FEDERAL TRADE COMMISSION

COMPETITION AND CONSUMER PROTECTION
IN THE 21ST CENTURY

MERGER RETROSPECTIVES

Friday, April 12, 2019
9:00 a.m.

FTC Headquarters
600 Pennsylvania Avenue, NW
Washington, DC

FEDERAL TRADE COMMISSION

I N D E X

WELCOME AND INTRODUCTORY REMARKS

MR. KOBAYASHI: My name is Bruce Kobayashi, and I’m the Director of the Bureau of Economics here at the Federal Trade Commission. I would like to welcome everyone to the 13th Hearing on Competition and Consumer Protection in the 21st Century. And today’s hearing will focus on merger retrospectives.

Before we get started with the substantive portion of the day, I have a few announcements that I’m required to read. First, please silence your cell phones and other devices. If you leave the building during the conference, you will be forced to go back through security, so please keep this in mind, especially during our relatively short lunch break. For those of you who don’t want to leave the building, there is a cafeteria on the 7th Floor that everyone can use.

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Question cards are available in the hallway on the information tables immediately outside the conference room. Staff will be available to collect your question cards and provide them to the moderators to pose to the panelists. Please pass your cards to the end of the aisle to be collected.

All right, that's over. My final task is introduce our opening speaker. Let me say that I think the organizers of this hearing made a great choice. The speaker is the Chairman of the FTC, Joe Simons. Even setting that aside, he would be a great choice.

Chairman Simons has been a consistent supporter of the continuation and indeed the expansion of the FTC's merger retrospective program, a lot of which -- most of which takes place in the Bureau of Economics. Indeed, I can go back to my very first conversation I ever had with Joe. And that conversation was dominated by many of the topics that will be covered by the four panels today.

So it’s great to have a Chairman that appreciates both the historical, ongoing, and central role of merger retrospectives and the FTC’s important and longstanding commitment to self-evaluation, criticism, and learning. So with all that said, it’s my pleasure to introduce our opening speaker, Joseph J. Simons, Chairman of the FTC.

(Applause.)

INTRODUCTORY REMARKS

CHAIRMAN SIMONS: Thank you, Bruce.

Well, good morning, everyone, and welcome to our hearing on merger retrospectives. I've been waiting a long time for this. One of the primary reasons for holding our Hearings on Competition and Consumer Protection in the 21st Century is to see how we are doing in terms of merger enforcement. Are we doing it the right way? And, if, not how do we fix it?

Achieving this purpose could also have an important effect on refreshing the strong bipartisan consensus on merger enforcement that existed for the past two decades or more. My belief is that merger retrospectives can play a critical role in making sure that our merger enforcement approach is on the mark and done with a strong bipartisan consensus.

In instances where merger retrospective studies are feasible, we can directly test whether a decision to seek relief was appropriate or not and whether remedies were effective in those cases in which we did obtain relief. We can also use retrospectives to test the tools that antitrust agencies use in analyzing anticompetitive mergers, such as GUPPIs and merger simulations.

That our methods of analysis make sense in theory is, of course, very important, but if they don't enable us to make reliable predictions in practice, what good are they? We need to understand whether our tools reliably predict merger outcomes or whether they result in too many false positives or negatives.

In addition, merger retrospective studies can be an important asset in persuading courts to block anticompetitive mergers. First, merger retrospectives can help validate prospective merger review tools. Testing the efficacy of these tools can demonstrate to the courts that these tools are effective in identifying anticompetitive mergers.

Second, retrospective studies can provide an empirical basis for a merger challenge. For example, these studies can help to persuade a court that a merger is anticompetitive by showing that similar mergers in the past resulted in anticompetitive outcomes. I see merger retrospectives as critical to ensuring the success of our merger enforcement program. Consistent with our tradition of self-examination, the FTC has been at the forefront of conducting retrospective studies. FTC economists have authored or co-authored more than 25 studies that have estimated the effects of mergers on competition.

Merger retrospective studies have previously demonstrated their value to the Commission's past enforcement efforts. In the 1990s, the Government lost a large number of hospital merger cases in a row, and the agencies actually considered whether to give up their hospital merger enforcement program. The Commission did not. Instead, under the direction of then-Chairman Muris, the Bureau of Economics conducted empirical economics studies that demonstrated the anticompetitive effects of certain past hospital mergers. These retrospective studies were critical in subsequent hospital merger challenges.

But despite prior successes, merger retrospective studies raise a number of methodological and feasibility questions. And there are questions about what an optimal merger enforcement retrospective program should look like. There is also a practical challenge in performing a large number of merger retrospective studies that may be needed to fully understand the effects of our merger enforcement program. Merger retrospective studies are time-consuming. They require significant resources and data, so we need to understand how to best allocate our available resources in this area.

In particular, we should consider whether and how the Commission can work with outside researchers on retrospective studies. That will also be a way potentially to improve transparency.

Today's hearing will address many of these issues. The hearing will feature four panels addressing distinct sets of these questions. The first panel will focus on what we've learned from existing merger retrospectives. This panel will address questions of what are the requirements of successful retrospective studies, which industries are good candidates for such studies, and what types of questions may be effectively answered with merger retrospective studies.

The second panel will focus on the use of merger retrospectives in prospective merger analysis. This panel will discuss how we can use merger retrospective studies to test the efficacy of economic tools used to forecast merger outcomes. The panel will examine what has already been done to test our economic tools and also discuss potential approaches for further testing of these tools.

In addition, the panel will discuss how merger retrospective studies could be both used for qualitative and quantitative analysis in studying merger effects.

The third panel will address the question of how the findings from merger retrospectives should influence merger policy. It will also discuss how retrospective studies should influence the case law.

And, finally, the fourth panel will focus on what should the FTC's retrospective program be over the next decade. I hope we will have a very lively, thought-provoking, and informative discussion today. And, in fact, I'm very confident with these panelists that we will. It is only through vigorous debate and exchange of ideas that we can help to build a consensus on our antitrust policy and particularly our antitrust merger policy.

My goal is to make it easier to achieve -- my sense is that it's easier to achieve this goal if we have good quantitative evidence to rely on and, of course, the merger retrospective studies would be critical to that.

Before I leave, I want to welcome all those attending the hearing from outside of the FTC. I would also like to acknowledge the efforts of the staff of the FTC, notably the Bureau of Economics, the Office of Policy Planning, the Office of Public Affairs, and the Office of the Executive Director. My fellow FTC Commissioners and I are very grateful to all of the people who have contributed to producing this impressive event, including and especially our speakers.

Thank you all for attending, and I hope you enjoy today’s program. Thank you.

(Applause.)

PANEL: WHAT HAVE WE LEARNED FROM EXISTING
MERGER RETROSPECTIVES

MR. GREENFIELD: I'm going to introduce each of the speakers, and then they'll come up to give their opening remarks. Leemore Dafny is the Bruce V. Rauner Professor of Business Administration at the Harvard Business School and a member of the faculty of the Kennedy School of Government. Jeff Prince is a Professor and the Chairperson of Business Economics and Public Policy at the Kelley School of Business at Indiana University.

Christopher Taylor is a Deputy Assistant Director in the Antitrust I Division of the Bureau of Economics at the FTC. And John Kwoka is the Neal F. Finnegan Distinguished Professor of Economics at Northeastern University.

Leemore.

MS. DAFNY: Thank you so much. I want to start by thanking the organizers for inviting me here today and also all of my fellow colleagues at the Bureau of Economics and the Federal Trade Commission. So I was asked to kick things off by summarizing what we know -- this is panel one -- so what we have learned about the healthcare sector from merger retrospectives.

So I'm going to kick off with a subject we know most about, which is hospital mergers. And up there, you can see the leading comment there is a real understatement. Hospital mergers are well-studied. In fact, I'd venture a guess that most in this room have probably been involved in a hospital merger. So they're certainly very well-studied.

I've only listed on there -- and the font is a little small, so it's probably for the best -- two of the most recent studies of which I'm aware, but there is a very, very long list of studies. And the evidence basically confirms that mergers of close rivals lead to price increases, okay? And the quality effects of these transactions, where they've been studied, are also generally negative. Now, most of these studies use differences-in-differences methodology where they compare the price effects of merging rivals with the price -- with, you know, parties that did not merge. Sometimes they will get rivals. Sometimes these studies address selection into merger, and we'll talk about that, no doubt, during our panel discussion.

You might call these event studies or reduced form studies. Right, some recent studies engage in what's known as structural model estimation.

And what they do is they use data from a given point in time, and then they build a model and estimate parameters that generate the state of the world as best as possible. And when you have that model and those parameters, you can then use them to simulate what-ifs. What if there is a merger? What if there is a conduct remedy?

So it’s a very flexible approach, and some of these studies have concluded effectively that elements of insurance plan design really ought to be incorporated into merger review. Elements of the insurance market which are not quantitatively involved in the standard workhorse of hospital merger review probably belong in there, so we’re gaining insights from these studies on the state-of-art methodologies that we ought to use.

More recently, and, yes, yours truly is involved, there is empirical evidence -- I expect we’ll discuss it during the course of the day -- that combinations of hospitals across geographic markets, so not just within markets where the hospitals are competing head to head for the same patients but combinations of hospitals across geographic markets are associated with significant price increases, okay, and some limited evidence of cost reductions. So that covers hospital mergers.

Everything else relative to hospital mergers we know a little bit less about, but you should think of it in a way on the hospital front as an embarrassment of riches because we do know a reasonable amount from merger retrospectives in the healthcare sector.

And I would say that the research there is growing. There are substantial findings on physician consolidation, both horizontal and vertical. In these cases again, price is most commonly studied, although there is a recent study by some economists here from the FTC, including Tom Koch and Nate Wilson, who have found adverse quality effects associated with vertical integration of hospitals acquiring physician practices. So there's lots of evidence that that leads to higher spending and to higher prices of services.

And now there's evidence there don't appear to be quality improvements, if anything on the contrary. There are some studies I've done myself on merger retrospectives in the dialysis industry, and the evidence suggests -- is consistent with price increases. I would say it's little bit less conclusive than the other studies.

In terms of what we know about insurance markets, I'm pretty sure this hearing is joint with the Department of Justice who does the insurance market. Is it? No, okay, but they do the insurance market reviews. And it's also a personal area of interest, but -- and clearly a relevant piece of healthcare markets. There are two merger study retrospectives of which I know, and they, too, find that when insurers gain concentration in local markets that premiums for insurance go up. And those studies do, I think, a reasonable job -- I am clearly biased -- of controlling for factors that might otherwise have led to price increases.

And, finally, there's a vast literature on pharmaceutical mergers, including something by a panelist who will be speaking later in the day. Most of those studies -- there are exceptions -- but most of them focus on how pharmaceutical mergers impact R&D investments and innovation, which is distinct, so that life sciences focus is distinct from what we're seeing in the healthcare services or insurance landscape where the focus really has more been on price in the pharmaceutical merger space. Generic companies, generic combinations aside, a lot of the focus is on what happens to R&D, what happens to innovation.

Okay, so kind of to summarize, I would say that the merger retrospectives to date, most of them have been horizontal, hence the lead to the slide. There are some vertical merger studies, in particular the hospitals acquiring the physicians. But in the wake of the new combinations we are seeing, we don't have much information from prior retrospectives on what we are likely to see, be it on the insurer PBM mergers, the health insurer PBM mergers. We don't have much prior on that. We don't even have a horizontal PBM merger retrospective, pharmacy benefit manager. So there's definitely room for additional merger retrospectives to inform our understanding of the transformation that is going to be taking place and is already taking place, particularly on the vertical side.

And last I'd also kind of be remiss if I didn't observe that the sorts of retrospectives that we see from agency economists tend to be different than the sorts of retrospectives that we see from academics like me. And I wanted to make that point because later in the day I think we'll be discussing what ought to be some policies potentially to promote creation of merger retrospectives.

And just to point out what will probably be obvious to many of us but perhaps not to every observer, which is that the academics tend to want to study large samples and make generalizable conclusions. We seek to publish in our journals and the reader wants to understand not what happened when A bought B but what in general is happening in this industry and what are the characteristics of marketplaces in which combinations tend to lead to efficiencies that are passed through or are not, and are there offsetting premium or price increases, that academics are interested in the general conclusion.

And, of course, we know that antitrust enforcers are focused on the very particulars of any one case as in a merger review should be. And, therefore, the agency economists, when they do merger retrospectives, they are likelier to take a case study approach and use all of those insights to inform their conclusions and will arrive at something that has just got a different lens than the academic studies.

I do believe these things are compliments. The academics also -- and this is significant to know -- would have great difficulty in publishing a case study because many, many journalists are not going to be interested in the academic pursuit of studying what happened when this hospital bought that or the even when this PBM bought that one. There may be massive industry interest in that, enforcer interest in that.

And the academics, particularly with the reduced form, want a large sample with the new structural models because they are so institution-specific. You may often see and you will hear from panelists who have written studies that dive deep into a particular transaction, but the objective of many of those studies, the contribution is methodological. So it's going to be very cutting edge, potentially more difficult for enforcers to apply. So there are some tradeoffs there, and I will close my opening remarks now.

(Applause.)

MR. PRINCE: All right. Thank you very much. I also would like to thank the organizers for inviting me to be part of this. I think dialogue like we're having today is very valuable for, I think, both sides, academics and practitioners. I'm thrilled to be part of this conversation.

So like Leemore, I think I'd like to open my remarks by giving a general sense of what I understand to be the way retrospective mergers have been done to date. So you know, there's a range of methods that have been used thus far, as Leemore noted, difference in differences or some variant of seems to be the most common. There's many examples of this.

So essentially, let's think about the merging parties, let's find comparable parties and look at their changes over time and make comparisons. Differences that we find we'll attribute as being effects of the mergers, so the list is very long. I'll gratuitously list my own paper on this, but I'll get into more depth in a minute.

Then matching estimators is another popular approach, so the idea being let's look at the merging parties, let's find similar parties on observable dimensions, match them up, and then look at differences in their outcomes. And the key thing there is to make sure that when we think about, you know, what would be driving factors as to why some firms merged and others did not, we want to make sure that those factors are not driving the outcomes that we're measuring.

And so for example, Marty Gaynor's paper and others would find factors like this, we might say they're political factors that might have been driving the differentials, not other factors that are related to the outcomes.

Another popular approach amongst economists would be an instrumental variables approach. So let's see if we can find what we call exogenous variation that we would say could explain why we'd see merging behavior but also then would not be an explanatory factor for the outcome that we're measuring, often price, and use that to kind of isolate the variation that we would think is good for trying to see what the causal effects are of the merger.

So Leemore and others, many others, have done an instrumental variables approaches. One example is in her 2009 paper using colocation as an instrument, right, for the likelihood of engaging in a merger.

A couple more things worth mentioning is using a focus on rivals. So the idea being that, you know, we might think some of the unobserveables that could be contaminating our estimates may not be existent in rivals but they would actually also manifest some of the merger effects. Again, price is a good reference point. So if we see price changes, it also could filter through into their rivals, so we could focus on them.

And then as Leemore mentioned, structural models also have merit in this area. There's been a range of analyses to use that approach, essentially putting structure on the supply and the demand side and then using that to assess what we predict to happen with a merger, a change in a power market structure. And then as Matt and others have done, we can then use those models to predict and then compare them to what we actually observe.

So the focus for me in my remarks is actually going to be on the nonprice side, so I've done a little bit of work in this area. And I think as Leemore said, there is a lot to be done here. I think there is a lot of openings. So when you think about price versus nonprice effects, in some ways, if you think about, you know, what should the control group be, right? So if I say here's the merging firms, who am I going to compare them to as the control so I can see the differences in the outcome.

With nonprice effects, in some ways, there could be some advantages there if you believe that the variables you're looking at are not so easily observed and not so quickly changed by competing firms, then you might say that, you know, if you have similar firms facing similar conditions, sometimes firms in the same market, if it's a nonprice outcome variable then they might actually be reasonable controls for the group that you're looking at because they're not contaminated by the fact that they might also be reacting to whatever nonprice changes you're doing as a result of the merger.

So Leemore touched on this a little bit, and when you think on the nonprice side of things, what have we really found in terms of merger effects on nonprice variables? And I think the typical way to think about this is quality, but it could encompass other things.

Hospitals, as we've seen, there has been a lot of action in this space. We've seen a lot of evidence of price increases in hospital mergers. You know, depending on the source, there is some mixed evidence when it comes to quality. So when you think about inpatient quality index, patient safety indicators, the list goes on and on, you do have ample evidence of declining quality, but there is some mixture in terms of what's been found out there.

On the airline side, which is where I've done some work in this space, you definitely see some substantial price increases as a result of the mergers, but then there's also some evidence out there on quality impacts. And let me kind of dive into some of the work that I've done.

One of the quality metrics that I've really focused on is on-time performance. I think that's kind of an obvious choice in this space to focus on. I think outside of price there's an argument to be made that that's the metric that consumers would typically focus on. So what we find is we did a merger retrospective. Daniel Simon and I did a merger retrospective, and this covered about 10 to 15 years of time over the airline industry, during which span there were five major mergers.

And what we found is in the short run, we did see a worsening in on-time performance, but then in the longer term, we saw that flip into a notable improvement in on-time performance. And while it's difficult to really parse that out, it is consistent with the idea of having some short-run coordination challenges but then long-run efficiency improvements and that manifesting in the data.

And then there's certainly other measures of interest with airlines. You can think about things like routing quality, cancellations, lost baggage. I mean, we've all traveled. You can think of anything that's going to drive you crazy when it's not there. We can measure those kinds of things. So Chen and Gayle actually have a paper looking at some of these, and they find some impacts on some, not so much on others. And I'll come back to that because I think that's an important thing to think about, is what are the range of things we should be looking at.

Right, so another, I think, relevant point that focuses on some of the research I've done -- this isn't with regard to a merger retrospective, but I think it highlights an important component when it comes to nonprice outcomes. So in another paper, Daniel and I look at the effects of entry and entry threats on on-time performance in the airline industry. And we actually find that on-time performance gets worse with entry and entry threats by a low-cost carrier, and in particular Southwest, but we actually found this for several other low-cost carriers as well.

And I think, you know, the relevance of this for the merger analysis is it speaks to -- unlike with price competition, when you think about -- when we do merger analysis and say what's the impact on price, it's typically framed in the context of two competing forces. There's increased market power which would push price up, and then there's increased efficiencies with it which then could push prices down. And then it creates ambiguity as to what the net effect would be.

With nonprice outcomes, even if you just focus on the market power side of it, there's already ambiguity there. So if you look at the theoretical literature and even some of the empirical work out there, I think what we found with the airlines actually points this out in that there's not necessarily the cleanest of relationships between market power and nonprice outcomes as much as there would be with what we understand to be going on with market power and price.

So what are some challenges in this area when you think about quality measurement? Well, when you think we've got a lot more data out there, a lot more things we can measure, the range of quality metrics that we can consider is certainly growing, right? We can get data on these things and we can start analyzing them. So you think about healthcare, certainly there's a wide range of outcomes that we could be looking at.

When you think about, say, technology, like a smart phone, right, if I talk about quality competition on smart phones, the list goes on and on all the dimensions that I could be looking at. So one of the key issues that I think is worth at least thinking about is what are the subsets of nonprice factors that we should be looking at. So when you think about multidimensional quality competition, the theory is even more complicated in that space. So this already creates challenges.

And I think another concern that I have is, you know, when you think about, we as academics, we try to think about, you know, big-picture problems and we pick variables we think are interesting to look at, do an analysis on these types of things. When you've got all that going on but then there's many, many variables to choose from, I do worry about, you know, even if we're not individually doing any data mining or things like that, collectively it becomes something like that, where if you're analyzing 50 different variables, you're bound to find something, even if it's not really a material impact that's going on.

So thinking hard about, you know, what's the selection mechanism for the variables that we're actually going to focus on, is it simply ones that we can demonstrate meaningfully impact demand? Are there other ways to think about it, creating composite measures of quality rather than just looking at many dimensions simultaneously I think is worth thinking about.

So some main takeaways, right, the

retrospective merger analysis for nonprice outcomes, if you think collectively, there is some mixture in terms of what we find there. And I think it highlights the importance of careful discipline and industry analysis when assessing merger impact, particularly for nonprice outcomes. And in contrast to price, the lack of a clear tie between market power and nonprice variables like quality contributes to the ambiguity as to the findings to date. So I think there is a lot of value in thinking hard about, you know, what to be analyzing and what are some of the important forces that might drive the response of those variables to mergers.

So I'll leave it at that. Thank you.

(Applause.)

MR. TAYLOR: Good morning. Not being an academic, let me give the standard disclaimer. Views expressed are my own and not necessarily those of the Commission or the Commissioners.

So I'm going to take you through the literature on petroleum mergers, but I think it's more important than that because not only am I going to talk about what we learned about the petroleum industry but more importantly I think what we learned about retrospectives in general.

Okay, so some background on the industry. There are multiple levels to the petroleum industry. The first level, we have bulk supply, so refining or large quantities of gasoline or diesel fuel. And then the second level of the industry, we have distribution, so local terminals, trucks, gas stations.

So there are really three main types of merger retrospectives and mergers we're looking at. We're looking at mergers among refiners or bulk suppliers, so horizontal mergers; mergers at the distribution level, so retailing and such and also horizontal; but then vertical mergers between bulk suppliers and retailers. And just to sort of go on top of that, there also can be mergers that are horizontal and vertical sort of at the same time, and these will come up in some of the retrospectives as well.

So the FTC has been very active in doing merger retrospectives. We have seven retrospectives currently looking at nine different transactions. There are some examples there. But, I mean, to summarize, the FTC studies thus far, we have not found consistent evidence of an increase in retail prices from these transactions. There was one case with some evidence of a retail price decrease due to inefficiency. There was another case where prices were expected to decrease and did post-merger, but that was not related to the merger. There was a change in the structure within the market.

The studies have found much more mixed results at the wholesale level. This is one of the more interesting facets of this industry. There are multiple wholesale prices and some of them are not observable by the researcher, which makes interpreting wholesale price effects that much more difficult. So for example, if you're looking at, you know, average unbranded wholesale prices rather than low wholesale unbranded prices, you could end up with very different conclusions.

But this is why we have, the FTC staff have generally concentrated their attention on the retail level. And so this one of the issues in any merger retrospective. If you've got multiple price measures, you have to be very careful about which prices you're actually looking at.

But another activity of the FTC staff, we spent a lot of time replicating some findings in a 2004 GAO report, and I'll discuss those findings when we actually are discussing the GAO report.

So the Government Accountability Office did two studies of the petroleum industry, two merger retrospectives. They were later partially published. And these were at the request of Congress. So both of the GAO studies looked at possible wholesale price effects of multiple transactions across the entire country. The effects were essentially a weighted average of all the wholesale prices at locations that GAO identified as being in a treatment group.

The 2004 study looked at eight mergers in the mid to late 1990s. They estimated 28 price effects across different wholesale prices and formulations and found 16 positive effects, 7 negative effects, and 5 transaction -- or five prices that had no effect. This led to a number of interpretation issues since the merger could have had positive -- some of the mergers had positive and negative effects across different prices and formulations.

So the reason I really want to get into this is the FTC technical report in replicating these estimates for some of the gasoline specifications found very different results. We found the results were very sensitive to identification assumptions. They did not do a standard difference-in-difference approach, which was really not obvious until you got into the weeds, if you really understood the estimation/identification assumption.

And in another case, they had omitted significant data that also affected the result. So ultimately after the replication exercise, we could only find one merger that had wholesale price effects. And this transaction was one that we were already in the process -- or we already had studied in Taylor and Hosken, and we found very different results at retail.

So 2009, also at the request of Congress, GAO did a second study. They found two wholesale price effects -- positive and one negative and four transactions that had no effect. But what was interesting, primarily to us and as a researcher, is that they used a different identification strategy from the previous study. They did a true difference-in-difference estimation.

Once again, if you looked at their study sort of in a cursory way, it looked like the identification assumption was the same, but if you looked at it carefully you could tell that they had actually changed it to a true difference-in-difference specification. One of those transactions where they found wholesale price effects we studied and published in Silvia and Taylor, 2013, and found no retail price effects.

So there were two other US retrospectives in literature -- Hastings and Hastings and Gilbert. Both of those papers reviewed changes in vertical integration in California. Both of those found effects. We later studied both of those transactions, one as a replication exercise and one looking at retail prices. And in both cases, we could find no consistent retail price affect.

So I wanted to briefly talk about non-US petroleum merger retrospectives, if for no other reason more in contrast to some of the US studies. So there have been studies in Canada, Australia, Argentina, and in Europe, a few examples around the slide. That's not an exhaustive list. Sen and Townley looked at retail in Canada; Houde looks at retail transaction in Quebec. Coloma did a study of Argentinian refinery merger. And there have been multiple mergers in Europe that mainly looked at retail.

So these non-US studies, you know, very similar to the US studies, generally use a difference-in-difference framework. They more often than not find effects. In at least one case where they didn't find a transaction effect, the authors did a number of testing to suggest that there was preexisting collusion in the market before the transaction.

But I think one thing that's common to most of these US studies that is different from the United States is the level of concentration and the amount of regulation in the industry. Concentration in these countries tend to be considerably higher than the United States, at least a thousand points higher in terms of HHI. And a number of these countries have regulations that make coordination easier, such as post-and-hold regulations and in some cases retail entry restrictions.

So what do I think we've learned? And I think these are more lessons for merger retrospectives in general as well as really for the petroleum industry. And this, I think, tees off something that Leemore was already raising. I mean, the point of doing these studies is not totally about whether a particular transaction had an effect, but why that transaction may or may not have had an effect.

So I think it's really important to have a clear design of the merger retrospective so that the study can learn larger lessons about broader outcomes. We can obviously challenge consummated mergers, but we're trying to learn about merger policy more generally. And this really comes down to a well-documented study, why do the assets in the transaction potentially lead to an effect or why they didn't.

You know, another lesson, we need to examine meaningful price, I think in this case, retail prices. Showing one whole price change is not necessarily a sufficient condition to actually have an effect. In this industry, it's really about the geographic markets and where the marginal supply is coming from. And I think that's one of the main things we learned in this industry, but it certainly applies to other industries as well.

And I could go into more detail and we can during question time, but trying to do too many transactions in one study, I think, is a recipe for failure.

But the last point I want to make really has to do with documentation and replication. I think we have all -- all of us who have tried to replicate someone else's study understands the number of decisions that they make that may or may not be well-documented, and, you know, this is a challenge and this is something that I think we all need to be better at.

But the other point of replication is really to understand robustness and be able to decompose the effects. A number of our replication studies have started by being able to try and understand more carefully where the effects come from. I think I'll stop there.

(Applause.)

MR. KWOKA: Good morning. Let me add my thanks as well to Dan Greenfield, Dan Hosken, Bruce Kobayashi, and others who organized this and certainly for the invitation to me to be here. I am an alumnus of the FTC -- a proud alumnus -- and always happy to be invited back.

Now, let me also acknowledge something that I think Chairman Simons has mentioned already, the role of the FTC in merger retrospectives has historically and up to the present time been crucial. The first recognizable merger retrospective was done here by two economists -- David Barton and Roger Sherman --back in the 1980s. And looking back on it, while this seems in many ways crude, it certainly is indicative of the methodology and importance of doing these studies.

Of course, others have advocated doing retrospectives along the way. We have I think on the program today Dennis Carlton who has called for the studies for quite some time, as well as Bill Kovacic, particularly when he was here at the FTC.

I view doing retrospectives as an act of good public policy, the courage of an agency to examine its own decision; and on occasion, where appropriate, to leave with some conclusions that may not be entirely favorable is the sort of good public policy that I think we don't always, perhaps often, see.

I don't have any PowerPoints. I did not get them prepared in time, but the good news is that a good deal of what I have to say has already been said by my fellow panelists. So if you remember some of their PowerPoints that will suffice.

Dan asked me to discuss some of my work and I will, but let me begin somewhere else, by setting out what I think are three different purposes of doing retrospectives. And these match up to some degree with the scope of the undertaking. So one route is to do a retrospective on a particular merger, a single merger, looking at a particular outcome from the event. So there are a fair number of these.

For reasons that Leemore mentioned, these may be more commonly done within the agency than by academia, but they are incredibly important because they provide insight for the agency into the appropriateness of the action that may have been taken as a policy measure for a particular merger, which is to say that in some instances the outcome may not have been what was predicted. Or the choice of policy may not have turned out to be as intended. And it’s an important part of continuous improvement in policy to look back on those and to determine what it is that perhaps should have been recognized at the time a decision was made to clear a merger or challenge it or to apply a remedy or a particular type of remedy or not.

Those actions, those insights really need to be developed on the basis of a stock of data that’s only available within the agency. Joe Farrell and I wrote a short policy piece a couple years ago where we said that one of the great unexploited areas of information for agencies was their own past case-bringing decisions, investigations and choices of policy.

We tend to look as economists for new theories, new empirical evidence, et cetera, but the reality is that the agencies sit on a vast store of information that has not, I think, adequately been tapped. So that’s the role of looking at individual or single mergers.

A somewhat different strategy is one that the FTC has pioneered successfully as well. And that is to identify a broader issue or an industry where there is a problem worth investigating. The hospital mergers that Leemore mentioned, and Chairman Simons as well, is an example of where because the agency was unsuccessful in persuading the courts about a particular problem that the agency knew full well should have been addressed differently by the courts, the agency stepped back and used consummated mergers cleared by the courts as a basis for developing better techniques and certainly better policy to inform the courts.

So a single industry or single issue on some instances, I think, can be addressed by launching a series of targeted retrospectives at that issue or at that industry. Healthcare and hospital mergers are a good illustration of the industry case. An issue, which I've promoted this to examine potential competition mergers. These are -- these suffer -- the courts have established a pretty high bar, but, again, one of the ways of reviving the ability of the agencies to bring successful challenges to mergers that eliminate a potential competitor and raise competitive concerns is to develop a set of retrospectives on cleared or consummated mergers where a potential competitor has been eliminated.

I’ve done one of these, and if I have time, which I doubt I will, I can talk a bit about that. But this is a topic area that I think would invite such investigation as well.

Third area, third use of retrospectives is to compile in some fashion all available retrospectives and to try to draw inferences from that body of literature about policy questions. And this is, in fact, where a good deal of my work in recent years has been devoted. There have been compilations of retrospectives done by Matt Weinberg, who’s here, and by Orley Ashenfelter, I think is on the program as well, and others. They’ve compiled available retrospectives and drawn some inferences.

What I did was to launch, I think, a more comprehensive survey with the assistance of Dan Greenfield and another former student of mine at Northeastern who assisted in the compilation process and analysis process of the existing literature. And this found its way into a meta-analysis and the book and some articles that I’ve published.

So in brief, a meta-analysis, as you know, has distinctive strengths over -- for these purposes because the most obvious is numbers. Inferences and implications are not dependent on single cases or idiosyncratic experiences or cherry-picked examples, but rather on a larger body of literature so that we know what the totality of the literature may say.

This does raise a question of whether that totality is adequate or not, but nonetheless, we know a deal more by looking at the entirety of the literature rather than some industry-specific or case-specific example. And so the full -- and this is also -- there also is a meta-analysis approach that one can apply to such a compilation. So in the analysis that I spearheaded, we surveyed literally hundreds of academic studies and imposed various criteria on the studies to be acceptable for the final database of merger experiences.

These needed to be largely or entirely horizontal mergers just for the sake of consistency. They were strictly within the US, putting aside issues that I think have been mentioned that are raised by mergers and studies of mergers in other jurisdictions. These had to look at final outcomes, prices, or quality rather than intermediate steps. For example, some switching costs or impediments in other fashion that don't automatically translate to a final consumer metric.

And perhaps most centrally, they needed to use state-of-the-art standard economic techniques for controlling for other factors -- difference in difference, of course, being the general rule, though there now are more ways and issues, more ways of attacking the question. And, finally, these needed to be published in a peer review journal or in one of a couple respected working paper series, including that by the FTC.

So in brief, the result of this compilation was really two different categories of mergers -- of studied mergers. One was individually studied mergers. Again, these provided the greatest detail, the most granular information about mergers, and allowed for the greatest opportunity to draw inferences.

So there were about 50 mergers, some of them studied multiple times. Those were of interest for the reasons that have been mentioned, because it provides some insight into whether there is consistency in the findings across different studies of the same merger. There were about 50 such mergers from about 60 studies, again some cases of mergers were studied multiple times, across 16 different industries.

And there were -- we identified 120 individually studied products. Again, multiple products oftentimes were studied within the same industry. So that was one category, the individually studied mergers.

The other category were studies that looked at aggregates of mergers, so there was a single case, a single study of aggregate of mergers ranging from, you know, 10 to 1,000 such mergers. And what those provided was less detailed indications or evidence about them. So the results of this analysis were published in my book, and, you know, roughly there was good news and bad news with respect to policy in there. What it showed is that there was a fair number of instances -- a good bit of evidence, rather, showing that agencies made good decisions as to what mergers to challenge.

But it also showed that the number of cases where mergers were approved ended up with many instances of anticompetitive price increases nonetheless. And with respect to remedies, I found a rather erratic pattern, which is to say some remedies were effective, and not infrequently, to the contrary, some were less effective.

So in short, I think that the -- while my work has been focused on the third of these, the compilation of studies and the effort to extract broad conclusions, all of these techniques are valuable, and all of these techniques, I think, are examples of excellent public policy by the FTC and, unfortunately, less by the DOJ, but certainly for academic researchers as well. Thank you.

(Applause.)

MR. GREENFIELD: Thank you to all the panelists. I'd like to start by having the panelists discuss whether there are certain industries well or poorly suited to study using conventional merger retrospective techniques. For example, many merger retrospectives focus on industries with localized geographic markets and they examine how prices change in the effective markets relative to unaffected markets. But how might a researcher deal with a merger in an industry that has a national market, and there might not be an obvious control group?

Who wants to jump on that?

MS. DAFNY: So if I may, unless we're going to have a separate discussion on differences in differences -- are we? We are. Then just talking about the industries, I would say that the methodology allows for -- it is not as -- it is not -- the most simplified version of differences in differences where you have a treatment group of, say, merging parties and a control group that don't merge is the most simplified version that there is. Certainly there's a risk if you're studying in the same geographic market of a spillover effect, if there is an oligopoly pricing situation going on. Others have noted that problem.

I would say that when we're talking about a national market, the challenge is the same, which is to try to identify either subsegments or certain kinds of products that are less likely to be affected by the transaction in question. There are matching methodologies that one could use to do that, something also called synthetic controls where you try to identify treatments and controls that have similar trends in your outcome measures before a transaction, and that can be, to some degree, a test of the assumption that the control group has similar behavior to the treatment group.

So whereas it may not appear as obvious as when there are multiple geographic markets, I think that the approach is not dissimilar.

MR. PRINCE: Yes, I agree with that. I mean, I think, you know, as you were pointing out, that the challenge is if it’s a national market, in some ways, you’re basically getting one observation of the market, the concentration change. The other thing I would just add to that, and this is in some ways just thinking out loud, but, you know, it might be worth at least thinking about exploring because of the difficulty often in trying to find what a proper control would be is, you know, we in economics have slowly but surely been opening ourselves to the possibility of using certain machine learning techniques in some of our analysis.

And it might be worth at least thinking about, you know, are there ways to use some machine learning techniques to get, you know, some meaningful predictions for that market in the counterfactual that the merger didn’t take place and use that as a comparison point. But I’m not advocating that that necessarily is going to work, but I think it’s something worth thinking about. So that at least came to mind because I think there is just this inherent difficulty of trying to figure out what is a reasonable comparison point at the national level.

MR. TAYLOR: You know, I was just going to add that there have been studies that have done hybrid approaches. I mean, so you can obviously just try and model the price formation in a given product. I mean, if you had enough demand and supply shifters, in theory, you don't need a control market. Obviously, for lots of products, that's not possible, but you could do -- and I think Vita and Sacher in a hospital paper did this, where they had a control market, but there were some potential issues with supply and demand shifters in the control market. And so you could have a control market but then also have additional variables trying to control for differences between the control and not. And as Leemore mentioned more work on synthetic controls as well.

MR. KWOKA: I think everything that I was about to offer with one exception, they already have been said, and that is that the problem of control groups, of course, is broader than the case simply of national market. It's oftentimes, it's fair, I think, to say that maybe the principal challenge in doing a retrospective is to find the right control group. There are other statistical and modeling issues as well, but finding a set of experiences -- a set of events, rather, unaffected by the merger, is oftentimes not so easy to do if one thinks broadly about the way industry is adjusting to new equilibria as a result of an event.

So for example, an airline merger is -- it’s common to take markets where the two parties, let’s say, the two incumbents on overlap markets are not present. On the other hand, there could be more systematic cost experiences that flow across a -- one of the merging parties that affect their performance in other markets or network issues that affect their performance in other markets. And all of those, oftentimes, I think many of those are oftentimes not adequately reflected in the design of retrospectives.

MR. GREENFIELD: So I mean, are there certain industries maybe that are better suited for qualitative analysis than statistical analysis in addition to an instance where you might have a national market? Sometimes prices are particularly hard to measure, for example in a service industry, where each customer is paying a slightly different price?

MS. DAFNY: We can go in order or --

MR. GREENFIELD: Sure.

MS. DAFNY: Okay. So I would say absolutely qualitative analysis ought to accompany quantitative analysis. I want to hesitate to let the perfect be the enemy of the good and to remind us all that hedonic models are often reasonable in controlling for features of products, differentiated products markets, certainly in healthcare.

We've got prices that depend not only on the features of the provider but also on the health conditions and costs associated with caring for the patient who is consuming the service because the price varies based on those conditions, and yet, somehow, we tend to focus on price, which is really hard to measure in part because of some of the issues around multiple quality dimensions and which ones are you observing and this question of what's called p-hacking. If you, you know, look at enough of them, you'll find some that are significant and what's happening to quality measures that we aren't observing.

So price, even if hard to construct, often is a very nice summary measure, although I'd be the first to say that we overemphasize it. And I'd go further on this qualitative versus quantitative. One of the reasons some might think qualitative analysis is so important is because there are these dimensions of quality that are really meaningful that you want to be able to study.

And I would just say that it is possible to quantitatively study these unobserved features using structural models that estimate, right, the magnitude of these and consumers' preferences for them. So I wouldn't say that because quality's important, therefore, it becomes often largely qualitative, even if it's multidimensional, just that you need methodologies that are a little trickier to explain in court.

MR. PRINCE: Yeah, I agree with all that. Those are great points. I guess when I was thinking about this issue, the way I look at it is I think, as Leemore put it, I don't think it has to be necessarily either/or. When I think about it, the question becomes, you know, any model that you might use is going to rely on some assumptions that you make. There are decisions that any modeler has to make to execute. And I think it was Chris or John that was making that point, some stated, some unstated.

And so you know, it's -- even if it's a complicated market where you do have these subtle differences between whatever products that are actually being sold, in some ways, the question becomes, you know, what level of assumptions am I willing to make to be able to make that model estimable and believable? And can I simply use qualitative analysis to inform, you know, the justifiability of those assumptions?

So I guess I don't look at it is, you know, because it becomes complicated to quantitatively assess this then we should just go to qualitative. I think it's a matter of, you know, if we're going to use quantitative methods and it becomes complicated, we use -- got to use more assumptions, that does knock into some of the credibility of it, but then qualitative analysis can help us to, you know, add some credibility to some of the necessary assumptions you might have to make to actually make those models work.

MR. TAYLOR: I guess one of the things to really think hard about today and in general is, you know, a high percentage of the merger retrospectives have come out of a small number of industries where pricing data is fairly available, where the difference in difference methodology is, you know, sort of easier to apply. And so I think, you know, we have lots of different ways of getting at this question, but essentially, the argument is how do we broaden the methodologies of doing merger retrospectives so that we can get at other industries where price is not one of the most important variables and it's readily available?

MR. KWOKA: Well, let me add a couple points. One is that there is, of course, a tendency in the literature, as everyone agrees and knows, to look at price. And then we bemoan the lack of studies on the quality side. But these are not necessarily independent or should not be independent. And here I'll have to acknowledge Dennis Carlton's point. When they steal perhaps what -- some of what you might -- perhaps were going to say later on, but for example, if we observe in a particular industry that price falls as a result of the merger, it could be associated with a decrease in quality. Or if the price increases, it could be because quality has increased.

Looking at price by itself, therefore, is at best incomplete and at worst quite misleading about what the full effects of a merger may be. So if you want to raise the stakes and the degree of difficulty of doing merger retrospectives, I think it's fair to say that we need to pay close attention to the way that firms going through a merger adjust, both on the price and quality dimensions, because those are one and the same decision. And that's often not the way that retrospectives examine them.

MR. GREENFIELD: So even when we have reasonable controls available and reliable data on market outcomes, whether it be price or quality, how does one deal with contemporaneous events that might threaten identification of merger effects? For example, a merger might involve a firm that's financially distressed, and that financial condition of the firm could potentially affect market outcomes.

We'll start, Leemore. You've done stuff along this line.

MS. DAFNY: Okay, well, that is a tough situation. When you -- there's always this assumption that your counterfactual, be it maybe machine-learning informed prediction of how the outcome would have evolved in the absence of a merger or a set of controls whose conduct is proxying for what would happen to the merged market or parties in the absence of a merger, there's always the possibility of some shock that causes market fluctuations. And that's fine unless the control group responds differently than does the merging parties or than do the merging parties.

One way to try to get comfortable with that or see whether your control group is going to be valid is to look at the premerger period and confirm that even in the wake of market changes that a treatment and control have similar trends. That's called a parallel trends assumption. But it remains a threat that, even if you satisfy the parallel trends assumption in the pre- period that in the post-period something happens and that's where you would like some qualitative analysis to confirm whether it seems like a plausible assumption.

MR. PRINCE: Yeah, I guess the way I always frame this is, I mean, that's kind of the killer when it comes to diff-in-diff analysis, right? So anytime you teach diff-in-diff methods, when I talk about, you know, what are these vulnerable to? What you're describing is exactly what I would say, right? It's when you have concurrent changes to the treated group, right, at the exact same time of the treatment that you are focused on.

And so then how can you say it's the treatment that's causing the outcome change when it could be this other concurrent event that happened that was specific to the treated group as well? And as I was thinking about this, the -- you know, how do you get around that, right? So any empirical method, I think, always has vulnerabilities, and I think this is the primary vulnerability of diff-in-diff analysis.

And so you know, one thing that comes to mind is -- and this, of course, is probably asking too much but, you know, is it possible to find some analysis that deals with what you saw to be the current event under other different conditions where the treatment that you're looking at did not happen, right? So then you can try to get a sense of, okay, I know this event happened concurrently with the treatment, right, the treatment being the merger, and then here's what we saw was the impact of that other event, like a bankruptcy, for example.

And so then, when I see this -- what we would then say it's kind of the combined effect in the analysis that you're describing, you know, perhaps we could difference the two, right? Or at least do some form of comparison between the two. At least for me, that seems the most promising defensible approach. But, admittedly, that's a big challenge when something like that happens.

MR. PRINCE: So I was wondering if Dan was thinking about refinery outages or something when he was writing that question. No, I mean, fundamentally, the control group, difference-in-difference assumption is difficult to prove, and that's what you're getting at. I mean, I can show you the pre-trends how they behave.

But unless, as Jeff was saying, I have the same kind of event in the pre-period where I can show you that they behaved in the same way, it’s going to be very difficult to prove that. But certainly in the petroleum retrospectives, we’ve had those types of issues that there’s some sort of outage or formulation change in trying to show that the control market and the treatment market had the same type of effect.

But fundamentally, it -- the treatment control relationship is an assumption that I can try and show you is a reasonable assumption, but I can’t prove that those prices always behave in exactly the same way.

MR. KWOKA: So again, I wish I had something constructive and helpful to say here, but let me point out that this is part -- a reflection of, I think, a larger issue. Whenever the event, a merger, say, is separated in time from the likely effect, there’s simply greater opportunities for other events to intervene. And the implication of that is that certain types of outcomes, for example on innovation, are much harder to assess because they are subject to lots of influences and the effect turns -- tends to be, of course, separated in time by years, not two or three years but perhaps a very long period of time.

The implication of that is that certain types of questions are simply harder for merger retrospectives to assess. We don't have good structural models of innovation. And we -- and difference and difference analysis is subject to more disruptive influences in the technique for those types of questions.

MR. GREENFIELD: Thank you. So as we've discussed, most merger retrospectives examine the impact of horizontal mergers on prices, but I'd like to ask the panelists to consider whether there are other questions that merger retrospectives will be likely or unlikely to successfully address? In particular, two recent NBER working papers have shown a negative relationship between labor market concentration and wages.

Do the panelists think that traditional merger retrospective techniques could be used to add to this literature, and are there unique challenges associated with analyzing labor markets or buyer power as a result from mergers more generally?

MS. DAFNY: Why don't we start there? I mean --

(Laughter.)

MR. GREENFIELD: Yeah, we keep making you jump out.

MR. KWOKA: So you know, the issue of labor market effects and monopsony power in labor markets, of course, is relatively new to antitrust, though it's been kicking around in most labor economists for a rather long period of time. It's a good example of where our silos have really done a disservice to us in thinking about the broader effects.

So I think that the technique is -- the difference-in-difference technique and the general thrust of merger retrospectives is quite capable of dealing with other types -- other dimensions, as I've said before, other dimensions of outcomes with respect to mergers. And I also would like to, I guess, broadly answer by saying that merger retrospectives are useful to the agency in other respects as well.

As I said in my opening remarks, merger retrospectives cast some light on the agency's internal decision-making, but it also -- they also can cast light on the agency's internal methods of analysis, for example, the use of merger simulations against retrospectives, a comparison that's been made in a couple articles in the literature, or the use of merger retrospectives to evaluate use of structural criteria, something that I’ve done a bit of work on as well.

So there’s a wide number -- a large number of areas where merger retrospectives, I think, have not been deployed to their full advantage just yet.

MR. TAYLOR: Mainly, I think this is not so much a question of methodology but the actual data, to get data at the level where you could look at localized labor markets or other types of these outcomes. I mean, I think one of the issues with some of the literature at this point is the level of disaggregation in the data and trying to look at broad measures of these kind of outcomes.

MR. PRINCE: Yeah, my initial reaction is a lot like Chris’ in terms of getting measurements for the data, but I think this also, when I think about it more broadly, this kind of feeds into one of the things I was talking about in my opening remarks, which is, you know, in some ways this is asking -- there’s a lot more outcomes we could look at. How do we go about that?

And I think it’s true. I don’t see any fundamental reason why the methods we’ve talked about couldn’t apply to these other outcomes, but I just would encourage us all to make sure that we're having a broad perspective on how we make that global choice. Right? Because here would be the concern, right? If I were a firm, the worry is if you're going to look at 30 outcomes, right, with these mergers, I'm probably going to fail on one of them. Right?

And so I think we don't want to get things to that level and be thinking in a disciplined way in terms of what are the set of outcomes that make sense to look at, and think about that in terms of a global analysis. You know, what does this aggregation of results over multiple outcomes really mean in terms of what really the impact of this merger was? So that would be kind of my main perspective on something like this.

MS. DAFNY: So I would say this is a situation where the richness of healthcare data is, again, a huge advantage. I was able, in one of my retrospectives, to explore monopsony power following insurance mergers using that kind of detailed, geographic-level data on employment as well as wages and find evidence of post-merger exercise of monopsony power.

I would add that the Department of Justice has challenged some insurance mergers for a variety of reasons but including allegations of monopsony harm arising from being able to depress the wages of healthcare professionals.

What I would say is that thinking about the effects of a transaction on labor markets is challenging because you want to make sure that you are mindful that employment reductions do not at all necessarily mean monopsony, right, that sometimes they can mean efficiencies. You want to distinguish between the two. That sometimes a transaction can lead to a change in which labor is compensated and that can raise some serious measurement issues and a change in, you know, bottom-line the production process.

And just to pick up a specific example, I found evidence that after insurers gained market power, they tended to substitute nurse labor for physician labor, thereby depressing physician wages. Right? And so thinking about the implications of that are a little different from holding the production process constant, depressing the wages of physicians by purchasing less of it. So you definitely need some context for that analysis, but it certainly is doable.

MR. GREENFIELD: So do we think merger retrospectives can measure merger-induced changes in production efficiency, cost, input prices, essentially what we've been talking about and, more broadly, can they be used to test efficiency claims made by the merging parties?

MR. PRINCE: Well, I thought I'd switch it up. I feel like we're just going to the corners. I mean, my answer is very quick. I mean, I think this actually kind of layers very cleanly onto the prior question. For me, it just comes down to issues of measurements and, again, thinking about kind of global set of outcomes that you're going to look at. But that's kind of as far as I was ready to take it.

MR. TAYLOR: I guess we had at least one merger retrospective where we did see efficiencies. I don't know whether the parties had actually raised it in the case, but we did see essentially a pipeline reconfiguration that led to lower retail prices.

So I mean, once again, it's a question of data and being able to identify these type of effects. There's no methodological reason you couldn't look at it.

MR. KWOKA: I agree with that. In my compilation of studies, there were a small number of studies that did look at cost issues, cost results for mergers, as well as efforts to measure at least R&D,

if not innovative output, and certain quality dimensions, as Leemore and others have mentioned. So there are studies out there that have used the same technique and sought to apply them.

It seems to me certainly that one of the places they would have high payoff for observers and certainly for the agencies would be to initiate a more concerted effort to determine whether the effects of mergers do include the efficiencies that the parties have claimed. I think there is anecdotal reason to be skeptical about that, and I think that a final determination really awaits this as one of the focuses of a concerted set of studies.

MS. DAFNY: I just have one comment to add, which is that a number of at least in healthcare, the assessments of the impacts of the merger on costs don’t address the issue of merger specificity. So I’ll leave it at that.

MR. GREENFIELD: So Leemore, you had talked about your research on cross-market hospital mergers. And, John, you had talked about some of your work on mergers that eliminate potential competition. I wondered if either of you would mind talking about the challenges of constructing a counterfactual when you’re -- you know, when the merger is affecting a broad set of markets, not just of the markets where the parties are competing head to head.

MR. KWOKA: So I'm happy to --

MS. DAFNY: Sure, yeah.

MR. KWOKA: -- spare Leemore going first again.

MS. DAFNY: I don't mind.

MR. KWOKA: So once again, the sad truth is that the study that I conducted along with Evgenia Shumilkina was in airlines. Where else would it be? Airlines offers not just a lot of data, making it an invited target for lots of graduate students and attention by others as well, but in the case of airlines, there's a greater ability to identify who a potential competitor might be. And there's a fair amount of literature that preceded my work that has -- that identified as a potential competitor a carrier that was positioned by virtue of operating at one or both endpoints to quickly enter the market.

And the argument, of course, is that the -- an incumbent clearly understands that there is a threat of entry, and the prospect of entry if it might fully exercise its own market power on the route, the incumbent recognizes that, and so it arguably affects its behavior.

So the question -- we found, in short, that there was an effect from a merger that eliminated such a threatening competitor. And the effect was about half the size of the effect of the two -- of routes where the two incumbents merged. But, again, the question then becomes -- and I’ve challenged many of my grad students to figure this out -- what other industries can we find where there is some reasonably objective identification of who a potential competitor might be, so one can run such a set of tests elsewhere? That’s not an easy question to answer.

The work by Florian Ederer and others in the pharmaceutical area is a good illustration of important work, but it also illustrates the gigantic amount of work that’s involved in identifying who may be prospectively competing with a drug development program on the part of the acquiring company. But -- so there are great challenges. It’s not to say that people cannot identify industries and potential competitors, but the identification of potential competitors needs to be defensible, and if it’s not, then the studies are correspondingly weaker in the quality and strength of their conclusions.

MS. DAFNY: Thanks for describing that work, actually. The lack of insights on the impact of eliminating potential competition, I think, is a real barrier to enforcement agencies and to courts in weighing that more heavily in transactions, and this new work is, I think, really important and useful. So I'm glad that you're on it.

So the project on cross-market mergers originated when I was at the Federal Trade Commission. I was here. Everyone was -- had -- I don't want to say have it nailed because it is a challenge, but the staff here and the attorneys and the economists worked together very well on the mergers of hospitals that were head-to-head rivals for the same patients and trying to figure out which of those were potentially problematic. Same goes for other provider services.

But what I was hearing a lot about prior to coming as a deputy at the FTC was insurers complaining that hospitals were merging into broader regional systems and now national systems and that they were negotiating higher and higher prices and that the authorities were not -- not investigating or taking seriously the potential harm from these transactions.

So that to me was kind of marching orders when I left and had more time or any time for research, and the study came out just this week finally in the RAND coauthored with Kate Ho and Robin

Lee. And in it, what we do is we have both a theoretical component and a quantitative component. I'll start with the quantitative component, which is assessing what were, in fact, the price effects of a series of all of the cross-market mergers during an extended period, 2000 to 2012, and also subsets of those.

So let me explain -- the answer to your question is, it's kind of tricky to figure out who might be affected and who might not in this whole issue of treatment and control groups. So to pick one of the empirical analyses we do, we take a set of transactions that were investigated by the Federal Trade Commission because of horizontal overlap. Okay, the cross-market overlap, to the extent that it's investigated historically certainly wasn't made public. So they were investigated because of horizontal overlap. And the parties continued to -- they merged after the fact, so instead of divesting what was the area of concern, the hospital of concern, they persisted through that investigation.

So that leads us to believe it's plausible that those transactions were driven by the desire for that horizontally overlapping hospital, and we focus on bystanders. So bystanders -- so plausibly exogenous to them, that they happen to be party to a merger where they gained another hospital in a different market, and we focused on if you gained another hospital in the same state versus another state, what's the implication for your prices?

And we find that if you gain hospitals in the same state where you're negotiating with the same insurer that prices go up, and that doesn't happen in -- when you gain partners in other states. Then we broadened it to include a large sample of mergers, all mergers, and we had a different approach to try to get rid of the hospitals that were the motivation for those transactions, again, to focus on the bystanders. And we found more precisely estimated similar results.

So quantitatively, the conclusion is that there is, I think, reasonably strong evidence that as at least in the hospital sector, as you gain heft in your state, certainly where you're negotiating with a common intermediary, that you're able to extract higher prices.

Now, we know that price increases themselves, that's nowhere in the Clayton Act, that transactions that lead to price increases -- and I'm assuming holding quality constant, okay -- but that transactions that lead to those, there's nothing that says that those are -- that's what the agency can raise a challenge to. They raise challenges when there is a diminution of competition. And so that then goes to the question, which I don't know if we'll discuss now or later in the day, as to what are the mechanisms that are generating these price increases and are they potentially actionable by antitrust enforcers?

MR. GREENFIELD: Well, I think the fact that you had to rely on a lot of industry knowledge in order to set up your research design in that case ties in nicely with another question I had. Are there guiding principles to selecting control products or in setting up your research design? And in doing so is it better to rely on industry-specific knowledge or take a data-driven approach?

You know, for example, a researcher might exclude certain control products because their own industry knowledge tells them that those control subjects might be -- or control products might be subject to unique demand or cost shocks and might confound measuring merger effects.

Alternatively, you know, some folks have talked about using empirical matching techniques where you might select controls based on observable characteristics in the data. I wondered if the panelists could talk about the tradeoffs there in terms of relying on making subjective decisions about -- using industry knowledge versus taking a data-driven approach to selecting control groups and designing your research.

MR. TAYLOR: I can start. Well, it really can't be an either/or. I mean, you -- you want to use the industry knowledge to hopefully identify some candidate control groups and then essentially show that they are behaving the same. I think it would be difficult to simply look at the prices or whatever, quality, whatever you're comparing, and show that they act the same and then not go the extra step to essentially explain why the industry detail would lead you to that conclusion or vice versa.

I think if you started out with just a numerical matching exercise that you could easily be led astray. But I mean, also -- essentially, it has to be both at the same time.

MR. PRINCE: I can jump in. Yeah, these are issues I like thinking about a lot. I guess the starting point I would go with is it often sounds good to say I used a data-driven approach, right? It's all objective, right? I didn't bring any of my biases into this. But then any of us that have executed these things know that you had to make decisions, right? Some subjectivity comes into this.

One thing I always teach my students is, even just using OLS, you've made a subjective call here, right, in terms of how you treat outliers as an example. Right? So there's inevitably going to be some subjectivity, even if you use kind of what you might think of as being an objective matching estimator. You have to think about how you construct that model, what are the variables that are going to go in it, right, how do they do in it. So I think there has to be some level of subjectivity. And as long as you acknowledge that, then you might as well bring in your industry knowledge to the best of your ability to help guide the subjective decisions that you inevitably have to make.

So I think it's good to think about it starting as a data-driven approach, but recognizing that you have to make calls and those should be informed by industry knowledge.

MS. DAFNY: I'll just add, of course, you need to make use of your industry knowledge. However, where there may be disputes or where it's not clear one way or the other, you always do your robustness checks and confirm and see how sensitive your findings are to different assumptions that's informing your analysis.

I also want to say that it's therefore very important -- it's an obvious point -- but that some of these retrospectives take place unrelated to litigation or to the promise of prospect of litigation by disinterested parties. Government economists are strong candidates. I think academic economists are candidates, although there are, you know, some biases that I'm sure arise.

I think the Commission could also potentially commission some studies. But I do think it's very important, especially because of the sensitivity of results to data decisions, to think about the context in which the analysis is produced.

MR. KWOKA: So Leemore's answer suggests another point, not exactly on target here, but the issue of what sort of merger retrospectives are in the public domain is of some interest. You know, what we would like would be a random sample of mergers, and we're two or three steps short of that in thinking about what's available, for example, in the meta-analysis that I did.

Not every study is equally likely to be

published. Not every industry is equally likely to be investigated. Not every set of results is of equal interest to the profession or to the journal editor. So there are selection issues all over the place. And for that reason, it's not only important that the researcher who's doing the retrospective be knowledgeable in the industry, but it's also important that any compilation of these studies or anything we attempt to synthesize from meta-analysis or any other compilation be sensitive to these kinds of forces that are really not germane to the question of -- the broader questions that we -- that may interest us as well. All hospital mergers, for example, or all mergers about which retrospectives have been done, which is my database.

MR. GREENFIELD: We have a question from the audience. The question is, the panelists focused on mergers but can the group talk about retrospectives or competitive studies that focus on conduct? I assume anticompetitive conduct investigations or cases. What would be -- and what would the issues with such studies be? I'm not aware of any retrospectives that investigated -- a particular conduct investigation case.

MS. DAFNY: Pay for delay.

MR. KWOKA: Go ahead, Leemore.

MS. DAFNY: So the one that comes to mind is pay for delay, and there's -- there are -- there's at least one FTC-produced study that provides an estimate of what is the cost to consumers as a result of that piece of conduct that's widely believed to be an underestimated.

At the same time, there's real selection issues with that, like which products did the pharmaceutical companies, in fact, elect for engaging in pay for delay. Were they products that had the weakest patents and therefore cause potentially greater harm, and is that greater harm captured in this estimate because a generic could have entered sooner? So there's a lot of selection issues that arise in those kinds of studies, just as they would in merger retrospectives.

MR. KWOKA: So as we all know, there are three pillars of antitrust -- cartels, merger enforcement, and conduct. There are hundreds -- I don't know -- maybe thousands of studies of cartels. John Cotter's work was really seminal in this area and we learned a great deal about cartel outcomes, formation, duration, that sort of thing from John's work. And I took some of my inspiration from his work.

He, of course, had a -- he had a very -- he cast his net very widely. He included lots of studies that I think vary in quality, which simply reflects the fact that there are different ways of doing meta-analysis. But it's easy to do cartel stuff. And for that -- and there's also an incentive to do cartel studies because these are subject to challenge and rewards to winning plaintiffs, treble damages and the like. And that has prompted a -- over a period of time, I think, a flurry of studies in that area.

In the merger area, of course, there's fewer, for a lot of those reasons. And there are fewer yet that look at conduct, and there the issue is trying to find a control sample of any degree of reliability. Conduct cases tend to be sui generis, very difficult to identify who it is, has not been subject to conduct by one of the major tech companies, for example, if that's the concern.

So there are efforts to draw comparisons, but I wouldn't call them retrospectives. Efforts to draw comparisons, for example, between the US and the EU practice for -- with respect to certain types of challenges to the tech companies. And those produce some insights, but they're hardly quantitative, and they're certainly not invulnerable to criticism about their idiosyncratic nature.

Still, conduct area is another largely unexplored area, but there I think the challenges really lie with the ability to construct a reliable study along the lines of those that are now being done in mergers.

MR. TAYLOR: Yeah, I mean, just to echo that, I mean, you would need conduct investigation that you had a clear starting point on, a clear ending point, and then a comparison group. I mean, there's certainly lots of studies out there about regulations and changes in regulations and the effects -- price or quantity effects on regulation. So it would essentially be the same -- it would be an analogous methodology, but you would have to find instances that lend themselves to estimation.

MR. GREENFIELD: Okay. Many retrospectives are agnostic about the underlying economic model of competition. However, some do incorporate some structure from economic models. For example, Ashenfelter, Hosken and Weinberg's 2015 RAND paper disentangles market power effects from efficiency effects by using differential changes -- by examining or allowing price effects to vary based on differential changes in shipping costs and changes in concentration.

Another example is Miller and Weinberg’s 2017 Econometrica paper which estimates a model of Nash-Bertrand competition in order to disentangle unilateral effects from coordinated effects. I was hoping the panelists could discuss some of the benefits and costs of adding structure from economic models.

MS. DAFNY: All right. I think -- I’ll say the basics and then please -- please embellish on that. There are enormous benefits to adding structure as the economists would say, and I think I’ll try to explain for noneconomists in the audience. Basically what that means is instead of this construct of let’s have treatment control like a randomized control trial where you look at kind of what happened as a result of the merger relative to the counterfactual in your control group, the structure means that you basically create a set of equations that -- that if, you know, you get the parameters in those equations as close to generating the data that you observe as possible.

So a set of equations that describe a market that have different factors in those equations, including things like costs and dimensions of your product and how sensitive demand is to dimensions of those products and the prices of them and so forth. So a fairly comprehensive numerical model of the world. And the advantage of these structural models is then, instead of just being able to say, as you do in the difference-in-difference merger retrospective, here's what happened, you can say here's what you would expect to happen when these two parties combine. We simulate it. We predict it. And we can show you how it compares. But we can also show you what would happen if we didn't have all-or-nothing bargaining because, say, we banned that.

We can also show you what happens if we required this product to stay on the market for a certain amount of time. So you can test your different potential merger remedies. You can also control for changes in the market that you become aware of after the fact.

So when you were asking us about confounding factors, if you had a structural model of the market, you could say, because it's well known that the price of corn increased so much, we would have expected some change in this marketplace anyway. Let's up the price of corn so we can control for that throughout all of the different components, and then see how just the existence of co-ownership impacted the outcome.

So it gives you a lot of flexibility. There's a tradeoff. You have to explain it. And you also have to feel pretty confident that the market you're modeling is in equilibrium when you're modeling it, otherwise there's lack of stability for all those parameter estimates. And you need an extraordinary amount of data.

MR. PRINCE: Very well summarized. So, yeah, if I was going to boil it down what I think about the tradeoffs, summarize the benefits, I'd look at in terms of counterfactuals -- and, let's see, what was the other one? I can do counterfactuals and mechanisms, right? So you can think about, as Leemore said, I can think about situations I haven't seen but the model can allow me to make predictions about what will happen. And then because you put in the structure, you think about demand and supply. I put structure on that, for example. Then I can really dig into what do I think is the mechanism by which, you know, this change that I'm considering actually filters into the outcome that I'm looking at?

And then in terms of cost, I guess the best way I'd summarize it is risk of misspecification, right? So there's -- you know, as Leemore said, you're assuming that the market is in equilibrium, maybe that's not true, how much of a consequence is that? And then, of course, there's other, as I've been saying all along, there's other decisions that you inevitably have to make, things like functional form assumptions, distribution assumptions on the components that you put into the model.

How consequential are those? It gets into robustness issues, things like that. But, yeah, those are the key tradeoffs that I often think about.

MR. KWOKA: I don't have anything to answer that. I think that's well stated.

MR. GREENFIELD: So I think we can finish here with -- come back to some of the requirements of a successful merger retrospective study, both in terms of data and in terms of ability to develop a reasonable counterfactual. We've gone over this a lot already. And we've talked about difference in differences a lot already. And one of the features there is that it requires data, not only on the products of the merging parties, but also on a set of control products, which were unaffected by the merger but otherwise experience similar demand and supply conditions.

And I'd like the panelists to think about are there any empirical techniques that have either been used or maybe there's some promise for use in the future that require less data, that don't require measuring changes in prices or market outcomes over time in two different sets of markets?

MR. TAYLOR: I mean, I think we've gotten to where we are with difference in difference because it makes less demands on the data than a lot of the other methodologies that are out there. So I'm not sure how we're going to reduce the demands from there.

MR. KWOKA: I would agree with that and simply add that if one looks at the set of studies that have been done over time, there is significantly increased sophistication in them, attention to issues, attention to control group issues, issues of heterogeneity, issues of serial correlation. And these are issues, I think, that increasingly are understood to be part and parcel of what one needs to bring to these studies.

So I think that the diff-in-diff is well established for the reasons that Chris mentions, that it's hard to beat it, but there -- within that model, within that regime, there is -- there certainly has been improvements along the way.

MS. DAFNY: I don't see them getting

simpler. I'd say in cases where the agency has good reason to understand the counterfactual, that pre- versus post-analysis can be useful, particularly if the markets are, you know, well known and relatively stable. But it's not usually your preferred version.

MR. GREENFIELD: Okay. I think that wraps up the first session. Thank you.

(Applause.)

PANEL: HOW CAN MERGER RETROSPECTIVES BE USED TO IMPROVE PROSPECTIVE MERGER ANALYSIS?

MR. HOSKEN: We're going to start the second panel now, How Can Merger Retrospectives be Used to Improve Prospective Merger Analysis. We have four speakers who have all conducted studies which have been explicitly designed to use merger retrospectives to tell us something about how to improve enforcement tools.

We have Chris Garmon from the University of Missouri-Kansas City. Chris worked at the FTC for a long time, too, so he's very familiar with what we do. Angelike Mina is an attorney in our compliance group and she has a long background in merger review. Frank Verboven from KU Leuven has a recent study that's looked at testing merger simulation. And Matt Weinberg, who I've written papers with for a really long time now, will also be describing his work.

So why don't you start, Chris.

MR. GARMON: Great, thank you.

Well, thank you, everybody. Thank you for the organizers and Dan for inviting me back to the FTC. It's great to be back here, see all the familiar faces, and talk about merger retrospectives and how we can use them to inform prospective merger analysis and what I'm going to be talking about, hospitals in particular and what I've done research to inform prospective merger analysis for hospitals.

So let's see. How do I advance the -- is it this? Okay, the big button? All right.

So as the Chairman mentioned at the beginning, in the '90s, there was a big losing streak in hospital merger enforcement, I believe eight straight losses for hospital merger challenges, and it looked like the merger enforcement was close to dead around the turn of the century. And Chairman Muris at the time decided to institute a merger litigation task force and also the Hospital Merger Retrospectives Project, which took a handful of hospital mergers and did a deep dive on what happened after those mergers. There were subpoenas for getting claims data and interviews and the like.

I think the two big lessons we learned from that project was that there were a couple of losses in the '90s where the merging parties were successful in making the argument that, yeah, we're going to get market power but we're nonprofit hospitals so we have the community's interest at heart and we're not going to exercise it, so you can trust us to do what's best for the community.

And this project was established with a couple of nonprofit hospital mergers that there can be cases where nonprofit hospital mergers will exercise the market power that they get, and so nonprofit hospital mergers can be anticompetitive. And there are also a number of more cases in the ‘90s where the geographic markets were defined by the courts as being very large, using the Elzinga-Hogarty test primarily. And these -- the Merger Retrospectives Project finding that there were a merger in Chicago and a merger in the Bay Area led to large price increases, showed that you can have anticompetitive mergers in urban areas where a technique like the Elzinga-Hogarty test would define a very broad geographic market.

So one thing that the Merger Retrospectives Project did not do was look at -- or evaluate prospective merger tools, and -- but at the same time, in the early 2000s, some papers were -- Town and Vistnes, Capps, Dranove and Satterthwaite developed some new tools to analyze hospital mergers prospectively. And later in that decade and in the recent years, those new tools, diversion ratios, willingness to pay, upward pricing pressure, had been used in actual court cases and successfully by the FTC and the state antitrust agencies.

The natural question is, are these new techniques and tools accurate in predicting post-merger effects? So what I did in my paper, I looked at 28 consummated hospital mergers of competing hospitals and then calculated the -- these screens, willingness to pay, upward pricing pressure, and a sort of reduced form merger simulation using premerger data, the data that would be available to an enforcer during that initial investigation.

And all -- and used the price method -- estimation method that Leemore Dafny used in her 2009 hospital merger paper, which is really needed to get a sample size this large, trying to get claims data for this level of -- this number of hospital mergers was difficult at the time since the Cooper, et al. paper has been able to look at hospital mergers using claims data, but I was not able to when I started this project.

The price change was measured for each merger relative to synthetic control, and I also looked at the change in the costs for each merger, post-merger change in costs, the measure of average variable cost. And the point of doing that is to evaluate these screens. They are meant to capture the loss of competition from a merger. They're not --

just like you can think of a normal HHI, you're looking at what would -- what would the loss of competition be?

So these -- this evaluation should emphasize this is looking at how well do these screens -- how accurate are they for seeing which merger should be investigated more thoroughly, not how well do they identify anticompetitive cases. So looking at the HHIs -- and this is consistent with what the Merger Retrospectives Project found -- they lead to a lot of false negatives. If you look at an HHI on a broad area, hospital referral region, that would approximate what an Elzinga-Hogarty market would be. It leads to a number of false negatives. If you do the opposite and look at a market that's a relatively small hospital service area, that basically flags every merger as anticompetitive, so that's not very effective as a screen.

And what I found is that the new measures -- willingness to pay and upward pricing pressure -- were more accurate in flagging mergers to be investigated further. And, in fact, for upward pricing pressure -- minimum upward pricing pressure of greater than 4 percent, that gives you the most correct predictions and no false negatives. So if you're really thinking about this as using it to flag mergers for further investigation, that would be better than using -- not ideal but better than using the HHI.

But when you look at the relationship between post-merger price changes and change in willingness to pay, for instance, the UPP graph is roughly the same. There's a lot of noise. There's a lot of variation that's unexplained by willingness to pay. I think that goes to the fact that willingness to pay and upward pricing pressure, although they're better at flagging potentially anticompetitive mergers, they're still relatively crude, and there's a lot that they don't explain about what's happening after a merger.

The limitations of this approach, I think there are two big ones. First, and as Dennis Carlton, as far as I know is the first one to highlight this, there's a selection bias. Those mergers that are most anticompetitive, would most likely be deterred or be challenged, successfully challenged. So the consummated mergers you have to select from tend to be more concentrated than those that are innocuous or procompetitive.

And then there are lots of other effects of a merger that are merger-specific and they relate to price but they’re not necessarily related to competition. If you get a hospital system that merges -- that acquires a new hospital and they have better negotiators, they can negotiate a better price. That’s not a competitive effect, but that can be a merger-specific effect. And so I think that could -- effects like that could explain some of this noise.

So that’s why I think complementing this merger retrospectives approach with approaches like Dave Balan and Keith Brand’s working paper on simulating hospital merger simulations, where they use a Monte Carlo-like approach to test these screens against the solutions to a Nash-in-Nash bargaining model, they serve as a good complement, and both of those together show that the new merger screens do a better job than HHI for flagging potentially anticompetitive mergers. Thank you.

(Applause.)

MR. HOSKEN: Frank.

MR. VERBOVEN: Okay. Thank you very much for organizing this event and for inviting me also to this event. So I will talk in this 10 minutes -- I will start with sharing my insights on a study we did on the -- about one market in Sweden. It’s about painkillers and where there was a very large merger.

So that's the unique distinguishing feature, so it was a large merger.

And when we -- I was also working on the case with people from the Swedish Competition Authority, and we predicted with a merger simulation model large effect. But then the merger for other reasons was accepted. And we then did an ex post analysis, which -- what I think what is nice about this merger is that we could -- since the merger effects were so large, we can test a lot more details, a lot more nitty-gritty than one can do often in other ex post analysis.

So we could look at price effects by brand and at market share effects by brand, and then we have a supply side and a demand side in the model. So in the demand side, we distinguished between basically unit demand and otherwise constant expenditure model, so meaning price is linea-log so the usual literature takes it to be linear. And then we also compare a simple nested logit with random coefficient logit.

And then on supply side, we also do several things, so we account for in a very simple way for deviations from the most common assumption, Bertrand-Nash behavior, before the merger. And then we allow -- when we do the ex post analysis, we also look at whether -- I mean, because we try to explain what happened and where the model fits well and does not fit well. We look at whether also cost changes might have occurred after the merger.

So what do we find? So we find that functional forms matter not surprisingly. So in our setting -- but this is not necessarily general -- the unity model performed worse, so in the sense that one would get markups which -- or elasticities which would increase a lot across products just because they are more expensive and that issue does not arise in the constant expenditure model.

Also, the unit demand somewhat underpredicts or largely underpredicts the expected price effects. On substitution patterns, so basically how the different products compete with each other, so here random coefficient versus nested logit, they both have -- I mean seem to -- they don't seem to be too much better or worse than each other, so the random coefficients model somewhat underpredicts price effects, but then it also better predicts the market share effects.

So in the rest, then, of the paper, we then studied -- we focused on the low price model constant expenditures, and then we compare then the other two models, random coefficient and nested logit, in more detail. And on the supply side, we see that the predictions on average seem to be quite well. But since effects are so large, as I said, you can also dig deeper, and so we do find anomalies that models cannot predict very well or not perfectly at least.

So the outsiders' price responses, so they tend to be larger than predicted, at least for some, not for all. And then the small -- what we found is in the ex post analysis that the price increase of the two merging firms, they are the same percentage amount, while the model would predict that the smaller firm would raise prices by more, so that is another anomaly.

And then factors that can explain this gap, So basically, the outsider price responses, so the usual way to think about it is, of course, is that it might be some kind of tacit coordination going on, but we also consider there's a cost increase that's plausible. So in this case, so it's about painkillers, so package size was actually reduced at the same time as the price per tablet was increased. So that raises costs, also. And then we did a regression analysis to validate that at least part of the price increase was due to a cost increase.

So insiders' price responses, so as I said, so there's some difference between the small and the large firm, and it could be that there was a possible cost advantage so there's a typo there to the smaller firm that could explain the findings.

So then the broader lessons, because I just talked essentially about one observation, but I think it's -- I mean, it's an observation we looked at a lot, so I hope it has more weight than the usual one observation in a data set. So what are the broader lessons? So basically for any demand model, so it's key -- I mean, it's key to capture the main dimensions of product differentiation. So there's discussion in demand literature, should you use simplified nested logit or more complicated random coefficient. That's, of course, a very important discussion, but I mean, we should -- we should mainly not forget that we should take care of basic -- capturing the relevant dimensions of differentiation.

So in this case, I forgot to say, but basically there was a merger where the two firms, they conquered -- or they got 100 percent of the market in one of the three segments. So -- but then the key question was, of course, whether these segments -- whether they matter from the consumer's perspective or not. So -- and the nested logit captures this well, but other models could also capture that by including random coefficients for these segments.

And functional forms on the demand side, they do matter. So log models predict bigger effect, but maybe with efficiencies this is not so important. If you -- so but at least if you just look at it without efficiencies and they make bigger -- they have higher predictions, so that basically our conclusion is that sensitivity analysis is desirable.

From the supply side, it’s important to -- we had a model where basically we allowed for noncoordinated conduct or we allow for having coordinated conduct already before the merger. The reason why that we looked at costs and the costs -- the markups from outside information were higher than basically predicted by the standard Bertrand model, so that’s why we allowed for some kind of premerger coordinated conduct.

And basically the broader lesson is that one should try to incorporate such prior information. When -- a final comment or broader lesson is that because I think one of the points of the session is to see whether basically evaluating merger simulation as a tool, so one should try as much as possible when we see that things differ after the merger one should take care as much as possible for any factors that could have changed. So for example, efficiencies that happen after the merger maybe affected some products of the merging firms differently than others. And, also, coinciding cost change or quality changes.

So some very brief remarks on future research on doing merger retrospectives. So I think -- I mean, it's very important to have more observation. So we have very few observations on merger retrospectives, and especially -- I mean, we have lots as we've discussed today but about evaluating merger simulation. I mean, I think there's room for a lot more.

And this is also academically I think very interesting because a lot of case studies I think you can learn a lot from all the qualitative analysis as well. One -- apart from merger simulation, maybe price concentration analysis could also be interesting, like maybe in airline markets in Europe, this has been analyzed a lot. This tool has been used a lot, so maybe in US as well.

I think also retrospectives on, for example, auctions, like when there is mergers between firms where auctions are important. That's definitely interesting and the same for vertical mergers. One thing I wanted to emphasize is it's also interesting to look at longer term effect.

So the study that we did about painkillers, so there was a short-term -- we looked at the short-term effects of two years before and after the merger. But we do have more data, and when I had to look at it last week, you see that the huge price increase that happened after the merger, they are no longer that visible several years later. So I think long-term analysis is also important. Evaluating nonprice effect on efficiency claims are important.

And, yeah, so just as a general conclusion, I would like, yeah, to say that I think merger retrospectives are very useful to evaluate these tools, and I think it would also be interest -- I mean there are costs involved, but I think there's also academic benefits from learning more about this and, of course, there's also challenges that we have to meet. Yeah, thanks.

(Applause.)

MR. WEINBERG: Okay. Thanks for organizing, Dan, and everybody else. Really happy to be here. I'm going to talk about two sets of papers today that are related to this topic of how retrospectives can be used to improve prospective merger analysis, and they have a common theme, but they focus on slightly different features of the problem. So the common theme is looking at this basic model of competition that’s very useful. It’s a framework. It’s like the maybe main framework for thinking about the lion’s share of mergers that’s built on kind of three parts.

The first part has to do with basically summarizing how people would switch from product to product, given changes in their prices. Of course, that forms pricing incentives. The next step is thinking about a model of competition, the typical thing is to think about the main locus of competition being prices. The next step is figuring out given that assumption about how firms compete what sort of costs would be necessary to rationalize what you see in the data.

And then the third step is, you know, the interesting step, which is given how people would substitute in this model of competition, how prices would change if a subset of products were combined in one portfolio, right?

So really the question is, what are the pricing incentives for multiproduct firms? That’s kind of the big question, right? So the first set of papers I want to talk about are really closely related to what Frank just discussed and Chris as well. So the first set of papers, one with Dan, the other one is a more limited analysis on the same theme. What these papers did was very similar. So what we did is we used only the information that you would have had ex ante before two mergers in the first paper and one more merger in the other paper were consummated.

So we had scanner data on prices and quantities in a couple of consumer product markets. And we did those three steps that I just described and computed predictions about how prices would change after these mergers went through, if they were to go through. For whatever reason, these mergers were approved and we then added to the sample data that was generated after the fact and looked before and after at directly what happened to prices, and compared the predictions with these more direct measures that use data ex post. Right?

So we tried to be sensitive to some of the issues that Frank brought up, and one issue that comes up in these models is, of course, functional form does matter. Right? It’s well known that not only does getting good measures of who competes with whom through cross-price elasticities or diversion ratios, of course, that's fundamental, right? But also, you know, given two different demand systems that have kind of the same implications about who competes with who, at premerger prices but different implications about how rapidly prices become more elastic as you move away from premerger equilibria, that matters, too, right? So you can calibrate two different demand systems that have the exact same premerger elasticities, plug them into a merger simulation and you get really different numbers, right? In other words, the second derivative matters.

Another way to think about this is exactly who the switchers are. Given a price increase, that matters quite a bit in how these things go through. So we focused on kind of bread-and-butter basic demand systems that were kind of off of shelf back then and did a pretty thorough sensitivity analysis to different specifications, demand, and different ways that you might go about estimating that, given information that might be available if you're actually reviewing one of these things.

So just backing up a little bit, the three different packaged consumer product markets that we focused on were some that Dan and Orley had looked at in a previous paper, and, you know, maybe they're not

mergers.

Our study was a qualitative retrospective. Most of the information that we got was through interviews. We also gathered some limited sales data to help us primarily corroborate what we were hearing in the interviews. We had the benefit of internal information such as Commission recommendation memorandums, and we also were able to and did have discussions with the investigative case team to learn more about their case.

We conducted a number of interviews, over 200, and we interviewed the respondents who would be the merging parties in this case, and also the parties that are subject to the Commission order. We also interviewed the buyer of divested assets. And for each market, we interviewed two competitors, two customers, and if the Commission appointed a monitor in that order, then we also interviewed the monitors.

We had a very high participation rate for our interviews. We also sought out sales data in revenue and volume from key market competitors, and we obtained that sales data through our 6(b) authority.

We evaluated our remedies in two different ways. The first way was to consider the competition question, whether or not the remedy maintained or

described by Chairman Simons, to examine and evaluate the effectiveness of our enforcement and, where we identify areas for improvement, to implement reforms. As I said at the second hearing way back in September, these hearings cannot simply reaffirm our current policies and practices with a pat on our back. Any serious and credible wide-scale review of our enforcement and policy record must be able to identify ways in which we can improve.

This morning's panels, and I'm sure this afternoon's panels will as well, involved extremely sophisticated and detailed economic and legal discussions of merger retrospectives. I'm going to take us in a completely different direction for a moment.

If any of you are or have recently been the parents or relatives of preschool age children, you may be familiar with the show, Daniel Tiger. Daniel is the cartoonized son of the puppet tiger on Mr. Rogers' Neighborhood, the PBS show, with which many children of the '60s, '70s and '80s grew up. Anyway, Daniel is the current generation's version, and using the concepts and themes pioneered by Mr. Rogers, he teaches extremely helpful life lessons in 15-minute segments, each punctuated by a unique summarizing song.

I personally have discovered that there is a Daniel Tiger song for basically any situation, including, as it turns out, how to think about antitrust enforcement and merger retrospectives. A very frequently cited Daniel Tiger refrain in my house is one about making mistakes -- and I will embarrass myself by singing it for you.

(Laughter.)

COMMISSIONER SLAUGHTER: It goes, “It’s okay to make mistakes, try to fix them and learn from them, too.”

(Applause.)

COMMISSIONER SLAUGHTER: I did not have an alternate career as a singer, it will not surprise you to know.

These are wise words for children, but they are important for adults as well, including antitrust enforcers. And while I would not say enforcement mistakes are “okay,” they are certainly inevitable, since merger review is generally an exercise in predictive analysis about how markets will operate after a proposed transaction is consummated. This predictive nature provokes reference to the well-worn quotation that: “Prediction is hard, especially when it’s about the future.” This quote has been variously attributed to Yogi Berra, Mark Twain, and apparently, Neils Bohr has a claim to it as well. This is what the internet has taught us.

It resonates because, even though we use our best economic and legal tools to make the most accurate predictions we can, we know that sometimes we may make mistakes. Of course, sometimes the evidence gathered in a merger investigation unambiguously predicts clear competitive harm that requires enforcement action.

For example, in the Tronox matter, the Commission successfully argued before several courts that the elimination of Cristal in the North American titanium dioxide market would have harmed competition. Just this week, the Commission announced a unanimous settlement that required a clean sweep divestiture of the relevant Cristal assets.

In other instances, accurate prediction is substantially more difficult. While our predictions need not be absolute, correctly divining how a proposed merger will change firm behavior and market outcomes, especially on non-price factors, like quality and innovation, can be extremely challenging. Recent vertical mergers illustrate this well. In the vertical context, predictions about how changes in firm behavior will influence competition are often more complicated and may be less clear. Two people in good faith can disagree about the merits of a given prediction and ultimately the propriety, or legal viability, of enforcement action.

But what I think we can all agree on is that the Commission's predictions and its enforcement decisions can profoundly impact competition and consumers for many years. There is an enormous weight on our shoulders to make the right decision about the fate of a merger. This responsibility extends beyond the time at which we evaluate proposed mergers; it also requires us to improve upon our predictions and to correct erroneous decisions that resulted in competitive harm.

And this is where we do well to heed Daniel's call to try to fix our mistakes, and learn from them, too. That is precisely what merger retrospectives can do. They can help us to check our work to test the accuracy of our predictions about a given merger. They can help test the usefulness of our models and other tools of analysis to inform future merger investigations, which, as Chairman Simons noted this morning, affirmatively helps our enforcement efforts.

The hospital merger retrospective study initiated by Chairman Muris, which resulted in a new strategy for successfully challenging anticompetitive hospital mergers, can and should serve as a model for how to tackle other enforcement challenges facing the Commission. Another good example of how retrospective analysis can be useful to improve prospective enforcement is the recent remedies study Angelike discussed in the last panel, from which the Commission learned several important lessons about ensuring the success of divestitures.

Importantly, retrospectives may also be able to help us determine not only how to handle new cases in the future but whether, in a specific case, further enforcement action, such as unwinding a consummated merger or challenging anticompetitive conduct, is necessary to protect and restore competition.

I appreciated the discussions this morning of different types of retrospective analysis, including not only the traditional modeling that relies on control markets but also simulation models. I am particularly interested in retrospective reviews that allow us simply to compare a market post-merger to our own predictions about what would happen at the time we evaluated the transaction.

This type of review may be particularly useful in vertical cases when our merger analysis rests on assumptions not merely about price but also about the behavior of merged firms. Did we rest our conclusions on an assumption that the merged firm would not engage in a foreclosure strategy when later we can observe that it did? Did we assume entry by third parties that would keep competition vibrant when no such entry in fact occurred?

To the extent that retrospectives can help us to improve our predictive tools and analysis and correct prior decisions, we need to do more of them. And given the increased complexity of analyzing vertical integration, I believe we should focus our resources on reviewing our enforcement decisions regarding vertical mergers.

Furthermore, if we make clear at the time a vertical transaction is cleared that it will be the subject of a future retrospective review, that may have the benefit of a disciplining effect on the merged firm. I appreciate that this may be unsatisfying from the academic perspective of looking for robust data, but I would be willing to assume that cost for the benefit of protecting competition.

I actually don't think anyone disagrees with the idea that more retrospectives would be a good thing, although I may be proven wrong. But I recognize the significant resources that retrospective examinations require. I support Chairman Simons' advocacy for more resources and his willingness to find ways to work with outside researchers who wish to conduct value-add merger retrospective studies.

I know I sound like a broken record on the topic of resources, but that is because it bears repeating again and again. When I first got to the agency, almost exactly a year ago now, I spent time meeting the staff across the bureaus. I asked everyone I talked to what they thought the greatest enforcement challenge they faced was and resources was the resounding refrain. The numbers bear this concern out.

Over the past several years, merger filings have increased and the cost to investigate and challenge anticompetitive mergers has skyrocketed. Yet, our funding levels have remained largely flat, which in reality is not flat but declining, because each year the cost of compensation and benefits for the same number of employees rises, so flat funding provides for fewer staff. This means specifically that the Bureau of Competition staffing levels have decreased in recent years.

But despite this headcount decline, the FTC's workload has increased. Since 2010, the number of premerger filings has more than doubled, and this statistic does not reflect the many additional mergers we investigate that fall beneath the Hart-Scott-Rodino reporting threshold.

That said, the FTC's dedicated staff works tirelessly to do more with less. Last year, they litigated four conduct cases and three merger challenges, and prepared to litigate an additional three mergers before the parties abandoned the transactions.

So what does this have to do with merger retrospectives? As Bruce Kobayashi, the Director of the Bureau of Economics and the gentleman who introduced me, said on a recent ABA panel, the resource crunch has required the Bureau to devote more resources to investigations and enforcement. This means less research and fewer merger retrospectives.

We should work with Congress to reverse this trend and ensure we're able to devote an ample and reliable stream of additional resources to our merger retrospectives program. With an increase in funding of $50 million annually, the Commission could not only supplement its Merger and Conduct Division staffing, it would be able to reboot its retrospective analysis by adding more attorneys and ten economists to the effort. But we cannot and should not wait for our resources to increase to consider whether and how we can retool our enforcement efforts now, including our retrospective analysis.

The panels today have been and will be incredibly useful to informing the Commission as to how we can be most effective in undertaking retrospectives and how they should inform our enforcement mission.

The questions in which I personally am most interested include: Should we look more at mergers that were not challenged following significant investigations? How would a vertical mergers retrospective program help hone our investigatory techniques? What kinds of information would best assist our retrospective efforts and what are the sources of and most effective means of obtaining such information? And how should we think about retrospectives in industries that are marked by rapid and significant technological change?

On this last question, I want to emphasize an additional point. The Commission often must review mergers in technology-intensive industries well before they have matured. And I want to be clear, I'm saying "technology-intensive" industries I don't think "technology" accurately describes any industry anymore. It's too widespread, crosses too many different fields.

But retrospectives may be particularly useful to inform our understanding of how these industries evolve and how mergers in the early stages of such industries' life cycles affect nascent competition and influence industry structure, growth, and dynamism. In this way, merger retrospectives can support our other technologically focused enforcement efforts, such as the Bureau of Competition's Technology Task Force.

So I look forward to hearing from this afternoon's panelists and thank you again to all of today's participants.

(Applause.)

PANEL: SHOULD THE FINDINGS FROM MERGER RETROSPECTIVES INFLUENCE HORIZONTAL MERGER POLICY, AND

IF SO, HOW?

MR. VITA: Thank you, Commissioner Slaughter, for those really insightful remarks.

So, welcome, everybody. Good afternoon. This is now session three of today's hearings entitled, Should the Findings from Merger Retrospectives Influence Horizontal Merger Policy, And If So, How?

I'm Michael Vita. I'm a Deputy Director here in the Bureau of Economics. And we have a really great panel for this session. So I'm just going to quickly name everyone. Orley Ashenfelter from Princeton; Steve Berry from Yale; Leemore Dafny, who you met this morning, from Harvard; Debbie Feinstein, the sole attorney on the panel, from Arnold & Porter; and Aviv Nevo from Penn.

It's a great panel, not only, you know, some distinguished academics and a distinguished attorney in Debbie, but a lot of enforcement experience as well as academic experience. Leemore, Debbie, and Aviv have all worked here at the Department of Justice as enforcers. So they have a really good understanding of the importance of these kinds of studies and how they can affect what the enforcement agencies are asked to do.

So let me just step aside then. Orley, I'll let you go first.

MR. ASHENFELTER: It's alphabetical, right?

MR. VITA: It is.

MR. ASHENFELTER: I have no slides, and that's very unusual for me. But I'm not going to talk about data. This is ten minutes that I'll take -- I hope not longer -- to talk a little bit about some policy issues and some more general issues related to merger retrospectives.

The first point that -- I want to make four points. The first point I want to make is that to some extent the methodology associated with retrospectives is associated with accidental opportunities to evaluate some merger. My first association with the idea really was using retrospective mergers to actually challenge a merger. That was the Staples-Office Depot case. I think I was involved because my good friend Jerry Houseman was an econometrician working for Staples. There was a belief I could crunch numbers, too. Probably not as well as he could, but good enough.

That situation was very unusual because at that time, the opposite of today, those firms were expanding. And there were many examples where one or the other would open a store in an area where this format, a brand new format for -- you may not remember now, but back in the day there used to be stationery stores. They're all gone now. As the format expanded and disrupted that whole industry, there were plenty of examples where one of the large superstores existed and another one would come in, and we could actually look and see what happened to the prices.

There was plenty of good anecdotal evidence that attorneys had turned up on what managers were supposed to do faced with this new form of competition, even telling them how much they should reduce their prices. The econometrics fell in line with it, too, and because there were many examples of stores that had opened across the country at different points in time, we could study those examples. They were retrospective merger evaluations, but they were used as a challenge for the merger going forward.

So that was an example -- it excited me because it was an extremely unusual example which we'd normally never run into. And then it opened my eyes to the idea that you could probably do that in some other cases, but that as a more general matter, the opportunity to study retrospectively what happened to mergers was something that could be done on a broader basis and probably should be done on a broader basis to inform us about how successful the merger enforcement issue efforts have been. But also to help us a little bit in learning about, if possible, where mergers were more or less likely to be problematic.

At that time, there were really -- it was 20 years ago, by the way. It was exactly 20 years ago that case took place, 1999. At that time, there wasn’t much to use as an alternative. I’m always fond of this agency because I’ve worked with some of the people in it like Dan Hosken, Matt Weinberg, who was here for a while. I know Bruce Kobayashi. In fact, we taught together for many years in trying to teach statistics to judges, probably not successfully but at least -- they’re probably still trying.

(Laughter.)

MR. ASHENFELTER: And I’m probably the only person here who has actually done work for the FTC not just in merger issues but in the fraud squad. I was involved once with a scam that the FTC shut down that involved trying to resell large quantities of wine to consumers as guaranteed investments. Unfortunately, the FTC did not shut down this operation until -- I learned about it when they had already stored away 30,000 cases of wine. They didn't actually shut it down until there were 130,000 cases in an unrefrigerated warehouse in San Jose, California. A whole lot of fine alcohol went down the tubes.

(Laughter.)

MR. ASHENFELTER: So the first thing I wanted to say, the first point is I think it's inevitable that retrospective analyses are going to have to be opportunistic because it either depends on the data or it depends on the opportunity to study something which is unique to a particular industry. It always has to be fact-intensive and difficult. So I think there's nothing that you can say that gets you past the fact that it's always going to be optimistic and, to some extent, like a case study.

Now, the panel before mentioned case studies can be really good -- and I'll come back to this -- for learning a little bit about how industry operates. Many times we don't really understand exactly the theory that helps explain how an industry works. But that's the first point I wanted to add. I don't think there's any way you can get around that.

The second point I want to make is with respect to public policy. In some sense, it's inevitable that merger retrospectives affect public policy. We all know that's really true. Because what we have observed is when we started doing retrospectives analyses, we were seeing price increases where there was a wide group of people who thought that all mergers led to price decreases, Robert Bork amongst them.

Bork's book is factually intensive. He seems to think he knows what the effects are. Clearly, it was not based on the facts at all. But his influence and the absence of any evidence to suggest that he was wrong had a phenomenal effect on the judiciary. I still remember Vaughn Walker, who was one of students by the way, who I still am in touch with -- he's no longer a judge so I can talk about him, but he's a very good friend in San Francisco -- explained to me that the antitrust law should only be used for price fixing. There was never any justification for blocking a merger. And, basically, that was Bork's position, I think.

So there is a sense in which, even if it's examples, it does affect the climate of public policy and it does affect whether or not people will take seriously the potential for anticompetitive behavior from mergers.

Now, the third thing I want to say, it relates to some work I've been doing recently -- more recently in the antitrust area. It's a very, very new thing. And that has to do with labor market. Every once in a while I realize you make a mistake, we heard a lovely song about that, and then you try to recover from it. And one of the mistakes I've made historically is, like most labor economists, we never really thought there was anticompetitive behavior in the labor market. We now know that's just not true.

We have plenty of examples even of cooperative behavior. The specific price -- naked, I guess it's called by the DOJ, naked wage suppression. And as a result, whenever I was looking at the issue of mergers, it never occurred to me to think about what the effect was on employment or wages. That was a mistake. I should have been more -- I think in some places it's unlikely you would ever see an effect, but it's probably not difficult to study it in some situations. In others, it can be difficult. Wages can be even more complicated than prices if we're trying to figure out how to measure them.

But I think that being open to other

outcomes is probably something that in the merger retrospective area maybe needs to be rethought a little bit in some areas. So that's my third point.

The fourth point is kind of a story and it leads me to what I think is -- actually someone I was speaking with earlier suggested this policy proposal when I explained a few facts, and it was exactly the idea that I had in my own head. So maybe you'll come to the policy proposal as soon as I give you the facts, too.

This has to do with a paper that Dan Hosken and Matt Weinberg and I wrote about the merger of Maytag and Whirlpool. Some of you know it was a problematic merger in some people's minds. We studied that our best we could econometrically, the effects of that merger on pricing, a lot of different products, a lot of different ways the products are brought into the market. And there were quite some puzzles in the paper. For example, effects, no effects on washers but effects on dryers as an example of one I just happen to bring up.

Subsequently, because of having written that paper, I actually was involved in the trade case that was just brought in the last two years involving Whirlpool's allegation of dumping by LG and Samsung in the washing machine market. Now, there's one nice thing about the International Trade Commission, their proceedings are public. So when you write down your testimony or whatever it is, there's no redacting, you just get up and you give it and everybody can come in and listen.

The staff prepares usually a huge document with lots of data that's very public. As a result, I learned a great deal about what was going on in that world, and I want to mention it to you.

So that was an example where the merger was approved because of the weapon of foreign competition. It was a theory that we would have -- it would not be possible for -- even though they merged 80 percent in some products, it would not be possible for one to increase prices because there would be foreign competition. Well, as you probably know, there was an increase in prices and there was foreign competition. LG and Samsung came in and had two-thirds of a market.

Our recent tariffs are extremely annoying for most economists. We learned from the ITC that there's exactly $20 of labor in a washing machine. There is no labor used to make washing machines. There are 2,000 workers in Ohio and they make four million machines. They said, as a result of these tariffs, they might increase the plant by 200 people. We need 130,000 jobs a month just to keep track with the labor force. Two hundred people is not even -- that's how many people kill themselves with opioids each day. It's a tiny number.

Now, the best part about it is, for example, I learned why it is we found this effect on dryers. Well, Whirlpool had a brilliant idea. It's something you would never think about from theory. They discovered or believed that dryers and washers were complements and that people would buy them as a group. Up to that time if you ever bought one, you know that dryers didn't cost as much as washing machines. They cost about half as much to make. ITC documents that, public information.

All Whirlpool did was brilliant. They actually raised the price of dryers to be equal the price of washers. That's more or less what we found in the paper. That's not what you'd expect, but it happened. And LG and Samsung sat back in their office and said, those guys are really smart, we're going to do that, too.

So now, you'll notice if you go anywhere to buy a washer and dryer, they're all the same price. People expect to buy two. Samsung, being in the phone business of course, then started adding design elements so that you almost have to buy the dryer at the same time as the washer, otherwise they won't look right up there in your fancy place.

Now, an interesting feature of this is that -- so, in a way, this whole industry was completely changed as a result of the increased competition from abroad. LG and Samsung are now building factories here. It won't be long before we don't have any American machines of that type. It is true that when the tariffs were enacted a little over a year ago, prices for machines went up by 15 percent or so, Whirlpool's stock price went up by a lot, and they said they might hire 200 people.

There's a real lesson here, which is if you think that international trade has a discipline device, then I think you have to get a promise from the company involved that they're not going to go to the ITC as soon as they get some competition and have it suppressed. Now, you wouldn't learn that unless you actually followed that merger over a long period of time.

So the fourth point I wanted to make was I think there's a good case for an institution having some longer term memory, very long-term memory that allows you to understand much more about what the long-term effect was of a decision that nobody would probably today at the DOJ even -- there's probably nobody there who was around at the time that it happened. But, nevertheless, the idea that competition is disciplined by international trade really only works if you have international trade.

(Applause.)

MR. BERRY: So I don't have much enforcement experience, a little bit of consulting experience. So I typically assume that if I'm invited to one of these things, it's on the topic of what kind of findings should -- what kind of research should influence policy.

So it's tempting to think of merger retrospectives as a relatively simple exercise, although people who have done them know better that you sort of -- there's a merger and you just go out and you look at what happened and you say, well, you know, that's what happened. And I think the important thing to keep in mind is that merger retrospectives are kind of counterfactual analysis. What you're curious about is what would have happened had the merger not occurred. Of course, since the world is a constantly changing place, that's not immediately evident from what did occur. So the question is how do you think about the counterfactual world that would have occurred in the absence of the merger?

So in retrospect, a merger analysis and in the study of policy effects more generally, one common modeling approach is just a classical difference-in-difference analysis, which is attempting to set up an appropriate control group that can tell you what would have happened. And the approach controls for, broadly speaking -- you can have some variations -- three sets of factors. Observe factors that could include classical kind of demand and cost shifters that you see in your data, some time and variant attributes of markets and our products and market and variant effects of time.

Now, apart from these factors in a really pure diff-in-diff analysis, the required assumption is that mergers or the effects of mergers in a cross-section are randomly assigned. Now, in the nonmerger context, diff-in-diff became really popular in the context of policy changes often that were differential in their timing as to when they were enacted. Different states had different policies at different times. And the classic argument was that the timing of these laws and not the existence of these laws was really just kind of a random thing, idiosyncratic politics, and that kind of thing.

So we might want to think for a minute about whether that argument is plausible in the case of mergers. So, you know, on one hand, the desire to merge is driven by the profitability of private firms, who have all kinds of private information about themselves. And on the other hand, the ability to merge is driven in part by regulators who are a consistent national experienced group of regulators who go out of their way to also gain a certain amount of private and sophisticated and sort of qualitative information. So we're not clear that random mergers, even with some fairly rich controls, is the right way to look on things.

Now, it might seem that I'm criticizing the analysis. So it's probably a good time to confess that I've done it myself. So, for example, Joel Waldfogel and I wrote -- I think it's one of the earlier, but probably not earliest, diff-in-diff merger retrospectives, I think it was about the same time you were working on Staples. I think we knew of your work at the time. Our paper was published in the QJE in 2001. And it looks at the effect of mergers on product variety in the radio industry. So I'm proud of that paper, so I think -- you know, I don’t want to beat up on diff-in-diffs too much because I really think often it’s a really useful thing to do.

Now, one important difference with some studies is that we did have an exogenous source of variation in merger policy. Therefore, we could use an instrument, something that moved the probability of a merger in the cross-section of markets. In particular, the 1996 Telecommunications Act set new higher maximum limits on the number of stations that a single owner could own in a local market. But that was cross-sectionally varying across markets. It depended on the total number of stations. Markets with more stations could have more owners. Now, you might worry that the number of stations themselves isn’t a very good instrument, but that’s very highly correlated with population, for example, with market size.

So we were able to use that variation, say, in population to trace out a differential effect of mergers in the cross-section on top of the diff-in-diff analysis that controls for other things. Now, you know, Orley talked about taking advantage of things, right. Well, we wrote the paper because Joel noticed the Communications Act and many times you don’t have that. And I do think that without that kind of exogenous variation, diff-in-diff gets a little harder. You have to think of some notion of quasi-randomization. So you’ve controlled for a lot of fixed effects, a lot of product effects, a lot of time effects, but somehow the effects of the merger is thought to be quasi-random across different markets or different products or however you want to run your statistical analysis.

So that strikes me as strong, but not maybe stronger than a lot of things we do in applied work and, you know, a very useful thing to do. And it’s also true that the diff-in-diff toolkit that’s used by labor and public economists has had increasing sophistication in looking for pre-trends and doing placebo effects, kind of in a long hunt for confounding effects and whether you can rule them out. So this used to be a very simple thing to do. Now, the papers are very, very long as people try to rule out all of the possible confounders that referee two has mentioned.

(Laughter.)

MR. BERRY: So another recent trend, which I’ve been more recently involved in, is to apply some of the same kind of identification arguments involving fixed effects and instrumental variables to a more classically economic style supply and demand context. How can we identify supply and demand and the effect of mergers in that context? So, for example, the brand might be differentiated products or naught; it might be homogeneous, the supply side might involve imperfect competition, we might or might not be willing to model that. People often criticize this for the reason that there are kind of a lot of moving parts and it's hard to know where the parameter estimates are coming from, and I think that's actually a pretty good criticism.

But I think there's been a move recently, which I want to just briefly elaborate on in this context that might say we can identify those underlying things more convincingly, in fact, maybe using some of the very kinds of ideas that are used in the diff-in-diff analysis.

So why might we want to do this? I would say first is a point emphasized by UCLA philosopher and computer scientist Judea Pearl. He has a new book, it's gotten a lot of attention. It's called the Book of Why. So what he argues is what people, in general, looking at data should be doing is writing down a pretty explicit model -- it could be supply and demand for an economist -- that makes it clear what we mean by causation and counterfactual in the course of trying to figure out what is going on. His point is that you often need that model to ask why something is happening not just what has happened. So a lot of mergers retrospectives are focused on the what. Did prices go up? And you wonder if you can go a little farther and focus on the why, right? Is it close substitutes, is it synergies? What is the thing on the demand or cost side that's actually going on?

So let me just finish with a final thought on that. I think it may be possible actually to combine the insights from the diff-in-diff and the instrumental variables analysis with this supply side -- supply and demand style of model. So, for example, let's say that we believe Orley and Dan that a particular set of fixed effects in the product level price regressions are sufficient to render the change in market structure, a basically quasi-experimental object. That becomes a fantastic instrument for price in the demand function so that we can actually get out substitution patterns in a very rich way using the policy variation -- and I think Orley was getting at this as well, too -- using the past policy variation to learn about the future underlying fundamentals of the model.

So if we believe the diff-in-diff, I actually think it makes the supply and demand analysis actually much more credible because it gives us this much more credible source of variation to go ahead and do that. So that would be one suggestion for moving forward and it might create a virtuous circle between these different approaches and it might help us to create some synergies between the questions of what and of why.

(Applause.)

MS. DAFNY: I would like to start by thanking the Commissioners and the staff and especially Michael Vita for inviting me to share my views on this important topic today. It’s a pleasure to be here.

So this morning, I had an opportunity to share my views about what we’ve learned from a great number of merger retrospectives that have been completed and also to discuss some of the methodologies. So I’m going to use my opening remarks to answer questions that I rarely answer because they begin with the word “should.”

And should those findings from merger retrospectives influence hospital merger policy? And my answer to that is, yes, I believe that they should. I understand not everyone believes that. I believe there's enormous potential and, certainly, we learned this morning about how much we know because of all of the merger retrospectives that exist.

So in these remarks I want to accomplish three things. I want to explain what I believe the goals of merger retrospectives ought to be to highlight why the findings can and should influence policy and to suggest some potentially bold steps to be taken to ensure there are more of them, okay.

So let me start by saying that I believe the goals of a merger retrospective should be to evaluate how an industry is functioning at the time that you undertake the analysis to describe what value is being created and for whom and to provide an estimate of how everything would be different in the absence of a merger. The primary goal of a merger retrospective in my view should not be to assess whether the enforcement agencies made accurate predictions when they were evaluating the transaction.

To some degree, any disparity between what the agency had predicted and reality will come to light and that's very useful information that can improve our merger review process. But if evaluating the agency's accuracy were the goal, the primary goal, then I think that those retrospectives would be too backward-looking. We wouldn't necessarily assess outcomes we hadn't been thinking about at the time of performing the review and it could potentially devolve into some sort of a blame game as to who predicted this and what, why, and I don't actually think that would be particularly productive.

So I wouldn't support a proposal to fill out a form of what you believed was going to happen at the time that you did the review. And I think it would also amplify some noise, which is necessarily going to happen. Even if merger enforcement policy is optimal, there's going to be some noise and predictions that we would expect and we might overemphasize what the prediction as against what actually happened. So to me, the primary goal is let's try to understand this industry and the impact that the merger has had on it.

All right. So second point, if the merger retrospectives indeed used those as the goals, I believe that it's clear they can influence policy, they can help stakeholders, regulators, enforcers figure out what's happening. They can highlight consummated transactions to investigate, inform our screening methods, identify conduct concerns. They can help us understand when merger remedies, whether structural or behavioral, are successful and why. They can help us look at outcomes that wouldn't have been considered at the time of the merger. And last, but very much not least, I think that they can help to deter anticompetitive conduct. Certainly, they would give us the long memory that Dr. Ashenfelter was asking for the agencies to have and it would be memorialized in a way that hopefully Debbie Feinstein will tell us the courts should find useful.

So third, most bold, is to suggest that we pilot a default merger review system. So I'm going to try to fix ideas that I believe were suggested also by Commissioner Slaughter. So imagine a policy where all transactions of a certain size would be evaluated three years after closing. The report would be due six months later. I can feel the tension in the room.

(Laughter.)

MS. DAFNY: You asked a "should" question. And the parties would be made aware in advance of the data request, compliance would be mandated as part of the merger approval or the attorneys will come up with some other way to make it binding. The FTC might have to either obtain extra or exercise its subpoena authority to get data from the parties or some other parties, if necessary.

There is an out. If staff did not believe that the merger retrospective was likely to be useful, perhaps because the industry fizzled or, you know, there was some kind of shock, then they would write up a little summary of why and the Commission could vote and say we’re not going to undertake this merger retrospective. But the fact that -- and in the case of Justice, the AAG could approve the recommendation.

But having a rule like that I think would avoid issues of selection bias. It could potentially have that deterrence effect, and it would start to create a library of information that so many stakeholders could draw upon.

Now, what about the mergers that are smaller? So there are very big ones that we don’t dismiss out of hand as just not being interesting to do for a merger retrospective. What about the rest? And there you can imagine some sort of probabilistic decision rule where you have some probability that any transaction that was approved as investigated, where the weight depends on how big the industry is, how long it’s been since a merger retrospective was done in that industry, which maybe for the ones I love, the hospital mergers, would mean no more of those. And something about the volume of transactions in the industry in the last couple years.

So you would try to be selecting, with higher probability, merger retrospectives that were likelier to add value. And then the total number of retrospectives would have to vary depending on budget. And, of course, I would only propose that this be a funded mandate. And I would like to think there would be bipartisan support if the number is -- you know, you make an estimate of how many this is going to be and what the staff would be or, you know, source out -- commission some of these studies, I think that there could be enormous value.

And, finally, because that's just not enough, I would suggest that we consider adding some retrospectives of transactions that were proposed and that, say, the Commission contemplated very seriously or even voted out a complaint and then were abandoned and study what happened in those cases that might give us a sense of the overenforcement margin about which we don't know too much.

So I think I'm probably out of time and hopefully not out of goodwill.

(Applause.)

MR. VITA: Lemoore, on behalf of the 600

future members of the Bureau of Economics, we thank you for that.

(Laughter.)

MS FEINSTEIN: So a number of the things that Leemore raised are things that we're going to discuss in the question, so I will resist the urge to respond immediately to some of the proposals other than yes, saying it would probably require a significantly larger Bureau of Economics, something that I actually, believe it or not, advocated for regularly when I was here in the Bureau of Competition for just that reason. I felt like we were keeping folks so busy with case work that we didn't have time to do some of the studies we needed, not only retrospectives but just studies of the industry at large. The impact of generic entry, you know, that sort of thing often very, very valuable in both the conduct and the thing.

So let me start with, of course, retrospectives can be helpful and -- you know, should they be done without question. I do think it's important to figure out why are you doing the retrospective, and some of it is what were our predictions and why did we get it wrong. And I don't think it's an issue of the blame game and I never had the sense that folks felt like that when we did sort of the divestiture retrospectives. But just to say we're going to look at an industry and see how it's functioning and how it would have functioned before the merger, I don't know how you do that without some understanding of how did we think it functioned before the merger and what has changed. So I think that's inevitable.

The notion that, of course, it's backward-looking, I mean, that's in the definition of retrospective. That's what it means is to look back and see what happened. And I think it's also important because you want to basically figure out what are we trying to figure out here. Is it that our predictions of entry are completely wrong and that we're not good at assessing timelihood, likelihood, and sufficiency, and understanding if a particular deal was cleared because folks thought entry was likely. I think it's important to have an understanding of that going in.

Now, it's a little tricky because when a Commission closes an investigation, we don't always know why the five Commissioners agreed. The memos aren't sort of check-the-box. There will be a whole discussion of issues as to why a particular transaction is not likely to lead to anticompetitive effects. The Bureau of Economics and the Bureau of Competition may or may not agree on why that's happening, they just agree that there's unlikely to be effects. Often, it's this holistic view as opposed to one particular thing. But I do think there is some reason to say why are we asking the question rather than just randomly, hey, let's look at it and see whether or not this market has been changed by the merger, and if so.

The resource intensivity is a tremendous issue. Think about the fact that your average merger investigation that involves process takes six to nine months, one merger with multiple people on it, lawyers and economists, and the notion of doing that regularly. You really have to pick and choose or you basically have to do wide -- you can basically do wide or deep. And in the divestiture study, for instance, we decided to do wide but only so deep. And basically we had a very clear question we were answering, which was did the divestiture buyer actually stay in the market? Was there a business that the divestiture buyer actually maintained? Some rudimentary ideas. Sometimes we got market share.

We did not attempt to basically do the deep dive that we would have been able to do on a small handful to basically say, look, can we get the data, can we look at prices, can we look at some of those indicia. Because what we were trying to figure out is not the magnitude of any price effect if the divestiture didn't work, but simply, hey, are we creating divestiture buyers that are meaningful competitors in the marketplace?

So I think it's really important to go in with a very clear question that you're trying to address because that is going to drive, again, whether you do deep, whether you do broad, whether you do it industry by industry as the Commission did years ago in hospital mergers because there was a particular problem, as Commission Slaughter said, you know, do you look at vertical mergers because you want to figure out if you've got it wrong there. I think it's really important that you have this understanding so you can figure out how best to use your resources.

I do think that even what I call sort of "mini-retrospectives" or "retrospectives as we go" occur and can be very useful. So when I was first here in the late 1980s, the then Bureau Director decided to do an informal, nonpublic gut check kind of retrospective and it literally involved taking dozens of mergers that had closed without action, but that there was some debate about, and calling customers and saying, so what happened, worse, better the same, just to get a sense of how often were customers saying, you got it completely wrong, you should have blocked that transaction. Interesting to see what happened there, and there was some useful information that came out of it for thinking about not only how to do investigations, but also how to keep files and how to keep that institutional memory going forward.

And then, finally, I would say I think that the Commission all the time does this kind of retrospective learning because it looks at the same industries over and over and over again, often in the same geographic market. So I can think of one, in particular, that I thought was really interesting because it's -- the first merger had happened before I was at the Commission and there was some controversy over whether or not the decision not to take action was the right one.

Fast forward, we had another merger in that industry. And in the course of looking at that merger, staff, of course, asked questions about what's happened over time. And much to my fascination, to a one, in great detail, the customers talked about how the previous merger, that had been somewhat debated within the agency and had a lot of scrutiny, was absolutely good for them. The promises that the merged parties had made to them had been delivered upon. They basically talked about how they were getting better deals, better service across the board, it was good. That was learning that we had, and that continues routinely.

So the notion that we always have to do these formal retrospectives I don't think is the case because I think there's this organic learning going on as the Commission does things. Not to say that formal retrospectives wouldn't also be useful, but I don't want to underestimate the extent to which this kind of learning goes on on a daily basis.

Thanks.

(Applause.)

MR. NEVO: Thanks, everyone, for putting this together and for inviting me. It's a pleasure to be here. I think this is actually the first time I've been on a panel in DC that was mixed lawyer and economist and the economists were a majority.

(Laughter.)

MR. NEVO: It's like wow. Now you know how we usually feel.

(Laughter.)

MR. NEVO: So I had the advantage of going last, A, because, you know, all kinds of really good points that I didn't even think of I could say, oh, what Steve said, that's great or Orley had really good comments. But it also means that, you know, it sounds like that's all I did. The fact I have handwritten comments even leads less credibility to the claim that I actually had some of my own.

So let me just start by answering the question that was put in front of us. Should the findings from merger retrospectives influence antitrust merger policy? And I think like several others, I'll give an unequivocal "yes." Okay? And maybe I'm done. But I still have to fill nine and a half minutes, so let me go on a little bit.

So generally, not just talking about retrospectives, just generally the importance of empirical analysis and of data and antitrust, I think has been understated for a long time. I think it's kind of finally coming out. When I was at the DOJ now almost five years ago, that was kind of a big thing that I always sort of would give in speeches and in talks. People would ask, well, what's the next wave. I said, well, the next wave is data. Everyone is talking about data except in antitrust.

Like you're teaching a business school -- you know, in our business school, there are statistics courses that no one wanted to take, okay? Until they started taking the exact same courses, but instead of calling them "statistics," now they're "data analytics." They're packed.

(Laughter.)

MR. VITA: We go over exactly the same material, the same features, everything the same. So, you know, I think we should stop calling this antitrust, but, you know, data analytics for competition policy.

(Laughter.)

MR. NEVO: So, you know, big data is everywhere except in antitrust, but that's been changing thanks to a lot of the folks in this room. And I think that's a positive wave. Merger retrospectives are one direction and, I think, you know, the more, the merrier.

I actually have been thinking about merger retrospectives for much longer, I think, than folks realize. I think when people think about me and mergers, I'm usually kind of affiliated with merger simulation and developing models for that. But actually very early on in my career, actually around the same time that Steve and Orley were talking about, oh, we were doing these retrospectives, I actually put forward a proposal to a private foundation proposing to say, you know, we should then game up, you know, gather together with the agencies and start this kind of collaboration, academic, government, to evaluate mergers.

We should create this database where we're looking consistently at mergers, getting information from the agencies about what's going on, where should we be focusing our attention. But the agencies are underfunded. How about we have some of these foundations that would like to fund public policy do that? I wish I had saved the referee report that I got. I wasn't funded, so that just gives you the idea. I wished I had saved the referee report that I got. Maybe I do have it in one of my old files. But they ranged from anything like, hmm, okay, you're just a first-year assistant professor, do you really think you're going to pull this off, to great idea and so forth. Anyway, it didn't get funded. I put it aside. I guess I wanted to get tenure. Probably should have pursued it a little bit more.

So beyond the simple answer of, yes, we

should be looking, a little slightly more nuanced answer is looking kind of at the details. I really want to make two points, some of which really overlap with what's been done. One is, how should we be using retrospectives? So that's kind of one point. I would like to discuss a variety of different things that have been proposed, and then touch a little bit on some of the same mythological points that Steve touched about. Maybe not surprisingly we're going to have, you know, somewhat or very similar views here.

Okay. So in terms of how to use the retrospectives, I think this was discussed in some of the panels earlier this morning. I would sort of say there's at least three different ways to look at. One is to say, let's just evaluate overall policy. Ask a question like, is the marginal merger pro or anticompetitive? Okay, you can ask a question of that sort. So that's kind of one type of use of retrospective.

Another is to improve the tools. Our kind of second panel of the morning was really all about that. And then, finally, a third is the use in either regulatory decision-making or litigation. When you litigate a merger, should we be looking back, when possible, at what actually happened. So Orley talked a little bit about the Staples case, but there are other cases where there were proper merger retrospectives, not as much as entry and exit analysis, which is basically the same thing and how have those been used.

So let me say a few about each of these one at a time. So on the first goal of trying to evaluate do we have the line at the right place, I'm less keen on that goal. I mean, not to say that, you know, it's not something worth looking at, but I think there are just a lot of issues that have been brought up before, issues that have to do with selection of which mergers we're looking at, issues of what is really the marginal merger, can we really honestly say that we know what that merger is.

And there's also a question of even if we -- so suppose we find that the marginal merger that was approved ends up being anticompetitive. There is a real question as to how that's going to impact actual decisions. Because you can imagine now you're going to make a decision and you could say, well, no, this really isn't the marginal one. Everything that we've seen doesn't really apply to that. So it's a little bit of a question you've got to translate into, you know, what does it mean to actual facts on the ground.

But to the extent that we are going to do this and this kind of, again, touches on points that have been made by others, I would focus more on more unique -- what I would call “unique” situations, whether it’s vertical mergers, whether it’s kind of other mergers and situations that are a little bit different, potential competition was mentioned in the morning as another example, and try to look at those situations. And in some sense, you know, just to help us, how should we even start thinking about some of these? I mean, vertical mergers, obviously, we have a clear way of thinking about it, but we have to see how to leave it in the ballpark in our way of thinking about it.

I’m more positive on the second goal, which is the goal of improving our tools and our methods, but really want to make two points about this. First, I guess before I even make the two points, this is not easy to do. There’s a lot of things going on, a lot of moving parts, and we heard a lot about this in the panel just before lunch.

Two things I want to sort of mention. One is whenever we are evaluating a tool, we always have to think about what the alternatives are. So I remember in one of the earlier versions of the Hosken-Weinberg paper, it had, you know, the two mergers, the artificial maple syrup merger and the oil merger. I don't know if this survived after the final version. Merger simulation got one of them right and one didn't, and that's a problem. And I was like, 50 percent success, hey, I'll take that, that's good.

So there's a bit of a question as to what's the alternative because in that case, if you actually applied structural analysis, you would have done even worse. So the question is if you're going to evaluate a method, the question is relative to what. You have to think of what the alternative is. So that's point number one.

Point number two is looking -- when we evaluate the mergers -- and you could see that actually a little bit in the panel -- the discussion before lunch, a lot of the focus was on the demand side. Because we're used to thinking about diversion and cross-price elasticities and does the random coefficients do better than AIDS and does it do better than nested logit and so forth, and so on and so forth. But I actually think where we really need to push the frontier, where we're really missing is on the supply side.

So I used to give this as a class exercise, actually exactly that paper. I would give to the students, say, before you evaluate the method, just look at the outcomes, take as given what's kind of founded from the retrospective, and then make reasonable assumptions on substitution patterns and cost efficiencies.

What I mean by reasonable is don't suddenly come to me and say, you know, a nonmerging party has suddenly become extremely more efficient or we take substitution patterns that don't match anything in reality. And say, and tell me a story -- okay, in some sense I'm telling you, you know, make up your demand elasticities and your efficiencies and try to explain what we see in retrospective. And it wasn't impossible, but it was pretty convoluted. It was pretty hard. And that is consistent.

I already gave an example of the appliances merger. I mean, that's another case. But it ends up, ex-post, maybe there is a very clear explanation but one that was completely outside of the realm of what we were thinking about.

So the question is, when we look at these retrospectives and then try to match them up to models, we have to ask what is it that we're missing.

I mean, is it that we don't know how to estimate elasticities the right way or that we just don't have kind of the standard way of thinking? If we actually have our typical model that will say you have a smaller party merging with a larger one, what I would actually tell you, you will see more of an effect on the smaller one, and that's a lot of times not what we see.

And then, finally, the use of -- in litigation. So this is a place where I actually think it's a little bit underused both in terms of, you know, being as kind of you want the main effect, but also in terms of, you know, debunking certain things that are brought up.

So let me give you an example from the Aetna-Humana case where I was actually the DOJ's expert. We used a retrospective there. We had a rare opportunity where Aetna, who was purchasing Humana, also purchased a much smaller insurer a few years before. And we can go and look and see what happened.

Now, before I got on the stand two days earlier, I got the perfect lead-in to that where the CEO of Aetna, when talking about efficiencies, said, we're very conservative in efficiencies. Why?

Because we used the same model here as we did in the other merger. And in that merger, it ends up the efficiencies were far, far greater. Okay? So guess what? We looked at the merger retrospective, and it ends up that there was a price increase. So that would be kind of a perfect case where you could say, look, you know, how do we deal with efficiencies. We can look at what happened. So that was my first point.

The second point had to do about methodology. I see on the sign that time’s up, so let me just kind of go through this. Basically, a lot of what I have to say is really what Steve said. Let me just add a little bit on the point of saying that when we look at retrospectives, folks think about diff-in-diff as the gold standard. And in some ways, it is, but we have to realize there are a lot of assumptions built into it. We talked about control. But there’s also assumptions about linearity. Do you do it in levels? Do you do it in logs? How do we think about things?

And then there’s a really big question, which is how do we interpret the results? And I talked about the example of how we look at them. But, also, do we look at price, do we look at quantity. So there's an argument, well, you look at price, but you don't know what happens to quality and, therefore, you want to look at quantity because that will give you what happens. Well, there's assumptions built into that. And especially when there's heterogeneity, you know, looking at just price and just quantity is not sufficient. It won't actually give you the whole story.

It's very easy to construct examples where prices go up and quantities go up and down and you can show how welfare could have gone up, could have gone down. We're actually doing that right now in the context of the airline merger. You actually have to dive a little bit deeper. A lot of times what you basically need to really interpret the results and really understand them, you go back to the fact that you need a model.

So let me just conclude by saying, should we use retrospective? Yes, we should. But I think we need to do that kind of very carefully and really use the results appropriate. Thank you.

MR. VITA: Great. Thank you, Aviv.

(Applause.)

MR. VITA: Well, thanks to the panelists. That was a great lead-in and it builds very nicely on the discussions that were held in the morning panels. So let me dive in with a couple of questions to sort of follow up on some of the issues raised in those earlier discussions, as well as amplified by the speakers in this session.

So Aviv’s comments were a nice lead-in to my first question. I think what we’ve heard today is that there are at least three chief goals of a retrospective merger program. One is we address the really sort of big question, is policy too strict or too lax or broadly defined? Secondly, how well do our analytical tools work? And, three, how can retrospectives help regulatory proceedings, judicial proceedings, that sort of thing?

So let’s talk a little bit about or think about the first question, especially in light of the discussion that took place in Dan’s session about what retrospectives are. It’s a whole big collection of case studies and a very nonrandomly-selected set of case studies. In the morning session, John Kwoka talked about his meta-analysis that covers virtually every study that was done between the early ‘80s and the time that the book was published in 2015. There’s like 45 or 50 transactions that were analyzed, horizontal transactions.