Securities and Exchange Commission Historical Society
Interview with Chester Spatt
Conducted on May 4, 2017 by Kenneth Durr

KD: This is an interview with Chester Spatt for the SEC Historical Society's Virtual Museum and Archive of the History of Financial Regulation. I'm Ken Durr. Today is May 4th, 2017, and we're speaking in Washington, DC. Thanks so much for taking the time to talk. I want to start by going back to talk about your education, and why economics? How did you come into that field?

CS: Well, I've always been fascinated by markets. I was always very good in math and abstract thinking. I was more interested in understanding society, and so was more focused on the social sciences rather than the sciences, despite my interest in math. I also did something a little bit unusual when I was in college, and it's going to sound like this was the path for my being a lawyer, but ultimately it became the path for my being an economist, and that was I sued the State of New York. I challenged the constitutionality of the state law that denied me a Regents Scholarship, which was a very small scholarship by the way, because I went to an out-of-state school.

I grew up in Brooklyn; the out-of-state school that I went to was Princeton University. The core of my legal argument was twofold. It was partially that this was a denial of my fundamental right to travel; there were various Equal Protection Clause cases along those lines. Also, that I was buying a good from a New Jersey producer, and there were court precedents under the Interstate Commerce Clause that New York couldn't impose special taxes on eggs from New Jersey, and so I argued that I was buying a good from a New

Jersey producer and that a denial of a rebate was just like a tax. So the case was initially assigned in the federal court to Judge Jack Weinstein, who's still a senior judge – this was a long time ago. He ruled that I had a meritorious enough claim that I should have my case heard by a three-judge panel, which was how the process worked at the time to overturn a state law.

Unfortunately, the three judges did not ultimately agree with my position. And, in fact, I thought that my stronger argument was about the Interstate Commerce Clause, which was an argument of comparative advantage. But what the court said was that they viewed this argument as ingenious but unrealistic, that we need not tarry over this argument. But I viewed the core of that argument as basically the argument of comparative advantage in economics, and it illustrated at an early stage my interest in thinking about matters from the point of view of economic principles.

KD: I was also intrigued by your Ph.D. dissertation. The title is *Three Essays in the Economics of Finance and Organization*. It sounds like an eighteenth century, nineteenth century economist's take on things. It's got that broad, general –

CS: Yes. In the era when I got my Ph.D. and actually continuing now to today, doctoral students increasingly are writing several essays, and it started roughly around that time, that people would write a few papers. I think the notion was that, in economics and finance that books were not the main mechanism of publication, but instead papers were. And in order to feed into that process most naturally in terms of a prospective faculty member's development, the three essays model – sometimes it was two essays or five essays, but that model seemed like a better one. So this was actually becoming relatively standard then. But when people have a more synthetic set of papers that fit particularly closely together, they come up with a more specific title.

KD: I'm used to hearing the very specific, specialized PhD dissertation titles. So you got your degree at Penn; is that correct?

CS: That's correct. Yes, I was a Ph.D. student at Penn. I worked under Stephen Ross, who was, at the time, an emerging superstar. Unfortunately, he passed away about nine weeks ago, but he certainly was a major figure in the finance discipline for close to half a century.

KD: And then did you go into teaching at Carnegie Mellon at that point?

CS: Yes, I did. That's where I became a faculty member.

KD: And what was your specialty? How did your specialty develop over those years?

CS: In the early years I was primarily a theorist by training. I tended to work on problems in applied microeconomic theory, particularly problems in industrial organization and finance, and some of my early papers were on the interface between those. Some of my early papers in finance focused on game theoretic issues in finance. For example, I have a study about an obscure instrument called sinking fund bonds and some of the strategic issues that arose at the time with those instruments. I had a number of early studies of mortgage contracting. I was writing about mortgages (and also sinking fund bonds) with one of my collaborators at Carnegie Mellon at the time, Ken Dunn. We were writing about mortgages in the 1980s, long before mortgages became as hot a topic as they certainly became years later. And so we studied various contractual and option aspects of mortgages.

KD: Did you develop a more general interest in financial markets at that point?

CS: Yes, I certainly had very broad interests in markets, not only in the mortgage markets. One of the directions I went in a number of my studies was to look at equity markets in various contexts, partially from the point of view of investor decision making. There, I've written some of the key papers on taxes and asset location; some of my work on the tradeoffs between paying capital gains taxes and diversifying; and also on asset location, what to put in your taxable and tax-deferred accounts. These, I think, are considered perhaps the leading papers on some of those problems. And certainly, the areas of mortgages and taxes and asset allocation, are other areas for which I'm known in the finance community, in addition to my interest in market structure and broad regulatory issues, which really blossomed partially through my service at the SEC. Certainly, my broader interest in financial regulation blossomed, particularly with the financial crisis, but also in the aftermath of my service at the SEC.

I started really working in market structure around 1990, partially as a byproduct of a visit to France, with a then young researcher, Bruno Biais. I had the opportunity to visit the Paris Bourse, and I asked lots of questions, and he and I hit it off. And he and another collaborator were able to obtain data, and we started studying this data. What emerged from that was the first published paper on electronic limit order books. And, in fact, it's now my most cited paper. This paper, published in the *Journal of Finance* in 1995, looks at the dynamics of the limit order book and the interaction of the limit order book and the order flow. So this is what really crystallized my interest in market structure.

Some of this also was a byproduct of having occasions where I would be doing some modest trading, and so I would think about what's my best order strategy, and where do I want to place the order relative to the quote, and so this paper was very synergistic with that. But also, I think one of the reasons that it wound up being widely cited was that the prior data was more limited – gradually, there was an evolution in the type of data that academics had available. So first, academics, finance professors, had prices, and then they started getting quotes. Well, we went one level farther down. We not only had, in effect, quotes, like bid and ask prices, we also had the orders. We had the orders on both sides of the market – we had the five best prices on each side of the book over a limited sample from the Paris Bourse.

Now people wondered at the time, why did we study Paris? Well, of course, that was the data we had, but also, this was a self-contained market. It would have been, in some respects, much harder to study the order book and the order flow with the New York

Stock Exchange, because that was a market which had significant manual components, as illustrated by some aspects of the specialist system. Now there were studies using data from it, too, but I think one of the advantages that our context brought to bear was that our data was really capturing the full market dynamic, so it was really quite an intriguing market to study. This study then led to a number of other studies that I did in the equity market structure area.

This initial paper was published in the *Journal of Finance* in 1995. We then did a study of how the opening worked in Paris. And we had very interesting data, because we got indicative prices – there was exchanges, there were communications that were occurring that were nonbinding before the market opened. And so let's say that the market opened at 10 a.m. We would have communications earlier that morning, and we constructed virtual prices: what would have been the price if the market actually did open then, but that was just a hypothetical. And we looked at the behavior of the virtual prices, and we saw there was a lot of efficiency.

Early in the morning, the virtual prices were just garbage, they were just noise. But later on, in the last ten minutes or so, they had a lot of predictive power about the opening. And so we explored some of that, and we wound up with a very nice paper in the *Journal of Political Economy*, which is one of the leading broad-based journals in all of economics. I did that with the same collaborators, Bruno Biais and Pierre Hillion, that I did the earlier study on the order book and the order flow. And Bruno Biais and I, we continued to work in the market structure area. We did a survey of the market structure area in which we partnered with Larry Glosten, who was one of the theoretical founders of the market microstructure area. That was at the final stages of the pre-publication process right at the time of my arrival at the Commission. So that was a nice set of circumstances, legal colleagues on the staff felt that they didn't need to vet our product, though I'm sure our paper had lots to say about many regulatory issues. So it was nice that it was done before I arrived.

Along the way, Biais, Christophe Bisière and I did an interesting study on competition and tick size – actually it was the presentation that I gave at the time that the Commission was starting to think about me and I was starting to think about the Commission. We studied a situation where the traditional NASDAQ had a relatively wider tick, and there was this platform called Island that was quoting much finer ticks within the NASDAQ framework, but really almost on the side. And it was consistent with the rules, but it was interesting to see how competition worked, and we wound up with a very nice paper about that in *Management Science*. And, in a way, for reasons that I didn't really appreciate at the time, this winds up actually being closely related to some of the issues in Regulation NMS, because NMS, of course, had to do with fragmentation and competition (and constraints on tick size). And, in a way, this was a pre-NMS cut at these issues, although it's taken me a long time to really fully grasp the whole connection.

KD: Yes. There's one thing that popped up that I'm intrigued by, and it's sort of a side excursion, but you did some work for the Federal Energy Regulatory Commission.

CS: Oh, yes. And that actually played an interesting role. I was a consultant to them in its investigation of manipulation in the Western Energy Markets, so I worked closely with them in that investigation. In fact, my predecessor wound up hiring one of the attorneys I was working with over there, for the staff. Then I think my predecessor also viewed this as a signal that I might have Potomac fever. My involvement in this other project encouraged him to cultivate me to think seriously perhaps about coming down to be his successor. Now, ultimately, of course, a director doesn't choose his successor, but my predecessor, Larry Harris, did play an important role in encouraging my interest and then passing that along to Bill Donaldson, who was the chair.

KD: Was there a lot of comparability between the energy market and the securities markets? Were you using the same sorts of concepts?

CS: Well, to some degree. One of my other papers that's gotten a fair bit of attention is "Equilibrium Model of Forward Curve Dynamics," written with my Carnegie Mellon colleagues, Bryan Routledge and Duane Seppi, and published in the *Journal of Finance*. Basically, it addressed such questions as what's the shape of the forward curve for commodities, how are short-term versus long-term prices determined, and what's the role of storage. We have a model in which storage helps clear the market. And so it's more of a pricing model based upon an economic foundation. But, because of my background in market structure, together with my expertise in that type of model, I think that's why FERC was interested and involved me in their investigation of the Western Energy Markets.

So are some of the market structure issues similar? Yes, but some of it worked quite differently. And, of course, in that market, Enron was playing a pivotal role. And so, obviously, it was a very different kind of market structure, certainly than equity, it's a very different structure, for many of the markets were over-the-counter markets and the products were more like derivative instruments and the like.

KD: Well, let's start moving on. You had talked about Larry Harris, and you came into his crosshairs at some point.

CS: Well, I wouldn't say in his crosshairs, no. We got along well.

KD: Tell me a little bit about when you first found out that this might be a possibility, and I want to get a sense of the tradition of that office, of the office of the economic advisor, and your understanding of that role in the past and what you might be looking toward.

CS: Yes. Historically, the person who was chief economist was often at a relatively younger career stage than I think many of the other directors, and I think that changed with Larry. It certainly changed then with me. And I think this really continued, now, with the recent chief economist, Mark Flannery. But I think, historically, many of the folks who have been chief economists were doing it at relatively earlier stages in their careers, maybe within about ten years or so with a Ph.D. If you go back and look, many of the folks were within about ten years of their Ph.D., and Larry and I were both twenty-plus years.

And you see Mark Flannery, who recently stepped down, received his Ph.D. in the mid-1970s. So there's been a sea change, and I think these longer lengths make it more comparable to the other directors.

I think the academic community looks at the role in an interesting way, because on the one hand, there's an appreciation that it's important to have a person with a fair bit of savvy in the role. I think the people who have been chief economists are a terrific group over the many decades. At the same time, I think there's also some skepticism in the academic community, because of the perception that the SEC is a lawyer-dominated agency, and perhaps, that's what you were alluding to.

KD: Yes.

CS: So there is certainly that perception. And I think, to some extent, it's probably a relatively fair perspective. I think most chief economists, myself included, I think I've tried to push on that. I think, in recent years, there's probably been more success, and I think some of that greater success in pushing on that actually owes itself to a combination of the District of Columbia Circuit Court of Appeals and the Commission's failure initially to really understand the message from the Circuit Court of Appeals, which led the Circuit Court to then escalate its voice.

So when I was chief economist, one of the controversial rulemakings, which was adopted as I arrived, was the mutual fund independent chair and independent directors rule. Of course, this was contested in court. A year into my time at the Commission, and nine days before Bill Donaldson's resignation was to be effective, the Circuit Court overturned the rule. But it stayed the order and basically told the SEC to do a proper cost-benefit analysis. And the SEC then turned it its response around in eight days, because the SEC declared that it wanted to have the same five commissioners to adjudicate the response. It's clear from the Circuit Court ruling that the Circuit Court found that insulting, lifted the stay, and six months later fully drove the nail in on that issue.

And then, six years later, I think that the Circuit Court must have concluded that things hadn't changed, because of the rhetoric in the proxy access decision, which a lot of observers felt was very aggressive. My view as a non-lawyer was, oh, no, you don't understand. Without aggressive rhetoric, obviously, the Commission wasn't going to get the message. And so, to me as a non-lawyer, this seemed to be eminently fair. And I think actually the Circuit Court ruling was very helpful to the SEC, because I think then the SEC understood, and then it beefed up its efforts in the cost-benefit space in a serious way.

KD: Now see, this raises the question, so why didn't they beef up the efforts earlier? I think that Donaldson wanted to do that, to some extent.

CS: Well, but he was only there for nine days after the ruling, so I don't understand your point – but I think Chris Cox did want to do that. And Brian Cartwright, who became his general counsel, and who I felt was a terrific general counsel, I think he wanted to do that. And Brian was very much of an intellectual, has a Ph.D. in physics, for example. And we had some meetings about this once Chairman Cox was putting everything together at the agency.

This wasn't the initial priority, obviously. I think dealing with the specific issues, to some extent, were, because those were clearly very important. And people were looking at him I think unfairly skeptically, but there's a tendency in Washington, if you don't do exactly what your predecessor does, they think that you're not true to some "mission." Well, the mission isn't necessarily defined by what your predecessor did. It was defined by what your predecessor did only when your predecessor was in charge.

KD: Okay. Well here's something I was referring to. Shortly after you came in, there was an announcement that the SEC was going to – when you're in the rulemaking process, the SEC decided that they're going to do the cost-benefit analysis at the beginning rather than at the end of that process. Does that ring a bell at all?

CS: No, it actually doesn't ring a bell. Now there was, in response to the Circuit Court, there were some internal interest – I think Brian Cartwright was leading an initiative on this. It was really beginning around the time that I was leaving. So I was chief economist for just over three years. I was there for thirty-seven months, from the beginning of July '04 to end of July '07. Toward the end, Cartwright and Cox were beginning an initiative, I think with the Circuit Court in mind but taking a bigger, longer view.

As an outsider I wasn't party to much of the internal deliberations after the initial meetings, but I suspect that the financial crisis was so consuming for the Commission that this just disappeared, because they were sympathetic to taking cost-benefit analysis more seriously. But I think the financial crisis, it just consumed everything on the radar. And the financial crisis was beginning in this period. I can recall, at some of my last senior staff meetings, we were being briefed on the stabilization of one Bear Stearns hedge fund and the collapse of the second Bear Stearns hedge fund. In the first case, Bear Stearns decided to put money in. In the second case, they decided not to put money in. And this was some of the initial seeds. So what was to come? Bear Stearns as a whole collapsed nine months later, and then, you know what subsequently occurred.

So my last official day at the Commission was July 31, 2007. In early August, there was what has been referred to as –the quantitative meltdown or the hedge fund meltdown. There were these huge shocks in some of the mortgage markets, in particular. There were huge, huge pricing shocks, and this really got the attention of the authorities. And I think many observers now trace the beginnings of the financial crisis in terms of market signals to that activity. And then you started to see, in some ways, although it wasn't really reflected in the stock price at the time, really bad news coming out of places like Citigroup. For a while, its stock price held up, but you started to see write-downs. And in 2008, it really increased. But it's easy to imagine, in that kind of environment, there just wouldn't have been the energy to take the cost benefit seriously, which the Commission has done in the aftermath of the proxy access ruling. And I think it provides a way to bring the principles of data and markets to bear in the regulatory process. I think if we're going to have effective and useful regulation, it's important that it is subject to a serious cost-benefit test.

KD: We've hit the end of your term and what the situation was then, but let's go back to the beginning and talk a little bit about some of the issues that you tackled and how you tackled them from an economist's perspective.

CS: Okay. So I'm going to talk not only about market structure issues, but we'll talk about other issues as well.

KD: Absolutely, yes.

CS: So I'll try to talk about some of the issues that I thought were among the most significant while I was there, which were in a variety of spaces. They were in the market structure space. They were, to some extent, in aspects of our assistance to the Division of Enforcement. They were, to some degree, also even in the accounting space, particularly on option expensing. So we'll talk about a variety of issues. I think one issue, which had already exploded before my arrival, was the issue of mutual fund market timing. And there, the Commission was arguably caught somewhat flat-footed, and they were shown up by New York Attorney General Spitzer, who happened to have a source. Now it's maybe not just luck that he had a source, because he was out there cultivating sources.

But then, I think, once the issue was squarely before the Commission – and Attorney General Spitzer, I don't think there was any indication that he was really interested in reforming the markets. He was interested in Attorney General Spitzer. But I think the Commission had been very slow earlier – and the roots of it were there well before I arrived. While the Commission had been very slow to pick up on this mutual fund market timing thing, I think, once it exploded in late 2003, I think the SEC did a very nice job. They looked systematically, they came up with a coherent framework for approaching these issues, and achieved serious sanctions, which flowed to investors under the relatively recent Sarbanes-Oxley Act.

These sanctions resulted in fair funds that flowed back to the victims, in effect, the uninformed investors who were being victimized. So, in a way, it's perhaps the leading application, because there was so much money involved, I think literally billions of dollars of sanctions. It's the leading example of the fair funds being created under Sarbanes-Oxley, so the sanctions went back to the victims as opposed to the Treasury.

We worked closely with the Division of Enforcement, and my sense was they valued a lot what we did, because we had methods that allowed the SEC to quantify the losses. So that occurred first at the stage where the Division of Enforcement was negotiating settlements. And then we worked closely as well with them later, when they were working with independent distribution consultants whose role was to distribute money to the victims. I worked closely with my team on these issues. I viewed these issues as very important, I understood instinctively the nature of the misvaluations here and the option strategies that investors could follow. I understood deeply how stale pricing works and how that would be exploited, and so I worked closely with my team on these issues, because I was able to help leverage them further, but I also had a very skillful team.

KD: How big was your team at this time?

CS: The overall economics group was something like thirty, and about twenty or so were Ph.D.s, and several others were highly talented.

KD: Did you create teams to deal with the different issues?

CS: Well, on the issues, yes. We had a team that worked with the Division of Enforcement, so that was a small number of people. It might have been half a dozen or so people. And sometimes, we would bring somebody from another group – if somebody had the right skills, we would kind of move them across and that sort of thing. But really, there were just a few people who focused on these matters, and they brought in others from time to time. But also, that gave them a lot of expertise and a lot of knowledge, and being able to look across the different situations was very, very helpful.

So later on, what our role was, after a lot of the settlements were negotiated, then our role was to work with the independent distribution consultants who were being hired by the mutual funds with the SEC's concurrence. We worked with them as to how they would propose to distribute the money. Now this points to a surprising aspect. We were working with many independent distribution consultants, and we worked closely, of course, with the Division of Enforcement. And then, together with the Division of Enforcement, we started to put these folks together a little bit, because we felt that they could learn not only from us, but they could learn from each other's experiences.

So we started to do these mega conference calls, which I think was a very good device. I worked closely on this with one of the deputy directors, Peter Bresnan, who was terrific. For the Commission, we led the efforts in this. I think part of our strategy on this was to also have the independent distribution consultants hear each other's issues, problems, concerns, and, this way, they could learn from each other. And I think I played a useful role in this context, because there were times as well where I would understand the concerns of the Division of Enforcement, because we were working closely with them, but I also understood the concerns of the independent distribution consultants, many of whom were finance professors. Some were law professors, a few were retired Judges, but the majority were finance professors. And I could understand their concerns, too, especially when there were certain kind of certifications they would be asked to provide; on some level, they were well positioned to do, but, on another level, they really weren't so well positioned to do so.

And when they would express particular concerns sometimes I was in a good position to be able to, in effect, explain that – to translate, basically. But also, in the other direction, when they were focused on tangents or not really seeing what the Division of

Enforcement felt was really important, sometimes I was able to express it in their language, too. So I was able to translate a little bit in both ways, and I thought that was effective. And I thought it was effective that we were, at times, dealing with so many independent distribution consultants at the same time. I don't mean just from the point of view that, okay, we didn't have to have twenty separate conversations. That was part of it. But also, that they could learn from each other, because we weren't trying to just cram stuff down. We wanted to try to sort out what was right.

But so there's one aspect of this that's a little bit weird. I had thought that, maybe in my second year at the Commission, when we had a lot of these calls, I thought a lot of the core business of how we would distribute this money was being done. But I've had some independent distribution consultants complain to me that it took many, many years to get the money really out the door. And so there must be other aspects of this process that are either not as simple or maybe, at some point, there's not enough focus on really trying to get the money to the investors. As the time extends, the problems become harder and harder.

The point is, people who are the victims, how do you find them many years later? It's a problem even a few years later. Well, as you increase the amount of time, it becomes more and more of a problem. It's not just that people move. They die, then there's this issue of the successors, and how do you track this. Here, there weren't three victims who lost $5 million. Here, there were a million victims who lost $150 million. How do you distribute that? Well, many of the victims, they didn't lose the average, they lost a tiny fraction of the average, because they did have relatively modest investments with this particular fund. So what do you do then? What's a de minimis amount below which you're not going to send them the money?

Now, meanwhile, the Commission had concerns that we don't want the money just flowing back into the fund – you know, there's legitimate issues about that. These were some of the kinds of issues that we had to deal with and work through with respect to the mechanics. But also, at the earlier stage, at the stage where we were helping the Division of Enforcement understand the magnitudes of the losses, we developed various methods. One of our preferred methods, although it was a little bit controversial, was the method called next-day NAV. The point was the particular prices at the end of the day when these trades were happening were biased, so our idea was to pick the following day's price as an unbiased measure. I don't think there's much ambiguity about that, at least in most of the relevant contexts. But it's a noisy measure, and that's where I think a lot of the concerns from outside counsel when the mutual funds came about. And sometimes, they had legitimate points about that, so we tried to sharpen it up at times in different ways. I think it was a good framework, but also, over time, I think we also learned about its limitations.

KD: But you had to start somewhere.

CS: Yes. Well, not only was it a uniform way to start, but because it was noisy –sometimes the negotiated settlements didn't reflect it so tightly. The Division of Enforcement would seek our input, and then they would negotiate the settlement. And, on the one hand, I think they tried to adhere to this metric, but the metric worked better in some cases than it did in other cases, and I think sometimes the settlements reflected that.

KD: Sticking to late trading and market timing, you already talked about the governance rule, some of the rulemaking that followed. One of the things that's interesting to me is the idea of the redemption fees, because the whole point of a mutual fund is the ability to get in and get out. Is that something that came across your desk that you looked at?

CS: Well, a little bit. So the redemption fees were more of an issue from the point of view of a proposed regulation of the Commission. And the Commission wanted to encourage the use of redemption fees, and the redemption fees would go back into the product. In the aftermath of that, I've been teaching financial regulation to our MBA students, and, in the last few years, also to our undergraduates. And I think, at some point, I actually wrote a little exam question about this kind of issue, that if you had a 2 percent fee, would this cut off the market timing trading?

And I think the point of my question was basically that it depends on what the timing is. If you could get out of the 2 percent fee by holding on for five days, it's not such a big deal. Because let's say you have a three-quarters of a percent or 1 percent or 2 percent advantage, and you go in, well, then you're just stuck being in the product for five days. Okay. And then you go out. And then you go out, but obviously you only go out when it's optimal to go out. You time when you go in, and you time when you go out. On the other hand, if you're stuck in the product for six months, that's different. So I think it is dependent a lot on the timing.

It also gets in the way of legitimate stuff. Let me give you an example of a simple trading strategy, which I think is highly appropriate for investors, and that's a tax loss-taking strategy. It's very appropriate for investors to take tax losses. And even if they want to take them in a couple of weeks, whatever investors want to do, this is permitted under the tax code, subject to the wash sale rule. But investors can sell, for example, a fund, and basically buy another fund in a somewhat different space.

But the point is, if you have to stay in a fund, let's say six months, and otherwise, you're going to pay 2 percent, that fund, I think, is noncompetitive, because you're essentially telling your investors you can't take the initial tax losses. And, after a while, there's not going to be any tax losses, because, eventually, prices are going to move up. And so the point is, when you first establish positions, you want to have the flexibility to take your losses. And if the product design gets in the way of that, that seems to me, bizarre. That point wasn't really so much on the table in the discussion of redemption fees, but I do think, the 2 percent rule over a really short horizon like five days, would not discourage the market timing or tax trading so, so much. If it was for six months, it would retard market timing trading, but it has then this other problem, greatly limiting the potential for tax loss trading.

KD: But there was no great consideration of that. I mean, it just seems like it was just something that, things needed to be done –

CS: The Commission tackled mutual fund market timing in more direct and effective ways.

KD: I know you spent a lot of time on options expensing.

CS: Yes, on option expensing. We worked closely with the Office of the Chief Accountant on this, and I think this was a context where we had a lot of technical expertise. We understood the option pricing models, we understood their strengths and we understood their limitations. I think we were able to vet the claims being made by the tech community. At one point, I was at a meeting, and a senior person from a high profile tech company, a CFO-type person, declared, "Well, if you require option expensing, our stock price is going to fall by a third." And I said, "Explain that to me?" And he said, "Well, our earnings are going to fall by a third, so our stock price is going to fall by a third."

I must say, I thought that was quite disingenuous. Why? Because the assumption that he was making is that the P/E multiple for his stock falls from the sky, and it's the same no matter what the accounting rule. This doesn't really reflect how markets work. Now, maybe they were trying to confuse their board or others about what the cost of the options were, but this was bizarre. But this was the type of stuff that was out there.

And ultimately, what happened is striking. I arrived at the latter stages of the debate about option expensing, by the way. There already had been almost ten years of debate, and, at this point, it was close to a done deal. The Financial Accounting Standards Board (FASB) was largely moving forward. There was a lot of controversy in D.C. There wasn't really controversy at the White House, by the way. I know that for sure. It wasn't really a White House issue, so they weren't involved. I think they were, obviously, happy not to be involved. There was so much controversy on the outside. But the Congress, they were still kind of engaged, but even they were pulling back, I think partially because, after the Sarbanes-Oxley issues and all those accounting scandals, I think the Congress started to become more and more reluctant to do the tech companies' bidding on this issue.

But what happened subsequently? Did innovation in America collapse? Hardly. Did people become less interested in working for Silicon Valley companies? Hardly. Just the opposite. Not directly causal though. But what did the companies do? Actually, what they did was they did pull back on the use of option grants, because options no longer had special treatment under the accounting rules. So they started using things like restricted stock. Indeed, the purpose of option expensing was to try to create a more uniform and equitable accounting treatment – were the approaches that were used in option expensing perfect? No. But the notion was that the costs weren't zero and the accounting treatment should try to fairly approximate the costs.

Now sometimes there were also proposals being made that we should use market-based approaches to option expensing, and my group was heavily involved in vetting these. There were a couple of proposals that got visibility. At some point I made a speech. It was an interesting little speech. My speeches are all on the SEC website. They're on my Carnegie Mellon website, too. But it was the only time my speech got picked up in the *Wall Street Journal*. And I said in the speech that it's important that market-based approaches be properly designed.

And so I received this call from a now-prominent journalist who was then covering us when she was more junior, and she said, "So, Chester, I read your speech. It was very interesting." I said, "Okay." She said, "Well, I'm going to go with the story, unless you tell me it's wrong." I said, "Well, what's your story say?" And then the headline was "SEC Top Economist Expresses Concern about Cisco Proposal." So I said, "I didn't say anything in my speech about a Cisco proposal." In fact, there was no public identification of that – except the *New York Times* had already broken the story about the Cisco proposal a month before.

KD: There was the assumption that you were –

CS: Yes. And then so I said, "Well, I'm expressing concern that it's important that these be properly designed." But ultimately, she said, "Well, if you tell me it's wrong, I won't run it." I said, "My point is that it's important that these be properly designed. I can't tell you it's wrong." She ran the story. Okay. But then I started getting bad-mouthed on the

Hill. That was kind of interesting. That's the only time anybody on the Hill ever heard of me. Yes, that was kind of interesting.

KD: Well, that's what the *Wall Street Journal* will do.

CS: Yes. But, you know, some of the folks in the industry thought that the purpose was – they wanted to use market-based approaches, because they were going to design the structure, so they were going to generate a low number. Now that's not the point of options expensing. The point is you're trying to get a legitimate estimate of the cost of the company. So sometimes what people would do is they would create a market structure such that they envisioned that the market would come out low, or they would design some other instrument where the valuation number would be low. And this was just an attempt – and it's kind of like a cheat, basically. So I think that reflected what our attitude was. However, at some point, the attitude in the Commission was evolving in this space.

KD: In what way was it evolving?

CS: Well, I think some of the leadership – there was a change in the chief accountant's office, and ultimately, they were the ones who had the most important input on the issue. But I think option expensing is an issue we contributed to a lot, especially on the implementation phase, and I think also in the initial vetting of market-based approaches. Although, then the market-based approaches basically faded. Why? Because I think the tech community got it, that there wasn't a level playing field before, and then they figured out and addressed, how do we want to compensate people? Given that there's going to be a level playing field, how do we want to compensate people? So that's what they did.

Then there were other issues that came up to, too, in the option vein, though I probably shouldn't take as much time, option backdating. Option backdating, in some ways, was a lot like market timing, except there was more explicit fraud. I think the leadership at some companies; they were actually backdating the grant documents. And it became obvious that this was what was happening, because you could see the footprints in the data. The only way you could explain some of the patterns in the data cross-sectionally was if they were falsifying the dates in certain ways, because what tended to happen was that the dates you would see would be the *best* possible dates over some big interval of time, and so you knew that they were looking back, and they were picking those dates off. You could see the empirical footprints.

So the option backdating was identified on the outside by an academic named Erik Lie, and then the *Wall Street Journal* started covering this, and it kind of really blossomed out there, and then the Commission got heavily involved. Then, one of my staff members, who was working with the Division of Enforcement, David Cicero, who's now an academic, looked at the exercises. The option backdating was about the grants. My staff member looked at the exercises, in part because he saw some evidence in a couple of situations in working with the Division of Enforcement that the exercises were backdated, too. So he thought, oh, let's look for patterns, let's look in the cross section. Academics had already, in effect, been looking, but they were looking through the wrong lens.

And what my staff member had the cleverness to figure out was that the detailed incentives were different if the stock was being sold back to the company in the exercise or if they were being retained by the executive. And it was the opposite incentive, basically, whether you wanted a high price or a low price. And so what you saw in the data was one pattern when they wanted a low price and one pattern when they wanted a high price. They always got their wish, it seemed. And so you see these effects, and that basically was the clue that yes, indeed, in the cross section, there was a lot of exercise backdating. This led to a very nice paper that he published in the *Journal of Finance* (2009) and a front page story in the *Wall Street Journal* (December 12, 2006).

Now some of this, I always thought was weird that there were so many companies doing it. The mutual fund market timing, I understood much better. First of all, I kind of understood it instinctively, because I realized that there were stale prices, and I thought a lot of people knew that there were stale prices. And so then the fact that people would come up with schemes to exploit that, not so surprisingly, and that some of the schemes might come from the outside, some of it might come from insiders, maybe all of that, not so surprising. And there were different kinds of mutual fund market timing cases, by the way. Sometimes, it was just because the company didn't follow the policies it stated. Sometimes, it's because its people were complicit. Sometimes the fund was a victim of some broker who was defrauding it by sending them back timed orders, misstating the timestamps, almost very much like backdating of the option.

So there were different kind of scenarios, but in the backdating, this wasn't something that was really out there. And then you wonder, how could it be that so many companies did this? How did they all know? Well, I think there clearly must have been some sort of communication channel. There is some suggestive academic evidence of this but I don't think this has really been so clearly sorted out. But I've always imagined that it either might have been some compensation consultants or it might have been some board members, although the board members weren't on so many boards. Or it could be some outside counsels, but I'm not sure. Again, there might be more ability to operate across companies there, but again, they wouldn't be so involved with so, so many companies.

But it is interesting that it permeated across so many companies before anybody knew about it. By the way, the whole problem went away with Sarbanes-Oxley. I think this was one of the best aspects of Sarbanes-Oxley, actually. So there were aspects of it which were more mixed, or a lot of costs that were created by Sarbanes-Oxley, like the 404 certifications. But one aspect that was very good was the companies were told you have to file your reports on option grants, on option exercises, on insider trading, you've got to file these in two days, not in six months, or three months, or whatever people were doing. And so Sarbanes-Oxley just put that into effect without knowing this problem. And you know what? When you look at that data afterwards, the problem went away. So all this evidence was from before, and then the problem went away. So this is actually an aspect of Sarbanes-Oxley I think that was unambiguously to the good, and I don't know that anybody even knew that it would accomplish this. I think they were just looking for more timely reports, but they didn't realize how bogus were some of the reports.

KD: Executive compensation disclosure, too. That's a part of this setting, these issues, right?

CS: Yes. So on executive comp the SEC has pushed to try and get more and more disclosure. In a way, it's a tough issue. I think disclosure of executive comp is important. I think there was a fair amount of political consensus in Washington, in the period I was at the Commission, for more disclosure of executive compensation. But I think it's important to keep in mind one of the things I pointed out in some of my speeches in this area was that more disclosure doesn't necessarily mean lower comp. People were surprised when I said things like that. But why is that? Well, what does more disclosure do?

So, on the one hand, if there's basically an agency problem, and the executives are just doing stuff they shouldn't be doing, and they're getting lots of comp, disclosure would be helpful and would push the board to scale back the comp – sunlight is the best disinfectant, so to speak. On the other hand, suppose, by disclosing people's compensation, their reaction is, well, this job is less attractive than my alternatives, like working for a private equity fund, so now, I need to be compensated more. Adam Smith talked about that. He called it a compensating differential. So that goes in the opposite direction. So that's why it's not so clear. I pointed this out at least in one of my speeches, maybe multiple ones.

And also, how does it change the relative bargaining process? Well, that's an interesting facet, too. Does it allow the executive to bargain better, or does it allow the company to bargain better? Now that's not about the particular company's comp, that's about what the other companies executives receive. Now, in principle, maybe it shouldn't matter, because everybody is armed to the teeth in these negotiations with the compensation consultants, but I bet it might have some effects there. But those effects were also ambiguous. So anyway, that's my take. It's a bit of an idiosyncratic take on compensation disclosure.

My personal view is that some of the more recent things have probably gone too far. For example, Dodd-Frank required this pay ratio disclosure. And I was pretty persuaded by Commissioner – and actually, currently, although maybe for only another few minutes – Acting Chair Piwowar's criticism that this was very costly and not relevant to investors. It did seem to me with pay ratio disclosure, there would be a lot of costs, and this wouldn't really be helpful to investors. It seemed to be maybe more political. Unfortunately, more political.

KD: There's one other topic that I wanted to get to, which was Reg SHO.

CS: Well, I definitely want to talk about that and then also want to talk about NMS, and also people I worked with.

KD: Definitely. I want to save the market stuff for last.

CS: No, that's good. I think, on the other issues, we've done cost benefit, we did mutual fund option – expensing option, backdating. Good.

KD: So Reg SHO, it's short sales, and, essentially, you're looking at how to implement this or how to structure the rulemaking?

CS: Well, okay. So a few things happened. So there were a couple of aspects of Reg SHO. One aspect was that there were a lot of complaints that delivery wasn't happening, that there were fails to deliver. Now the biggest source of the complaints was from small companies who felt they were being taken down by short sellers. That was the source of the complaints, I would say. I guess they were able to rev up a lot of letters, and I think the SEC leadership felt like it needed to tighten up a bit on this issue of delivery. And so they tightened the delivery requirements and basically said that if you didn't deliver in a certain amount of time, while you would have some extensions, you would get bought back in.

Then the SEC came up with a locate requirement, and that was, I think, one of the big changes. The locate requirement was that, when the broker sells the stock short, he's got to locate the stock he can borrow. Now this was not what they would call a hard locate, so you didn't actually have to borrow the stock before you did the short. But people would say to me, "Oh, well, wouldn't the locate be enough?" And I think the locate was probably sensible, if you felt like that people shouldn't be able to sell stock short without basically borrowing it. But why could there be some wiggle room? Well, because you do a locate, so one broker calls another and he locates this stuff, but five different brokers are calling that same one, and they locate the stuff. So nobody's lying, but then – and then one of them claims the stock, and then when the others go to get the stock, they don't have the stock anymore.

So the problem with the hard one would be the reverse. The problem with a hard locate is, if you first had to make the deal, well, maybe, in the end, you didn't want to sell the stock, and this is going to seem like it imposes a lot of friction on the markets, so that seems needless. So there was some controversy at the time about what the lines were. So, at some point later on, actually, in October 2008, so right at the heart of the Financial Crisis, I'm not in the media so much, but I got called by Fox Business. They wanted to do a little point/counterpoint, and they had me and John Byrne, father of the CEO of Overstock. It was about the short sale issue, but it was clear we were talking in disconnected ways. He was focusing on companies like theirs, Overstock, and there are issues about liquidity in the shorting process. And I thought the contemporaneous issues were about the big banks, because this was right after the Commission had banned short sales for 900 financial stocks, so I thought the issues were about these banks where there wasn't really a mechanical problem with shorting and borrowing the stock. This was a non-issue. So we were a little bit at cross purposes on that.

So the delivery was one aspect on the short sale piece. So another key aspect that I was involved in was the short sale or up-tick pilot, basically taking off the seventy-year-old requirement that you could only sell stock on a rising tick, that you couldn't do it on a declining tick. And we were very favorable to that. My predecessor had started the process for the pilot. We implemented the pilot. And, at some point, later on in the implementation, we had an academic roundtable, and it was very clear. Floyd Norris from the *New York Times* came down, and he wrote a column about it. But it was very clear. There wasn't any disagreement about this. And then, within the next six to nine months, the Commission moved forward to repeal this.

So we repealed. And what we had done earlier, as part of the transition to this, we did this natural experiment. It was a beautiful natural experiment. We took off the restriction on a thousand of the Russell 3000 stocks, and we did a matched sample approach. And I think it was a very nice approach, and we basically saw what would happen. Well, later on, this became controversial, because there were some people who thought, mistakenly, in my view, that this was at the root of the financial crisis. A couple of them were very high profile. One is named Jim Cramer, and he talked about this repeatedly on his CNBC show, and another was named John McCain, who went crazy about this in the middle of September of 2008. And, at some point, he called for Chris Cox's head, because Chris had signed off on this issue. The *Wall Street Journal* actually had a rejoinder on this. They wrote a very nice editorial. They basically said that the work that my group did on the repeal of this was the best economically-vetted work out of the SEC in a long, long time.

KD: And this is the pilot project?

CS: This was on the pilot, yes. And they wrote this editorial. It was a very nice editorial. They wrote this editorial in September of 2008, and it was clearly a rejoinder to McCain. Now, they saved up, they had one more editorial in mind. A week later, they wrote a second editorial. The second editorial was to be highly critical of the SEC for banning short sales on 900 financial stocks. But they did a very clever job, I thought, of separating the two things. And I thought that was very nice, because, the first one, they praised the Commission and were very critical of McCain for calling for Chris Cox's head, and, in the second one, they kind of made it clear that the SEC was a little bit confused, too.

But the SEC had a problem, is the way I understand it. Now I wasn't at the Commission when the SEC did that ban. The way I understood it is that the White House, potentially at the highest level, was calling the Commission to really push on this idea of the ban. I think most academics think it's bizarre that we banned short sales in the face of bad information. Now why is that? Well, I think, for a lot of reasons, it's bizarre. And by the way, Chris Cox, to his credit, he did basically an exit interview, so to speak, with the *Washington Post* at the end of that year. They asked him what was the worst mistake he made during the crisis, and he said it was listening to his colleagues on the President's Working Group and agreeing to ban the short sales on those 900 financial stocks.

Now that said a couple of things, by the way, obviously. It's saying that the policy decision was wrong and that maybe his colleagues in the President's Working Group didn't know as much as what they thought about his space. And I think that was a very principled thing for Chris to say. But why do I think this was such bad policy? Because, basically, you have a situation where you've now made your whole regulatory structure uncertain in terms of how it's going to operate in the future. That's a huge issue, a huge cost. Furthermore, in the midst of the crisis, what are you telling investors? You're telling investors, however bad you think things are, they're even worse than you thought, so we're banning these short sales.

So what was the market's reaction? It wasn't good. It was ugly. Furthermore, the option market makers, they immediately went to the Division of Market Regulation, and they said, "Well, if we can't short sale, we can't hedge, which means we can't make option markets, so we're going to close down." And then the staff said, "No, we don't want you to close down." So the Commission agreed to exempt them. I think that was the right thing to do, given that they were going to ban these short sales, but it points to the problem. How the heck do you set up a regulation, and then you exempt this one category and give them monopoly power? That's not what the SEC should do. Well it was the right response, given the other aspects of it, because, otherwise, then we wouldn't have had option markets either, and this surely would have been problematic. It would have been more problematic, and the Commission understood that. But, in principle, you don't exempt somebody from something so basic like that and give them monopoly power. This is not what we want regulators to do. So anyway, that's my take on short sales.

One related point to a ban on short selling that I wish to emphasize is that short selling (in crises and normal times) is very important to the capital markets in that short sellers protect America's investors against purchasing over-priced assets and hence should not be needlessly discouraged.

KD: I think the pilot project is very interesting.

CS: Oh, yes, so on the pilot there is one thing I learned later. So the natural experiment, it was very good, and it's then seeded a whole bunch of pilots. The SEC is now in the pilot businesswell, partially because the Congress has really even pushed them. Sometimes, some of the pilots, I think, have been not so well conceived. Some of them are well conceived. I'm a fan of the make or take pilot, but then again I'm on the SEC's Equity Market Structure Advisory Committee, which recommended this, because I think the make or take structure is a big mess, and I think there's all kinds of incentive problems that it creates, and I think this is a step to try to help sort that out.

But where the Congress really pushed the SEC was on the tick size pilot, but I think there already was very strong evidence as to what tick sizes would do: if you changed the tick size, what would be the effects? I don't think we needed a pilot to do this. I don't think we needed to muck around with the markets to do that, because we had evidence of what happened in the other way. Now the Congress had the idea, somebody created the idea, that there would be more IPOs in America if only analysts made a little bit more money. I don't think this is the main margin on which IPOs are being decided. I think part of it may be that the costs of being a public company are too big. Maybe that plays into it. But it's not specifically about the analysts and the tick. And, furthermore, could a pilot possibly produce enough data to help you sort out would there be more IPOs if we just had a little bit wider tick? There's no way there's going to be enough statistical power on that.

Oh, and one last point about the short sales. One thing I learned later is that pilots aren't perfect. I'm still a big fan of pilots, but they're not perfect, because some of the things don't show up in the pilot. For example, there are some things that are spillover effects, and Charles Jones at Columbia, with some collaborators, has done some very nice work on documenting this. So it turns out when the up-tick repeal went live, things were even a little bit stronger than would have been suggested from the pilot, when it actually went live later on. And the reason was because, in the pilot, you could only sell a third of the stock short. So if you were going to do program trades against the futures, well, you wouldn't do that, because you wouldn't be able to sell short two-thirds of the stocks, if the tick restriction binds. But when the thing went live, you could do that. So there were spillover effects that you couldn't pick up in the one context that would arise naturally later. So I don't think pilots are perfect, but I think they're still a really good tool.

KD: Well, let's get to Reg NMS. This is something that's moving when you arrive, right?

CS: Yes. It was already sort of moving. It was partially on hold, but partially moving. It was definitely conceived before. It was partially conceived, I think, by my predecessor, Larry Harris, partially conceived by Annette Nazareth, who was, of course, at the time, the director of market regulation, who subsequently became a commissioner. So I came in and NMS was moving along.

KD: Was it out for comment at that point?

CS: I think it might have been in between. I don't remember, but I think it might have been in between. But I certainly remember a very interesting meeting I was at with some of the most important people at the Commission on this issue. And I raised an issue that had a huge impact on the way which the process played out. I raised the following issue. I said, "Look, this rule, it's going to protect the top of the book, but not protect anywhere down, so we're really not protecting the best prices. We're protecting the best price at an individual platform, but not the best X prices in the market, because some platform, it might have three other prices right below that are still better than everybody else's prices, and we're not protecting those, we're just protecting at the top."

So I pointed out that basically, this was really not intellectually consistent. Given that, I think the leadership thought, okay, well, let's explore this a little bit more. So they put out for comment two variations going all the way down and the more basic one protecting the top, which had been the original proposal. Well, people went crazy. And by the way, they never outed me either. The leadership really deserves a lot of credit, because they could have really made me to be the fall guy on this.

KD: So they put this out that they were going to protect more orders.

CS: They were going to protect all the way down as a variation, this is an alternative, we're considering this alternative, too. And people went crazy.

KD: Why?

CS: So NMS was already criticized as being prescriptive, which it is, and I think that is one of the criticisms of it. From my perspective today, that's one of the main criticisms of NMS. But protecting all this stuff would have been even much more prescriptive. Now it was very interesting, also, that some of the players explicitly weighed in for the one alternative versus the other, and this is what really was sort of fascinating, how it influenced the debate. So one of the things I noticed in the comments as I was looking at the comments, we got a lot of letters from members of Congress, and the letters invariably supported the one version but not the other version, not the one going all the way down. There was lots of opposition to going all the way down.

Now part of the opposition was it was very prescriptive, way too prescriptive, I think probably fairly so. But why were there so many letters from members of Congress? Well, the New York Stock Exchange had hired somebody with tremendous Washington expertise in the communications, like a former press secretary type, to guide them. And this person engaged with the members of Congress, and the members wrote a lot of short letters that made clear A, not B. You got all these – you know, you could see this. I don't know what the impact of the letter, but the fact that the – everybody was really concerned that it was too prescriptive and that it was going to be far more costly than the other to implement. I don't know if it would have been so much more costly. But in any case, so Commission didn't go that route.

They got a lot of criticism, because they put this alternative out there. A lot of people thought that they put the alternative out there, because they wanted their proposal to have smooth sailing. So by having something that was so draconian, people thought, oh, they're being wise guys. They're putting this draconian thing out there, so they're going to get what they want to get done. But I think, actually, the reason they put the draconian thing out there is I pointed to the intellectual inconsistency in the other. And, to their credit, they never outed me on this, because you could imagine they received a lot of criticism.

KD: In a way, they're not protecting the best price, they're protecting the competition.

CS: Yes, exactly. The individual best price at the competition.

KD: Right, but ensuring that there's going to be a lot of players out there.

CS: So one of the things I've been pointing out in the last few years, really starting with my Congressional testimony – I testified before the relevant subcommittee of the House Financial Services Committee, at the end of February of 2014. And now this is also reflected in my main talk in this area, which maybe I should send along to you, that this really promotes fragmentation. One way to think about that is, if the top price you're quoting is protected, and if protection is valuable, then what you want to do is you want to subdivide. You want to have a bunch of different entities, and each one's top price would be protected. So, in effect, you could imagine in the limit that you could achieve the other solution just by splitting things up.

So, in a way, NMS provides a direct regulatory incentive for fragmentation. This is something I started to realize, maybe a different way to frame the issue, and I started reflecting that theme in part with that Congressional testimony, and also in my current paper in this space, and even in some of the conversations in other contexts, too. And, by the way, it's not clear to me that fragmentation is bad. There's another term for fragmentation. It's called competition. And I'll say it in a form where I think it's unambiguously good. One of the things that NMS led to was the demise of the New York Stock Exchange specialist. I think, with hindsight, that structure was pretty much indefensible. This was basically a system where there was tremendous market power, and we didn't really need to have this market power. And you could see the market power in various forms. You could see it in the value of the seats. You could even see it to the extent when you walked around the floor, you noticed that many of these businesses were family businesses.

Now, when I go see my lawyer, or when I go see my doctor, most of those practices, they don't have any relatives in them. Now they might say, well, because they have anti-nepotism rules. But even putting that aside, often, children, they go into other endeavors. The specialists, their kids often went into the business. Why was that? I think it was because, once you kind of got the basic skill – basically, it was a business where there were a lot of rents being earned, and it would otherwise, ultimately, be hard to transfer the rents, because you couldn't really sell the business – it would be hard to fully capitalize the rents, so, instead, you passed them down.

But I think also the seat values are kind of a personification of this. Now, ultimately, the stock exchange came out with a very clever solution to the problem of the specialists in the seats. They quickly, after NMS, merged with Archipelago, and that solved a number of problems. That provided liquidity to the stock exchange, so it could basically buy out the specialist, and so the specialist would say, "Well, thank you very much," because now, all of a sudden, they could liquefy. It also provided an interesting regulatory solution to them. Imagine, in that era, if they had gone to the SEC, and they said, "Oh, we want to become a public company." What machinations would the SEC have put them through? But instead, here, in the aftermath of NMS, they're going to merge with an existing public company, well, of course, they're going to have to have that governing structure. So it short-circuited a lot of regulatory process that would have probably been very complicated and awkward otherwise, so I thought this was very clever in the direct aftermath of NMS.

Coming back to the issue of proliferation, one of the things that NMS did was it pushed very strongly that what you have to do in executing is you have to get the best price on the next piece of the order. That is, you have to look around, and you can't just do some big package. You've got to respect those individual prices. Well, not all the way down, but still, you've got to respect at the top. Okay. Well, actually, the institutional investors, they don't like this. Why don't they like it? Because it gets in the way of their flexibility, and their concern, if they could take out 300 shares here and 500 shares there, people are going to figure out they've got X-zillion shares behind that. And what's going to happen? The prices are going to move adversely. Which, by the way, indirectly, is part of the complaint in Michael Lewis's book, but he doesn't interpret it this way. But actually, some of Michael Lewis's complaints are actually indirectly about NMS – in a way, you can sort of see how this fits together.

So NMS pushes you to fill in small pieces, it encourages proliferation of platforms, so all of this is fragmentation. And now, why did, the specialist also disappear? They wouldn't have been viable under NMS, anyway. Why? Because you had to be a fast market under NMS. You can't have significant manual markets and meet the fast market requirements to benefit from order protection. So, basically, the specialists were toast once NMS was adopted, and then the stock exchange, incredibly quickly, within like weeks, they had this really elegant solution, namely the acquisition by Archipelago. But I think, actually, the most important impact of NMS in my mind was the demise of the specialist system, and I think that was incredibly good. Just like the NASDAQ became so much more competitive in the aftermath of its scandal a decade before, I think this really improved dramatically our market structure in the rest of the equity space.

KD: Were there any of the fallout or any of the repercussions of NMS that you dealt with?

CS: Not so much, because the implementation took a couple of years, so we were just involved in implementing. And some of my perspectives, they've taken me time to form, too. And so partially in preparing for my congressional testimony a few years ago, for my service on the Equity Market Structure Advisory Committee, also this talk that has been a keynote address that I've given half a dozen times over the last year or so in this space – and one other way in which my perspectives also started to form, I was involved – initially put together basically by the old Knight Securities firm, I did a little project with Larry Harris and Jim Angel that's gotten a fair bit of attention. And actually, then, we had a little follow-on to it, too, and that's gotten some attention as well.

What these studies basically did is they looked at, how have spreads changed in the aftermath of NMS. And then we also opined a bit on what did we see as some of the current – well, this is several years ago, but what do we see then as some of the current regulatory issues and challenges? And that was helpful in a number of ways to me. One way it was helpful was we have some very nice plots that people are using over and over in all kinds of presentations these days about what happened to spreads, what happened to market share, and why NYSE market share went from 80 percent to 20 percent on its listed stocks; what happened to spreads, spreads declined dramatically.

Now it still leaves open, largely, the question of, well, what about institutional trading costs? The institutions are not so happy about NMS. And this is important, I think, because they're not just investing for the wealthy people, maybe hardly for the wealthy people, they're really investing for America's public, because these mutual funds, that's who they're investing for. But I think the big asset managers, they're concerned about their flexibility in the trading process and that NMS gets in the way of that. And I really do see that as tied in a little bit to some of the issues in the Michael Lewis book. Obviously, he's talking in part about other issues, too, in IEX and the like.

KD: How so? Because I think the publication you talk about did get a lot of –

CS: Oh, tremendous.

KD: It's like the first thing I ran across, and I just kept running across it.

CS: Yes. And it's pretty clear it led to the formation of our Equity Structure Advisory Committee, for example.

KD: In the SEC.

CS: Yes.

KD: And it’s a pretty positive picture, more liquidity, more trading, et cetera, et cetera. So how do you reconcile that with some of the more negative portrayals that you get? And then you’ve just talked about Michael Lewis, who’s sort of –

CS: I’m sorry?

KD: There’s a general negative approach to the speed of the markets, the fact that the markets are –

CS: Yes. So the markets are clearly faster, and one of the criticisms of that is that there’s a lot of costs that are incurred to make it faster. I joke to my students at Carnegie Mellon in Pittsburgh, “Well, why should we complain that somebody wants to spend $300 million drilling through the Allegheny Mountains nearby here? Maybe we should consider that public works.” But the point basically is, okay, so, I mean, clearly, the willingness to invest a lot of resources to get a tiny advantage, which clearly says there’s rents being earned in the business, and so there’s some competition that dissipates some of the rents.

Now do I always understand what advertising is good for? No. And some advertising I think is kind of baloney. You hear some of these pharmaceutical commercials, and, apparently, there’s some regulatory requirement that they have to disclose that there’s side effects, so they pick the most bizarre side effects, basically, so people think that won't happen to them, because of the fact that they've cast them in such a bizarre way and as a way to be dismissive of the side effects. Well, okay, so do I think those commercials serve a lot of good? No, I don't think so, because I think, how could you decide what kind of medicines you're going to use? You should talk to your doctor. Now they say that in the commercials, too, but what's the value of those commercials? Now I'm not so sure it's so great. But, obviously, there are a lot of rents that the drug companies are earning. That's why they run those commercials.

So what should we do in this space, and should we be concerned – so that now people talk about there being an arms race. That's the term that they use. Well, was there an arms race fifty years ago? Yes. You know how the New York Stock Exchange did it? New York Stock Exchange used to not allow cell phones on the floor. They were very proud of this in some of my visits, going back fifteen, twenty years, that they didn't allow cell phones on the floor. Well, why didn't the NYSE allow cell phones on the floor? Because they rented out the space around the edge, and that's where you could communicate. But if they allowed you to have a cell phone, who would need that space? So they were competing with the phone company, basically, and then giving you a landline over at the side rather than allowing you to use a cell phone. So this is how they were capturing the rents. So there was co-location then. I mean, people talk about co-location now as if it got discovered in Michael Lewis's book or in the last five years.

And did people sometimes get an edge out of the Pony Express or out of the telegraph? Absolutely. And 400 years ago, when the boats would come into Europe, were people observing how far down in the water were the boats and drawing inferences from that? Absolutely. So is getting the relative time advantage a new thing? No. So now, it's occurring over smaller and smaller units of time, sure. So the question is, well, okay, so, at some point, do we want to impose – well, I'm not sure. Now there is the physical issue, right? Because we know, at some point, there's the physical limitation, the speed of light. Okay. But this issue I don't think is so clear cut, and I think many people haven't cast it enough in a historical context and that it's about relative time.

Another way I would say it is we know that, in asset markets, a lot of the volatility is not just the natural information, it's from the trading. The trading is how information gets produced and aggregated. There's a classic study in finance published in the mid-1980s by two famous researchers, Richard Roll and Ken French. In this paper, they looked at an interesting example. They looked at the example of the New York Stock Exchange in the late 1960s. I think in 1968, the stock exchange was closed on roughly eighteen Wednesdays. Now why did the stock exchange close? Because they couldn't deal with the back office aspects of clearing 10 or 20 million shares a day.

So what did they do? Well, first, they slimmed the hours, so they closed at two o'clock, but that wasn't enough. So then, they closed on Wednesdays to give them time to catch up. So what did French and Roll do with this? They looked both within that sample and then also for days where the stock exchange was open at the volatility. And what did they find? Basically, the volatility really was associated with the market being open, with the trading. And I think that speaks strongly to that if you speed up the clock, it's not just there's a cost issue on the one side, but also a benefit. So the critics on this issue – and I don't have a strong view, but I think that a lot of the criticisms, they focus on the cost and not acknowledging that there's a benefit to facilitating trading in terms of price discovery. But I do think there is a cost-benefit tradeoff.

KD: Anything else we should talk about?

CS: Just a couple of other observations. I think one issue we weren't so heavily involved in, but I think it's an important one from an economic perspective, has to do with sanctions, and I think perhaps hasn't received much attention. When I was at the Commission, there was a little bit of attention on this, but nobody was really interested in our being players on this, it's fair to say – neither commissioners, on the one hand, nor the Enforcement Division on the other.

So the issue of corporate sanctions has sometimes been controversial. The reason it's controversial is because, in some of these matters, the victims are the stockholders. That's when they're controversial. If the victims are somebody else, then it's not so controversial. So if Goldman Sachs is alleged to have defrauded some other company, there's not much criticism about whether there should be a corporate sanction. But suppose it was an accounting fraud, and the victims were their own stockholders? Then should you sanction those stockholders, too? They already lost in the stock price because of the fraud – and I think this is a legitimate issue.

Now, Chris Cox really pushed on this issue, so he made some headway on it, but the headway only lasted, obviously, during his chairmanship. And then, with the wave of criticism of banks, particularly with the financial crisis, this issue, it hasn't been on anybody's radar for a long time. Whether it'll be now on the radar in the new environment in Washington, this remains to be seen. I haven't heard about this issue recently, but I did think there was one interesting example that points to this issue in a curious way. So there was one enforcement action the Commission brought against Citigroup. It didn't have to do with the crisis, but it was at the heart of the weakness in Citi. And basically at the margin, the government owned Citi, effectively. And there was a big sanction, like $50 million, and the Division of Enforcement simply said, "You know what? We're going to waive that. This is what would have been typically required, but we're not going to try to collect because we realize that, well, it's really the taxpayers who are effectively the owners." So that was an interesting example that I think relates to the corporate sanction (and effective burden) issue in a neat way.

One issue which hasn't been so controversial for a while is the issue of indemnification. That's more on the personal side, and I think there's some interesting connections here. So, in particular, I think everybody across the spectrum agrees, those individual wrongdoers, we ought to throw the book at them. Sometimes, there's a little bit of frustration. They fight hard, so therefore the staff attorneys mostly like to go after the corporations, because they don't fight so hard, and they want to get scalps.

But what is indemnification? Indemnification is the key employees are often insured by the company or by an insurance company. Now why is that? I indirectly learned why this is. At first, I thought, oh, this is some weird practice, some really bad practice. This encourages people to do badly, and dot-dot-dot. Well, I chatted with a very senior person at the Commission when I was there, and I learned very quickly about this. He said something very insightful. He said to me, "Oh, when I was in private practice, we wouldn't negotiate a compensation arrangement that wouldn't have such a provision. This would be malpractice." And I said, "Oh. Were you representing the executives?" I sensed he wasn't, that he was representing the firms.

He said, "No. Of course, I was representing the firms." And then I realized, oh, what he's saying to me is the following. He's saying, yes, these contracts have indemnification, because that's not only to the employees' benefit, it's to the companies' benefit, in effect. And then I realized, oh, yes, so the companies' benefit as it was just part of an efficient labor contract, because this is a way to share these risks, because, a lot of the time, when the regulator tries to bring a case against an executive, he may have made some inadvertent error, but, if you're not going to be protected about this, he's going to demand more comp up-front, and it's going to be more costly, and the company's in a better position to bear the risk. And I thought at some point – he didn't say all that to me, but then, through my economics lens and thinking about it from a risk-sharing perspective, then, I started to understand that.

So this brings up another very interesting issue, which is, so if the corporation is indemnifying, and if we do have legitimate concerns about corporate sanctions, we come back almost to who's at the margin with respect to indemnification? The stockholders may still be at the margin (a point not highlighted in the debate about corporate sanctions). Of course, sometimes there's an insurance company in the picture.

An unrelated issue that I learned much about from my Commission experience and then subsequently is the broad economics associated with credit rating agencies. Indeed, subsequent to my time at the SEC I received support from the Sloan Foundation for initiatives in that arena, including hosting five conferences with significant participation by academics and regulatory staff and undertook both a major study of opacity and credit ratings (arguing that the lack of disclosure of contacts between issuers and rating agencies led to rating shopping and inefficiency) and a broader monograph in the area. The core rating agency issues during my time at the Commission concerned encouraging entry within the NRSRO framework through the 2006 rating agency legislation, the focus upon "notching" of ratings by rating agencies (in effect, recognizing the ratings by other rating agencies of tranches, but discounting them somewhat—I felt that the choice/selection of the rating agencies for particular instruments offered an explanation for this—so that the practice was not anti-competitive on its face) and attention to unsolicited ratings (rating that were not purchased, but still provided by the rating agencies). When I arrived at the SEC these unsolicited ratings were viewed as anti-competitive and perhaps even an attempt at extortion to force issuers to purchase ratings, but shortly after I left the SEC began during the financial crisis to encourage unsolicited ratings as objective and a device to combat rating shopping in some contexts. In effect, instead of viewing the unsolicited ratings as artificially low, the solicited ones were viewed as reflecting shopping and artificially high. Not only do I feel that I learned much about ratings over the years, but arguably so has the SEC, especially after my departure! The notching context was one in which I also learned a bit about how firms engaged with regulators to convey their views. The rating agencies had different perspectives on notching—some felt that they benefited from the practice, but others felt that they were harmed. We met with one of the rating agencies and then posted the required brief notice in the public rule-making file. Another agency, who hadn't viewed the Chief Economist as someone to visit, suddenly became very anxious to meet once they realized that their competitor had done so.

Another example where the underlying economics was interesting during my time concerned bond market transparency. Much of the early headway in that space had occurred during the tenure of my predecessor, Larry Harris. We were involved in various follow-up efforts and I did present one speech in this space, but much of my personal involvement was subsequent to my service as Chief Economist—for example, using FINRA securitization pricing data to show in a co-authored forthcoming paper in the *Review of Financial Studies* how spreads varied between central and peripheral dealers.

KD: The only other thing on my list is the Equity Market Structure Advisory Committee, which you mentioned it.

CS: Yes, so let's talk about that, and then we'll talk about some of the people I interact with and let you wrap up. So I've been on lots of committees, actually, of outsiders, too, of critics and sometimes not-so-critics. I was a longstanding member of the Shadow Financial Regulatory Committee. It's been a little bit of a critical kind of group. I've been a member of the Systemic Risk Council, originally founded by Sheila Bair. That's actually a more sympathetic group, not so much in this space, they're really more focused on the financial stability space, although we, at times, had meetings with senior SEC people, too. I also was a member of the initial Model Validation Council of the Fed, which provided them advice about how to look at the stress tests and how to validate those.

But the one that I think may be most closely tied to my Commission experience would be the Equity Market Structure Advisory Committee. I think one of the main things there that I've been the most pleased with is potentially moving ahead with a pilot on make or take pricing. And I think some of the distortions associated with that are also really highlighted in my work with Jim Angel and Larry Harris, which is really when I started to learn about those issues. And while we don't do formal analysis of it, we have an informal discussion, but people have really picked up on that in the academic community, too, about what are some of the distortions and some of the frictions.

But also, I think in this context, one of the things I've learned is that the buy side, the big institutional investors, they're not very happy about this structure, because I think they just think it creates a lot of distortion. And I think this may be very constructive, and I think here a pilot may be much more constructive than I think it is likely to be on, let's say, tick size, for example. So what's the current status of the committee? Well, we were initially appointed for two years. Toward the end of the two years, Chairman White and the Commission asked if we would extend for six months, and we agreed to do that. And I think the idea was to give the incoming chair flexibility as to if he wanted to go forward with a structure like this.

KD: From your perspective, was that structure working?

CS: I think it worked pretty well, yes.

KD: It was to get external ideas into the Commission.

CS: Yes, absolutely. And I think we had a good mix. Now there were some complaints about the membership. Some of the leading complaints came from some of the exchanges, because they felt they weren't represented. But first of all, I thought the membership was pretty good. I thought having significant representation from the buy side was healthy. It seems to me that they're the ones, maybe more so than the platforms. The platforms have a vested interest, particularly the large exchanges. A couple of the large exchanges, they kept complaining to the media they weren't represented.

Well, I know that the subcommittee I'm on addressing NMS, we invited them to work with us, to meet with us. And, in fact, we were going to give them membership within our subgroup, but I think they were more interested in making these pronouncements about not being involved, I think to give them more optionality. So we brought in others to give us breadth and perspective. I think the committee's worked pretty well, but, obviously, it's the prerogative of the new chair to decide how he wants to organize in this space. But I think we've laid the foundation for potentially some important issues, and I think helped put the market structure issues back on the Commission's radar.

I made the reference before that the crisis had taken the steam out of a bunch of stuff. But also, Dodd-Frank obviously did. And certainly, even within the Commission, most of the people at the Commission will acknowledge this. Some will publicly speak about this, and others, at least informally, acknowledge there was so much Dodd-Frank that an equity market structure wasn't really tied into that. I think *Flash Boys* actually helped put it back on the radar. I think that was perhaps one of the main contributions of *Flash Boys*.

KD: Well, and the flash crash, I'm sure.

CS: And a little bit the flash – yes, but that was so long ago now, and that only put on the radar some specialized kind of issues, some narrow issues, like about the circuit breakers and the like.

KD: And you want to talk about some of the people that you worked with.

CS: Yes. So I thought most of the people in my group were terrific, and many of them have emerged in interesting ways. It's interesting to follow the evolution of their careers. One of my staff members, a fellow who I made a permanent employee of the Commission on the way in, was Mike Piwowar. Mike had been a visiting academic at the Commission, and he applied for one of our open positions, and I was pleased to be able to hire him, and he was a very talented staff member. And then, obviously, later on, he did other things in Washington, at some point working at the White House, both under Presidents Bush and Obama, and then being chief economist for the minority at Senate Banking Committee, and then in his role as Commissioner and Acting Chair. He was one of my top staff members.

My deputy, Jonathan Sokobin, was terrific. At some point, in some of the later transitions I think he was actually the acting chief economist internally. Then, later on, he moved over to the OFR in a senior role, and from there he was hired to be the first chief economist at FINRA, and I think he's played a very important role at FINRA in heightening its focus on empirics – and I think they've done some really nice things in facilitating access to data. I think one of the things the SEC has done a poor job at has been to facilitate access to data by outsiders, and I think FINRA has done just the opposite. They've done a very nice job of facilitating access to data by outsiders, and, therefore, helping to facilitate what we learn about markets.

Another one of my talented staff members, actually, I just read his name in the *Washington Post* yesterday in an interesting context, is Rob Fisher, who was part of my enforcement team, but who had very broad skills. He was a Harvard Law graduate and a sophisticated economist. Later on, he moved from my group to become one of the senior people in International Affairs, and, I think, at some point, was the acting director. So why was he in the news recently? I just was reading a book review of a 1,450-page biography of President Obama, a new biography, and Rob was mentioned in passing in the *Washington Post* piece. Well, why was that? Because at Harvard Law School, he was good friends with the President and over time had helped the future President on some book projects.

But who were some of the other people that I interacted with a lot? Well, I clearly interacted a lot with the various directors of market regulation. Erik Sirri, who I've known for many years because he's a fellow financial economist and good friend. Obviously, I interacted a lot with Annette Nazareth after she became a commissioner, but before Eric was hired, with Bob Colby, who was the acting head. And then Bob, later on, after he left the Commission, first, he went into private practice with one of the DC law firms, but then he moved to FINRA as the chief legal officer there.

Well, who were some of the others that I interacted with? Well, of course, the senior people in the Division of Enforcement. First, Steve Cutler, who obviously saw the financial crisis, then, later on at a different vantage point, being general counsel at

JPMorgan Chase. I didn't have any connection with him then, by the way. And, for much of my time, Linda Thomsen was the head, and I interacted a lot with her. I also interacted a lot with Peter Bresnan, who was one of the deputies. I interacted with Peter particularly with respect to these mutual fund market timing matters.

Obviously, I interacted a lot with the heads of corporate finance, the first half of the time I was there, Alan Beller, and then, the second half of the time I was there, John White, of course, the husband of Mary Jo. I interacted, of course, a lot also with the head of investment management, initially, when I arrived, Paul Roye, and then, later, Buddy Donohue. I also interacted a fair bit with the chief accountant, particularly the initial chief accountant when I was at the SEC, Don Nicholaisen, who I thought was a terrific chief accountant.

I have a couple of comments about broader market structure. One of the kind of things that it's helpful to clarify is, over the long stretch of time, how has equity market structure really changed? This is not so much a comment about when I was at the Commission, but just to provide a little bit more historical context about it. So I point to a couple of things.

The things I see as maybe the most important developments in the equity market structure arena, if I look back over the last forty, forty-five years, the things I would point to are the introduction of the options markets – that was in spring of 1973, that was contemporaneous with – and here's my perspective as a finance professor – with the development of the option pricing model, the Black-Scholes model, both in continuous time and in binomial form, the Cox-Ross-Rubinstein model. These models in the markets, these, I think, really heightened the use and the development of our whole derivative securities apparatus.

Then, I think, after that, I would point to May 1st, 1975, the deregulation of commissions. Tremendously important, certainly, to think that the commissions' levels used to be not so different than the commission levels on selling houses. And then, I would point, of course, to the NASDAQ. We briefly touched on that and the collusion on tick size and all of that in the NASDAQ. Then I would point to NMS, and especially the demise of the New York Stock Exchange specialist, which I view as one of the principal contributions of NMS. Oh, and, of course, how could I forget the crash of '87? Tremendously important, obviously. In the broader financial landscape, there obviously were other developments, too, the Internet bubble, and then S-Ox, and, of course, the financial crisis.

KD: Reg ATS is in there, too.

CS: Yes of course. Reg ATS, obviously was important as well, in terms of how the market structures have evolved and played out.

KD: So do you expect to see the change continue at a breakneck pace, or are things going to settle down and adjust in a new track?

CS: I do think things will continue to change, yes, because technology is still evolving. Technology platforms have become more and more decentralized, and I think that may have implications that we don't yet understand. So I think that's basically what I would point to with respect to the markets.

One aspect from the perspective of today where my lens is now a little bit different is S-Ox. When I was at the Commission, we were starting to hear a lot of criticism of S-Ox, or at least the way the SEC was implementing S-Ox. We heard a lot of criticism, actually from the members of Congress. And some of this was because they were hearing, of course, from their constituents, and so a lot of this came from small business. And, in fact, it was bipartisan criticism. There was no question about that. And it was interesting, with hindsight, first of all, the fact that it was bipartisan criticism. And so Senator Kerry from Massachusetts, he was very active in communicating views of small business which were communicated to him, just as an example.

There was a lot of concern by foreign platforms about the changes in the U.S. regulatory environment, and they felt that their companies were now trapped – companies who were joint-listed here felt like they were trapped, so the SEC came up with ways to ease back on that front by offering an exit ramp under certain conditions. So that's basically what I would say about the markets.

Just a couple of other points I would highlight. I talked a little bit about the issues that I'm interested in as an academic in other spaces. We've talked about mortgages and taxes and asset allocation, in addition to my market structure interest. So I should also point out an important role I've had in the academic community. I was one of the founders of the *Review of Financial Studies*. We were founded in the mid-1980s, and we immediately emerged as one of the three major journals in the finance discipline, along with the *Journal of Finance* and the *Journal of Financial Economics*. And, even to this day, these are the three most significant journals in finance. Both leading departments and secondary departments look to these for assistance in their evaluation process. But the journal basically emerged very quickly as one of the elite journals in the discipline, and I think it helped broaden the types of research that were being encouraged.

I should also say that being at the Commission was a tremendous growing experience for me. It helped me make the transition from being a theorist by training, as I sometimes refer to myself, to being somebody very comfortable vetting empirical things and undertaking empirical practice and efforts, and it broadened substantially my perspectives about institutions and our markets. And, indeed, one of the things I learned that's really striking to me is how much our capital markets are looking to the information in those SEC filings – of various stripes, by the way – and the extent to which these filings are, in some respects, the lifeblood of our capital markets. This was something, I daresay, I was probably close to clueless about when I arrived in Washington. I didn't really understand how deeply this plays a central role in our regulatory process.

I should also say that I was very fortunate. I mentioned early on in the interview the recent passing of Steve Ross. I should say that I was very fortunate to have him as my mentor. He was a preeminent theorist and so terrific a role model. But he also instilled within me a deep understanding of the connection between theory and markets, between theory and empirics, the power of basic principles, the virtue of simplicity, the importance of arbitrage principles and the importance of thinking through the mechanisms by which data is generated. And so that's been very helpful to me, both throughout my career and I think even especially during my work at the Commission.

KD: That's a great thought to quit on. Thank you very much.

CS: This was very interesting.

[End of interview]