.0	3.0	0.75	17
Silver	160.3	22.6	10.2	0.94	46
Smallcap	6.1	5.7	6.8	0.06	17
SoyBeans	7.1	8.8	6.7	0.17	47
SoyMeal	8.9	9.8	8.5	0.09	48
Sp500	38.2	7.7	5.1	0.79	56
Sugar # 11	9.4	6.4	3.8	0.3	48
SwissFranc	5.1	3.8	2.6	0.05	38
TY10Y Notes	5.9	5.5	4.9	0.1	27
Wheat	5.6	6.0	6.9	0.02	49
Yen/USD	9.7	6.1	2.5	0.27	38

(3) There is no evidence of "convergence to normality" by aggregation, i.e., looking at the kurtosis of weekly or monthly changes. The "fatness" of the tails seems to be conserved under aggregation.

Clearly, had decision-makers been aware of such facts, and such unreliability of conventional methods in tracking large deviations, fewer losses would have been incurred, as they would have reduced exposures in some areas rather than rely on more "sophisticated" methods. The financial system has been fragile, as this simple test shows, with the evidence staring at us all along.

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2.2. *The problem of large deviations*

2.2.1. *The empirical problem of small probabilities*

The central problem addressed in this paper is that small probabilities are difficult to estimate empirically (since the sample set for these is small), with a greater error rate than that for more frequent events. But since, in some domains, their effects can be consequential, the error concerning the contribution of small probabilities to the total moments of the distribution becomes disproportionately large. The problem has been dealt with by assuming a probability distribution and extrapolating into the tails—which brings model error into play. Yet, as we will discuss, model error plays a larger role with large deviations.

2.2.2. *Links to decision theory*

It is not necessary here to argue that a decision maker needs to use a full tableau of payoffs (rather than the simple one-dimensional average forecast) and that payoffs from decisions vary in their sensitivity to forecast errors. For instance, while it is acceptable to take a medicine that might be effective with a 5% error rate, but offers no side effects otherwise, it is foolish to play Russian roulette with the knowledge that one should win with a 5% error rate—indeed, standard theory of choice under uncertainty requires the use of full probability distributions, or at least a probability associated with every payoff. But so far this simple truism has not been integrated into the forecasting activity itself—as no classification has been made concerning the tractability and consequences of the errors. To put it simply, the mere separation between forecasting and decisions is lacking in both rigor and practicality, as it ruptures the link between forecast error and the quality of the decision.

The extensive literature on decision theory and choices under uncertainty so far has limited itself to (1) assuming *known* probability distributions (except for a few exceptions in which this type of uncertainty has been called "ambiguity"[9]), and (2) ignoring fat tails. This paper introduces a new structure of fat tails and classification of classes of randomness into the analysis, and focuses on the interrelation between errors and decisions. To establish a link between decision and quality of forecast, this analysis operates along two qualitative lines: qualitative differences between decisions along their vulnerability to error rates on one hand, and qualitative differences between two types of distributions of error rates. So there are two *distinct* types of decisions, and two *distinct* classes of randomness.

This classification allows us to isolate situations in which forecasting needs to be suspended—or a revision of the decision or exposure may be necessary. What we call the "fourth quadrant" is the area in which both the magnitude of forecast errors is large and the sensitivityt to these errors is consequential. What we recommend is either changes in the payoff itself (clipping exposure) or the shifting of exposures away from that part. For that we will provide precise rules.

The paper is organized as follows. First, we classify decisions according to targeted payoffs. Second, we discuss the problem of rare events, as these are the ones that are both consequential and hard to predict. Third, we present the classification of the two categories of probability distributions. Finally, we present the "fourth quadrant" and what we need to do to escape it, thus answering the call for how to handle "decision making under low predictability".

3. The different types of decisions

The first type of decisions is simple, it aims at "binary" payoffs, i.e. you just care whether something is true or false. Very true or very false does not matter. Someone is either pregnant or not pregnant. A biological experiment in the laboratory or a bet about the outcome of an election belong to this category. A scientific statement is traditionally considered "true" or "false" with some confidence interval. More technically, they depend on the zeroth moment, namely just on the probability of events, and not their magnitude —for these one just cares about "raw" probability.[10]

[9] Ellsberg's paradox, Ellsberg (1961); see also Gardenfors and Sahlin (1982) and Levi (1986).

[10] The difference can be best illustrated as follows. One of the most erroneous comparisons encountered in economics is the one between the "wine rating" and "credit rating" of complex securities. Errors in wine rating are hardly consequential for the buyer (the "payoff" is binary); errors in credit ratings have bankrupted banks, as these carry massive payoffs.

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Clearly these are not very prevalent in life—they mostly exist in laboratory experiments and in research papers.

The second type of decisions depends on more complex payoffs. The decision maker does not just care about the frequency, but about the impact as well, or, even more complex, some function of the impact. So there is another layer of uncertainty of impact. These depend on higher moments of the distribution. When one invests one does not care about the frequency, how many times he makes or loses, he cares about the expectation: how many times money is made or lost *times* the amount made or lost. We will see that there are even more complex decisions.

More formally, where $p[x]$ is the probability distribution of the random variable x, and D the domain on which the distribution is defined, the payoff $\lambda(x)$ is defined by integrating on D as:

$$\lambda(x) = \int f(x)p(x)\mathrm{d}x.$$

Note that we can incorporate utility or nonlinearities of the payoff in the function $f(x)$. But let us ignore utility for the sake of simplification.

For a simple payoff, $f(x) = 1$. So $L(x)$ becomes the simple probability of exceeding x, since the final outcome is either 1 or 0 (or 1 and -1).

For more complicated payoffs, $f(x)$ can be complex. If the payoff depends on a simple expectation, i.e., $\lambda(x) = E[x]$, the corresponding function $f(x) = x$, and we need to ignore frequencies since it is the payoff that matters. One can be right 99% of the time, but this does not matter at all, since with some skewed distributions, the consequences of the expectation of the 1% error can be too large. Forecasting typically has $f(x) = x$, a linear function of x, while measures such as least squares depend on the higher moments $f(x) = x^2$.

Note that some financial products can even depend on the fourth moment (see Table 2).[11]

Next we turn to a discussion of the problem of rare events.

[11] More formally, a linear function with respect to the variable x has no second derivative; a convex function is one with a positive second derivative. By expanding the expectation of $f(x)$ we end up with $E[f(x)] = f(x)e[\Delta x] + 1/2f''(x)E[\Delta x2] + \cdots$, and hence higher orders matter to the extent of the importance of higher derivatives.

4. The problem of rare events

The passage from theory to the real world presents two distinct difficulties: "inverse problems" and "pre-asymptotics".

4.1. Inverse problems

It is the greatest difficulty one can encounter in deriving properties. In real life we do not observe probability distributions, we just observe events. So we do not know the statistical properties — until, of course, after the fact — as we can see in Fig. 1. Given a set of observations, plenty of statistical distributions can correspond to the exact same realizations—each would extrapolate differently outside the set of events on which it was derived. The inverse problem is more acute when more theories, more distributions can fit a set of data—particularly in the presence of nonlinearities or nonparsimonious distributions.[12]

So this inverse problem is compounded of two problems:

+ *The small sample properties of rare events*, as these will be naturally rare in a past sample. This is also acute in the presence of nonlinearities, as the families of possible models/parametrization explode in numbers.
+ *The survivorship bias effect of high impact rare events*. For negatively skewed distributions (with a thicker left tail), the problem is worse. Clearly, catastrophic events will be necessarily absent from the data, since the survivorship of the variable itself will depend on such effect. Thus, left tailed distributions will (1) overestimate the mean; (2) underestimate the variance and the risk.

Fig. 4 shows how we normally lack data in the tails; Fig. 5 shows the empirical effect (see Fig. 6).

4.2. Pre-asymptotics

Theories can be extremely dangerous when they were derived in idealized situations, the asymptote, but are used outside the asymptote (at its limit, say infinity

[12] A Gaussian distribution is parsimonious (with only two parameters to fit). But the problem of adding layers of possible jumps, each with a different probabilities, opens up endless possibilities of combinations of parameters.

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Table 2
Tableau of decisions.

Mo	M1	M2+
"True/False"	Expectations	
	LINEAR PAYOFF	NONLINEAR PAYOFF
$f(x) = 0$	$f(x) = 1$	$f(x)$ nonlinear$(= x^2, x^3,$ etc.)
Medicine (health not epidemics)	Finance: nonleveraged investment	Derivative payoffs
Psychology experiments	Insurance, measures of expected shortfall	Dynamically hedged portfolios
Bets (prediction markets)	General risk management	Leveraged portfolios (around the loss point)
Binary/Digital derivatives	Climate	Cubic payoffs (strips of out of the money options)
Life/Death	Economics (Policy)	Errors in analyses of volatility
	Security: Terrorism, Natural catastrophes	Calibration of nonlinear models
	Epidemics	Expectation weighted by nonlinear utility
	Casinos	Kurtosis-based positioning ("volatility trading")

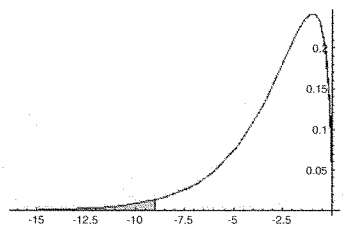

Fig. 4. The confirmation bias at work. The shaded area shows what tend to be missing from the observations. For negatively-skewed, fat-tailed distributions, we do not see much of negative outcomes for surviving entities AND we have a small sample in the left tail. This illustrates why we tend to see a better past for a certain class of time series than is warranted.

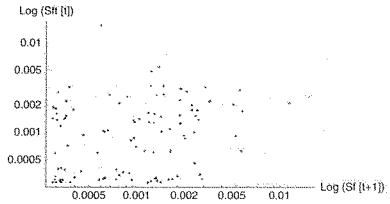

Fig. 5. Outliers don't predict outliers. The plot shows (on a logarithmic scale) a shortfall in one given year against the shortfall the following one, repeated throughout for the 43 variables. A shortfall here is defined as the sum of deviations in excess of 7%. Past large deviations do not appear to predict future large deviations, at different lags.

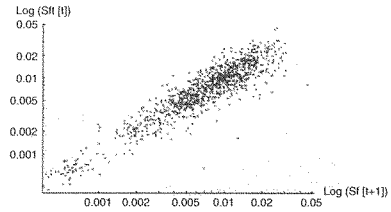

Fig. 6. Regular events predict regular events. This plot shows, by comparison with Fig. 5, how, for the same variables, the mean deviation in one period predicts the one in the subsequent period.

or the infinitesimal). Some asymptotic properties do work well pre-asymptotically (as we'll see, with type-1 distributions), which is why casinos do well, but others do not, particularly when it comes to the class of fat-tailed distributions.

Most statistical education is based on these asymptotic, laboratory-style Platonic properties—yet we take economic decisions in the real world that very rarely resembles the asymptote. Most of what students of statistics do is assume a structure, typically with a known probability. Yet the problem we have is not so much making computations once you know the probabilities as finding the true distribution.

5. The two probabilistic structures

There are two classes of probability domains — very distinct qualitatively and quantitatively — according to precise mathematical properties. The first, Type-1,

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we call "benign" thin-tailed nonscalable, the second, Type 2, "wild" thick tailed scalable, or fractal (the attribution "wild" comes from the classification of Mandelbrot, 1963, 2001).

Taleb (2009) makes the distinction along the lines of convergence to the Central Limit Theorem. Type-1 converges in an acceptable form, while Type-2 either does not converge (infinite variance), or converges only in a remote asymptote and needs to be treated pre-asymptotically. Taleb (2009) also shows that one of the mistakes in the economics literature that "fattens the tails", with two main classes of nonparsimonious models and processes (the jump-diffusion processes of Merton, 1976,[13] or stochastic volatility models such as Engels' ARCH[14]) is to believe that the second type of distribution is amenable to analyses like the first—except with fatter tails. In reality, a fact commonly encountered by practitioners is that fat-tailed distributions are very unwieldy—as we can see in Fig. 2. Furthermore, we often face a problem of mistaking one for the other: a process that is extremely well behaved, but, on occasions, delivers a very large deviation, can easily be mistaken for a thin-tailed one—a problem known as the "problem of confirmation" (Taleb, 2007a,b). So we need to be suspicious of the mistake of taking Type-2 for Type-1, as it is more severe (and more readily made) than the one in the other direction.[15]

As we saw from the data presented, this classification of "fat tails" does not just mean having a fourth moment worse than the Gaussian. The Poisson distribution, or a mixed distribution with a known Poisson jump, would have tails thicker than the Gaussian; but this mild form of fat tails can be dealt with rather easily—the distribution has all its moments finite. The problem comes from the structure of the decline in probabilities for larger deviations and the ease with which the tools at our disposal can be tripped into producing erroneous results from observations of data in a finite sample and jumping to wrong decisions.

[13] See the general decomposition into diffusion and jump (non-scalable) in Duffie, Pan, and Singleton (2000) and Merton (1976); and the discussion in Baz and Chacko (2004) and Haug (2007).

[14] Engle (1982).

[15] Makridakis et al. (1993) and Makridakis and Hibon (2000) present evidence that more complicated methods of forecasting do not deliver superior results to simple ones (already bad). The obvious reason is that the errors in calibration swell with the complexity of the model.

5.1. *The scalable property of type-2 distributions*

Take a random variable x. With scalable distributions, asymptotically, for x large enough (i.e. "in the tails"), $\frac{P[X>nx]}{P[X>x]}$ depends on n, not on x (the same property can hold for $P[X < nx]$ for negative values). This induces statistical self-similarities. Note that owing to the finiteness of the realizations of random variables, and the lack of samples in the tails, we might not be able to observe such a property, yet not be able to rule out.

For economic variables, there is no fundamental reason for the ratio of "exceedances" (i.e., the cumulative probability of exceeding a certain threshold) to decline, as both the numerator and the denominators are multiplied by 2.

This self-similarity at all scales generates power-law, or Paretian, tails, i.e., above a crossover point, $P[X > x] = Kx^{-\alpha}$.[16, 17]

Let us now draw the implications of type-2 distributions.

5.1.1. *Finiteness of moments and higher order effects*

For thick tailed distributions, moments higher than α are not "finite", i.e., they cannot be computed. They can certainly be measured in finite samples—thus giving the illusion of finiteness. But they typically show a great degree of instability. For instance, a distribution with an infinite variance will always provide, in a sample, the illusion of finiteness of variance.

In other words, while errors converge for type-1 distributions, the expectations of higher orders of x, say of order n, such as $1/n!E[x^n]$, where x is the error, do not decline; in fact, they become explosive (see Fig. 7).

[16] Scalable discussions: introduced by Mandelbrot (1963), Mandelbrot (1997) and Mandelbrot and Taleb (in press).

[17] Complexity and power laws: Amaral et al. (1997), Sornette (2004), and Stanley, Amaral, Gopikrishnan, and Plerou (2000); for scalability in different aspects of financial data, Gabaix, Gopikrishnan, Plerou, and Stanley (2003a,b), Gabaix, Ramalho, and Reuter (2003c), Gopikrishnan, Meyer, Amaral, and Stanley (1998), Gopikrishnan, Plerou, Amaral, Meyer, and Stanley (1999), and Gopikrishnan, Plerou, Gabaix, and Stanley (2000). For the statistical mechanics of scale-free networks see Albert, Jeong, and Barabási (2000), Albert and Barabasi (2002) and Barabási and Albert (1999). The "sandpile effect" (i.e., avalanches and cascades) is discussed by Bak (1996) and Bak, Tang, and Wiesenfeld (1987, 1988), as power laws arise from conditions of self-organized criticality.

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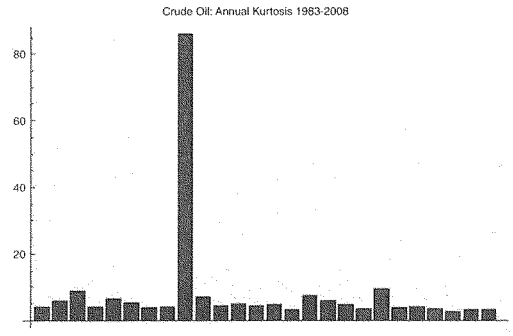

Fig. 7. Kurtosis over time: example of an "infinite moment". The graph shows the fourth moment for crude oil in annual nonoverlapping observations between 1982 and 2008. The instability shows in the dependence of the measurement on the observation window.

5.1.2. "Atypicality" of moves

For thin tailed domains, the conditional expectation of a random variable X, conditional on its exceeding a number K, converges to K for larger values of K.

$$\lim_{K\to\infty} E[X|_{X>K}] = K.$$

For instance, the conditional expectation for a Gaussian variable (assuming a mean of 0) conditional on the variable exceeding 0 is approximately 0.8 standard deviations. But with K equals 6 standard deviations, the conditional expectation converges to 6 standard deviations. The same applies to all of the random variables that do not have a Paretian tail. This induces some "typicality" of large moves.

For fat tailed variables, such a limit does not seem to hold:

$$\lim_{K\to\infty} E[X|_{X>K}] = Kc,$$

where c is a constant. For instance, the conditional expectation of a market move, given that it is in excess of 3 mean deviations, will be around 5 mean deviations. The expectation of a move conditional on it being higher than 10 mean deviations will be around 18. This property is quite crucial.

The atypicality of moves has the following significance.

- One may correctly predict a given event, say, a war, a market crash, or a credit crisis. But the amplitude of the damage will be unpredicted. The open-endedness of the outcomes can cause a severe miscalculation of the expected payoff function. For instance, the investment bank Morgan Stanley predicted a credit crisis but was severely hurt (and needed to be rescued) because it did not anticipate the extent of the damage.
- Methods like Value-at-Risk[18] that may correctly compute, say, a 99% probability of not losing no more than a given sum, called "value-at-risk", will nevertheless miscompute the conditional expectation should such a threshold be exceeded. For instance, one has 99% probability of not exceeding a $1 million loss, but should such a loss occur, it can be $10 million or $100 million.

This lack of typicality is of some significance. Stress testing and scenario generation are based on assuming a "crisis" scenario and checking robustness to it. Unfortunately such luxury is not available for fat tails, as "crises" do not have a typical magnitude.

Tables 3 and 4 show the evidence of a lack of convergence to thin tails, and hence a lack of "typicality" of the moves. We stopped for segments for which the number of observations becomes small, since a lack of observations in the tails can provide the illusion of "thin" tails.

[18] For the definition of Value at Risk see, Jorion (2001); for a critique, see Joe Nocera, "Risk Mismanagement: What led to the Financial Meltdown", *New York Time Magazine*, Jan 2, 2009.

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Table 3
Conditional expectation for moves > K, 43 economic variables.

K, Mean deviations	Mean move (in MAD) in excess of K	n
1	2.01443	65,958
2	3.0814	23,450
3	4.19842	8,355
4	5.33587	3,202
5	6.52524	1,360
6	7.74405	660
7	9.10917	340
8	10.3649	192
9	11.6737	120
10	13.8726	84
11	15.3832	65
12	19.3987	47
13	21.0189	36
14	21.7426	29
15	24.1414	21
16	25.1188	18
17	27.8408	13
18	31.2309	11
19	35.6161	7
20	35.9036	6

Table 4
Conditional expectation for moves < K, 43 economic variables.

K, Mean deviations	Average move (in MAD) below K	n
−1	−2.06689	62,803
−2	−3.13423	23,258
−3	−4.24303	8,676
−4	−5.40792	3,346
−5	−6.66288	1,415
−6	−7.95766	689
−7	−9.43672	392
−8	−11.0048	226
−9	−13.158	133
−10	−14.6851	95
−11	−17.02	66
−12	−19.5828	46
−13	−21.353	38
−14	−25.0956	27
−15	−25.7004	22
−16	−27.5269	20
−17	−33.6529	16
−18	−35.0807	14
−19	−35.5523	13
−20	−38.7657	11

5.1.3. Preasymptotics

Even if we eventually converge to a probability distribution of the kind well known and tractable, it is central that the time to convergence plays a large role.

For instance, much of the literature invokes the Central Limit Theorem to assume that fat-tailed distributions with a finite variance converge to a Gaussian under summation. If daily errors are fat-tailed, cumulative monthly errors will become Gaussian. In practice, this does not appear to hold. The data, as we saw earlier, show that economic variables do not remotely converge to the Gaussian under aggregation.

Furthermore, finiteness of variance is a necessary but highly insufficient condition. Bouchaud and Potters (2003) showed that the tails remain heavy while the body of the distribution becomes Gaussian (see Fig. 8).

5.1.4. Metrics

Much of time series work seems to be based on metrics which are in the square domain, and hence patently intractable. Define the norm L^p:

$$\left(\frac{1}{n}\sum |x|^p\right)^{\frac{1}{p}};$$

it will increase along with p. The numbers can become explosive, with rare events taking a disproportionately larger share of the metric at higher orders of p. Thus the variance/standard deviation ($p = 2$), as a measure of dispersion, will be far more unstable than mean deviation ($p = 1$). The ratio of mean-deviation to variance (Taleb, 2009) is highly unstable for economic variables. Thus, modelizations based on variance become incapacitated. More practically, this means that for distributions with a finite mean (tail exponent greater than 1), the mean deviation is more "robust".[19]

[19] A note on the weaknesses of nonparametric statistics: the mean deviation is often used as a robust, nonparametric or distribution-free statistic. It does work better than the variance, as we saw, but does not contain information on rare events, by the argument seen before. Likewise, nonparametric statistical methods (relying on the empirical frequency) will be extremely fragile to the "black swan problem", since the absence of large deviations in the past leave us in a near-total opacity about their occurrence in the future—as we saw in Fig. 4, these are confirmatory. In other words, nonparametric statistics that consist of fitting a kernel to empirical frequencies, assume, even more than other methods, that a large deviation will have a predecessor.

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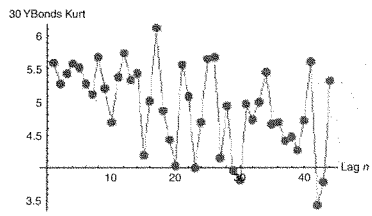

Fig. 8. Behavior of kurtosis under aggregation: we lengthen the window of changes from 1 day to 50 days. Even for variables with an infinite fourth moment, the kurtosis tends to drop under aggregation in small samples, then rise abruptly after a large observation.

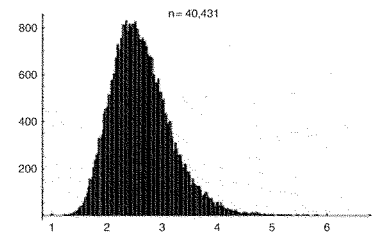

Fig. 9. Estimation error from 40 thousand economic variables.

5.1.5. Incidence of rare events

One common error is to believe that thickening the tails leads to an *increase* of the probability of rare events. In fact, it usually leads to a decrease of the incidence of such events, but the magnitude of the event, should it happen, will be much larger.

Take, for instance, a normally distributed random variable. The probability of exceeding 1 standard deviation is about 16%. Observed returns in the markets, with a higher kurtosis, present a lower probability of exceeding the same threshold, around 7%–10%, but the depth of the excursions is greater.

5.1.6. Calibration errors and fat tails

One does not need to accept power laws to use them. A convincing argument is that if we don't know what a "typical" event is, fractal power laws are the most effective way to *discuss* the extremes mathematically. It does not mean that the real world generator is actually a power law—it means that we don't understand the structure of the external events it delivers and need a tool of analysis. Also, fractals simplify the mathematical discussions because all you need to do is to perturbate one parameter, here the α, and it increases or decreases the role of the rare event in the total properties.

Say, for instance, that, in an analysis, you move α from 2.3 to 2 for data in the publishing business; the sales of books in excess of 1 million copies would triple! This method is akin to generating combinations of scenarios with series of probabilities and series of payoffs, fattening the tail at each time.

The following argument will help illustrate the general problem with forecasting under fat tails. Now the problem: *Parametrizing a power law lends itself to extremely large estimation errors* (since heavy tails have inverse problems). Small changes in the α main parameter used by power laws lead to extremely large effects in the tails.

And we don't observe the α—an uncertainty that comes from the measurement error. Fig. 9 shows more than 40 thousand computations of the tail exponent α from different samples of different economic variables (data for which it is impossible to refute fractal power laws). We clearly have problems figuring out what the α is: our results are marred by errors. The mean absolute error in the measurement of the tail exponent is in excess of 1 (i.e. between $\alpha = 2$ and $\alpha = 3$). Numerous papers in econophysics found an "average" alpha between 2 and 3—but if you process the >20 million pieces of data analyzed in the literature, you find that the variations between single variables are extremely significant.[20]

Now this mean error has massive consequences. Fig. 10 shows the effect: the expected value of your losses in excess of a certain amount (called the "shortfall") is multiplied by >10 from a small change in the α that is less than its mean error.[21]

[20] One aspect of this inverse problem is even pervasive in Monte Carlo experiments (much better behaved than the real world), see Weron (2001).

[21] Note that the literature on extreme value theory (Embrechts, Klüppelberg, & Mikosch, 1997) does not solve much of the problem, as the calibration errors stay the same. The argument about calibration we saw earlier makes the values depend on the unknowable tail exponent. This calibration problem explains how Extreme Value Theory works better on computers than in the real world (and has failed completely in the economic crisis of 2008–2009).

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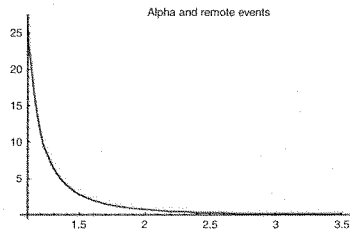

Fig. 10. The value of the expected shortfall (expected losses in excess of a certain threshold) in response to changes in the tail exponent α. We can see it explode by an order of magnitude.

6. The map

First quadrant: Simple binary decisions, under type-1 distributions: forecasting is safe. These situations are, unfortunately, more common in laboratories and games than in real life. We rarely observe these in payoffs in economic decision making. Examples: some medical decisions, casino bets, prediction markets.

Second quadrant: Complex decisions under type-1 distributions: Statistical methods may work satisfactorily, though there are some risks. True, thin-tails may not be a panacea, owing to preasymptotics, lack of independence, and model error. There are clearly problems there, but these have been addressed extensively in the literature (see Freedman, 2007).

Third quadrant: Simple decisions, under type-2 distributions: there is little harm in being wrong—the tails do not impact the payoffs.

Fourth quadrant: Complex decisions under type-2 distributions: this is where the problem resides. We need to avoid the prediction of remote payoffs—though not necessarily ordinary ones. Payoffs from remote parts of the distribution are more difficult to predict than closer parts.

A general principle is that, while in the first three quadrants you can use *the best* model you can find, this is dangerous in the fourth quadrant: no model should be better than just any model. So the idea is to exit the fourth quadrant.

The recommendation is to move into the third quadrant—it is not possible to change the distribution; but it is possible to change the payoff, as will be discussed in Section 7 (see Table 5).

The subtlety is that, while we have a poor idea about the expectation in the 4th quadrant, exposures to rare events are not symmetric.

7. Decision-making and forecasting in the fourth quadrant

7.1. Solutions by changing the payoff

Finally, the main idea proposed in this paper is to endogenize decisions, i.e., escape the 4th quadrant whenever possible by changing the payoff in reaction to the high degree of unpredictability and the harm it causes. How?

Just consider that the property of "atypicality" of the moves can be compensated by truncating the payoffs, thus creating an organic "worst case" scenario that is resistant to forecast errors. Recall that a binary payoff is insensitive to fat tails precisely because above a certain level, the domain of integration, changes in probabilities do not impact the payoff. So making the payoff no longer open-ended mitigates the problems, thus making it more tractable mathematically.

A way to express it using moments: all moments of the distribution become finite in the absence of open-ended payoffs, by putting a floor L below which $f(x) = 0$, as well a ceiling H. Just consider that if you are integrating payoffs in a finite, rather than an open-ended domain, i.e. between L and H, respectively, *the tails of the distributions outside that domain no longer matter*. Thus the domain of integration becomes the domain of payoff.

$$\lambda(x) = \int_L^H f(x)\, p(x) \mathrm{d}x.$$

With an investment portfolio, for instance, it is possible to "put a floor" on the payoff using insurance, or, even better, by changing the allocation. Insurance products are tailored with a maximum payoff; catastrophe insurance products are also set with a "cap", though the cap might be high enough to allow for a dependence on the error of the distribution.[22]

[22] Insurance companies might cap the payoff of a single claim, but a collection of capped claims might represent some problems, as the maximum loss becomes so large as to be almost undistinguishable from that with an uncapped payoff.

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Table 5
The four quadrants.

	Simple payoffs	Complex payoffs
Distribution 1 ("thin tailed")	First quadrant: Extremely safe	Second quadrant: Safe
Distribution 2 (no or unknown characteristic scale)	Third quadrant: Safe	Fourth quadrant: Dangers[a]

[a] The dangers are limited to exposures in the negative domain (i.e., adverse payoffs). Some exposures, we will see, can only be "positive".

7.1.1. The effect of skewness

We omitted earlier to discuss asymmetry in either the payoff or the distribution. Clearly, the fourth quadrant can present either left or right skewness. If we suspect right-skewness, the true mean is more likely to be underestimated by the measurement of past realizations, and the total potential is likewise poorly gauged. A biotech company (usually) faces positive uncertainty, a bank faces almost exclusively negative shocks.

More significantly, by raising the L (the lower bound), one can easily produce positive skewness, with a set floor for potential adverse outcomes and open upside. For instance, what Taleb (2007a) calls a "barbell" investment strategy consists of allocating a high portion of a portfolio to T-Bills (or equivalent), say α, with $0 < \alpha < 1$, and a small portion $(1 - \alpha)$ to high-variance securities. While the total portfolio has medium variance, $L = (1 - \alpha)$ times the face value invested, another portfolio of the same variance might lose 100%.

7.1.2. Convex and concave to error

If a source of uncertainty can offer more benefits than a potential harm, then there may be gains from it—which we label "convex" or "concave".

More generally, we can be concave to model error if the payoff from the error (obtained by changing the tails of the distribution) has a negative second derivative with respect to the change in the tails, or is negatively skewed (like the payoff of a short option). It will be convex if the payoff is positively skewed (like the payoff of a long option).

7.1.3. The effect of leverage in operations and investment

Leveraging in finance has the effect of increasing concavity to model error. As we will see, it is exactly the opposite of redundancy—it causes payoffs to increase, but at the costs of an absorbing barrier should there be an extreme event that exceeds the allowance made in the risk measurement. Redundancy, on the other hand, is the equivalent of de-leveraging, i.e. by having more idle "inefficient" capital on the side. But a a second look at such funds can reveal that there may be a direct expected value from being able to benefit from opportunities in the event of asset deflation, and hence "idle" capital needs to be analyzed as an option.

7.2. Solutions by mitigating forecasting errors

7.2.1. Optimization vs. redundancy

The optimization paradigm of the economics literature meets some problems in the fourth quadrant: what if we have a consequential forecasting error? Aside from the issue that the economic agent is optimizing on the future states of the world, with a given probability distribution, nowhere[23] have the equations taken into account the possibility of a large deviation that would allow *not* optimizing consumption and having idle capital. Also, the psychological literature on well-being (Kahneman, 1999) shows an extremely concave utility function of income—if one spends such income. But if one hides it under the mattress, one will be less vulnerable to an extreme event. So there is an enhanced survival probability for those who have additional margin.

While economics have been mired in conventional linear analysis, stochastic optimization with Bellman-style equations that fall into the category Type-1, a different point of view is provided by complex systems analysis. One of the central attributes of complex systems is redundancy (May, Levin, & Sugihara, 2008).

[23] See Merton (1992) for a discussion of the general consumption Capital Asset Pricing Market.

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Biological systems — those that have survived millions of years — include a large share of redundancies.[24, 25] Just consider the number of double organs (lungs, kidneys, ears). This may suggest an option-theoretic analysis: redundancy is like an option. One certainly pays for it, but it may be necessary for survival. And while redundancy means similar functions used by identical organs or resources, biological systems have, in addition, recourse to "degeneracy", the possibility of one organ to perform more than one function, which is the analog of redundancy at a functional level (Edelman & Gally, 2001).

When institutions such as banks optimize, they often do not realize that a simple model error can blow through their capital (as it just did) (see Fig. 11).

Examples: In one day in August 2007, Goldman Sachs experienced 24 times the average daily transaction volume[26]—would 29 times have blown up the clearing system? Another severe instance of an extreme "spike" lies in an event of September 18, 2008, in the aftermath of the Lehman Bothers Bankruptcy. According to congress documents, only made public in February 2009:

> On Thursday (Sept 18), at 11 am the Federal Reserve noticed a tremendous draw-down of money market accounts in the US, to the tune of $550 billion[27] was being drawn out in the matter of an hour or two.
>
> If they had not done that [add liquidity], their estimation is that by 2 pm that afternoon, $5.5 trillion would have been drawn out of the money market system of the U.S., which would have collapsed the entire economy of the U.S., and within 24 h the world economy would have collapsed. It would have been the end of our economic system and our political system as we know it.[28]

For naive economics, the best way to effectively reduce costs is to minimize redundancy, and hence avoiding the option premium of insurance. Indeed, some systems tend to optimize and therefore become more fragile. Albert and Barabasi (2002) and Barabási and Albert (1999) warned (ahead of the North Eastern power outage of August 2003) how electricity grids, for example, optimize to the point of not coping with unexpected surges—which predicted the possibility of a blackout of the magnitude of the one that took place in the North Eastern U.S. in August 2003. We cannot discuss "flat earth" globalization without realizing that it is overoptimized to the point of maximal vulnerability.

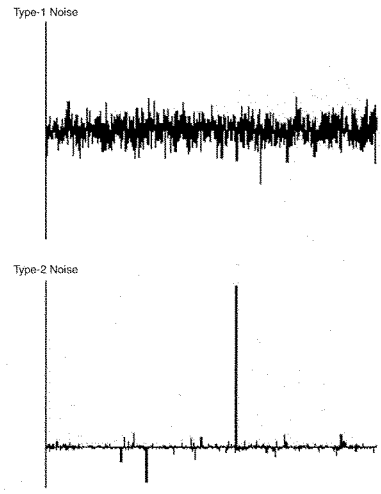

Fig. 11. Comparison between Gaussian-style noise and Type-2 noise with extreme spikes—which necessitates more redundancy (or insurance) than normally required. Policymakers and forecasters were not aware that complex systems tend to produce the second type of noise.

7.2.2. *Time and sample size*

It takes much, much longer for a fat-tailed time series to reveal its properties—in fact, many can, in short episodes, masquerade as thin-tailed. At the worst, we don't know how long it would take to know. But we can have a pretty clear idea whether *organically*, because of the nature of the payoff, the "Black Swan" can hit on the left (losses) or on the

[24] May et al. (2008).

[25] For the scalability of biological systems, see Burlando (1993), Enquist and Niklas (2001), Harte, Kinzig, and Green (1999), Ritchie and Olff (1999) and Solé, Manrubia, Benton, Kauffman, and Bak (1999).

[26] Personal communication, Pentagon Highland Forum, April meeting, 2008.

[27] Even if the number, as is possible, is off by one order of magnitude, the consequences remain extremely severe.

[28] http://www.liveleak.com/view?i=ca2_1234032281.

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right (profits). This point can be used in climatic analysis. Things that have worked for a long time are preferable—they are more likely to have reached their ergodic states.

Likewise, portfolio diversification needs to be larger, much larger than anticipated. A mean variance Markowitz-style portfolio construction fails in the real world on several accounts. Taleb (2009) shows that, even if we assume finite variance, but fat tails and an unknown variance, the process of discovery of the variance itself makes portfolio theory totally unusable. DeMiguel, Garlappi, and Uppal (2007) show that a naive $1/n$ allocation outperforms out-of-sample any form of "optimal" portfolio—compatible with the notion that fat tails (and unknown future properties from past samples) require much broader diversification than is required by modern portfolio theory.

7.2.3. The problem of moral hazard

It is optimal (both economically and psychologically) to make a series of annual bonuses betting on hidden risks in the fourth quadrant, then "blow up" (Taleb, 2004). The problem is that bonus payments are made with a higher frequency (i.e. annually) than is warranted from the statistical properties (when it takes longer to capture the statistical properties).

7.2.4. Metrics

Conventional metrics based on type 1 randomness fail to produce reliable results—while the economics literature is grounded in them. Concepts like "standard deviation" are not stable and do not measure anything in the fourth quadrant. This is also true for "linear regression" (the errors are in the fourth quadrant), "Sharpe ratio", the Markowitz optimal portfolio,[29] ANOVA, Least squares, etc. "Variance" and "standard deviation" are terms invented years ago when we had no computers. Note that from the data shown and the instability of the kurtosis, no sample will ever deliver the true variance in a reasonable time. However, note that truncating payoffs blunts the effects of the inadequacy of the metrics.

[29] The framework of Markowitz (1952), as it is built on the L^2 norm, does not stand any form of empirical or even theoretical validity, owing to the dominance of higher moment effects, even in the presence of "finite" variance, see Taleb (2009).

8. Conclusion

To conclude, we offered a method of robustifying payoffs from large deviations and making forecasts possible to perform. The extensions can be generalized to a larger notion of society's safety—for instance how we should build systems (internet, banking structure, etc.) to be impervious to random effects.

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A longer literary version of the ideas of this paper was posted on the web on the EDGE website at www.edge.org, eliciting close to 600 comments and letters, which helped in the elaboration of this version. The author thanks the commentators and various reviewers, and Yossi Vardi for the material on the events of Sept 18, 2008.

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House Financial Services
Subcommittee on Oversight and Investigations Questions For the Record
"Oversight of the Office of Financial Research and the Financial Stability Oversight Council"
July 14, 2011

Questions for the Record

Q1. Discussing the Federal Reserve's growing importance in data warehousing and management, Chairman Ben Bernanke stated, "To ensure that we have access to more detailed data on mortgage and credit markets, the Federal Reserve System has created the Risk Assessment, Data Analysis, and Research, or RADAR, data warehouse." The Federal Reserve says that this new platform will "help inform our monetary policy, bank supervision and regulation, and community development." What has OFR learned from the Federal Reserve's experience? Regarding data warehousing and management, what do you see OFR doing differently than the Federal Reserve and what would you like to replicate?

The Risk Assessment, Data Analysis, and Research (RADAR) system demonstrates the value of leveraging recent technological advances to create an analytic infrastructure that can support the consumption, aggregation and linkage of data across multiple sources, while also maintaining a focus on information security. The system exploits the efficiency of on-demand provisioning of analytic resources, the effectiveness of cloud-based delivery models and the cost efficiency of large scale computing platforms based on commoditized hardware.

We have begun discussions with the Federal Reserve Bank of Kansas City team who designed the RADAR system regarding best practices and 'lessons learned' as part of ongoing consultations into the design of the Office of Financial Research's (OFR) long-term analytic platform. These consultations have also included the Federal Reserve Board and the Federal Reserve Bank of New York. We have also been working with the Chief Information Officers of the Financial Stability Oversight Council (Council) member agencies to initiate a "Big Data" working group. This working group is exploring the opportunities the "Big Data" technology paradigm affords OFR and the Financial Stability Oversight Council (Council) information technology (IT) community and will help inform OFR on alternatives we should consider when designing OFR's IT capabilities. We are also mindful of the potential benefits of leveraging existing analytic resources within other Council member agencies, including the RADAR system.

Q2. Because most of the information that OFR seeks to receive from financial institutions will be sensitive in nature-- including proprietary data -- what is OFR doing to develop data protection and risk management strategies?

The OFR is developing robust plans to protect information and data.

First, the OFR will use the best available IT security processes for protecting against unauthorized access to information through hacking, malware or other cyber-attacks.

1) The OFR uses the Treasury Departmental Offices IT support infrastructure. We follow the National Institute for Standards and Technologies *Recommended Security Controls for Federal Information Systems and Organizations* (NIST SP 800-53 rev. 3), meeting the standards required for high confidentiality, high integrity and high availability. Our Local Area Network (LAN) is not directly connected to the Internet, but stands behind the Treasury T-Net; the T-Net Internet connection has been approved by Department of Homeland Security's United States Computer Emergency Readiness Team (US-CERT) as a Trusted Internet Connection. Treasury's Internet traffic is monitored by the Government Security Operations Center using Department of Homeland Security and US-CERT tools searching for attack profiles.

2) In addition to the T-Net layer of monitoring and the DO-LAN layer of protection, each Departmental Office establishes internal firewalls to meet its own information security requirements. The design for the OFR's information security architecture will allow increased protections when the role-based access requirements emerging from the framework for data governance demand such enhancements.

3) At the individual level, OFR laptops are protected from accidental or intentional tampering through the use of the Federal Desktop Core Configuration Standard, provided by the Office of Management and Budget. Users do not have administrative rights and all updates and changes are reviewed by IT security. OFR email and system access is monitored at multiple levels. These controls are commonly audited as part of Treasury's normal acquisition processes, and a maintenance audit takes place at least once a year as part of the annual Federal Information Security Management Act compliance audit.

Second, the OFR will limit the scope of data and information collected to those needed to fulfill its mission.

Third, the OFR is working with Council member agencies to develop procedures and protocols to share data appropriately while limiting distribution appropriately. Authorized participants in unique access programs or institutional agreements will be trained to manage the data at the level of confidentiality required by the originating agency. The OFR will avoid retaining records or allowing access beyond the mission needs for timely analysis, audits, evidentiary purposes, and in order to comply with the General Records Schedule or a Records Schedule unique to Treasury. When reports responding to specific Council requirements regarding particular companies are gathered, analyzed, and managed by the OFR, they will be afforded all additional protections that would govern the management of personal identity information or business confidential data, as needed.

Finally, post-employment restrictions will reinforce the OFR's security processes. No employee of the OFR who has had access to particularly sensitive data maintained by the OFR about financial entities required to report to the OFR may be employed by or provide advice or consulting services to a financial company for a period of one year after possessing access to such data or business confidential information. For employees whose access to confidential information was limited, the regulations may provide, on a case-by-case basis, for a shorter period of post-employment prohibition.

Q3. Has OFR developed a business continuity plan? If so, please provide the plan.

As an office within the Treasury Department, the OFR is included in the Department's Continuity Of Operations Planning (COOP) process. The OFR will be included in all Department-wide exercises and planning activities for disasters and emergency events.

In addition, the OFR is preparing its own emergency plan and COOP that incorporates workforce flexibilities, including telework, as a key component. The COOP will ensure that essential functions will continue during a wide range of emergencies, including localized acts of nature, pandemic influenza, accidents, and technological or attack-related emergencies.

Q4. In response to a question from Mr. Fincher at the July 14, 2011, hearing, you said, "There is a salary -- set of salary guidelines, and that was consistent with the pay scale in other federal financial regulators. So there is a, if you will, there is a cap on salary." Please provide these OFR salary guidelines.

Personnel within the OFR fall into positions whose compensation are covered under provisions of the Financial Institutions Reform, Recovery and Enforcement Act. The salary guidelines used by the OFR are consistent with these provisions. The OFR salary tables are enclosed.

Q5. At the July 14, 2011, hearing, Mr. Fitzpatrick asked you, "Are there plans by the office to publish for public comment, for instance, the criterion for the information request[ed]?" You responded, "... we'll put those -- those things out for comment by -- you know, by the public." Please provide OFR's written plan for seeking comment on the criterion for OFR's information requests?

The OFR is committed to transparency and public participation. We are in the process of developing a series of standard operating procedures that will reflect that commitment. This series will include documentation of a consistent approach for determining which questions regarding information requests require public comment. These procedures will leverage existing vehicles for gathering public

comment, such as Treasury's website, Regulations.gov, and the Federal Register. The guidelines for the use of these forums will be broadly consistent with those commonly used by Treasury. In addition, information collections subject to the requirements of the Paperwork Reduction Act (PRA) will be issued with a robust opportunity for comment consistent with the PRA.

Q6. Please provide OFR's plans for complying with the rulemaking provisions in Sections 153 and 154.

The OFR is in the process of developing a series of standard operating procedures. This series will include documentation of a consistent approach for determining when it is necessary to issue rules, regulations and orders for carrying out duties related to 1) data collection; 2) standardization of types and formats of data, and 3) assisting in the determination of types and formats of data authorized by the Dodd-Frank Wall Street Reform and Consumer Protection Act to be collected by member agencies. This will include verifying that the required information is not already available through another agency. The procedures for using the Federal Register for such activities will be consistent with those commonly used by Treasury, which are documented within Treasury Directive 28-03, Review and Clearance of Regulations.

Q7. Please provide the personnel policies and regulations, or drafts of these policies, that OFR has promulgated in response to the requirements found in Section 152(g).

An interim rule in response to Section 152(g) was published in the Federal Register on September, 30, 2011. It is open for public comment until November 29, 2011.

Q8. At the July 14, 2011, hearing, Mr. Grimm described two IT projects at the FBI, the VCF and Sentinel programs, that ended as well-publicized failures. Please explain why you think OFR will be able to accomplish its open-ended IT goals when the FBI and other government agencies were not?

The OFR recognizes the need for clearly articulated requirements (taking into account opportunities to leverage existing capabilities), realistic schedules, strong oversight, and well specified deliverables in the design of its IT infrastructure. The Data Center has been set up so that validated business requirements and priorities drive the IT build and so that quality control, risk mitigation, and testing relative to requirements are in place upfront. Specifically, we are:

1) Taking a deliberate approach to specifying the requirements that determine what we need to build;

2) Building our "map" of the financial services ecosystem to better understand what capabilities already exist among Council members and can be leveraged in support of OFR's mission;

3) Working to establish advisory committees comprised of both representatives from the public and private sectors;

4) Working with academia on research initiatives to help us benchmark technologies and approaches, experiment with new technologies and inform our plans for building OFR's IT infrastructure.

5) Building the OFR's Program Management Office to provide oversight over all project activities of the OFR, working to ensure timely delivery of projects critical to the OFR's mandate and reduce costs through the elimination of duplicative activities and increased efficiencies.

6) Implementing a governance process throughout the technology investment lifecycle to evaluate and prioritize investments across the enterprise and to manage any risks or issues that are identified on a timely basis. We will use this process to continuously validate the business case for an initiative, to assess the viability of the intended architecture, to offer a structured framework to track and monitor projects, to enhance executive-level transparency, to ensure projects meet stated objectives and maximize the management of costs across our investment portfolio.

Q9. What has the OFR done to pursue or facilitate international cooperation among regulators? Are there efforts underway to develop alternative or rival LEI systems in other countries? What could be the consequences of those efforts?

The OFR has been engaged in a number of multilateral and bilateral discussions with international financial regulators, including the Financial Stability Board, the Technical Committee of the International Organization of Securities Commissions, and the International Monetary Fund regarding the global Legal Entity Identifier (LEI) initiative. The OFR has also been engaged in consultations with regulators from Europe, Asia, Latin America, and Canada on a bilateral basis. The OFR also has been cooperating with other U.S. regulators who participate in various international work-streams related to financial data standards and reporting.

The LEI is a public-private initiative of regulators and market participants from around the world. The key differences between the global LEI initiative and currently existing local identification systems are the scope of coverage and common data standards. While the majority of jurisdictions have local systems of market participant identification, those systems are designed to identify a particular category of participants meeting certain criteria, engaged in certain types of activities, or acting in certain markets. The LEI is envisioned to be a common

identifier for all financial participants involved in any type of financial activity

There do not appear to be any efforts underway to develop an alternative global LEI system in other countries. Instead, the OFR and international regulators have been working jointly with the International Organization for Standardization, financial international standards groups, and participants in the financial industry to establish agreement on principles to establish an LEI that reflects the needs of public and private stakeholders.

Q10. What efforts toward international cooperation in implementing a universal LEI program are underway? What issues have arisen in those efforts?

The LEI will be a universal identifier used across jurisdictions and industries based on a single financial data standard. The common data standard will allow regulators to aggregate financial data across participants to assess risks to financial stability, to conduct market surveillance and enforcement, and to supervise market participants. The standard will also allow market participants to improve operational efficiency and assess risk exposure across markets and products among other internal business needs.

The global LEI initiative is advanced not only in the United States but is also included in a number of international work-streams. In August 2011, the Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions released a consultative report on over-the-counter derivatives data reporting and aggregation requirements. The report endorses a global LEI as an "essential tool" for regulators. In July 2011, the Financial Stability Board welcomed the progress of financial regulators and industry to establish a single global identifier for uniquely identifying parties to financial transactions, and agreed to arrange a workshop in the fall to address how best to coordinate and move forward.

The OFR worked with the Financial Stability Board Secretariat and other authorities to organize an LEI workshop in September 2011. The workshop attendees included stakeholders and experts in finance, data, and technology from the public and private sectors, including financial regulators from around the world. It is expected that a roadmap for next steps will be created as a result of this workshop to further progress the LEI definition and implementation.

Q11. During these early stages of OFR's existence, what is OFR doing to manage costs, particularly as it relates to technology infrastructure?

The OFR is engaged in multiple efforts to realize cost efficiencies across the organization, specifically addressing technology infrastructure. We are partnering with Treasury's Office of the Chief Information Officer and Council member

agencies to understand and leverage existing capabilities, as well as to gain a better understanding from their experiences in expanding their existing IT environments. We are looking for synergies among Council member agencies data center plans and exploring the viability of establishing common hosting and infrastructure solutions, all with the goal of enabling greater economies of scale.

As detailed in response to question 8, the OFR recognizes the need for clearly articulated requirements (taking into account opportunities to leverage existing capabilities), realistic schedules, strong oversight, and well specified deliverables in the design of its IT infrastructure. The Data Center has been set up so that validated mission business requirements and priorities drive the IT build and so that quality and risk control processes are in place upfront.

Q12. What are OFR's plans for "cloud computing" services and infrastructure?

The OFR is planning to leverage the advantages of cloud-based computing solutions, so long as they meet or exceed the OFR's strict data security requirements. As the OFR makes decisions relative to the hosting of its products and services, maintaining the security of our data assets will be our first priority.

To meet the OFR's legislative mandate to engage academia, the financial services industry, and the public, the OFR is developing a collaboration platform that will facilitate data transparency and collaboration on new risk management models.

Attachment 1

OFR Interim AD Pay Tables
2011 Salary Tables

Cities Where GEO Zone Rate is 0 (Includes all cities not listed below.)		
Pay Band	Min	Max
OR-1A	$22,200	$31,182
OR-2B	24,420	34,300
OR-2A	27,100	41,909
OR-2B	29,810	46,100
OR-3A	37,200	52,314
OR-3B	40,920	57,545
OR-3C	45,012	63,300
OR-4A	46,300	64,877
OR-4B	53,245	74,609
OR-4C	61,232	85,800
OR-5A	64,400	90,662
OR-5B	74,060	104,261
OR-5C	85,169	119,900
OR-6	97,944	154,600
OR-7	112,636	199,100
OR-8	136,700	247,500 *

* Capped Rate

Cities Where GEO Zone Rate is 3% (Includes Atlanta, Cleveland, Charlotte, Columbus, Dallas, Dublin, Fort Worth, Houston, Independence OH, Jacksonville, Milwaukee, New Orleans, Overland Park KS, Peoria IL, St Louis, Syracuse, Tampa)		
Pay Band	Min	Max
OR-1A	$22,866	$32,117
OR-2B	25,153	35,329
OR-2A	27,913	43,166
OR-2B	30,704	47,483
OR-3A	38,316	53,883
OR-3B	42,148	59,272
OR-3C	46,362	65,199
OR-4A	47,689	66,823
OR-4B	54,842	76,847
OR-4C	63,069	88,374
OR-5A	66,332	93,381
OR-5B	76,282	107,389
OR-5C	87,724	123,497
OR-6	100,883	159,238
OR-7	116,015	205,073
OR-8	140,801	247,500 *

* Capped Rate

Attachment 1

OFR Interim AD Pay Tables
2011 Salary Tables

Cities Where GEO Zone Rate is 8% (Includes Denver, Minneapolis, Phoenix)		
Pay Band	Min	Max
OR-1A	$23,976	$33,676
OR-2B	26,374	37,044
OR-2A	29,268	45,262
OR-2B	32,195	49,788
OR-3A	40,176	56,499
OR-3B	44,194	62,149
OR-3C	48,613	68,364
OR-4A	50,004	70,067
OR-4B	57,505	80,577
OR-4C	66,130	92,664
OR-5A	69,552	97,915
OR-5B	79,985	112,602
OR-5C	91,983	129,492
OR-6	105,780	166,968
OR-7	121,647	215,028
OR-8	147,636	247,500 *

* Capped Rate

Cities Where GEO Zone Rate is 13% (Includes Bensalem PA, Cherry Hill NJ, Chicago, Downers Grove IL, Farmington Hills MI, Landover, Miami, Schaumburg IL, Southfield MI, Wilming DE, Washington, DC)		
Pay Band	Min	Max
OR-1A	$25,086	$35,235
OR-2B	27,595	38,759
OR-2A	30,623	47,357
OR-2B	33,685	52,093
OR-3A	42,036	59,115
OR-3B	46,240	65,026
OR-3C	50,864	71,529
OR-4A	52,319	73,311
OR-4B	60,167	84,308
OR-4C	69,192	96,954
OR-5A	72,772	102,448
OR-5B	83,688	117,815
OR-5C	96,241	135,487
OR-6	110,677	174,698
OR-7	127,279	224,983
OR-8	154,471	247,500 *

* Capped Rate

Attachment 1

OFR Interim AD Pay Tables
2011 Salary Tables

Cities Where GEO Zone Rate is 18% (Includes Boston and Providence)		
Pay Band	Min	Max
OR-1A	$26,196	$36,795
OR-2B	28,816	40,474
OR-2A	31,978	49,453
OR-2B	35,176	54,398
OR-3A	43,896	61,731
OR-3B	48,286	67,904
OR-3C	53,114	74,694
OR-4A	54,634	76,555
OR-4B	62,829	88,038
OR-4C	72,253	101,244
OR-5A	75,992	106,981
OR-5B	87,391	123,028
OR-5C	100,499	141,482
OR-6	115,574	182,428
OR-7	132,910	234,938
OR-8	161,306	247,500 *

* Capped Rate

Cities Where GEO Zone Rate is 23% (Includes Carlsbad, Los Angeles, Monterey Park CA, Santa Ana CA)		
Pay Band	Min	Max
OR-1A	$27,306	$38,354
OR-2B	30,037	42,189
OR-2A	33,333	51,548
OR-2B	36,666	56,703
OR-3A	45,756	64,346
OR-3B	50,332	70,781
OR-3C	55,365	77,859
OR-4A	56,949	79,799
OR-4B	65,491	91,769
OR-4C	75,315	105,534
OR-5A	79,212	111,514
OR-5B	91,094	128,241
OR-5C	104,758	147,477
OR-6	120,472	190,158
OR-7	138,542	240,000 *
OR-8	168,141	247,500 *

* Capped Rate

Attachment 1

OFR Interim AD Pay Tables
2011 Salary Tables

Cities Where GEO Zone Rate is 28% (Includes San Francisco and Palo Alta CA)		
Pay Band	Min	Max
OR-1A	$28,416	$39,913
OR-2B	31,258	43,904
OR-2A	34,688	53,644
OR-2B	38,157	59,008
OR-3A	47,616	66,962
OR-3B	52,378	73,658
OR-3C	57,615	81,024
OR-4A	59,264	83,043
OR-4B	68,154	95,499
OR-4C	78,377	109,824
OR-5A	82,432	116,047
OR-5B	94,797	133,454
OR-5C	109,016	153,472
OR-6	125,369	197,888
OR-7	144,174	240,000 *
OR-8	174,976	247,500 *

* Capped Rate

Cities Where GEO Zone Rate is 33% (Includes New York City and Edison NJ)		
Pay Band	Min	Max
OR-1A	$29,526	$41,472
OR-2B	32,479	45,619
OR-2A	36,043	55,739
OR-2B	39,647	61,313
OR-3A	49,476	69,578
OR-3B	54,424	76,535
OR-3C	59,866	84,189
OR-4A	61,579	86,287
OR-4B	70,816	99,230
OR-4C	81,438	114,114
OR-5A	85,652	120,580
OR-5B	98,500	138,667
OR-5C	113,275	159,467
OR-6	130,266	205,618
OR-7	149,806	240,000 *
OR-8	181,811	247,500 *

* Capped Rate

United States Government Accountability Office

GAO

Testimony
Before the Subcommittee on Oversight and Investigations, Committee on Financial Services, House of Representatives

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DODD-FRANK ACT

Eleven Agencies' Estimates of Resources for Implementing Regulatory Reform

Statement for the Record by A. Nicole Clowers, Director
Financial Markets and Community Investment

U.S. Government Accountability Office
GAO 90 YEARS 1921-2011
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GAO-11-808T

Chairman Neugebauer, Ranking Member Capuano, and Members of the Subcommittee:

Thank you for the opportunity to provide information on selected federal agencies' reported funding and staff resources associated with implementing the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) in 2010, 2011, and 2012. As you know, the recent financial crisis is considered to be the worst since the Great Depression, and data from the Board of Governors of the Federal Reserve System (Federal Reserve) show that it resulted in the loss of trillions of dollars in household wealth.[1] Congress passed the Dodd-Frank Act in 2010 in response to the ongoing crisis, including in the legislation numerous provisions intended to strengthen oversight of insured depository institutions and nonbank financial companies and to consolidate consumer protection responsibilities that had been fragmented across multiple agencies.[2] The Dodd-Frank Act also authorized the creation of new offices and agencies to implement the reforms. The extensive reforms and the need for new offices to implement them have raised questions about the potential costs to agencies of complying with the provisions.

My statement today focuses on (1) the agencies' funding estimates and the sources of funds associated with implementing the Dodd-Frank Act, (2) agencies' estimates of the number of new entities that will be created and the full-time equivalents (FTEs) they anticipate needing to carry out new responsibilities, and (3) challenges that the agencies faced in developing these estimates.[3] My statement draws on information we collected from 11 federal agencies in preparation for an oversight hearing held by the Oversight and Investigations Subcommittee, House Committee on Financial Services, on March 30, 2011. We collected this information at the subcommittee chairman's request and provided it to the subcommittee staff on March 18 and 25, 2011. Appendix I includes the information we collected from the agencies.

[1]Federal Reserve Flow of Funds database (March 6, 2008 and March 11, 2010). Available at http://www.federalreserve.gov/releases/z1.

[2]Pub. L. No. 111-203, 124 Stat. 1376 (2010).

[3]FTE is a staffing measure that reflects the total number of regular hours employees work divided by the number of compensable hours in a fiscal year.

To address the Chairman's request for cost information before the March 2011 hearing, we obtained and summarized budgetary information from 11 federal agencies: Commodity Futures Trading Commission (CFTC), Bureau of Consumer Financial Protection (also known as the Consumer Financial Protection Bureau, or CFPB), Federal Deposit Insurance Corporation (FDIC), Federal Housing Financing Agency (FHFA), Board of Governors of the Federal Reserve System (Federal Reserve), Federal Trade Commission (FTC), Financial Stability Oversight Council (FSOC), Office of the Comptroller of the Currency (OCC), Office of Financial Research (OFR), Securities and Exchange Commission (SEC), and Department of the Treasury (Treasury). We judgmentally selected these agencies because the Dodd-Frank Act assigned them new responsibilities or created them.

We reviewed documents that these agencies provided to the subcommittee regarding the costs of implementing the Dodd-Frank Act. In addition, we requested data on the agencies' estimates of their funding and FTEs agencywide and for activities related to the Dodd-Frank Act in 2010, 2011, and 2012. We also requested that agencies identify their sources of funding (appropriations, assessments of supervised institutions, revenue from investments or providing services, and transfers of funds from other agencies), describe the extent to which new resources related to the Dodd-Frank Act would be funded on a one-time or recurring basis, and describe challenges they faced in developing the estimates of requested funding and FTEs. We followed up with the agencies to clarify any questions that we had about the information they provided. To the extent possible, we corroborated the information with other published sources, including the President's Fiscal Year 2012 Budget documents.[4]

We conducted the work for this statement in March 2011 and sought updates and verification of the information in July 2011.[5] Our work was

[4]We also reviewed the Congressional Budget Office's updated estimate of the changes in revenue and spending that would result from implementation of the requirements under the Dodd-Frank Act over the 2010-2020 period. See http://www.cbo.gov/doc.cfm?index=12120.

[5]We provided a draft of this statement to the 11 federal agencies for review and comment. All of the agencies except Treasury provided technical comments, which we incorporated as appropriate. Treasury did not have any comments on the information presented on the Department or on CFPB, FSOC, and OFR.

performed in accordance with GAO's Quality Assurance Framework. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions.

The amount of new funding the agencies reported as associated with implementing the Dodd-Frank Act varied significantly across the 11 agencies (table 1). For example, new funding resources related to Dodd-Frank responsibilities during the years 2011–2012 ranged from a low of $0 for FTC to a high of around $329 million for CFPB. Funding resources to implement the Dodd-Frank Act accounted for at least 25 percent of the agency's total budget increase at 9 of the 11 agencies in the most recent year for which data were available. Excluding the three agencies that the Dodd-Frank Act created (CFPB, FSOC, and OFR), the CFTC devoted the highest share of total agency resources (25 percent) to implementing the Dodd-Frank provisions. Agencies reported that most of the costs related to implementing the provisions will be recurring.

Table 1: Summary of 11 Federal Agencies' Reported New Funding Resources Associated with the Implementation of the Dodd-Frank Act, Fiscal Years 2010 through 2012

($ in thousands)

	Dodd-Frank-related Funding Resources			
Agency	**2010**	**2011**	**2012**	**Total**
Federal Reserve[a]	$7,300	$77,500	Not available	$84,800
CFTC	$0	$15,400	$77,000	$92,400
FDIC[a]	$2,345	$40,860	Not available	$43,205
FHFA	$0	$3,800	$4,350	$8,150
FTC	$0	$0	$0	$0
OCC	$0	$34,850	$235,000	$269,850
SEC	$0	$23,525	$108,982	$132,507
Treasury	$0	$10,393	$5,525	$15,918
CFPB	$9,200	$142,825	$329,045	$481,070
FSOC	$0	$7,435	$7,885	$15,320
OFR	$0	$33,890	$74,468	$108,358

Source: Data from individual agencies.

[a]FDIC and the Federal Reserve report on a calendar year basis. The figures for these two agencies reflect calendar years 2010 and 2011 estimates. At the time of this review, estimates were not available for calendar year 2012.

The agencies are relying on a variety of sources to fund the implementation costs for the new provisions, including assessments and revenues, appropriations, offsetting collections, and transfers from other agencies (table 2). Six of the 11 agencies reported that their funding would be fully or partly met by assessments imposed on regulated institutions or revenues from their operations. Three others reported that they would have to rely at least partly on appropriations. SEC said that it would use offsets (e.g., fees collected), and CFPB would use transfers from the Federal Reserve to fully fund its activities.[6]

Table 2: Summary of 11 Federal Agencies' Types of Funding Sources

Agency	Assessments and Revenues	Appropriations	Offsetting collections	Transfers
Federal Reserve	X[a]			
CFTC		X		
FDIC	X[b]			
FHFA	X			
FTC		X	X	
OCC	X			X
SEC			X	
Treasury		X		
CFPB				X
FSOC	X			X
OFR	X			X

Source: Data from individual agencies.

[a]According to the Federal Reserve, its income is derived primarily from the interest on U.S. government securities that it trades through open market operations. Other sources of income are the interest on foreign currency investments held by the System; fees received for services provided to depository institutions, such as check clearing, funds transfers, and automated clearinghouse operations; and interest on loans to depository institutions (the rate on which is the so-called discount rate). Under the Dodd-Frank Act (Section 318) the Federal Reserve will receive new reimbursements through assessment fees to large Bank Holding Companies, Savings and Loan Holding Companies, and Systemically Important Financial Institutions designated by the Financial Stability Oversight Council. Reimbursements for 2011 assessment fees will be collected in 2012. Preliminary estimates of the fees will be completed later this year. After paying its expenses, the Federal Reserve turns the rest of its earnings over to the U.S. Department of the Treasury.

[6]CFPB will be fully funded through transfers from the earnings of the Federal Reserve. The amount of funding will be limited to a certain percentage of the 2009 total operating expenses of the Federal Reserve, adjusted annually for inflation.

[b]FDIC is funded by premiums that banks and thrifts pay for deposit insurance coverage and from earnings on investments in U.S. Treasury securities.

As table 3 shows, nearly all the agencies plan to have some staff work specifically on responsibilities related to the Dodd-Frank Act. Agencies can hire new staff, redirect staff from other areas, or use staff transferred from other agencies. According to data from the agencies, FTEs related to implementing the Dodd-Frank provisions for the years 2011–2012 ranged from a low of 0 for FTC to a high of 1,225 for CFPB. More specifically, FTC reported that it would implement the Dodd-Frank Act using existing resources and did not anticipate that the new requirements would have a noticeable impact on the agency's budget or operations, since its responsibilities under the Act were relatively limited. CFPB reported that all of its estimated FTEs were new hires, as the agency is currently being established. Furthermore, some agencies will be receiving staff and resources transferred from other agencies. For example, nearly all of OCC's new staff for fiscal years 2010 through 2012 will come from the Office of Thrift Supervision (OTS), which the Dodd-Frank Act dissolved as of July 21, 2011.

Table 3: Summary of 11 Federal Agencies' Reported FTEs Associated with the Implementation of the Dodd-Frank Act, Fiscal Years 2010 through 2012

	Dodd-Frank related FTEs		
Agency	**2010**	**2011**	**2012**
Federal Reserve[a]	69	397	Not available
CFTC	0	121	238
FDIC[a]	0	55	Not available
FHFA	0	16	2
FTC	0	0	0
OCC	0	133[b]	0[b]
SEC	0	14	352
Treasury	0	24	11
CFPB	0	342	883
FSOC	0	17	7
OFR	0	33	135

Source: Data from individual agencies listed.

Note: FTE estimates include all staff resources—that is, new hires, redirects, and transfers from other agencies—devoted to implementing Dodd-Frank responsibilities.

[a]FDIC and the Federal Reserve report on a calendar year basis. The figures for these two agencies reflect calendar years 2010 and 2011 estimates. At the time of this review, estimates were not available for calendar year 2012.

[b]According to OCC, the agency expects to receive an estimated 682 OTS staff transfers in fiscal year 2011. OCC estimates that these transfers will represent 131 FTEs for fiscal year 2011 (based on their July 21, 2011 transfer date). Because these FTEs will already be on board at the beginning of FY 2012, they are not considered new Dodd-Frank related FTEs in FY 2012.

Agencies faced numerous challenges in reporting the resources associated with implementation of the Dodd-Frank Act. Agencies told us that their reported funding and FTE resources reflect their best estimate of the level of resources required to implement existing and new responsibilities but stated that these estimates were uncertain. Beyond the normal challenges associated with estimating resource needs in the future, agencies told us that pending and evolving implementation actions, such as interagency transfers (e.g., from OTS to OCC) and establishing new offices required by the Dodd-Frank Act, makes these estimates particularly uncertain and subject to change. In collecting and analyzing this information, we also found challenges and limitations that affected our efforts to aggregate the data. For example, not all of the agencies are on a federal fiscal year, so the reported budgetary activities for some agencies cover different time frames. In addition, agencies may have used different approaches to estimate the funding and FTE resources, potentially making the figures harder to compare across agencies. Finally, the data collected shed light only on direct costs to these agencies, as reported by them. The information does not include other related direct and indirect costs, such as the costs to market participants or the benefits of implementation—information that would be needed to conduct a complete analysis of the costs and benefits of implementing the Dodd-Frank Act.

Contacts and Staff Acknowledgments

If you or your staff have any questions about matters discussed in this testimony, please contact A. Nicole Clowers at (202) 512-8678 or clowersa@gao.gov. Other key contributors to this testimony include Daniel Garcia-Diaz (Assistant Director), Emily Chalmers, Joe Hunter, Elizabeth Jimenez, Marc Molino, Akiko Ohnuma, and Michael Pahr.

Appendix I: Eleven Agencies' Estimates of Resources for Implementing the Dodd-Frank Act

Board of Governors of the Federal Reserve System

CY 2011 Dodd-Frank resources[a]: $77,500,000
CY 2011 agency-wide total resources: $3,840,000,000
(Dodd-Frank resources = 2.0% of CY 2011 agency total)
CY 2011 agency-wide resources increase: $170,000,000
(Dodd-Frank resources = 45.6% of CY 2011 agency increase)

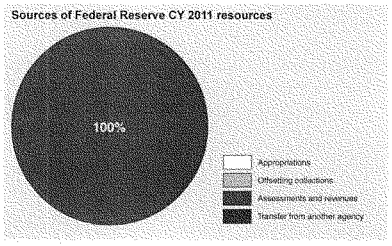
CY 2011 Dodd-Frank new-hire FTEs: 290
CY 2011 agency-wide FTE increase: 620
(Dodd-Frank FTEs = 46.8% of agency increase)

[a]Resources made available or requested for Federal Reserve.

($ in thousands)	CY 2010 actual	CY 2011 approved	CY 2012
Agency total resources[b]	$3,670,000	$3,840,000	Not available
Dodd-Frank related resources[b]	$7,300	$77,500	Not available
Agency new FTEs (net)	-361	620	Not available
Dodd-Frank new FTEs	69	397	Not available
• *New hires*	0	290	Not available
• *Redirected from other work*	69	107	Not available

[b]Resources totals provided exclude the cost for new currency and pension costs for the Reserve Banks.

Sources of Federal Reserve CY 2011 resources



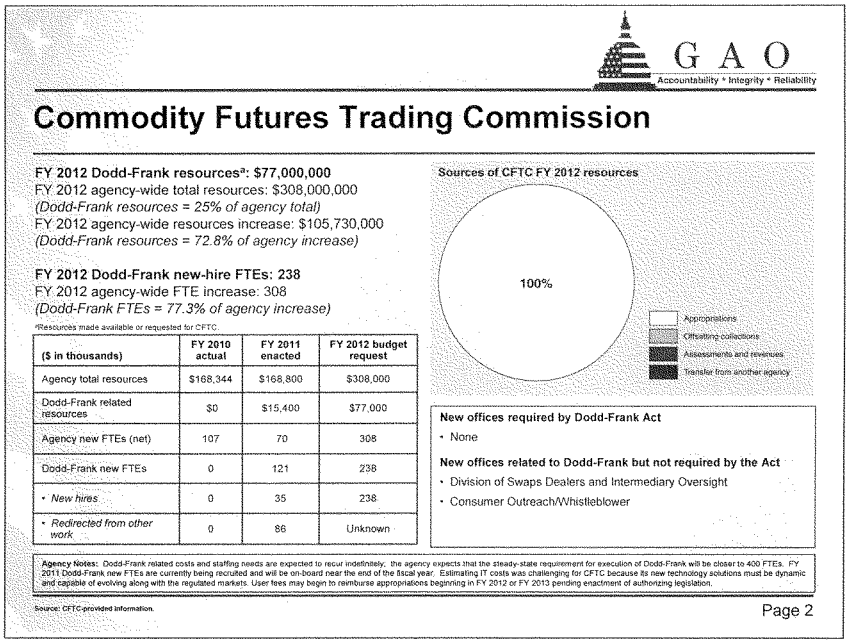
New offices required by Dodd-Frank Act
- Office of Minority and Women Inclusion (at the Board and each of the Reserve Banks)

New offices related to Dodd-Frank but not required by the Act
- Office of Financial Stability Policy and Research
- Financial Market Infrastructures Risk Analytics
- Financial Market Infrastructures Oversight

Agency Notes: The FTE data reflect the Board's best estimates at this time. The negative "Agency new FTEs (net)" for 2010 reflects the net reduction of staff in the financial services (e.g. check processing and support functions) partially offset by an increase in supervision staff. CY 2012 budget and FTE estimates are not yet available. The agency is staffing one-time studies and other one-time costs by redirecting existing staff. Longer term work will be performed by new staff hired to implement Dodd-Frank.

Source: Federal Reserve-provided information.

Page 1



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Commodity Futures Trading Commission

FY 2012 Dodd-Frank resources[a]: $77,000,000
FY 2012 agency-wide total resources: $308,000,000
(Dodd-Frank resources = 25% of agency total)
FY 2012 agency-wide resources increase: $105,730,000
(Dodd-Frank resources = 72.8% of agency increase)

FY 2012 Dodd-Frank new-hire FTEs: 238
FY 2012 agency-wide FTE increase: 308
(Dodd-Frank FTEs = 77.3% of agency increase)

[a]Resources made available or requested for CFTC.

($ in thousands)	FY 2010 actual	FY 2011 enacted	FY 2012 budget request
Agency total resources	$168,344	$168,800	$308,000
Dodd-Frank related resources	$0	$15,400	$77,000
Agency new FTEs (net)	107	70	308
Dodd-Frank new FTEs	0	121	238
• *New hires*	0	35	238
• *Redirected from other work*	0	86	Unknown

Sources of CFTC FY 2012 resources

New offices required by Dodd-Frank Act
- None

New offices related to Dodd-Frank but not required by the Act
- Division of Swaps Dealers and Intermediary Oversight
- Consumer Outreach/Whistleblower

Agency Notes: Dodd-Frank related costs and staffing needs are expected to recur indefinitely; the agency expects that the steady-state requirement for execution of Dodd-Frank will be closer to 400 FTEs. FY 2011 Dodd-Frank new FTEs are currently being recruited and will be on-board near the end of the fiscal year. Estimating IT costs was challenging for CFTC because its new technology solutions must be dynamic and capable of evolving along with the regulated markets. User fees may begin to reimburse appropriations beginning in FY 2012 or FY 2013 pending enactment of authorizing legislation.

Source: CFTC-provided information.

Page 2

Federal Deposit Insurance Corporation

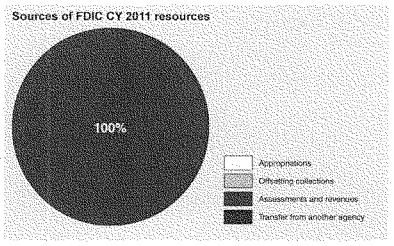
CY 2011 Dodd-Frank resources[a]: $40,860,000
CY 2011 agency-wide total resources: $3,877,108,000
(Dodd-Frank resources = 1.1% of CY 2011 agency total)
CY 2011 agency-wide resources increase: -$112,172,000[b]

CY 2011 Dodd-Frank new-hire FTEs: 45
CY 2011 agency-wide FTE increase: 444
(Dodd-Frank FTEs = 10.1% of agency increase)

[a]Resources made available or requested for FDIC.
[b]The reduction is primarily due to a decrease in financial institution failures, offset by a smaller increase in supervision expenses.

($ in thousands)	CY 2010 actual	CY 2011 approved	CY 2012
Agency total resources	$3,969,280	$3,877,108	Not available
Dodd-Frank related resources	$2,345	$40,860	Not available
Agency new FTEs (net)	502	444	Not available
Dodd-Frank new FTEs	0	55	Not available
• *New hires*	0	45	Not available
• *Transfers from OTS*	0	10	Not available
• *Redirected from other work*	Unknown	Unknown	Not available

Sources of FDIC CY 2011 resources



New offices required by Dodd-Frank Act
- Office of Minority and Women Inclusion

New offices related to Dodd-Frank but not required by the Act
- Office of Complex Financial Institutions
- Living Will Review and Oversight Section within the Division of Risk Management Supervision
- Complex Financial Institutions Section within the Legal Division

Agency Notes: The "Transfers from OTS" 10 FTEs for 2011 reflect the net of FDIC receiving 20 Dodd-Frank related FTEs from OTS and FDIC providing 10 Dodd-Frank related FTEs to the CFPB. One-time expenses totaling $3,575,000 for IT systems development are included in the 2011 total. All other known costs are recurring and are expected to grow as the FDIC's 74 positions dedicated to Dodd-Frank Act functions become fully staffed (only 45 FTEs are expected to be on board during 2011). The costs associated with the OTS transfers are not included.

Source: FDIC-provided information.

Page 3

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Federal Housing Finance Agency

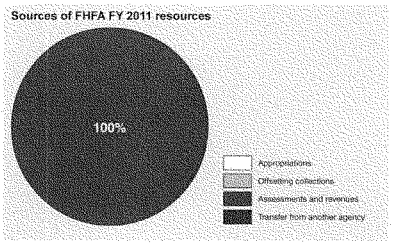
FY 2011 Dodd-Frank resources[a]: $3,800,000
FY 2011 agency-wide total resources: $166,900,000
(Dodd-Frank resources = 2.3% of agency total)
FY 2011 agency-wide resources increase: $11,300,000
(Dodd-Frank resources = 33.6% of agency increase)

FY 2011 Dodd-Frank new-hire FTEs: 1
FY 2011 agency-wide FTE increase: 48
(Dodd-Frank FTEs = 2.1% of agency increase)

[a]Resources made available or requested for FHFA.

($ in thousands)	FY 2010 actual	FY 2011 enacted	FY 2012 estimate
Agency total resources	$155,600	$166,900	Not available
Dodd-Frank related resources	$0	$3,800	$4,350
Agency new FTEs (net)	23	48	Not available
Dodd-Frank new FTEs	0	16	2
• *New hires*	0	1	2
• *Redirected from other work*	Unknown	15	0

Sources of FHFA FY 2011 resources



New offices required by Dodd-Frank Act
- Office of Minority and Women Inclusion

New offices related to Dodd-Frank but not required by the Act
- Office of Systemic Risk and Market Surveillance

Agency Notes: FHFA's agency-wide FY 2012 budget information is not yet available. However, the agency surveyed its staff and provided estimates of funding and staffing that will be devoted to Dodd-Frank related activities in FY 2012. One challenge FHFA identified in estimating these figures is that many of its Dodd-Frank related activities are collaborative efforts with other agencies, the estimates are based on FHFA's supporting role to these collaborative working groups.

Source: FHFA-provided information.

Page 4

Federal Trade Commission

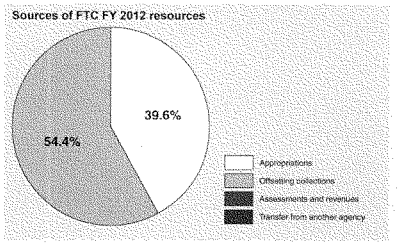
FY 2012 Dodd-Frank resources[a]: $0
FY 2012 agency-wide total resources: $326,000,000
(Dodd-Frank resources = 0% of agency total)
FY 2012 agency-wide resources increase: $34,300,000
(Dodd-Frank resources = 0% of agency increase)

FY 2012 Dodd-Frank new-hire FTEs: 0
FY 2012 agency-wide FTE increase: 25
(Dodd-Frank FTEs = 0% of agency increase)

[a]Resources made available or requested for FTC.

($ in thousands)	FY 2010 actual	FY 2011 enacted	FY 2012 budget request
Agency total resources	$291,700	$291,700	$326,000
Dodd-Frank related resources	$0	$0	$0
Agency new FTEs (net)	51	9	25
Dodd-Frank new FTEs	0	0	0
• *New hires*	0	0	0
• *Redirected from other work*	0	Unknown	Unknown

Sources of FTC FY 2012 resources



New offices required by Dodd-Frank Act
- None

New offices related to Dodd-Frank but not required by the Act
- None

Agency Notes: FTC does not anticipate that the passage of Dodd-Frank will have any noticeable impact on its budget and the agency will implement its Dodd-Frank related responsibilities using existing resources. FTC did not attempt to estimate the number of existing FTEs performing Dodd-Frank related responsibilities or their associated costs.

Source: FTC-provided information.

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GAO
Accountability * Integrity * Reliability

Office of the Comptroller of the Currency

FY 2012 Dodd-Frank resources[a]: $235,000,000
FY 2012 agency-wide total resources: $1,040,000,000
(Dodd-Frank resources = 22.6% of agency total)
FY 2012 agency-wide resources increase: $225,500,000
(Dodd-Frank resources = 104.2% of agency increase)

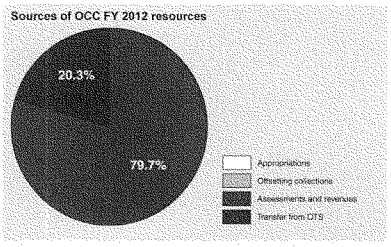
FY 2012 Dodd-Frank new-hire FTEs: 0
FY 2012 agency-wide FTE increase: Unknown

[a]Resources made available or requested for OCC.

($ in thousands)	FY 2010 actual	FY 2011 enacted	FY 2012 budget request
Agency total resources	$791,700	$814,500	$1,040,000
Dodd-Frank related resources	$0	$34,850	$235,000
Agency new FTEs (net)	Not provided	76	Unknown
Dodd-Frank new FTEs	0	133	0
• *New hires*	0	0	0
• *Transfers from OTS*	0	131[b]	0[c]
• *Redirected from other work*	0	2	Unknown

[b]Represents FTEs for estimated 682 OTS transfers on-board from July 21, 2011 (transfer date) until end of FY 2011. Since these FTEs are on-board at start of FY 2012, they are not considered new Dodd-Frank FTEs.

Sources of OCC FY 2012 resources



New offices required by Dodd-Frank Act
- Office of Minority and Women Inclusion
- Deputy Comptroller for Thrift Supervision

New offices related to Dodd-Frank but not required by the Act
- None

Agency Notes: Nearly all of OCC's new FTEs will perform ongoing work related to supervision of thrifts that will recur in future years. However, these FTEs were previously incurring cost at OTS and therefore do not represent new costs to the financial system. OCC's primary challenge in determining these costs was estimating the dollars related to FTEs. Also, the number of transfers from OTS to OCC and from OCC to FDIC and CFPB has not been finalized.

Source: OCC-provided information.

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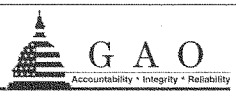


Securities and Exchange Commission

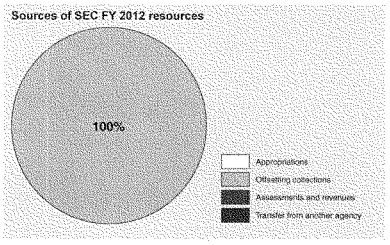
FY 2012 Dodd-Frank resources[a]: $108,982,100
FY 2012 agency-wide total resources: $1,407,483,130
(Dodd-Frank resources = 7.7% of agency total)
FY 2012 agency-wide resources increase: $186,347,414
(Dodd-Frank costs = 58.5% of agency increase)

FY 2012 Dodd-Frank new-hire FTEs: 331
FY 2012 agency-wide FTE increase: 588
(Dodd-Frank FTEs = 56.3% of agency increase)

[a]Resources made available or requested for SEC.

($ in thousands)	FY 2010 actual	FY 2011 enacted	FY 2012 budget request
Agency total resources	$1,118,753	$1,221,136	$1,407,483
Dodd-Frank related resources	$0	$23,525	$108,982
Agency new FTEs (net)	92	124	588
Dodd-Frank new FTEs	0	14	352
• *New hires*	0	9	331
• *Redirected from other work*	0	5	21

Sources of SEC FY 2012 resources



New offices required by Dodd-Frank Act
- Office of Investor Advocate
- Office of Credit Ratings
- Office of Municipal Securities
- Office of Whistleblower Protection
- Office of Minority and Women Inclusion

Agency Notes: $39,137,000 (35.9%) of the FY 2012 Dodd-Frank related costs are for one-time costs such as IT projects costs. Budget and FTE estimates depend on timing of Congressional approval of reprogramming of the budget for new offices.

Source: SEC-provided information.

Page 7

Department of the Treasury

Includes only departmental offices salaries and expenses

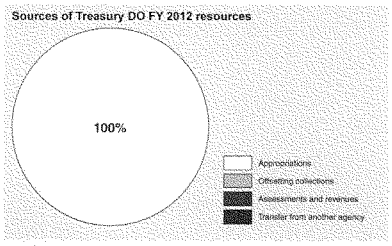
FY 2012 Dodd-Frank resources[a]: $5,525,000
FY 2012 agency-wide total resources: $324,889,000
(Dodd-Frank resources = 1.7% of agency total)
FY 2012 agency-wide resources increase: $20,001,000
(Dodd-Frank costs = 27.6% of agency increase)

FY 2012 Dodd-Frank new-hire FTEs: 11
FY 2012 agency-wide FTE increase: 75
(Dodd-Frank FTEs = 14.7% of agency increase)

[a]Resources made available or requested for Treasury.

($ in thousands)	FY 2010 actual	FY 2011 enacted	FY 2012 budget request
Agency total resources	$304,888	$304,888	$324,889
Dodd-Frank related resources	$0	$10,393	$5,525
Agency new FTEs (net)	77	100	75
Dodd-Frank new FTEs	0	24	11
• *New hires*	0	24	11
• *Redirected from other work*	Unknown	Unknown	Unknown

Sources of Treasury DO FY 2012 resources



New offices required by Dodd-Frank Act
- Office of Minority and Women Inclusion
- Federal Insurance Office
- Bureau of Consumer Financial Protection (independent)
- Financial Stability Oversight Council (support to independent council)
- Office of Financial Research

New offices related to Dodd-Frank but not required by the Act
- Office of Financial Stability Oversight Council

Agency Notes: All identified costs are *recurring*. Treasury did not separately track existing FTEs and other resources utilized for implementation of the Act, so estimates do not include use of existing resources. The legislation has directly and indirectly impacted the work assignments of many throughout the Departmental Offices, particularly those in the office of Domestic Finance.

Source: Treasury-provided information.

Page 8

Bureau of Consumer Financial Protection

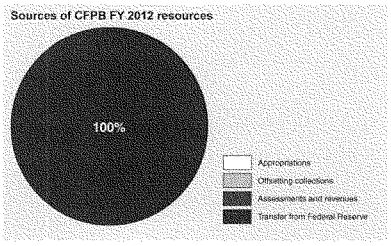
FY 2012 Dodd-Frank resources[a]: $329,045,000
FY 2012 agency-wide total resources: $329,045,000
(Dodd-Frank resources = 100% of agency total)
FY 2012 agency-wide resources increase: $186,220,000

FY 2012 Dodd-Frank new-hire FTEs: 883
FY 2012 agency-wide FTE increase: 883
(Dodd-Frank FTEs = 100% of agency increase)

[a]Resources made available or requested for CFPB.

($ in thousands)	FY 2010 actual	FY 2011 estimate	FY 2012 budget request
Agency total resources	$9,200	$142,825	$329,045
Dodd-Frank related resources	$9,200	$142,825	$329,045
Agency new FTEs (net)	0	342	883
Dodd-Frank new FTEs	0	342	883
• *New hires*	0	342	883
• *Redirected from other work*	0	0	0

Sources of CFPB FY 2012 resources



New offices required by Dodd-Frank Act

- The Bureau of Consumer Financial Protection is itself a new office required by Dodd-Frank

Agency Notes: Other agencies (OCC, OTS, FDIC, National Credit Union Administration, Department of Housing and Urban Development, and the Federal Reserve) will likely see cost and FTE reductions when their consumer protection functions are transferred to the CFPB. CFPB's spending to date (March 2011) contains significant one-time expenses, close to 40 percent. As the bureau continues to grow, these one-time expenses should decrease. A reasonable estimate for one-time expenses in FY 2012 is up to 20 percent of the total budget. Creating estimates for FY 2011 and FY 2012 was especially challenging for the agency given the uncertainty of a stand-up phase.

Source: Treasury-provided information.

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Financial Stability Oversight Council

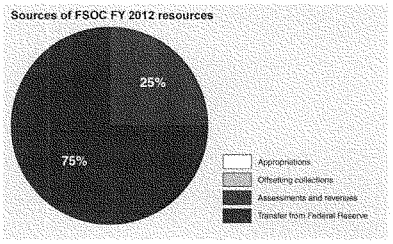
FY 2012 Dodd-Frank resources[a]: $7,885,000
FY 2012 agency-wide total resources: $7,885,000
(Dodd-Frank resources = 100% of agency total)
FY 2012 agency-wide resources increase: $450,000

FY 2012 Dodd-Frank new-hire FTEs: 7
FY 2012 agency-wide FTE increase: 7
(Dodd-Frank FTEs = 100% of agency increase)

[a]Resources made available or requested for FSOC.

($ in thousands)	FY 2010 actual	FY 2011 estimate	FY 2012 budget request
Agency total resources	$0	$7,435	$7,885
Dodd-Frank related resources	$0	$7,435	$7,885
Agency new FTEs (net)	0	17	7
Dodd-Frank new FTEs	0	17	7
• *New hires*	0	17	7
• *Redirected from other work*	0	0	0

Sources of FSOC FY 2012 resources



New offices required by Dodd-Frank Act

- The Financial Stability Oversight Council is itself a new office required by Dodd-Frank

Agency Notes: Beginning in July 2012, all resources will come from assessments. The FY 2012 budget reflects ongoing staff needs to carry out the mission of the office. However, as the FSOC continues to assess its needs, estimates may change.

Source: Treasury-provided information.

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GAO
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Office of Financial Research

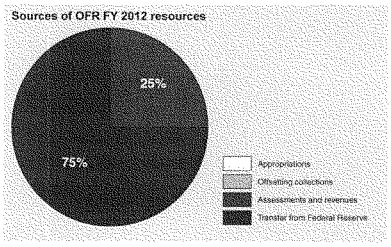
FY 2012 Dodd-Frank resources[a]: $74,468,000
FY 2012 agency-wide total resources: $74,468,000
(Dodd-Frank resources = 100% of agency total)
FY 2012 agency-wide resources increase: $40,578,000

FY 2012 Dodd-Frank new-hire FTEs: 135
FY 2012 agency-wide FTE increase: 135
(Dodd-Frank FTEs = 100% of agency increase)

[a]Resources made available or requested for OFR.

($ in thousands)	FY 2010 actual	FY 2011 CR estimate	FY 2012 budget request
Agency total resources	$0	$33,890	$74,468
Dodd-Frank related resources	$0	$33,890	$74,468
Agency new FTEs (net)	0	33	135
Dodd-Frank new FTEs	0	33	135
• *New hires*	0	33	135
• *Redirected from other work*	0	0	0

Sources of OFR FY 2012 resources



New offices required by Dodd-Frank Act

- The Office of Financial Research is itself a new office required by Dodd-Frank

Agency Notes: Beginning in July 2012, all resources will come from assessments. FY 2012 estimate includes $10 million in one-time capital data center costs. As the agency's data architecture and IT infrastructure plans are developed, the resource and FTE estimates may change.

Source: Treasury-provided information.

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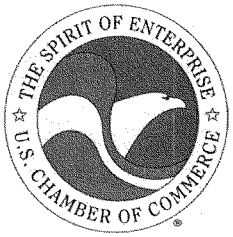

Statement
of the
U.S. Chamber
of Commerce

ON: **Hearing entitled "Oversight of the Office of Financial Research and the Financial Stability Oversight Council"**

TO: **Subcommittee on Oversight and Investigations, U.S. House of Representatives**

DATE: **July 14, 2011**

The Chamber's mission is to advance human progress through an economic, political and social system based on individual freedom, incentive, initiative, opportunity and responsibility.

Statement for the Record
U.S. Chamber of Commerce

Hearing entitled "Oversight of the Office of Financial Research and the Financial Stability Oversight Council"

Subcommittee on Oversight and Investigations
U.S. House of Representatives

July 14, 2011

The U.S. Chamber of Commerce (the "Chamber") is the world's largest business federation, representing the interests of over three million businesses and organizations of every size, sector, and region and believes that a coherent, streamlined regulatory structure and effective commonsense regulations would ensure the safety and soundness of the financial markets while promoting economic growth and job creation. As the House Financial Services Subcommittee on Oversight and Investigations holds a hearing entitled "Oversight of the Office of Financial Research and the Financial Stability Oversight Council," the Chamber would like to share its views on the Office of Financial Research.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank") created the Office of Financial Research ("OFR") for the purpose of collecting data and performing applied research to support the efforts of the Financial Oversight Council ("FSOC") to identify emerging threats to the stability of the U.S. financial system. The Chamber supports the efforts of OFR and FSOC to monitor systemic risk and believes that more efficient access to comprehensive market and industry data in ways that are not unnecessarily burdensome will assist in identifying and understanding systemic risks.

The Chamber also believes that effective and even-handed regulation is an important component for efficient capital markets. A failure to effectively regulate these markets was a contributing cause to the financial crisis. A key lynch-pin of effective regulation is data collection and analysis. Nonetheless, a balance must be struck to satisfy the needs of the regulators without hampering businesses with unreasonable or burdensome requests.

Accordingly, we would like to share our concerns with various structural and operational aspects of the OFR, including its overreach of entities, duplicative data requests, and confidentiality concerns.

Overreach of the OFR

Dodd-Frank provided OFR with authority to gather financial transaction data and position data from financial companies, whether through an ordinary request or subpoena, in order to help identify emerging threats to the financial system. A financial company is defined in Section 151(2) of Dodd-Frank by reference to Title II of the legislation, which is limited to companies that are predominantly engaged in financial activities. These boundaries set by Congress are reasonable and necessary.

However, the OFR in its November 30, 2010 Statement of Policy regarding legal entity identification for financial contracts appears to overreach beyond the statutory authority granted. The Statement of Policy expands the OFR's jurisdiction from financial companies to "eligible markets participants, including but not limited to all financial intermediaries, all companies that issue stock or debt listed on an exchange, all companies that trade stock or debt, infrastructure providers, all entities subject to financial regulation, and firms affiliated with such entities."[1] The inclusion of all such companies, and potentially others, regardless of the extent of their financial activities, in OFR's reach is an unauthorized expansion of jurisdiction that may be intrusive and burdensome to numerous companies that pose no or limited risk to the financial markets. The Chamber is concerned that the OFR, immediately out of the gate, is exceeding its authority, and we urge the Committee to rein in this new agency.

Duplicative Data Requests

While the OFR must coordinate with a financial company's primary financial regulatory agency before issuing a subpoena, it is unclear whether and how the OFR will ensure there is a streamlined process for data requests from all financial regulators. Too often, financial companies whose activities are subject to the jurisdiction of multiple financial regulatory agencies are inundated with redundant requests for the same or similar data to be provided in different formats to different regulators. In some instances, financial companies receive similar data requests from

[1] Office of Financial Research, Proposed Statement of Policy – Legal Entity Identification for Financial Contracts; November 30, 2011, page 74147, Section II (A)(6). Proposal may be found at http://www.gpo.gov/fdsys/pkg/FR-2010-11-30/pdf/2010-30018.pdf

different offices within the same financial regulatory agency. These duplicative data requests are burdensome, costly, and time-consuming. In the end, such requests, like all forms of regulation, create increased cost that must be borne by businesses or their customers.

In addition to the costs of complying with the onslaught of Dodd-Frank regulations, the compliance costs of duplicative data requests may further hamper a company's ability to remain competitive or result in higher costs for consumers. Considering the large number of companies whose limited resources would be diverted away from more economically beneficial activities, the lack of standardization and coordination of these requests will complicate companies' ability to focus on job creation. The OFR's obligations to coordinate with the relevant primary financial regulatory agency should be enhanced by ensuring that coordination within financial regulatory agencies occurs as well.

Confidentiality Concerns

Information drives the financial industry and often separates successful companies from unsuccessful ones. Data generally provided to financial regulatory agencies is confidential, proprietary information that could place a financial company at a significant competitive disadvantage or cause the financial markets to react if released. Thus, the OFR should provide the strongest possible assurances to financial companies that it will vigilantly protect identifiable company-specific data from public disclosure. In this regard, the OFR should clarify how it intends to treat such data under FOIA, the Privacy Act, judicial or administrative subpoenas, and other lawful orders or actions. If the OFR determines that it cannot provide complete protection of the data, notification should be made to financial companies and the OFR should consider whether legislative remedies should be pursued.

The OFR's Research and Analysis Center is tasked with the responsibility to coordinate and sponsor research to support and improve the regulation of financial entities and markets. As such, the OFR may be expected to disseminate data and encourage its use by academic researchers and private analysts. Because of the highly sensitive nature of the company-specific data that may be collected by the OFR, it should take all necessary steps to redact confidential, proprietary information from data provided to researchers and analysts. To the extent the OFR does in fact release such data to academic researchers, private analysts and other third parties, it should ensure that such parties are subject to enforceable restrictions regarding their use of such data and the protection of such data while in their hands.

Conclusion

In conclusion, the Chamber believes that the OFR could be an effective agency to identify threats to the financial systems; we support such a goal. However, as the agency takes shape, its success will only be achieved if the appropriate checks and balances are implemented, it ensures enormous integration and coordination among financial regulatory agencies on data requests, and it protects any data gathered with the utmost confidentiality. Failure to give adequate assurances in any of these areas would significantly undermine public confidence in the agency and its important mission. The Chamber appreciates the opportunity to submit this statement for the record and would be glad to assist the Subcommittee in any way in its oversight of the OFR.

On March 30, 2011, the agency summarized its work on this bill in the testimony
Review of CBO's Cost Estimate for the Dodd-Frank Wall Street Reform and Consumer Protection Act.

June 29, 2010

CBO Estimate of the Net Deficit Effects of H.R. 4173, the Dodd-Frank Wall Street Reform and Consumer Protection Act

by fiscal year, in billions of dollars

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2010-2015	2010-2020
June 26, 2010, Conference Report													
Total Revenues	0	*	3.9	4.3	4.4	4.6	1.5	1.7	2.0	2.2	2.4	17.1	26.9
Direct Spending	0	3.5	5.0	3.3	1.1	1.9	2.0	1.7	1.6	3.1	3.7	14.9	26.9
Net Increase or Decrease (-) in the Deficit	0	3.5	1.1	-1.0	-3.3	-2.7	0.5	*	-0.4	0.9	1.2	-2.3	0.0
Estimated Changes for Proposed Amendment (AYO10H48), June 29, 2010													
Revenues	0.0	0.0	-3.4	-3.4	-3.4	-3.4	0.0	0.0	0.0	0.0	0.0	-13.5	-13.5
Direct Spending 1/	-11.0	0.0	0.0	0.0	-0.1	-0.2	-0.7	-0.5	-0.7	-1.7	-1.8	-11.3	-16.7
Net Increase or Decrease (-) in the Deficit	-11.0	0.0	3.4	3.4	3.3	3.2	-0.7	-0.5	-0.7	-1.7	-1.8	2.2	-3.2
Conference with June 29, 2010, Amendment													
Revenues	0.0	*	0.5	0.9	1.0	1.2	1.5	1.7	2.0	2.2	2.4	3.7	13.5
Direct Spending	-11.0	3.5	5.0	3.3	1.0	1.7	1.3	1.2	0.9	1.4	1.9	3.6	10.2
Net Increase or Decrease (-) in the Deficit	-11.0	3.5	4.5	2.4	*	0.5	-0.2	-0.5	-1.1	-0.8	-0.6	-0.1	-3.2

Note: * = between -$50 million and $50 million. Components may not sum to totals because of rounding.

1. Estimated deficit reduction of $11 billion for fiscal year 2010 would stem from changes in the Troubled Asset Relief Program, created by the Emergency Economic Stabilization Act. Section 204 of that Act designated all provisions of the Act as an emergency requirement for purposes of enforcing S. Con. Res. 21 (110th Congress), the concurrent resolution on the budget for fiscal year 2008.

On March 30, 2011, the agency summarized its work on this bill in the testimony *Review of CBO's Cost Estimate for the Dodd-Frank Wall Street Reform and Consumer Protection Act.*

CONGRESSIONAL BUDGET OFFICE
COST ESTIMATE

June 28, 2010

H.R. 4173
Dodd-Frank Wall Street Reform and Consumer Protection Act

Conference Agreement, as Reported on June 26, 2010

SUMMARY

CBO and the Joint Committee on Taxation (JCT) estimate that enacting H.R. 4173 would increase revenues by $17.1 billion over the 2011-2015 period and by $26.9 billion over the 2011-2020 period and increase direct spending by $14.9 billion and $26.9 billion, respectively, over the same periods. In total, CBO estimates those changes would reduce budget deficits by $2.3 billion over the 2011-2015 period. The changes in revenues and direct spending from enacting H.R. 4173 would have no net effect on budget deficits for the full 2011-2020 period.[1] Because enacting the legislation would affect direct spending and revenues, pay-as-you-go procedures apply. CBO has not prepared an estimate of the changes in discretionary spending that would arise from implementing the conference agreement.

Pursuant to section 311 of the Concurrent Resolution on the Budget for Fiscal Year 2009 (S. Con Res. 70), CBO estimates that the act would increase projected deficits by more than $5 billion in at least one of the four consecutive 10-year periods starting in 2021.

H.R. 4173 would grant new federal regulatory powers and reassign existing regulatory authority among federal agencies with the aim of reducing the likelihood and severity of financial crises. It would establish terms and procedures for the orderly liquidation of certain large financial institutions that become insolvent or are in danger of becoming insolvent; provide a framework for guaranteeing financial obligations when market conditions impede the normal provision of financing to creditworthy borrowers (known as a liquidity crisis); permanently increase the limit on federal deposit insurance for an

1. Different time periods are relevant for the purpose of enforcing the current pay-as-you-go rules in the Senate and the House of Representatives. Over the 2010-2014 period, CBO estimates that enacting H.R. 4173 would increase direct spending by $12.9 billion, revenues by $12.5 billion, and net deficits by $0.4 billion. Over the 2010-2019 period, we estimate that enacting H.R. 4173 would increase direct spending by $23.3 billion and revenues by $24.5 billion, thus reducing net deficits by $1.2 billion.

individual's deposits to $250,000; and make other changes to federal deposit insurance programs. The legislation also would require certain firms with assets of more than $50 billion to pay an estimated $17.9 billion over the 2012-2015 period, which would be deposited in a new Financial Crises Special Assessment Fund.

Other provisions of H.R. 4173 would change how financial institutions and securities markets are regulated, create a new Bureau of Consumer Financial Protection (BCFP), broaden the authority of the Commodity Futures Trading Commission (CFTC) and the Securities and Exchange Commission (SEC), expand the supervision of firms that settle payments between financial institutions, and modify the regulation of fixed-income annuities. The legislation also would set standards for transactions related to residential mortgages and provide funding for loans or loan guarantees for certain homeowners and for grants to state and local governments to restore neighborhoods affected by foreclosures.

MAJOR PROVISIONS

Title I would establish the Financial Stability Oversight Council and the Office of Financial Research (OFR), both of which would be funded by assessments on certain financial and nonfinancial entities starting two years after the act's enactment. For the first two years after enactment, the Federal Reserve would fund those activities. Title I also would direct the Federal Reserve to register and supervise non-bank financial companies.

Title II would establish a new program for resolving certain financial firms that are insolvent or in danger of becoming insolvent. The act would create the Orderly Liquidation Fund, from which the costs of liquidation would be paid. The FDIC could borrow funds to pay resolution costs and would be directed to assess fees on private firms to recover costs incurred by the fund.

Title III would abolish the Office of Thrift Supervision (OTS) and change the regulatory oversight of banks, thrifts, and related holding companies by transferring authorities and employees among the remaining financial regulators. It would permanently increase the amount of individual deposits insured by the FDIC and the National Credit Union Administration (NCUA) to $250,000 (Public Law 111-22 temporarily raised the limit to $250,000 through 2013) and would expand the scope of federal deposit insurance to include non-interest bearing transaction accounts through 2013.

Titles IV, VII, and IX would change and broaden the authority of the SEC to oversee activities and entities associated with the national securities exchanges. Title VII also would change and broaden the authority of the CFTC to regulate certain derivatives transactions on over-the-counter markets. It also would specify that certain fixed-indexed annuities would be exempt from regulation by the SEC.

Title V would establish the Federal Insurance Office and set national standards for how states may regulate and collect taxes for a type of insurance that covers unique or atypical risks—known as "surplus lines" or "nonadmitted insurance." The act also would establish national standards for how states regulate reinsurance—often referred to as insurance for insurance companies.

Titles VI would modify the regulation of bank, thrift, and securities holding companies.

Title VIII would broaden the supervision of certain firms that settle payments between financial institutions.

Title X would establish the BCFP as an independent agency within the Federal Reserve to enforce federal laws that affect how banks and nonfinancial institutions make financial products available to consumers for their personal use. The BCFP would be funded by transfers from the Federal Reserve.

Title XI would revise the FDIC's authority to guarantee obligations of certain financial entities when federal officials determine that the economy faces a liquidity crisis. Future legislation would be required before the FDIC could use this authority. This title also would make changes to certain lending activities of the Federal Reserve.

Title XIV would appropriate funds for programs to provide mortgage relief to homeowners and to provide grants to state and local governments to purchase and redevelop abandoned properties. This title also would make numerous changes in laws that regulate activities related to residential mortgages.

Title XVI would direct the Financial Oversight Council and the FDIC to assess and collect fees on certain large financial firms over the 2012-2015 period. This title also would amend the Internal Revenue Code to specify that certain swaps and other derivative contracts do not trigger the mark-to-market and other tax consequences of section 1256 of the Internal Revenue Code.

Provisions of titles XII, XIII, and XV would have no significant net effects on future budget deficits.

ESTIMATED COST TO THE FEDERAL GOVERNMENT

The estimated changes in revenues and direct spending that would result from enacting H.R. 4173 are shown in the following table. CBO has not completed an estimate of costs that are subject to appropriation. The costs of this legislation fall within budget functions 370 (commerce and housing credit), 450 (community and regional development), and 800 (general government).

	By Fiscal Year, in Billions of Dollars											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2011-2015	2011-2020
NET INCREASE OR DECREASE (-) IN THE BUDGET DEFICIT FROM CHANGES IN DIRECT SPENDING AND REVENUES [a]												
Orderly Liquidation Authority	2.4	4.4	2.9	2.1	2.0	1.9	1.4	0.8	1.1	1.4	13.7	20.3
Securities and Exchange Commission Regulation	0	-0.4	-0.4	-0.5	-0.5	-0.5	-0.6	-0.6	-0.6	-0.7	-1.8	-4.8
Consumer Financial Protection	*	0.2	0.2	0.5	0.6	0.6	0.6	0.6	0.6	0.6	1.5	4.6
Emergency Financial Stability	-0.1	-0.3	-0.4	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-1.2	-2.1
Changes Among Financial Regulators	*	*	0	*	*	-0.1	-0.1	-0.1	-0.1	-0.1	*	-0.3
Derivatives Regulation	*	*	*	*	*	*	*	*	*	*	0.1	0.1
Other Financial Oversight and Protection	*	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.7	1.3
Financial Stability Oversight	*	*	*	0.1	0.1	*	*	*	*	*	0.3	0.4
Other Provisions Affecting the Federal Reserve	*	*	*	*	*	*	*	*	*	*	*	0.1
Deposit Insurance	1.0	-0.1	-0.6	-2.4	-1.7	-1.6	-1.6	-1.3	-0.3	-0.3	-3.8	-8.8
Emergency Mortgage Relief	0	0.3	0.3	0	0	0	0	0	0	0	0.5	0.5
Neighborhood Stabilization	0.1	0.4	0.3	0.2	0.1	0	0	0	0	0	1.0	1.0
Regulation of Fixed-Indexed Annuities	0	0	*	*	0.1	0.1	0.1	0.2	0.2	0.2	0.1	1.0
Other Provisions	*	*	*	*	*	*	*	*	*	*	*	*
FDIC Special Assessment	0	-3.4	-3.4	-3.4	-3.4	0	0	0	0	0	-13.5	-13.5
Total Change in the Budget Deficit	3.5	1.1	-1.0	-3.3	-2.7	0.5	*	-0.4	0.9	1.2	-2.3	0.0

Continued

	By Fiscal Year, in Billions of Dollars											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2011-2015	2011-2020
CHANGES IN REVENUES												
Orderly Liquidation Authority [b]	0	*	0.2	0.3	0.4	0.6	0.8	1.0	1.2	1.4	0.9	6.0
Securities and Exchange Commission Regulation	0	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	2.0	5.2
Consumer Financial Protection	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.4	1.2
Changes Among Financial Regulators	0	*	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6
Derivatives Regulation	*	*	*	*	*	*	*	*	*	*	*	0.1
Other Financial Oversight and Protection	*	*	*	*	*	0.1	0.1	0.2	0.2	0.2	0.1	0.8
Financial Stability Oversight	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
Federal Reserve Changes	*	*	*	*	*	*	*	*	*	*	*	*
Regulation of Fixed-Indexed Annuities	0	0	*	*	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-1.0
Financial Crisis Special Assessment	0	3.4	3.4	3.4	3.4	0	0	0	0	0	13.5	13.5
Total Changes in Revenues	*	3.9	4.3	4.4	4.6	1.5	1.7	2.0	2.2	2.4	17.1	26.9
CHANGES IN DIRECT SPENDING												
Orderly Liquidation Authority												
Estimated Budget Authority	2.4	4.4	3.1	2.3	2.4	2.5	2.2	1.8	2.3	2.9	14.6	26.3
Estimated Outlays	2.4	4.4	3.1	2.3	2.4	2.5	2.2	1.8	2.3	2.9	14.6	26.3
Securities and Exchange Commission Regulation												
Estimated Budget Authority	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
Estimated Outlays	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
Consumer Financial Protection												
Estimated Budget Authority	0.1	0.2	0.4	0.7	0.7	0.8	0.8	0.8	0.8	0.8	2.0	6.0
Estimated Outlays	*	0.2	0.3	0.7	0.7	0.8	0.8	0.8	0.8	0.8	2.0	5.9
Emergency Financial Stability												
Estimated Budget Authority	-0.1	-0.3	-0.4	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-1.2	-2.1
Estimated Outlays	-0.1	-0.3	-0.4	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-1.2	-2.1
Changes Among Financial Regulators												
Estimated Budget Authority	*	0.1	*	*	*	*	*	*	*	*	0.2	0.3
Estimated Outlays	*	0.1	*	*	*	*	*	*	*	*	0.2	0.3

Continued

	By Fiscal Year, in Billions of Dollars											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2011-2015	2011-2020
CHANGES IN DIRECT SPENDING Continued												
Derivatives Regulation												
Estimated Budget Authority	*	*	*	*	*	*	*	*	*	*	0.1	0.2
Estimated Outlays	*	*	*	*	*	*	*	*	*	*	0.1	0.2
Other Financial Oversight and Protection												
Estimated Budget Authority	*	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.8	2.2
Estimated Outlays	*	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.8	2.2
Financial Stability Oversight												
Estimated Budget Authority	*	*	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.9
Estimated Outlays	*	*	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.5	0.9
Deposit Insurance												
Estimated Budget Authority	1.0	-0.1	-0.6	-2.4	-1.7	-1.6	-1.6	-1.3	-0.3	-0.3	-3.8	-8.8
Estimated Outlays	1.0	-0.1	-0.6	-2.4	-1.7	-1.6	-1.6	-1.3	-0.3	-0.3	-3.8	-8.8
Emergency Mortgage Relief												
Estimated Budget Authority	0.5	0	0	0	0	0	0	0	0	0	0.5	0.5
Estimated Outlays	0	0.3	0.3	0	0	0	0	0	0	0	0.5	0.5
Neighborhood Stabilization												
Estimated Budget Authority	1.0	0	0	0	0	0	0	0	0	0	1.0	1.0
Estimated Outlays	0.1	0.4	0.3	0.2	0.1	0	0	0	0	0	1.0	1.0
Other Provisions												
Estimated Budget Authority	*	*	*	*	*	*	*	*	*	*	*	0.1
Estimated Outlays	*	*	*	*	*	*	*	*	*	*	*	0.1
Total Changes in Direct Spending												
Estimated Budget Authority	4.9	4.4	3.0	0.9	1.8	2.0	1.7	1.6	3.1	3.7	15.0	27.1
Estimated Outlays	3.5	5.0	3.3	1.1	1.9	2.0	1.7	1.6	3.1	3.7	14.9	26.9
MEMORANDUM:												
CHANGES IN DIRECT SPENDING CONTINGENT ON FUTURE LEGISLATION[c]												
Emergency Financial Stability												
Estimated Budget Authority	0.1	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	2.9
Estimated Outlays	0.1	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	2.9

Note:. *= between -$50 million and $50 million. Components may not sum to totals because of rounding.

a. Positive numbers indicate increases in deficits; negative numbers indicate decreases in deficits.

b. The legislation could affect federal tax receipts under the Internal Revenue Code. However, there are a number of uncertainties regarding potential effects of the use of a bridge financial company by the Federal Deposit Insurance Corporation on the tax attributes of a failed financial institution. It is not possible to determine whether the use of a bridge financial company would provide a tax result that is more or less favorable than bankruptcy, which is the current-law alternative. Therefore, the staff of the Joint Committee on Taxation is not currently able to estimate the changes in tax revenue that would result from this provision of the act.

c. While the legislation would expand the authorities of the FDIC, the use of that new authority would be contingent on the enactment of future legislation. The resulting costs of triggering the use of the new authority are shown here and are not included in the totals above.

BASIS OF ESTIMATE

For this estimate, CBO assumes that H.R. 4173 will be enacted before the end of fiscal year 2010 and that spending will follow historical patterns for activities of the FDIC, the Federal Reserve, and other agencies.

CBO estimates that enacting the legislation would increase revenues by $26.9 billion over the 2011-2020 period. About $13.5 billion of those revenues would be generated by an assessment on certain firms with assets over $50 billion; the remaining revenues would arise from other activities under the act. Several provisions of the act, most importantly those establishing the BCFP and reassigning supervisory responsibilities over financial institutions among the various regulators, would increase the net earnings of the Federal Reserve, which are recorded in the budget as revenues. The SEC would receive permanent authority to collect certain fees, which would be recorded as revenues. Under current law, these fees are collected subject to appropriation. Assessments imposed by the FDIC as part of the orderly liquidation authority also would increase revenues, as would additional fees collected by the Public Company Accounting Oversight Board (PCAOB) and the Securities Investor Protection Corporation (SIPC).

CBO estimates that enacting the legislation would increase direct spending by $26.9 billion over the 2011-2020 period. Most of that amount would result from provisions that would establish a program for resolving certain financial firms that are insolvent or in danger of becoming insolvent. Additional costs would be incurred to establish the BCFP, the Financial Stability Oversight Council, and the OFR; broaden the regulatory duties of the PCAOB; increase the amount the SIPC may borrow from the Treasury; and provide funding for programs to provide mortgage relief to certain homeowners and to provide grants to state and local governments to purchase and redevelop abandoned properties. Some of that spending would be offset by a reduction in net outlays of the FDIC resulting from changes in deposit insurance and the agency's loan-guarantee programs.

PAY-AS-YOU-GO CONSIDERATIONS

The Statutory Pay-As-You-Go Act of 2010 establishes budget reporting and enforcement procedures for legislation affecting direct spending or revenues. The net changes in outlays and revenues that are subject to those pay-as-you-go procedures are shown in the following table.

CBO Estimate of Pay-As-You-Go Effects for the Conference Agreement for H.R. 4173, the Dodd-Frank Wall Street Reform and Consumer Protection Act, as Reported on June 26, 2010

	By Fiscal Year, in Millions of Dollars												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2010-2015	2010-2020
NET INCREASE OR DECREASE (-) IN THE DEFICIT													
Statutory Pay-As-You-Go Impact	0	3,480	1,147	-964	-3,282	-2,658	533	-29	-353	882	1,244	-2,277	0
Memorandum: Net Deficit Effects of H.R. 4173, Excluding the Special Financial Crisis Fund Assessments Imposed Under Sections 1601 and 1602[a]													
Net Deficit Impact	0	3,480	4,511	2,400	82	707	533	-29	-353	882	1,244	11,180	13,457

a. Under section 1601, the amount of the Financial Crisis Special Assessment is the lesser of $19 billion and the product of 1 1/3 and the amount necessary to offset the net deficit effects of the provisions of the act, excluding the effects of sections 1601 and 1602 for the period starting on the date of enactment of the act through September 30, 2020. CBO estimates that the Financial Crisis Special Assessments would total $17,943 million. That gross increase would be partially offset because the fees would become an additional business expense for the companies required to pay them, resulting in a net revenue increase of $13,457 million over the 2010-2020 period.

PREVIOUS CBO ESTIMATES

On May 3, 2010, CBO transmitted a cost estimate for S. 3217, the Restoring American Financial Stability Act of 2010, including amendment number 3739 in the nature of a substitute for S. 3217. CBO estimated that the amendment in the nature of a substitute to S. 3217 would reduce budget deficits over the 2011-2020 period by $19.5 billion; about $17.6 billion of that reduction would stem from a program to facilitate the resolution of certain financial institutions that are insolvent or in danger of becoming insolvent. Funding for the program would come from fees assessed on large financial companies. Other provisions that contributed to the reduction in budget deficits included reclassifying the collection and spending of fees collected by the SEC and changing the regulatory regime for supervising banks, thrifts, and related holding companies.

S. 3217 was amended by the Senate, substituted for the text of H.R. 4173, and passed by the Senate on May 20, 2010.

On June 9, 2010, CBO transmitted a cost estimate for H.R. 4173, the Restoring American Financial Stability Act of 2010, as passed by the Senate. CBO estimated that the Senate-passed version of H.R. 4173 would increase budget deficits by $19.7 billion over the 2011-2020 period. That increase in budget deficits would largely stem from changes to

the program that would establish a fund to liquidate systemically important financial firms that are insolvent or are in danger of becoming so.

H.R. 4173 was further amended in the conference between the House and Senate. CBO estimates that the resulting conference agreement, as reported on June 26, 2010, would have no net effect on budget deficits over the 2011-2020 period. The major differences between the Senate-passed version of H.R. 4173 and the version reported by the conference committee arise from the following changes:

- Provisions in title III regarding the level and scope of federal deposit insurance would reduce net direct spending by an estimated $8.8 billion over the 2011-2020 period, CBO estimates. Increasing the amount of insured deposits would increase the FDIC's and NCUA's liabilities for failed institutions, but those costs would be offset over time by higher insurance premiums. Insured depository institutions also would be required to pay additional premiums to increase the size of the insurance funds in proportion to the increase in the amount of insured deposits. For this estimate, CBO projects that that enacting these changes would increase insured deposits at the FDIC by about 10 percent by 2020.

- Title XIV that would reauthorize the Emergency Mortgage Relief Program (EMRP) and provide funding for the Neighborhood Stabilization Program (NSP). The act would provide authority to make $1 billion in loans or loan guarantees under the EMRP to homeowners who are delinquent on their mortgage because of a substantial reduction in income as a result of involuntary unemployment or under-employment. The act would provide $1 billion in funding for the NSP make grants to states and local governments to be used for the purchase and redevelopment of foreclosed and abandoned residential properties. CBO estimates that these two provisions would increase budget deficits by $1.5 billion over the 2011-2020 period.

- Title XVI would require certain large financial firms to pay fees sufficient to collect the lesser of $19 billion or an amount determined by a formula based on the net deficit effects of this act, excluding the net federal proceeds from the fee. Because the fees would be compulsory, the amounts collected would be classified as revenues. Based on the estimated impact of enacting this legislation on the budget deficit, CBO estimates that the special assessments would total about $17.9 billion over the 2012-2015 period; however, the net revenues received by the government would be less than that amount—an estimated $13.5 billion—because the fees would become an additional business expense for companies required to pay them. Those additional expenses would result in decreases in taxable income somewhere in the economy, which would produce a loss of government revenue from income and payroll taxes (estimated to total about 25 percent) that would partially offset the revenue collected from the fees

themselves. Income from fees would be deposited in a new Financial Crisis Special Assessment Fund and would not be available to be spent for any purpose.

- Title XVI would exempt swaps and other derivative contracts from the tax consequences of section 1256 of the Internal Revenue Code. As a result, JCT estimates that the derivative provisions would increase revenues by $120 million over the 2010-2020 period, rather than reduce revenues by $1.3 billion as in the Senate-passed version of the legislation.

- Title IX would require that certain fixed-indexed annuities would be exempt from regulation by the SEC and thus would be regulated solely by the states. CBO estimates that the provision would result in more income being earned from tax-deferred annuities rather than from other taxable instruments, resulting in a revenue loss of about $1 billion over the 2013-2020 period. The provision was not in the Senate-passed version of the legislation.

- The Senate-passed version would establish a new entity that would be responsible for assigning approved credit rating agencies to produce credit ratings for new issuances of certain securities; CBO estimated that establishing the new entity would increase budget deficits by $0.1 billion over the 2011-2020 period. The conference agreement does not include this provision.

ESTIMATE PREPARED BY:

Federal Spending: Kathleen Gramp, Susan Willie, Matthew Pickford, Daniel Hoople, Chad Chirico and Wendy Kiska

Federal Revenues: Barbara Edwards

ESTIMATE APPROVED BY:

Peter H. Fontaine
Assistant Director for Budget Analysis

Committee on Financial Services
Ranking Democratic Member,
Subcommittee on Oversight
& Investigations

Committee on Transportation &
Infrastructure

Democratic Steering & Policy
Committee

Democratic Caucus
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July 13, 2011

The Honorable Gene Dodaro
Comptroller General
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Dodaro:

I appreciate the efforts of the Government Accountability Office (GAO) to respond to a request for submission for the record on the implementation costs of the Dodd-Frank Wall Street Reform and Consumer Protection Act for the July 14, 2011 Oversight Subcommittee hearing. However, the GAO's submission, which was requested two weeks ago, provides only a narrow view of the factors to be considered in implementing this law. The financial crisis, its causes and impacts, and the actions taken by Congress in response to prevent such a catastrophe from every happening again are complex. As such, the issue warrants more than a 20-page document produced in two weeks and born out of a technical assistance request. In addition, if the GAO is to provide analysis on this topic, it is my hope that the Oversight Subcommittee would provide the GAO with an opportunity to testify on the matter and thoroughly discuss its work. However, the July 14 hearing, entitled "Oversight of the Office of Financial Research (OFR) and Financial Stability Oversight Council (FSOC)" is not about the cost of Dodd-Frank; its purpose is to review the activities of the OFR and the FSOC. To my knowledge, GAO has not been invited as a speaking witness to this unrelated hearing.

Therefore, I request the GAO to initiate a full, comprehensive cost-benefit analysis, to the full caliber and quality for which the agency is widely known, on the implementation of the Dodd-Frank Wall Street Reform and Consumer Protection Act. In addition to any issues the GAO deems appropriate, this review, to the extent possible, should examine and consider the following:

- All of the costs and benefits of implementing the Dodd-Frank Act, including those factors weighed in the Cost Estimate and Supplemental Assessment by the Congressional Budget Office on the Dodd-Frank Act from June 28 and 29, 2010 which found the law to have a net effect of reducing deficits by $100 million over 5 years and $3.2 billion over 10 year (see attached)[1];

[1] Congressional Buget Office Cost Estimate, *H.R. 4173 – Dodd-Frank Wall Street Reform and Consumer Protection Act, Conference Agreement as reported on June 26, 2010*, June 28, 2010, available at

- The total cost to the U.S. economy in losses due to the lack of adequate laws and regulations that could have prevented the financial meltdown, including the loss of $10 trillion in household wealth, according to data from the Federal Reserve[2];

- The total cost to clean up the financial crisis through the creation of TARP and the establishment and use of the liquidity programs by the Federal Reserve;

- The savings from not having to bail out financial firms in the future due to the passage of the Dodd-Frank Act and the resolution process established by it;

- The expected assessments paid to implementing agencies by supervised institutions as required by the Dodd-Frank Act;

- Revenues from investments or providing services associated with the implementation of the Dodd-Frank Act; and

- The costs of resources and hiring staff for each agency responsible for implementing Dodd-Frank.

Thank you for your time on this matter. If you have any questions regarding this request, please contact Noelle Melton at (202) 225-6511.

Sincerely,

Michael E. Capuano
Ranking Member
Subcommittee on Oversight & Investigations

Enclosures

cc: The Honorable Barney Frank
The Honorable Randy Neugebauer
The Honorable Spencer Bachus

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http://www.cbo.gov/ftpdocs/115xx/doc11596/hr4173.pdf, and CBO Estimate of the Net Deficit Effects of H.R. 4173, June 29, 2010, available at http://www.cbo.gov/ftpdocs/116xx/doc11601/hr4173amendment.pdf

[2] Federal Reserve Flow of Funds database (March 12, 2009 and March 10, 2011) Available at http://www.federalreserve.gov/releases/z1. Comparing peak household net worth in 2007 to three years later in 2010.

Committee on Financial Services
Ranking Democratic Member,
Subcommittee on Oversight
& Investigations

Committee on Transportation &
Infrastructure

Democratic Steering & Policy
Committee

Democratic Caucus
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July 13, 2011

The Honorable Randy Neugebauer
Chairman, Subcommittee on Oversight & Investigations
Committee on Financial Services
U.S. House of Representatives
Washington, DC 20515

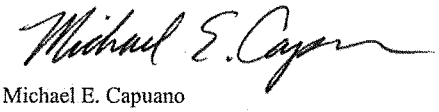
Dear Chairman Neugebauer:

I am writing regarding the submission for the record by the Government Accountability Office (GAO) on the implementation costs of the Dodd-Frank Wall Street Reform and Consumer Protection Act for the July 14, 2011 Oversight Subcommittee hearing. GAO's submission, which was requested two weeks ago, provides only a narrow view of the factors to be considered in implementing this law. The financial crisis, its causes and impacts, and the actions taken by Congress in response to prevent such a catastrophe from every happening again are complex. As such, the issue warrants more than a 20-page document produced in two weeks and born out of a technical assistance request. In addition, if the GAO is to provide analysis on this topic, it is my hope that the Oversight Subcommittee would provide the GAO with an opportunity to testify on the matter and thoroughly discuss its work. However, the July 14 hearing, entitled "Oversight of the Office of Financial Research (OFR) and Financial Stability Oversight Council (FSOC)" is not about the cost of Dodd-Frank; its purpose is to review the activities of the OFR and the FSOC. To my knowledge, GAO has not been invited as a speaking witness to this unrelated hearing.

Therefore, I am requesting the GAO to initiate a full, comprehensive cost-benefit analysis, to the full caliber and quality for which the agency is widely known, on the implementation of the Dodd-Frank Wall Street Reform and Consumer Protection Act. I have requested that the report consider all of the costs and benefits of implementing the Dodd-Frank Act, including those factors weighed in the Cost Estimate and Supplemental Assessment by the Congressional Budget Office on Dodd-Frank from June 28 and 29, 2010 which found the law to have a net effect of reducing deficits by $100 million over 5 years and $3.2 billion over 10 year. I have included a copy of this request for your convenience.

Sincerely,

PLEASE VISIT OUR WEBSITE TO SIGN UP FOR OUR NEWSLETTER
PRINTED ON RECYCLED PAPER



Michael E. Capuano
Ranking Member
Subcommittee on Oversight & Investigations

Enclosures

cc: The Honorable Spencer Bachus
The Honorable Barney Frank

NIF

Committee to Establish the
National Institute of Finance
1507 Blue Meadow Road, Rockville, MD 20854 www.ce-nif.org

11 February 2010

The Honorable Christopher J. Dodd, Chairman
Committee on Banking, Housing and Urban Affairs
534 Dirksen Senate Office Building
United States Senate
Washington, DC 20510

Dear Senator Dodd:

The recent financial crisis has revealed fundamental gaps in our understanding of financial markets and how they affect the broader economy. These gaps were evident in the inability of regulators and policy makers to see the buildup of systemic risks that led to the recent crisis and to understand the potential impact of their decisions at the most critical times of the crisis.

Going forward, a significant regulatory weakness is the absence of a sustained effort to gain a deep understanding of risks to the financial system, including the lack of essential data and the analytical capacity to turn that data into useful information to enable regulators to better safeguard our financial system. A simple comparison to our national efforts related to weather, defense, health and medicine strongly suggests that we are systematically shortchanging our efforts related to systemic safety and that such an organized effort could bring tremendous improvements.

The current legislative response to the crisis has focused primarily on expanding regulatory authorities and determining who should exercise those authorities. There has been far too little attention devoted to strengthening the research efforts and fixing the inadequate data and analytical capability on which sound regulatory decisions must be based. In his opening comments to the Senate Banking Committee, on June 18, 2009 Secretary Geithner commented, "We must be able to look in every corner and across the horizon for dangers and our system was not able to do that." In spite of this observation, the bill that recently passed the U.S. House of Representatives does nothing to provide authority to collect system-wide data or to provide the permanent staff and resources needed to develop these critical capacities.

To be successful, legislation intended to equip the government to understand and monitor systemic risk and be able to reduce the risks of major financial crises in the future must include provisions to strengthen research efforts and provide the government with previously unavailable data and analytical capabilities.

Over the past year a large group of academic scholars, regulators, and financial sector experts, calling themselves the Committee to Establish the National Institute of Finance (CE-NIF), came together in a

We strongly urge you to include in the U.S. Senate's financial regulatory reform legislation the authorities and resources needed to assure that the U.S. government will have the understanding, data and analytical capabilities proposed by the CE-NIF that are necessary if government regulators are to have the tools needed to safeguard the U.S. financial system. Enclosed is a summary of Key Legislative Objectives we consider essential for an independent, effective and self-financing National Institute of Finance. For further information please contact Allan Mendelowitz, former Chairman of the Board of Directors of the Federal Housing Finance Board, and the CE-NIF "man in Washington:"

Allan Mendelowitz
allan.mendelowitz@ce-nif.org
Tel: 301-279-0744
Cell: 202-669-7856

Sincerely,

Harry Markowitz
Adjunct Professor of Finance
University of California, San Diego
Nobel Prize in Economic Sciences, 1990

Myron Scholes
Frank E. Buck Professor of Finance, Emeritus
Graduate School of Business, Stanford University
Nobel Prize in Economic Sciences, 1997

Robert F. Engle III
Michael Armellino Professor of Finance
New York University Stern School of Business
Nobel Prize in Economic Sciences, 2003

William F. Sharpe
Professor of Finance, Emeritus
Stanford University
Nobel Prize in Economic Sciences, 1990

Robert Merton
Nobel Prize in Economic Sciences, 1997

Vernon Smith
Nobel Prize in Economic Sciences, 2002

CC: Senator Tim Johnson, Senator Robert F. Bennett, Senator Jack Reed, Senator Jim Bunning, Senator Charles E. Schumer, Senator Mike Crapo, Senator Evan Bayh, Senator Bob Corker, Senator Robert Menendez, Senator Jim DeMint, Senator Daniel K. Akaka, Senator David Vitter, Senator Sherrod Brown, Senator Mike Johanns, Senator Jon Tester, Senator Kay Bailey Hutchison, Senator Herb Kohl, Senator Judd Gregg, Senator Mark R. Warner, Senator Jeff Merkley, Senator Michael F. Bennet

NIF Committee to Establish the National Institute of Finance

Key Legislative Objectives of The Committee to Establish the National Institute of Finance

The objective of legislation to create the National Institute of Finance (NIF) is to equip the financial regulatory community with the data and analytic tools needed to safeguard the U.S. financial system.

At a minimum the NIF must have the following attributes, authorities and responsibilities:

- The NIF will be established with two key organizational components:
  - The Federal Financial Data Center (Data Center)
  - The Federal Financial Research and Analysis Center (Research Center)
- The NIF will have the authority to:
  - Establish reference data bases (a legal entity reference data base and a financial product reference data base);
  - Establish standardized formats for reporting financial transactions; and
  - Compel the provision of transaction and position data from U.S. based financial entities and from foreign financial entities that execute transaction in the United States or with U.S. counterparties.
- The Data Center will have the responsibility to:
  - Establish and publish the reference data bases and reporting formats;
  - Collect, validate and clean the transaction data;
  - Provide appropriate summaries of data to the general public; and
  - Keep the data secure.
- The Research Center will have the responsibility to:
  - Develop metrics to measure and monitor systemic risk;
  - Develop the capacity to assess the financial condition of large financial institutions and assess their capital adequacy in stress scenarios;
  - Monitor, investigate and report on changes in system-wide risk levels;
  - Conduct, coordinate and sponsor long-term research into systemic risk; and
  - Provide advice on the financial system and policies related to systemic risk.
- The NIF will have reporting independence so that the Systemic Regulator and the financial regulatory agencies have the benefit of the NIF's very best assessments.
- The NIF budget shall be funded from assessments on reporting institutions.
  - This self-funding approach is used by most financial regulatory agencies.
  - This funding approach is appropriate because industry will benefit from an annual reduction in operating of cost of tens of billions of dollars as a result of standardization of data and reporting.
  - The use of industry assessments will make it possible for the NIF, like the financial regulatory agencies, to pay salaries that are above the standard civil service pay scale.