



FTC Seventeenth Annual Microeconomics Conference

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Just has a better idea. You need to help the university and the research how to signate data use agreement with the government agency or with a private sector firm. These are things the faculty are taught to do in graduate school. You're not taught how to negotiate a data use agreement. You're taught how to explain to the university's lawyer why your confidential data set is actually secure, according to the standard blah blah blah. I feel we can bear a lot of the fixed cost. How do we appoint resource assistant. What title.

How do you run it. How do you help get cameras. How do you help with data use agreements appear we can do some of that. I think there are things you need to do. One of the things in this conference is an example of it, you need to connect researchers with people who know the questions are here I was a little skeptical when we started about whether we would , or anything -- academics are always a little -- famous for being methodological. Theory, blah blah blah. And it's really interesting how much people's eyes light up.

There's a related topic to the one that you work on. People's world would be much more interested in it. I thought maybe the answer would be who cares. I do what I do. The more common answer is really can you tell me more about that? If they could do the research and affect the world that seems like a way more fun thing to do. That's really worked. I think this kind of conference, it would be a mistake to think of it as academics come in and share research ideas and so forth. There's a really important role for a conference like this.

To help the academic community figure out what the issues are. I think it's one of the rules of the scientific community to pick topics and papers that are relative to the work. Some of the papers are just cool research, that's fine, do. One of the interesting topics that academics should know about, that's an important role for this conference. From the inside. What are the things we don't know that we should.

Let's say that someone comes to us, because I have this great policy result and I would like to influence the world, one thing you have to be careful of that this is really ready for prime time period there are a lot of research papers that are good research papers but are not really ready to influence policy.

Everyone likes to love the little policy section. You have to be a little hard headed, should there be two more papers or three more papers, or is this really truly credible research. We are not going to feel bad, because we don't actually know if it's right. The other thing you have to do, I think, is to figure out, are people ready to listen? Because you can press release or something like that, you can hold a conference,

in practice I think this means avoiding things that are, if things are polarized already, if this group of people want to hear evidence on the side, you're not going to change their mind.

A good news for a lot of accompanist is a lot of the stuff we do is

[INAUDIBLE] We were just talking about healthcare costs. The healthcare system is a mess. You spend too much money on it. Staffers on both the democratic and republican side would like to hear something where they can save \$300 million and it wouldn't hurt anybody. What could we do to make that happen. That's where you can get into the weakest, or if they decided to do something, can you direct them in the direction of more sensible, or less sensible. We have this immensely complicated reduction act which is actually a comment -- climate bill. One of the things I talked to them about is

[INAUDIBLE] Do they actually help the environment or do get the Amazon cut down. They are supposed to come up with a number, how good they are for the environment. What do they know about this treasury 3 months ago, they have to make a decision. There are cases where they are really looking for help. Should taxes go up in general, or should taxes go down in general, or are we going to revamp the tax around tariffs. Academics talk about that, which is valuable. We are not going to affect things in the short run. The other thing we need, we need people who are good at that.

Zach is good at that but that's not primarily me. Agree to which we've been able to get fantastic staff who actually want to get out of the environment and be able to talk to both sides and not be trying to score points. It's interesting to me how surprised people are. People in Washington DC who are sincere in the same since that I meant sincerity picked they actually want to do good. They want to make the world a better place. That's one of the inspiring things about this conference. There are a number of things in the federal government.

I've said this before. Where the economic staff is unreasonably good. You guys are better than we deserve, you're fantastic and I'm not sure we deserve that. But it's because there are people who want to do good. People who will turn down and outside opportunity in order to do work that makes the world a better place. That's super inspiring. We've got people who have been in the white house, who have been legislative policy directors for the white house, things like that. Who want to come and work for us because they say we are sincere and they actually want to get that.

I think it's really important for us to maintain this connection between academic economists and the government economists. We have complementary abilities in this regard. We have to figure out how we are going to get a seat at the table. The government staff are lucky, you guys are permanent seat in the building. And that's something that you're really lucky about. And you know the policy questions because they are coming at you fast you don't have to wonder about what, it's coming right at you. I think those are things that are valuable for us. We have people who are in the inside, who we can talk to, I think one of the advantages that we have is that we can pivot.

If something is -- and I trust this is not the issue today. Even though -- I trust we can do pre K policy. But I think what's interesting about this conference is that a lot of the resource that people, a lot of the research that economists present is relative to maybe not the question they're being asked today. Maybe they were asked that a few years ago and somebody asked that again. I think by getting that out to a broader set of economists, these papers are not -- they're going to be solid research. But other people can take them and see what the policy implications are and help get those out to the world.

Maybe in your non research life you're focusing on the question people are asking you. And I think what I want to finish with is just, I think in all of this, we really have to think about our credibility. It's going to be

super important that we are always doing that first step. Figuring out what's the good advice, being honest when we don't know so much. A whole big digital market. I want to be careful how we market this. This is super new stuff. I want the -- these are the thoughts of very smart people who have thought about this a lot.

And are talking about policy. It's not like I can sign off and say yeah, every one of these statements we know are correct. And that's fine. Any policymaker may say, I've got to do something, that's the best we've got. But, we've got to be honest, that's not a finished research. Another case, we just help on the paper, effect of pre K on mothers labor force participation. Done right it's a huge effect. I just really believe that result. I think we can go and say look, this is a big result. I really believe that result. I think we have to be careful about that.

In an age where experts are distrusted. We worry a bunch of different political movements, I think keeping that, I think he keeping that credibility is something we can do and actually, I'm sincere, I actually think it will pay off in the long run, so come up why don't we hear some actual research.

[APPLAUSE]

[>>] Good morning. I'm Thomas I'm an economist here at FTC. I've got

[INAUDIBLE] The first one will be presented by my colleague.

[INAUDIBLE]

[APPLAUSE] OK, how does this work? There we go. Great. Yeah. Thank you so much for having us here today. It's truly an honor to present this work at this conference. This is joint work with my partners Dan Hoffman and Charles

[INAUDIBLE] This does not reflect the views of the federal trade commission or the federal reserve board. We also don't have any financial disclosures on this paper. With that I'll jump straight into the research question. We're going to look at downstream horizontal mergers and the question is how and when did they affect consumers and workers. The ideas that mergers might not be good for consumers, can be bad for workers or bad for workers and good for consumers and we want to figure out in what case that occurs and what the interaction is between the consumer market and the labor market.

To do that we're going to take A2 level vertical supply chain model. Originally

[INAUDIBLE] Efficient bargaining and downstream there is -- this is going to allow us to

[INAUDIBLE] Worker welfare at the same time. There are some key mechanisms in the model. So the first one is going to be just think of your standard downstream merger simulation coming of product market recapture, that's going to increase prices and decrease quantity. Decreasing quantity it means decreasing employment period we are going to layer on this bargaining muddle. So the first additional mechanism that we have, actually as firms become more profitable due to the downstream merger, others and increase the bargaining surplus and this could increase workers wages once we have that bargaining game added on. The next effect we are adding in, is going to be an increase in the firms bargaining leverage period you can think of this as a single product firm negotiating with its workers, if it can't reach an agreement it's not going to be able to produce.

But a multiproduct firm will be able to recapture some sales through downstream substitution into its other products and therefore its threat point is going to be higher, giving more leverage and decreasing worker wages. The 4th and final mechanism that we have and maybe the most important is the change in worker bargaining leverage so to the extent there is a change in the labor market concentration we are going to adopt A static version of the

[INAUDIBLE] And say employers will not bargain against themselves. The idea is if I'm a worker and pre merger I can negotiate with firm one and firm 2, I'll receive offers from both firm one and firm 2 and use them as threat points against each other. Post merger if firm one and firm 2 I'm no longer receiving separate offer so I lose one of those options and my outside option is to lower my leverage and decrease my wage. Another key aspect of the model is that it's pretty flexible in terms of thinking about whether labor and markets are the same.

Especially geographically we are thinking about potentially labor markets could be broader or narrower than the product market. The first case is thinking about a service industry. It could be the case of the consumers are willing to not move very far to consume products but workers might be willing to commute a lot farther you could have two hospitals on other sides of town. In terms of consuming acute care hospital services I might just go to my local hospital. But a nurse might be willing to work anywhere in the zone and go across town to work at another hospital.

Labor market could be broader. Secondly you might think about any trainable industry, the product market could actually be a lot broader than the labor market. You could think about automobile manufacturing, there could be plants in different states. Producing the same car into the national market. But those geographical labor markets are not related at all. Implicit in that is mergers can occur across geographies. So in particular in this paper, we are going to focus on cross geographic mergers a lot because we are thinking about completely shutting down the overlap in either the labor or the product market to focus on how the effects on workers can differ.

You can think about workers only being affected through the product market or consumers only affected through the labor market. That's an important point. I'm going to go into more detail on exactly the type of configurations we are looking at in order to illustrate the model. Our baseline for configuration is kind of what you might think of as where there is perfect overlap between the labor and product market. You can think of this as a rural area where there are two hospitals and everyone is both working and consuming at those two hospitals. There's not a lot of options around.

And so in this case the change in concentration is going to be the same in the product market and the labor market and all of those mechanisms are going to be in effect. The next case we look at, a piece of a broader labor market and in particular, to illustrate the model, you could think of there being more or less overlap in the labor market for versus the product market. There's actually no change in product market concentration from the merger, thinking about the hospital across town, merges with the other hospital across town, that doesn't affect the demand for hospital services, but it affects the workers in the zone for those hospitals.

We do this to illustrate the mechanisms and the model because in this case the only impact on workers will be through the labor market. The 3rd and final case we take is the opposite of that, here we have the treatable goods case. We're going to look at mergers across geography like manufacturing plants. Taking across geographic merger we're the only impact on workers is going to be through the product market and the downstream product market overlap. So in terms of our approach, we are going to take a simulation approach. This is because the model is extremely flexible, there's a lot of parameters, a lot of configurations to figure and we want to calibrate it to some real world industries.

In terms of seeing predictions that are relevant to finished cases we would see. We are going to take some shares, margins and costs from real world industries and run simulations of fake mergers. To get a sense of how the model works. As a preview of our results, obviously it depends on the configuration

you're looking at. We find that most of the harm happens when there is both labor and product market overlap. Those seem to be additive in how they affect workers. And workers can't actually benefit in some cases from the mergers when there's only product market overlap.

That increase in bargaining surplus mechanism can't in some place dominate and increase wages for workers. We also find that the change in concentration is very predictive of both worker effects and consumer effects for mergers, that's very helpful. We also find the conventional merger simulation based on product market does actually pretty well at predicting when mergers will harm workers as long as their product market overlap. In that case where there is only labor market overlap, in that case obviously the downstream simulation cannot do a good job. In terms of where we fit in the literature, obviously there's been a lot of evidence on labor markets not being perfectly competitive and David Arnold impact mergers on wages.

But some of the more classical models don't take into account strategic interaction. Obviously the Josh paper we saw earlier is an exception and also the burger packer we saw at this conference last year. Pretty close to ours, they feature local labor market competition and competitive product markets period we are going to be complementary and that we have both competition and the labor market and in the product market and we are building more off the merger simulation.

[INAUDIBLE] With that I'm going to jump into the middle. And talk about how about first tell the marketing work and how wages are set, that's the key focus of the model. We have here, I think we've seen this a few times at this conference. Standard marketing functions. Maximize the product of the gains for trade of the worker and the gains for trade with the firm. Weighted by the bargaining

[INAUDIBLE] The firm will improve. I'm going to go into detail how we specify each of these payoffs.

That's how we are going to get at the model mechanisms. The firm's agreement pass is going to be pretty standard preferred function. One worker is producing 1 unit of output, and using one unit of cost as well.

That ratio, 1 to one does not necessarily have to be that, but we choose that for simplicity. Consequence of that as we have constant marginal cost which is a pretty standard assumption in merger simulation.

The firm's disagreement payoff is going to be 0 if they can't produce.

If they don't reach an agreement with the worker. But we have denoted here CJ, other products owned by that firm. And that's going to be the consumer substitution cover the recapture that allows the multi product firm to have a higher threat we. This is how that third mechanism I was talking about, with the bargaining leverage of the firm comes in. CJ gets larger post merger. The firm's threat point is going to go up. I won't talk too much about the downstream since it's a standard logit demand system. I will say that the margins of the firm also depend on that said ZJ and that's how we connected that second mechanism in the middle.

Post merger the larger the ZJ or the higher the margins are the higher the profit. That may intend to increase wages. For workers we have labor marketplace that may be different from the product market size. We do allow for different record elasticities for consumers. There is this production technology and you need to write both worker shares and product market shares, in terms of quantity, scaling them by the market size, which is given that quality there. The worker agreement payoff, we assume they get that wage bill within the market paired just the wage times the quantity and again that can be ran either in terms of worker shares or product market shares.

The worker disagreement payoff is going to be the key thing. We assume that if the worker doesn't reach an agreement with the firm, they can work at other options within the market or outside of the market. If

you're thinking about nurses and hospitals, the nurses can work at other hospitals in the market or they can go to work at a long term care facility or doctor's office which would be considered outside the market. And the key thing here is that said ZJ. The set of products owned by the merging firms. Queer assuming that if two hospitals merge, I no longer get an offered from both of them.

The merge for empiric and therefore I'm going to have fewer options inside that disagreement payoff. And more people will be diverting to the outside option. So now I'm just putting back together all of those components into the larger bargaining game. We have here again that the worker payoff is the wage bill minus the share weighted other options in the market. And the firm gains from trade as their profit minus their recapture in the downstream product market. And so the wages are going to solve this function, as weighted by the bargaining product parameter. In terms of solving this, we make the standard assumption.

When agent negotiation is happening come with their holding fixed all the other wage negotiations and also the downstream price gain but in equilibrium the wages and prices satisfy all the conditions, in a relationship between the bargaining and the downstream game. I'll go into a bit more detail on the methodology that we have for the simulations now. The data that we need for the downstream conditions is pretty standard. We just need margins, cost, market shares coming to get the downstream parameters. The bargaining additionally we are going to need data on wages and on the workers outside option wages.

To identify the bargaining power parameter. We could alternatively assume the bargaining power parameter and backed out wages or outside option wages. Which chose to estimate the parameter. Things are pretty standard things we would receive during an investigation period the FTC or DOJ. But it's more difficult to find public data at the firm level merges and wages, especially for our purposes we wanted to do a broad set of simulations to demonstrate the middle pair so we need an industry right for margins and wages period this was difficult to find. Definitely talk to me if you know of any other industries we could look at.

We did find a few applications we could use the data for. The first of those is the hospital industry. Building up the -- wire lead data to get wages and the hospital level. Data for cost and price information here the BLS for outside option we just. And we are going to focus on the market for nurses and pharmacists. We think they might have specific human capital and therefore be more likely to be subject to mergers and market power. Another advantage of taking the hospital data is that there are some off the shelf market divisions we can use which is helpful to us since we want to do a lot of simulations and don't necessarily want to do an exercise for each market.

So we use hsa hospital narrative for a narrow stylized market. This is a zip code in which residents received most of their care. We also take off the shelf HR which is amalgamation, think of a broader market classmate of hsas and we use that as our broader market configuration. The second data we use is the manufacturing data, 1991 census period this is a lot of different industries in Colombia and a lot of different regions. So we're going to take this field workers wages again because we think skilled workers might be having more specific human capital.

And we are going to look at local geographic labor markets across Colombia. And estimate national product market. We do our best to exclude imports and exports. Unfortunately we have to assume all the plants are independent pre merger because there's no data on ownership in the census. So, just to recall, there for mechanisms we are trying to illustrate here, the downstream effect unemployment, through their

standard product market simulation, the increase in bargaining surplus and the changes in leverage that tend to decrease wages. To really get those 4 mechanisms and disentangle them, going to run 3 different versions of our model and compare them.

Converse is just your standard downstream merger simulation for the second is modified bargaining game where we are only going to allow the surplus to change and the firms leverage to change paralysis very close to what horn and alums ski did. And we will do full simulation with admin importantly, the decrease on the workers leverage. We run all these mechanisms across the three configurations I described earlier period for the case where there's change both product and labor market surplus, and the hospital industry, HSA is, very narrow geographic markets, for the case in which there's only labor overlap we're going to take that broader HR in the hospital industry as the labor market and the narrow HS as the product market.

So in this case there would be no change in the product market and only a change in the labor market HI. And the third configuration would take the Columbia manufacturing data and look at mergers across geographies. No change in labor market HI. But focusing on the effect of H and the broad I -- so, finally getting through our results, for the first configuration we have a set of 855 mergers we are going to focus and the interest in time on the change of worker surplus from the mergers. These are boxed in that covered the distribution simulations.

The median is going to be that line in the box. The edges of the box or the 25th and 75th percentile of distribution and the tails are 5th and 95th. Again in this model the only impact on workers of through their employment period would you say pretty negative impact on workers. Moving to the middle middle, this adding and build the burgundy surplus effect and the firm leverage affect. The predicted impact is not clear from that. Tend to increase wages and the firm leverage will decrease wages. We see workers are kind of the same or maybe even a little better off moving into the bargaining model where their wage can adjust up or down.

When we move to the full model and we add a networker leverage effect, we stay pretty stark decrease at least in the median of the workers outcome. And so we can conclude from that the bigger leverage effect is potentially very important. Moving on to our next application, we look at labor overlap online, we have 324 mergers here. So, by construction, there's no change in the product market HI. The simulation is not going to have any effect on workers and also, but there is a change in the delta HI and the labor market period and the full model we do see a pretty big decrease in worker surplus.

Pointing to the fact that labor market overlap would be pretty important. In the case where there is labor overlap. Moving on to our third configuration we have 423 mergers and the manufacturing data. Here in the downstream of lake and the -- move to the full middle, in this case that's a little bit interesting because there's no more removal of an option for workers since there's only product market overlap here. No labor market overlap. The only change is going to be the equilibrium effects. So the wages at the other hospitals in the market will change as a result of the merger and you see the tabs and ambiguous effect on workers with the median goes down slightly but the parents goes up a lot.

Just because the wages come with their other options are changing and the market. The next set of results I'm going to show our their relationship to delta hi. We want to get a sense of how the delta HI is a worker hard. There are a couple of reasons that we want to do this and one is that the distribution of mergers differs allowed by the configuration. In order to compare apples to apples we want to look at the

distribution effects by the delta HI. You're looking at only bad mergers or good mergers. The next reason is the mental mechanisms make --

that disappears as you go to higher, etcetera period in order to do this, we are going to take some common measures of merger impact. The more intuitive, and see how they with HIV. Here's the first set of results for that. Each dot in this graph is a merger simulation and on the axis is the delta HI. This is for our first configuration. Both in the labor market and the product market, it's going to be identical for both markets. So, it represents both. The thing that I want to point out here is there seems to be a very strong correlation between delta and both wages and output and since both wages and output are affecting the workers surplus come with the worker surplus is also very negatively correlated with the delta HHI.

The price tends to be dispersed based on this correlation. Moving on to our case where there is only labor overlap and no product overlap frequently a very strong correlation between the wage and the delta HI and not as much of an effect as price or output. There's no product market overlap here so you wouldn't expect a first order effect on price or output from this merger. Another sense this is really surprising because we're seeing wages are going down pretty starkly here. And yet we are not seeing price or output pair we do see the direction of the correlation there, the correct direction.

As we get the higher delta HI. And going up very slightly. The reason we don't see more passed through in this case is because using the hospital industry period the share of cost of nurses and pharmacists at the hospital is only about 2% when you see a 20% decrease in wages on an input that's only 2% of their inputs it's just not going to be passed through meaningfully to consumers. That's sort of an interesting result here. We did do some Marty Carlo simulations early on if you push the percent of the cost up to 90% you can actually get stronger pass Through.

The last case is Columbia manufacturing. With their strong negative correlation between wages and output. And the delta which is only in the product market because there's only product market overlap. What's really interesting here is if you look in the left graph at wages, actually in about 50% of the cases worker wages are going up as a result of the merger. Especially when there is a more of a benign merger. Delta HI is more than 1000. That passed through mechanism is increasing bargaining surplus, increasing wages can happen here and does have an in about 50% of the cases here.

The overall workers are much worse off especially when you take into account the output going down and employment going down. The last set of results I'm going to show is looking at enforcement screens you're trying to see how good downstream product market simulations due in terms of capturing worker welfare period this is very close to our heart as an agency. Think about if we were just blocking product market overlaps. How well would that do in terms of protecting workers. The metric we're going to use for this is if we blocked every merger that would cause more than 1% decrease in consumer surplus, how would that do in preventing mergers that would harm workers, more than 1% or 5% and obviously this is based on the calibrations we did.

But here are the results across 3 configurations. In the case of both product and labor overlap, if we blocked all the consumer surplus decreasing mergers we would catch up 77% of those mergers that harm workers more than one person and 99% of those mergers that would harm workers more than 5% and the results when there's only product overlap are also pretty good, 45% of the mergers that would harm, and very close to 100% that would harm workers more than 5%, so, that's pretty good results. The key thing is that if there's no product overlap, by construction, this metric cannot help us here.

And so we are catching 0% of the cases where there is only labor overlap. I'll just conclude now. We did A2 level radical stipulation, we can we calibrate it to two industries, hospitals and manufacturing. Workers are most harmed when there's product and labor overlap. But workers can benefit in some cases when there's only product market over that from that pass through of profits. We found that delta HI is very productive for both workers and consumers. And finally we looked at the conventional product market screening tool and found they are pretty effective. And the only key case they missed, this case where there's no product overlap, and over only labor market overlap.

And that's all I have, thank you so much for having me.

[APPLAUSE] To discuss that paper is Elena Preger from the University of Rochester and the MBR.

[>>] Good morning. What's the right button on here? Thank you, OK, great. So when Tom invited me to discuss this paper, thank you by the way, and thank you to Viola and Sam for getting us all organized. When I was invited to discuss this paper I expected to have to defend to an audience of antitrust economists how we model labor markets. After yesterday I'm not sure that's really necessary. But I will point out for the uninitiated that the new merger guidelines that came out at the end of last year, for the first time it's specifically called out labor market competition as a component of merger review. And there's been a lot of discussion about this. There's a serious question that Miriam raised quite clearly towards the end of her talk about whether, in fact, just using the standard screens that we already have on the product market side, would already catch most of the transactions that we might think might be harmful to workers. And if that's the case, then smarter people than may have pointed out, Nancy in the room over here, that enforcement is not costless. Eric and if you're going to add a labor screen to every single transaction that you look at, you may end up being a less active enforcer overall because, unfortunately, we don't have the resources to double the staff at the FTC or the DOJ, as much as we might like to.

This paper helps us to really think about this stuff seriously, for the first time. It's not an understatement to say that putting together strategic interactions on the product market side and strategic interactions on the labor market side in the same paper is not an easy feat. I have thought about this and come up dry. To Miriam and her co-authors, thank you for moving us in the right direction. They have product market competition that I think all of us recognize as being pretty natural. Sort of differentiated products. That is layered on top of production function.

I'll come back to what the implications of that are in a couple of minutes. And on the labor market side, we have negotiations between an employer and someone that looks vaguely like a union. This group of workers and they are negotiating also. The key result of the paper, pulling out just the versions of the simulation that used the full model, are sort of twofold or rather there are many results but there are two in particular that I want to highlight. If you look at the panel on the right, these are the simulations from the Columbia manufacturing data.

Where there is no labor market overlap or at least that's what the exercise is meant to represent. You can still get negative effects on the labor market, even when they overlap entirely on the product side. The other thing I want to point out here is that you can have worker effects that are larger, when you have both labor and product market overlap. Then when you just have labor market overlap. Those are the two panels on the left. If the magnitudes I just said don't make sense just know that the Y axes are different across the version that has both labor and product market overlap versus has just the labor market overlap.

So, what this paper tells us is the product based screens do a pretty good job before the kinds of transactions that we are already used to thinking about. In other words if you are thinking only about sort of traditional transactions that primarily impact product markets, then seems like we do a pretty good job already of catching harms and put markets. The question is then, what fraction of transactions is that. And the paper tries to make inroads in that direction by saying let's like what would happen if you actually looked at transactions primarily our labor impacting rather than product impacting and there they find kind of mechanically, but kind of not, the traditional screens will catch none of this.

Gets really hard for me to overstate how timely and important this is. This is a serious discussion that the agencies are having. It's a discussion that lawyers and economists are having from outside of government. And it's really important for us to figure out how we should be targeting these enforcement resources that are limited. The paper is a really nice step forward in helping us to understand those things. It also still leaves a question open for the rest of us of OK, we've now established, thank you Miriam, there is a class of mergers for which the existing screens don't do a good job.

How many transactions are in that class? When I conclude maybe I'll have time to come back to a call to action for the rest of us. In some ways enforcers have gotten in their own way for measuring this because most recent update to the HSR pre notification form could have included a labor screen and didn't. Which means we are now going to not collect systematic data about how much overlap there is among proposed transactions. Which I think is kind of a bummer. We won't get those data and as a result maybe the rest of us in the research community, we are not bound by agency rules, can step in.

OK, I'm going to do the reverse of what husky did yesterday because I'm a pretty poor theorist. I will focus most of my comments on the simulation exercise but I do have one comment on the model which is that we are using production function here. That's important for a tractability and we want to maintain a tractability. It does have some implications for how we interpret the results of the simulation. In particular what you're getting here is a disagreement payoff for the employer. That's pretty severe. They don't get to produce that particular product at all even if they --

if there's some recapture 3 multi product firm. You basically need something else in the model, some other parameter to rationalize observed outcomes that look pretty good for the firm. And it's possible that that's what's driving the estimated parameter for the firm bargaining being so high. Something didn't really have time to cover in her talk. Seems to be close to one pair that in turn might explain why you don't get very much passed through to workers Comp which is something of course you did mention. I think we want to be a little bit careful in sort of what we try to extrapolate from the simulations.

Bearing in mind this assumption. Let's also talk a little bit about the worker side results. One of the figures that I put up showed you this comparison between labor market effects and markets that, or sorry, transactions that involve both product and labor market overlap, versus ones that only involve labor market overlap. And I was surprised to see smaller effect on workers in the latter case because you would think there would be some offsetting effect when there's also an increase in product market power. Maybe it isn't just because of the high firm bargaining weight. But another possible explanation for what's driving the calibrations is that you have actually different geographic definitions of what counts as the labor market across these two sets of simulations period the second set uses those broader labor markets that Mariam mentioned.

On average HR's are 10 times larger than HSA's. Which means you're actually doing an apples to apples comparison. Related to that I think there are some other things we want to be careful about. If we're going

to try to use hsas for both product and labor market definitions. I came of age as a health economist and so I'm sorry I can't help but put up a map of HSA's. This is the DC area. Many of you probably work here. I imagine many of you live outside the district. And yet Arlington and Bethesda in the district are all separate hsas.

We maybe want to be pushing towards HS that are a little bigger. The analysis already does this. I should be careful to say, they don't try to do anything that are super tiny pic but I think maybe sub setting some more or maybe expanding the product market definition that looks like an HR might be more. OK. So, with that sort of apples to oranges comparison I think it becomes hard specifically to do just the exercise, do we think workers are going to be more effective when there's product and labor overlap as opposed to just labor overlap.

That doesn't invalidate either of those exercises in isolation. It's just an issue of whether we can compare across them. Clearly there are reasons to be concerned about worker harms in both cases. As the simulations show. Trying to find a setting where it's very clear that you just have labor overlap without having product overlap, is really difficult. Which is why they've had to set it up this way. And I'm very sympathetic to it being hard to find, not just in industry, but with public available data that would allow you to do this more convincingly. I wonder if the answer is just to simulate an industry.

You're already calibrating a lot of things and stimulating a lot of things come up maybe just come up with one that fits the need structure. I will more or less stop there period I just want to emphasize again, how incredibly timely this is. As a discussant is kind of my job to quibble with some of the implementation choices. But, this is a hugely important policy concern right now. We don't know a lot about it. And really I think it's our job as a research community, as well as an enforcement community to try to figure out what fraction of transactions are actually just completely flying under the radar.

But may be harmful to labor markets because we haven't been implementing those. I'll stop there.

[APPLAUSE] And now we have time

[>>] for some questions.

[>>] Thank you so much for the discussion.

[>>] Hi, I enjoyed the clarity of that paper because there's a lot of things going on. Having something that actually lets you work through the different pieces, without it being gigantic model was kind of helpful. The one comment I have is, I've always thought the difference between a model with a union versus a model with workers mesh bargaining was, are we having negotiations about the marginal product of a worker, versus the average product? And it strikes me that this would be an easy switch to go from one type of labor market to another, depending on what's being split.

And given the prevalence of unions and the united states. Small. It might be simple to address those setups. In the paper.

[>>] Yeah, that's a really good question, we thought about that quite a bit. We have this marginal cost assumption, we have to go through the math for sure, but I think it's actually the equivalent problem, if you had individual workers bargaining period in this case because the marginal worker is the same as the entire worker in terms of the math. We would have to put in some sort of diminishing returns to scale or costs I think into the model and then we could look at, thinking about the marginal worker, maybe not as pivotal to the firm in terms of their output.

[>>] I'm over here. So, I'm wondering, how exactly do you deal with worker identity in the sense that you could imagine that more specialized workers, more hit by a merger that I guess it's in the same area but

at the same time they might be more mobile. And I guess for some workers minimum wages might be binding, and I wonder if you take that into account.

[>>] Yeah, we definitely can't adjust that workers outside option. We do set it according to what it is for nurses. What we think it is in Colombia but it could be much broader for lower skilled workers. In terms of minimum wage we have not thought about that. But maybe we can talk after.

[>>] This is a similar note to allana's question. But, so the stuff I'm using rudder tools strategic interaction is to think about labor market is a potentially really valuable practice this

[INAUDIBLE] And I fear if we don't read it, we are going to end up reinventing the wheel and having a lot of debates all over again. For example think a lot about what our labor unions or labor side exactly negotiating over and what do they care about with and without an agreement, how should we think about when the firm chooses a quantity and how it's responding to wages, and how should we think about who exactly the labor side is caring about with an agreement and without an agreement.

[>>] It's definitely a really difficult choice. I think we made the same choice as Alan did in his talk yesterday. The union cares about wages times output. Is kind of both. That's a bit of a cop out. The firm is just setting the quantity according to the product demands period we don't have any kind of labor supply elasticity that's containing the firm and the number of it can hire.

[INAUDIBLE]

[>>] One last question.

[>>] I have two comments, first excellent paper, I enjoyed it. For following up on the comment that was made, when you're bargaining, your bargaining just over W , bargaining over W , setting $W&L$. So that you're not a demand or supply curve pick the second question I have, in your simulations, I think you could do the exotic experiment, the actual experiment, what efficiencies you need. In order to offset these harms. And does an efficiency have a bigger effect on the product market, or the labor market, and under what circumstances. You know, the minimum efficiency you need in order to make the merger desirable.

[>>] That's a really good suggestion. There could be interactions of the efficiencies in both markets. That's a good idea. In terms of bargaining over $W&Q$, I think we'll have to give that some thought. It's hard to reconcile the product demand versus the bargaining over queue. Maybe I'll talk to Alan about how he can keep that up.

[>>] OK, thank you.

[>>] And now for the 2nd paper come up Benjamin better From MIT.

[>>] Do I see myself anywhere. Where are my slides covered there we are. Thank you very much for including me in the conference. Very excited to talk to you about vertical integrations. So come with the motivation for the paper is healthcare market has been steadily growing around 80% are physicians are integrated with other hospitals or insurers. 70% of our drug coverage is now integrated between PMS and insurers and 50% of all inpatient care in this country is now delivered by hospital systems also in the business of selling health insurance. This paper is concerned with this type of inner energy -- it speaks to longstanding literature on differentiated product markets. And on integrative care. And both of these literatures give us really ambiguous things to start from in terms of the welfare effect period on the positive side they say eliminate double marginalization is likely a good thing it's fundamentally a friction on the market it might increase coordination of care. Incentives for hospitals to engage in wasteful examinations. Provide very little value and the only reason do it is because the price of it. Consolidate

market power, it might lead to incentive for rivals from access to valuable hospitals and reduce access to care.

Despite the interest in this kind of work there's been limited research on this because data and setting, on the data side it's very hard to track ownership and a lot of these settings. In enormous amount of work. Ownership of physician groups and hospitals and on the setting side what happens with integration, often they come with restructurings and you need to give them time to really show up in the data and in a market that's very active like the hospital market, by the time you look at it again there's been a lot of other mergers of hospitals and it's not clear what you're looking at.

We are interested in this questions and because of these challenges we are going to look forward in another setting. We're going to look for it in the context of the healthcare market. And a couple slides I will try to help you map the setting to the American setting. The best that I can. But fundamentally we are going to look at the privatized healthcare market where there's private insurers and private hospitals. And contract structures that look similar to what we have in the US. And it has, we can observe between vertically integrated hospitals and non vertically integrated insurers.

The complete network of agreements. We have very detailed data of ownership on insurance claim structures. On insurance rates. Enrollments and premiums and incomes. And how much they pay out of pocket which is how much the insurer pays and so on. The paper structure is in two parts. The first part I'm not going to talk too much about today because of time, largely descriptive tried to ask our firms different than non vertically integrated firms. We have 3 headline findings from their. 1 is vertically Conditional

[INAUDIBLE] on the patients demographics and the case and the complexity. The treatment and all the other things you would like to control that might affect the cost of the service. And by charging I mean the true price. 30% less through their own insurers. Very much in the business of getting people to stay within their systems and they do so to a large extent by providing them generous deals in terms of cost sharing. Cost sharing is more generous if you stay within the system. Despite our best efforts we failed to find any evidence of differential quality cost or treatment decisions at integrated hospitals for their own patients. Where the literature will tell you there should be something happening. This is where they have some informational advantage and they don't seem to be leveraging it. Which is consistent with other findings on inpatient care. What I'm going to focus on today is on our findings from a model we developed and estimate of the market which includes hospital prices and premiums and most importantly plan design. So the structure of the plan, meaning the network and the coverage that is offered by each plan. In terms of that it's really important. Vertically integration around \$42 million to put that in context, 6% increase in patient spending period now in patient spending is very elastic so 6% is a large increase for a market. Bench market even further you can think for the people who are getting harmed by vertical integration this is equivalent about 5 monthly premiums of surplus. The reason why it's going to happen, going to silo the VA hospitals from their competitors and those competitors are going to face less competition and going to increase their prices. Importantly this happens only through the endogenous restructuring of insurance networks. And response to the market structure. And if you fail to account for that restructuring, you'll get the opposite side on the welfare effect. One of the interesting things we find here.

So, to highlight the mechanism, I'm going to start with a simple illustration. The simple setup you can put this into, there are two hospitals upstream. The market has to determine by various means prices denoted by P . You see in a bit it's the only meaningful cost sharing element in this market. Which is

denoted by C and the premiums and the demand is structured by the arrows. Represented by the arrows. And H1 and Ma are integrated and in blue and what it means is they set their own price, PA 1, and the coverage of the insurance plans so see NCA 2.

And maximize the profit. While MB is not integrated with H2 and determines its own coverage rate period the design of its planned and its premiums unilaterally. To maximize its own Profits. I want to highlight the distortion, or the changes are at the top and the paper we include also the pages in demand. The key for us is at the top here. The first thing that vertical integration does is it creates internalization of profits. The effect of each plan design on retaining profits within the system. And increases incentives to self preference. To increase coverage within the system and to narrow it, which is represented by lowering the coverage outside to kind of rival hospitals.

The integrated hospital understands its prices in demand for insurance. For integrated systems. Pushes its own prices down. Increases incentive to increase rival cost per equity attempt of rising the cost to the rival insurer will shake off some of its demand and hopefully some of that will come to my own insurance plan. But the interesting action happens through the rival insurance. The rival insurance is placed in a position where these integrated insurers are going to offer pretty generous cost sharing terms to their own hospital. They have pretty generous, in terms of risk protection, they are competing against.

They need to offer something competitive in this market. They need to decide where they're going to provide this risk protection or coverage to. They cannot do so or dissuaded from doing that at age 1 because they have this incentive to raise cost. H1 is going to think it's an opportunity to increase their cost. Make their plans look bad. And get a lot of demand. They're going to have to do that at age 2.

They're going to have to lean on the non integrated partner. You see this is happening. The arrows in the middle and the diagnosis get fainter as less and less demand is filling them.

That is siloed income that's the silo of hospitals that is happening. Any static picture this looks like a lot of foreclosure but it's coming from the downstream. To change its input period rather than the upstream for closing the downstream parent that comes with differences in the analysis and the outcomes. But, fundamentally our finding, the way to read it, we put this through the and quantify things. The losses from this diagonal line is getting fainter. Becoming more difficult. And the increased price on the gray line top of the non integrated line, offsets the gains from lower prices on the blue line and the integrated level.

This is fundamentally what we are finding. So here's a crash course on the Chilean private healthcare market. We're looking in Santiago, within 2013 to 2016, on the insurance side there's 5 private insurance, I should say this is the healthcare market. There's a bazillion regulations about it. I'm

[INAUDIBLE] Here are the key things you need to understand. There's 5 private insurers. Offering individual or family plans. You go to a website and you enroll and the regulation says there are different plans for different age groups and gender and family status and there's community pricing. If you're a woman between 18 and 34 with no dependence you see one set of plans and premiums and if you're a man, 35 to 45 and you have dependents you see another side. In this market there's negligible deductibles. Really for inpatient care the most relevant thing, the only relative thing is this coverage rate. Which is a fraction of the bill the insurer will pay if you go to the hospital. The regulation dictates that insurance networks have to be tiered. Every general hospital, in patient care hospital, has to be in either based tier, base coverage, the median is around 55% of the bill is paid by the insurer, every plan, every insurer can decide to have a different set of hospital to call them differential and have a more generous,

so 88%. Effectively on the ground works a lot like having in network and out of network providers. With the caveat that there's going to be negotiation for what we would call out of network providers here. A base tier hospital and every insurer can offer very structures of this in network and out of network. Or preferential or not preferential. On the hospital side there's eleven large inpatient hospital providers. They provide meaningfully androgynous quality and that really matters because our upstream model, our upstream providers here, differentiating meaningful ways period some of them are the best at providing maternity care, others are good at infectious diseases, and you as a single patient might be at risk for different types of demand. Different types of treatment. That are better delivered at different types of hospitals. Important for us, others two star hospitals that are not integrated.

That provide almost uniformly better quality across the board period you should think about them as those are the ones benefiting the most from getting excluded or getting isolated from high quality integrated hospitals. There's an outside option here both on the public side for insurance and for hospital care. It's relative for the hospital side. Insurance market is really cemented, you can understand almost everything, on your own. On integration, tour of these ensures our integrated. They each own 3 hospitals and there's one set of hospital insured that's integrated at the beginning of our data and stops being integrated.

Get in a fight around surplus explaining. We leverage it very minimally. I'll show you exactly what 4. To give an idea come with the insurance account for 60% of admissions and their own hospital. They are very successful. Control only 13% at rival hospitals. They do so to a large degree by being more generous. 30% more likely to be preferential of its own insurance plans than its rival insurance plans appear to be clear, there's still going to be non integrated insurers offering plans that have that aren't integrated with rival insurers because those bi hospitals might be the best option for maternity care.

Here is our model. And the first day insurers are going to design their networks and their coverage. And then they're going to negotiate prices with insurers and hospitals. Simultaneously set premiums.

Consumers are going to see that and decide what to enroll in. If they get ill they're going to decide where to seek care. Stage 2-3 and four are fundamentally With

[INAUDIBLE] some adjustments and really stage 1 is where we bring something new to the table. So, if they get ill and they are enrolled in a certain plan and the consumer is going to choose to go to certain hospital based on how much they have to pay out of pocket, what is the distance they have to travel? They might be influenced by Di marketing. This is, the insurers are very good at marketing their own hospitals. Their systems by which you can call and ask where should I go for these kind of things. Will come and go to our own hospital, and we can see kind of disappearing when this integration happens. There's hospital diagnostic care, perceptions about this horizontally differentiated quality which matches what we know to be true in the market. People seem to understand certain hospitals are better and others are better at other care. What is important about this model is we have this differentiation so there's value for broad access and this model because of location differences and horizontal differentiation and hospital care. Price electricity is which by different coverage levels. On the enrollment side, people are buying plans for themselves and for their family. They care about the surplus that their whole family unit is going to derive from that and that has to do with the risk they are exposed to.

The insurance plans cover the insurance market themselves. Different age groups that show up in the data. Most importantly because family is live in different parts of the city, they are exposed to different types of risk, they value networks. Even in an outcome here coming out everyone picks up the same insurance plan. Now on the insurance said, insurers are going to set premiums to maximize their own

insurance profits. And if they're integrated, some hospital profits. The insurance profits, every consumer picks up my plan, minus cost, there is no risk adjustment in those market, and the paper we document, there's under provision of private insurance as our theories predict, it is there.

And then if they're integrated they're going to care about their hospital profits, following the literature, we're going to allow for that and kind of internalization to be perfect or more than perfect in a way. We're going to identify a parameter, it is close to one for the sake of today you can think about it. For everyone that is integrated. Integrated hospitals and insurers come with their setting the same objective. They are just maximizing something else. That's the only thing that changes from here to here. Maximizing of price. And if they're not, they're going to bargain on us.

Endless negotiation is very standard. If the hospital system disagrees with the insurer come of the whole system gets disconnected. What happens in this agreement, what everyone else is doing, the only thing that is specific here is some penalties to violate access and there's some legal penalties for this agreement that are happening here. They still happen but, there is some rain for consumers to sue and get some benefits out of that. Explain some rogue agreements that you wouldn't explain otherwise. The interesting part the new part is on this data which ensures are going to decide on every plan, what is the base here and the preferential here and every plan they are offering.

They are going to do this, delivering consequences of this decision. How does it affect the subject. And some design cost. Largely has to do with slacking constraints. This was the slide that was the hardest for me to cut off from this presentation. How we go to solve this problem. This is rather a complicated problem, but it turns out it falls with any class of problems that people have made a lot of progress on since the 2000 tens and we are able to leverage some results that speak a lot, kind of clearly come into the mechanism design problem that these insurers are trying to solve.

It works remarkably well solving these problems. And it works at scale for hundreds of insurers. So, headline estimates come up much like in the US, more premiums than hospital prices come unlike the us we find hospital prices not nearly 0. It's -0.8 for people that are not from healthcare period this is high. Right? And healthcare is basically 0. The reason why it's more than 0 in Chile, when network are tiered it's easy for people to shop around and we see that in practice. But in Chile you can actually call the hospital and say hey, how much would it cost me, and they will tell you a number.

And

[LAUGHTER] that's important because the system is simple that way they're not going to ask you which number plan are you in. They have one price. They have one tier. And that helps people shop around. Still shopping for something highly uncertain about the package of services you get. That is of course difficult. And interesting thing about this to note is because people value premiums more than comment respond to premiums way more than prices, because the downstream insurer has an advantage here. When the hospital increases its price by a dollar, it can offset it by less than a dollar decrease in the premiums.

In equilibrium, it's important to note this is an equilibrium, because it's determined by the networks they are selling, they have this advantage and they can offset the increase in cost by less than the increasing premiums. If you're concerned about what is the role of elasticity that you might be familiar with in the prices, the main thing it's doing for us is it's preserving this behavior in and out of network. It's keeping people within network. Even though in the US, the margin of care, we are very elastic moving out of network. This is what it's doing for us primarily.

On the bargaining side, we estimate bargaining weight, what is telling you, Not [INAUDIBLE] through bargaining weights, but through actual market power and value that they provide in the system. We have a form of results that tells us that in this relatively common bargaining framework, if we did not have auxiliary data on hospital cost, which is not the full cost, but it tells us a component of the cost, our system would not be identified, we would not be able to identify the remaining hospital cost and the bargaining simultaneously. We [INAUDIBLE] take this to come up we are going into 2016, later part of our data. And we ask will, with integration what would happen without it? We break the vertical integration and we re optimize their coverage plans cover we let hospitals renegotiate their rates, insurers to reorganize their premiums. People to choose again what they're buying. Starting from the plan design, we can see that, here what I'm showing is the base coverage and the preferential coverage is what's highlighted. On average, the base coverage is 52% in the baseline and 70% in the baseline and this falls by 6% and increase by 2% on the preferential.

And same pattern, but even starker for the non Vi insurers. What's happening here, the ingredient of staying in network, going out of network, going stronger. Steering us more effective. They are steering people, in a particular direction. And you'll see exactly why. In terms of who gets to be on the preferential tier, in baseline, the way to read this number itself professing states of I hospital, how likely it is to be preferential on AVI plan, 67% of the time in baseline. And that drops around 1/3 once they stop being integrated. And it drops around half on non Vi insurers.

22%. 22. 1 it's how likely is the VA hospital to be preferential on a non Vi insurance plan. And the drops from 22% around 10%. But the most interesting action comes from the 7.4% on the star hospital preferencing rate on the insurers period this seems small, but that's really important because that's the margin in which Vi insurers are going to pick up preferential plans, to the star hospital high quality non integrated hospitals and they're going to put it for the people that really value high quality, high complexity, high value care. And that's where it's going to create competition for the former partners, high quality partners, and affect the prices.

So moving on to prices, one thing to note here, because of all the steering, the average price in the market and the average price experience by consumers are very different. When you eliminate vertical integration, marginalization kicks in an average price between H1 and Ma, or this is representing, the average integrated price, that increases it increases by 23%. The downstream insurer no longer has an incentive to depress premiums, to steer people to its own hospitals. But the insurer is not passive, it's steering people away from where the double marginalization hurts the most and in fact along this vertical chain, the average price consumer is false.

What is happening is that all of these, if you remember, they own 3 hospitals and you should think about them in quality. For simplicity. They are taking away people from the middle ground. They are steering low complexity care to the downtown hospitals, that are cheaper. They're low complexity. And reducing transportation costs. That's good for consumers. High complexity care, high value care which carries the bulk of the surplus it's steered toward the high complexity, high quality former partners comment now increase competition from the star hospitals. They face lower prices their. And the other averages, one thing important here, and limiting integration both upstream and downstream but upstream providers are differentiated, provide different types of care.

Insurers our financial institutions. If you take away the integration, they are fundamentally identical. Competition among them is way stronger. And the power here means that hospitals are in much better position once you eliminate this differentiation that they had through vertical integration downstream. Substitute 1 insurer for the other end that gives them an advantage in negotiation. The average rate, the average price there increases. But the average price that consumers experience does not appear because none insurers are doing exactly the same play as Vi insurers period they are steering consumers away from where this increase hurts the most.

They're taking consumers back for low value care to downtown Santiago for low complexity care at cheaper hospitals. And they're moving high complexity care or retaining it at the star hospitals that now face increased competition. There's a lot of resorting of patients, away from middle quality that seems to be largely distorted by the incentives created by vertical integration. If we look at the demand, so this is 2016, it's a bit different than the 60% number I showed you before, if you look at the VA hospital, 70% of the technicians that you see in the baseline is coming from its own insurer in our baseline, 2016 model. 24% comes from other non VI insurers and 4% is coming from the other VI insurer. But when this is, when Vi is bad, this is telling you that ensures essentially identical. So now, the admission rate at VA hospital look essentially the same across insurers. And this speaks to the fact that access has become basically uniform period those diagonal lines go back to being essentially the same. So, who benefits? The VI firms lose a better quarter of their profit. 87% of it is recaptured by their rivals. And non VI insurers increase about 90%. Now consumers are almost all better off.

72% of them are better off. Who is worse off? The ones that are very loyal to the VI insurer. They see double marginalization kick in. But they are losing around \$8. A member on average. And the ones that are benefiting are getting about \$52. And they are the ones on non Vi Plans. 5 monthly premium surplus. The important part of this is, BI's are decreasing. The welfare number is negative. Or positive because we've been the -- if you help coverage fix come you'll get a different answer. The orange bars are the full adjustment numbers. Which is what I just showed you.

The green bars is what would happen if we helped the plan design as we see it in the data. And so what happens is if you hold it as you see it in the data you'll find via is largely a good thing. What are you introducing, by having, by eliminating BI you're reducing marginalization and eliminating the raising rivals cost effect. But the rising cost was already weak.

[INAUDIBLE] Now, that's all good but this is an unstable situation. Because you're creating a whole problem. Leave plans as they are, you have vertically integrated or ensures stuck with plans that the only reason to exist is because they're trying to steer patients that were formerly integrated hospitals, which they no longer own. Those in former partners are going to hold them up on that value. The whole system the whole business model relies on me giving that coverage and I no longer take a share of your surplus as an insurer. I want to be paid for it.

Therefore it is clear the insurers are not going to continue to retain those plans and keep offering those plans and this is why we had to endogenous the plans. To be clear it is not as simple if you do this analysis. I'm going to study these situations from a trust perspective. The plans we see are not the plans the rivals are offering.

[INAUDIBLE] That's wrong completely about what happens period if you remember the plans, it's fundamentally this other line that was also weak diagonal connections. So, fundamentally, breaking vertical integration breaks this via hospital silo and changes the healthcare effect of integration. Lastly to

conclude, so vertical integration distorts equilibrium prices coverage and access pick the price effect of vertical integration in our setting seems to be largely positive again double marginalization, eliminating is a good thing and the cost effect seems to be relatively weak in our setting but it is through the plan we design that things flip and looks a lot from the static picture like foreclosure but it comes from a different source.

It comes from the decision of seeing who you're yours is. It Harkins back to the literature that thinks about choices. But here the fundamental difference if you go back to the literature is the upstream is differentiated.

[INAUDIBLE] It creates different mechanisms. Now we are finding an outstanding role for plan designing healthcare market. It flips the welfare side and provide solving these kind of at scale. I didn't have time to talk about this today but we provide and say in our setting we don't see quality or cost gains for vertical integration, we can give you a number to say how big would it have to be? I can tell you the cost efficiency that would make a vertical integration are really really low, around 20%. That's not reasonable. But the quality affects could offset this.

They would still have to be quite large. Benchmark this, what would happen to people who had different preferences. Might look more like the US. Whenever the premium is larger than prices and more or less looks the same. Supplication on the is very clear, if you want to curtail the negative effects, you need to regulate the networks. That's where it's coming from. So, this is where it's coming from. That's it.

[APPLAUSE]

[>>] To discuss the paper we have From Stanford.

[INAUDIBLE]

[>>] All right. Thanks very much. It's this button. OK. I have to go through all of the slides. Ohh boy. Oh, one second. Are we, OK. Is there a way to click through faster? You guys are seeing all this stuff? There we go. Thanks so much for having me. There's a lot of this paper and I knew there would be as soon as I saw the starting point was the paper. So, I anticipated I think correctly that much of binny's discussion was going to be about the modeling framework and thinking through the logical steps and how they break it down in the paper.

I saw they broke it down in a very detailed way. At every step of the way. And so I thought that instead of spending a lot of time quibbling cover the most valuable way I could spend my time is by giving you guys some intuition about what's really driving this underneath. As you can tell there's lots of data and lots of careful work to understand by the modeling at every step of the way actually made sense. I'm going to give you a snapshot of some of the descriptive, some of the work that was in the paper.

To justify why the decisions made sense. OK, so, Ben gave you an example of the market structure and kind of a dummy example, here say figure from the paper that shows exactly the market structure. There are 9 hospitals here. Labeled , 8 hospitals come up for some reason labeled H2 T 09, or H11, never mind comparing these are all private hospitals. And there is one public hospital and there are several insurers and the dashed boxes around sets of hospitals and insurers are going to basically integration. So you see 4 is connected to H2, H8, these are all in one network.

That's what we mean by integration. The bottom line that Benz showed you, I'm going to reiterate, this is one piece of the many results that are there. That vertical integration is bad. And specifically if we were to do the comparison, take vertical integration, take the market as it is, and compare it to, which we turned off altogether, the benefit accounting for consumers, accounting for the firms come of the hospitals,

accounting for the insurers, accounting for everybody's total welfare, we would get a net benefit of about \$40 million. Right Ben, it's not in Chilean? And so the 41 points, \$71,000,000 is a figure that's in the bottom there.

If we work our way up, we see as I highlighted here the consumers are benefiting and they are a big part of this 40 million. But another big piece is this thing called moral hazard spending and this is a little bit different than what we often think of as moral hazard in other settings. I will talk about it in a little bit. Keep that in mind. So how did we get to this number? Basically there's a large modeling exercise and I'm not by enemies trying to argue that we don't need this. But, I'll sort of walk you through steps and then decompose them.

What we do to get this number is we take a number of consumer demand for hospitals per the reason we could do this in part is because the Chilean system works more like a two part tariff than the way that insurance works in the US in the sense you pay a premium up front and then you basically pay for service when you go to the hospital. That's the reason I imagine that Ben said when you call the hospital and ask for a price they can give you a price period they can give you a price because you are actually going to pay a price that is foreseeable.

Not, and is not dependent on some sort of later stage bargaining. That's really nice because then you see consumers making choices over hospitals for specific conditions period something on their data that allows them to see how consumers trade off prices. For different hospitals and presumed anticipated quality of care at these different places. Given their conditions and given the insurance plans they are currently in. Now they take this model of consumer demand which is already an estimation exercise and they put it into a model of downstream I suppose of consumer demand for insurance plans. You anticipate you know what conditions you're going to have an expectation.

You make your insurance plan at the beginning of the period as a function of the premium you anticipate. And the utility, the inclusive value of what you're going to get once you're in that plan. Now we have 2 orders of estimation. And we feed that into a model of price setting. Then we have this is kind of interesting it happens at the same time in their model. Basically have the hospital and insurers bargaining over prices. They bargain over the split of revenues. From the consumer side or the split of cost sharing, the insurer and the consumer for every transaction and at the same time they have their insurance companies setting their premium choices.

Simultaneously choosing all of the prices it's going to encounter. The revenue it's consumers to get from the and the amount is going to spend paying the hospital for every bit of care. Once we have that price setting model, we feed that into another model. Further up or downstream, however you like to think about it. Where before the insurer has decided on all the prices they decide on the design of the actual insurance plan. How much coverage they're going to assign to every hospital treatment. And specifically what important margin is going to be which hospitals they include in their preferential tiers.

Or they give preferential status to different plans. This is going to turn out to be really important, and I'll show you why in a little bit. Once we have all those different pieces, that stimulation to figure out how the market will, which turns out to be quite complicated. Really mostly because of the insurance plan design. And then they can do their simulations and compare. OK. So, how did to get there from the perspective of the data, so, I'll show you a couple snapshots to get at this. One snapshot, there's no modeling at all in here this is just raw data.

Here I have a pair of tables from some appendix. I don't know. That has two ways of looking at how preferential status and integration interact with where consumers eventually go. You can think about this as some evidence some very preliminary evidence of steering through preferential tearing. The left hand table here, shows you the percent. So, on the X axis you have all the hospitals. Let me see if I can show you. If we want to keep some numbers in mind, let's take the first bucket, the first box and remember, we have ensure MA, that's emphatically integrated with hospitals 2-3 and eight.

So, we can follow these a little bit in our table period the left hand table shows us the percent of plans from each insurer. Give preferential treatment or have a preferential tearing for each hospital. On the Y axis we have the plans. If we look at the top row that's ensure in a. We are number 238. We see are shaded in darker blue because they have many more of their plans giving preferential treatment or preferential tearing to the hospitals that are vertically integrated. It's worth noting there are other hospitals that are not in there. That also have preferential tearing.

It's just a vertical integration corresponds strongly to having more concentrated preferential treatment. More so for ensure MB. I didn't emphasize it for you when you look back through the picture but the first hospital associated with MBS hospital age 4 which you can see is very dark blue. Now, why does this matter? We can take another snapshot on the right graph. The right hand table. Which looks at a similar kind of thing. Instead of looking at the plan level it looks like the percent of a commission. So what percent of people with insure and let's say wind up being admitted to hospital age 2 and you can see there's a high correlation between these two with the darkly shaded boxes on the left and the right and we can see this more directly, I had a hard time doing the comparison, so I just put them in the graph.

There seems to be a pretty strong relationship, whenever hospitals are integrated, they are integrated with an insurer, they are more likely to be preferred and more likely to get patients from that ensure. It's worth saying, going back here, there aren't all that many zeros here. All hospitals, I think, more or less, admit patients sometimes from all plans. And so, there is lots of shopping around, this is going to be some useful variation. The main point here is there seems to be pretty strong appearing to specific hospitals based on preferential treatment and indirectly through the vertical integration.

I'll show you more about that. Actually I'll show you more about that right now. Let me show you more evidence that the steering is not coincidental. It doesn't seem to be just that people that they like. There seems to be as far as we can tell a convincing evidence in the direction of the steering being somewhat causal. One way to look at this coming out perfect, goes in the right direction, if you look at people who move and this is another figure, people who move locations and therefore choose a new plan, and you look at the event study of how likely they are to wind up going to hospitals that are preferentially , that are vertically integrated with the ensure that they move to, and generally speaking preferentially to tiered, you see there's a sharp increase.

The left hand study there. You see that up until time 0. When they move there is basically no difference in how likely they are to use preferentially tiered hospital as soon as they shoot up. OK, why does this matter? They use this notion of allocated moral hazard. Somewhat settled that Ben mentioned somewhere in his slide. So, the general idea here is that because hospitals are specialized in different things, but many hospitals are good even if they're not the best. And sometimes even public hospital is quite good at simple procedures. The way they look at this in their model or their paper more generally, is by looking at people's choices of hospitals for each, for each diagnosis that they have.

They use this diagnosis model, the demand, to look at the value, which they determined, which they define as a quality hospitalization coming for each hospital treatment pair period this is what this graph is showing. It's important to note that access here comes with the Y axis here goes below 0 and the reason is the baseline value here is the public option. The public option which is generally cheapest I should mention. And what this shows you if you stare really hard it's lots of different colors. This shows you that many of the hospitals that are vertically integrated actually have blue spots.

Which suggests the public hospitals are better. From the perspective of consumers. At some of the treatment diagnosis. The reason this is important is because what they mean by allocated inefficiency or allocated moral hazard here is preferential treatment, preferential steering through the vertical integration, plan structure, basically gets people to use the same hospital more or less all the time. And sometimes this is efficient because hospitals are good at some things. But in many ways come up many times it might be inefficient because the people are going to be using same hospital for treatments that they could have gotten elsewhere.

In ways that the specialized pricing structure might be inefficient period from the consumers perspective. And from a social perspective it was inefficient any case. So cover the last thing, I'm out of time here, I want to show one more thing, basically the model operates under the assumption that there's going to be lots of adjustment. A big point at the end of the talk most of the action in terms of getting the welfare to be positive at the end, welfare from 8:00 vertical integration at the end is the fact that formerly vertically integrated insurers are going to readjust their plan structure and remove the way that they do the preferential tearing of the hospitals they are integrated with.

One reason to think that's not crazy is they can actually see an example of this data over the course of their panel they have a vertically integrated pair that winds up disintegrating. And they can use that variation to look at the effect of the preferential tearing and they see exactly what bins model is showing. They basically show that when a hospital disintegrates, the probability that a formally integrated hospital preferentially teared goes down. Have you pile up all the pieces of evidence I showed you before, you should expect once that happens you should see the prices change in kind of the right direction. And that people, and that the consumers of the hospital readjust as well. And this is exactly what their model shows. Basically without vertical integration, the formerly vertical integrated insurers will raise their premiums because they no longer internalize the value that the hospital is getting from the steering. The formerly VI hospitals sometimes raise their prices and sometimes lower their prices but most of what happens and most of where the action is, is that basically the vertically, the formerly vertically integrated insurers wind up changing their coverage and the increased coverage for other hospitals and decreased for their own hospitals.

As a consequence formerly being steered to expensive hospitals for conditions that don't need expensive hospital care. Would go elsewhere and in particular would go to hospitals that are public or just more centrally located which the model shows us very important part that's where most of the efficiency gains are coming from. I'm out of time and been already talked about the additional bells and whistles they've done and so I'll leave it there, thanks.

[APPLAUSE]

[>>]

[>>] We have time for a few questions.

[>>] Hi, thank you, this is really fascinating. And I guess by virtue of being here, in the US, the US regulatory agency and thinking how do we apply these results to what's happening here, and I think one of the arguments you hear a lot about here, or in the US, these are vertically integrated health systems. Not just hospitals. At one of the arguments they make as we are actually keeping people out of the hospital. To begin with. And this may be asking too much. If there's any way to kind of respond to that kind of argument.

Within the limits of the data and the setup you have here. Or do you have any thoughts on that? Bam these are also integrated health systems and they will tell you the same. You asked them what sort of initiatives you have in place and they have a very hard time to tell you what they have. Now in practice, we could look at things like admission rates, there's nothing there pick we can look at infection rates. Nothing there. Whatever it is they are telling you they are doing, but we don't seem to find. That's not necessarily true for outpatient care which is not our focus here there is some evidence they're able to do those things outpatient care.

Managing these kinds of integrated operations is something that is complex or carries the volume for inpatient care period it doesn't seem to be happening, it doesn't mean that it couldn't appear in a way that the environmentalists will tell you that they don't have the incentive to do it, is very profitable. Even without.

[>>] On your left. Here.

[LAUGHTER] Very interesting and thought provoking period they question is can we apply what we have here for online platforms because I'm thinking online platforms, which is similar to the insurance coverage, but I guess one difference is here, you have the patience but for online platforms there are kind of two different platforms period I don't know how much of that will change your --

[>>] Very good, too, after I did the theoretical model behind these things and it looks a lot like a platform model and the fundamental is, in a way this is saying, if the VI system, the self preferences isolates, does it push away everything they are not telling away from their platform, the other platform that is selling not the integrated products, not the essentials, then they are going to come those products on the other platform are going to face competition and increase prices. Essentially all of these models you can write it without any risk. Risk coverage and very minimal role period it's fundamentally platforms and hydrogenous.

And so I think it's very much within this line.

[>>] Hi Ben, over here. I'm a big

[LAUGHTER] fan of the paper. It's incredible work. I'm excited to see how this goes, going forward. My question is kind of unpacking the consumer surplus gains from banning viper how much of this results in healthcare that consumers seem to value could be way too much that seems reasonable compared to clinical quality, how much if you unpack that of the consumer welfare gains come from convenience versus cost savings, versus maybe something like clinical quality. Do you have any sense of the estimates, what might be there, and what we might learn from that?

[>>] Exactly what you're saying is pushing our surplus measures down period a lot of people we say, they seem to be going, shopping a hospital that is different quality but they value it a lot. And they are really discounting the travel distance period for example something that is actually meaningful. And that is exactly within this line pushing, if I put what I thought was the objective value, it would be much larger. I think it's within this. In other parts of my work, I would have taken this fixed effect for the hospital

diagnostic and tried to the true value of the true quality, taking beliefs, and those beliefs are going to be the two grading.

It speaks to that. We don't have a direct composition that says this is the value of benefits. It's hard for us because it's hard for me to tell, without putting my ideas on it, this is convenience versus this is truth. But, it just definitely expressed there and my feeling it is depressing the consumer surplus gains.

[>>] You're saying it would be even stronger without?

[>>] My feeling is we get A lot of

[INAUDIBLE] people end up going to these hospitals that are really high quality. For ingrown nail. And why are you going to this extremely complex care for something that is so menial. But there is the convenience element to it. They are putting a lot of value into the preference of that thing in terms of quality of care they would be much better off saying going downtown hospital. Simple, in and out, low complexity. Low kind of fixed cost operation.

[>>] Last question.

[>>] OK, so, this paper is huge, when I saw it five years ago. I'm glad you spent another five years making the paper even bigger. You probably have done both of the things I'm going to ask you about. Thing #1, I think an obvious thing to ask about, or any individual mergers, if you unwind them, welfare enhancing, and then secondly, I think this is probably a pretty good setting to study the idea that maybe vertical integration itself is a strategic complement. If my arrival integrates, I want to get siloed, I have a stronger incentive to integrate, talked about merger waves and merger bank runs.

This sort of idea seems like this would be a good opportunity to study that.

[>>] Let me start from the second one couple that's basically goes back to the foundational theory that cover the foundational theory is actually thinks about endogenous integration and what's happening, star hospitals, they wouldn't want to integrate. They benefit too much. The history is on your side. There's been new integrated in this market. The incentive is there. No, it is very much a competition. You're absolutely correct on this. It's not part of our paper. With the new entrance on this, now the first part, was about individual mergers very interesting thing. We do this analysis in the paper.

We have two integrated system. What if we just kept 1? If you take the high quality, the ones that own the highest quality and you just left them around, that's good for the average consumer surplus. It is really bad for 98% of consumers. It's hard to tell. You look at the average, the average is very misleading. It's really really good for the patients that have these enormous value. Really high value specialized care they're. But for most consumers it's bad. If you get the integrated cheap hospitals which is serving a large demand of very elastic consumers and you further reduce their prices by -- that's good for, 50% of consumers but on average the welfare is bad. It is there in the analysis but it's actually quite tricky and it's an interesting way, androgynous impact of these integrations.

[>>] We are going to take a break and reconvene at 11:15.

[MUSIC PLAYING]

[>>] Welcome back. I'm happy to introduce Zach Cooper. Zach Cooper is an associate professor of public health. And associate professor of economics on Yale university. He also serves as a director of health policy at yales Tobin center. For economic policy. He's a health economist whose work is focused on providing data driven scholarship that can inform public policy and his academic work is, competition hospital insurance markets. So they can influence price transparency on consumer behavior. And explore the causes of surprise -- we look forward to his discussion.

[>>] Hi everybody. All right. Thanks everybody for coming these last two days. On behalf of Steve, the Tobin center, all of us, we are so delighted to be able to partner with you and work with you in putting this together. As Steve said, exactly what our mission is. So, what I want to do is present, the 1st 2 and a series of papers that we are working on. Think about the causes and consequences of rising healthcare prices appear in the US. And the 1st paper, which was joined with Stuart Craig and Lev carnett. Thinking about whether there's 2 little antitrust enforcement.

In the hospital sector. The second paper which has those guys and includes itadori and Corbin Miller from treasury, what are the downstream consequences of rising prices. How does it affect workers outside the healthcare center. And really 3 takeaways from our work. The first is we do think there's evidence of under enforcement. We think that's mostly because of funding concerning. It's not that the FDC doesn't know a bad deal when they see it, we do. It's that we think the agencies funding is pretty restrictive. The second is that the downstream consequences of raising prices for mergers are very, very weak. Job losses for workers in the lower and middle, outside the healthcare sector. Right and the third takeaway for us is that enforcement is actually cost effective. For the federal government. Because people are losing their jobs, tax revenue goes down. And the drop in tax revenue is actually much, much greater than we think. Than the cost of taking enforcement action. So, this number, right, \$25,572, this is really the number that motivates a lot of my work. Its premiums for health insurance, for a family of four. Wild to think about. You can get pretty nice car for \$26,000.

The model individual in the US gets his or her health insurance from an employer period the average family is buying new cars worth. A new Toyota corolla is worth health insurance. Hospital pricing large for the same reason, that's where the money is. It's personality of health spending in the US. The sector of the economy that accounts for 6% of GDP. A lot of my work has shown the variation in health spending being driven by variation in hospital prices. We know that price growth in hospital sector is driving health spending in fact prices in the hospital sector have grown faster than prices in any other sector of the economy.

Over the last two decades. Now this has happened concurrently with a significant amount of consolidation. In the hospital industry. About 50 mergers per year. And if instead of graphing this in deals I grab it in deal size, we actually see it going up steadily over time. In a sense a lot of the singleton mergers happen in the early 2000s and now we are starting to see bigger systems. Come together. What we've also seen is, a modest number of enforcement actions. Largely about, count them, 13 over the last 20 or so years. And what we are interested in is that the right equilibrium Quebec and we think a simple test to adjudicate this is for whether or not we can see transactions and we can predict using standard screening tools.

Raise prices. All sorts of reasons we might think this is the efficient level of enforcement, right now. Maybe the deals that are coming out, going through, aren't problematic. Maybe they aren't lasting competition period conversely maybe the current enforcement rate is enough of a deterrent that the deals are coming out are problematic. So, what we are going to do is take the two standard screening tools used by the agency, right, the first outline horizontal merger line, whether the deal raises the hi of the party is, and leads to a post merger HI of 20 points, or greater.

Going to use that as a flag, we are going to flag those transactions that cross that threshold. And 2nd, we are going to follow, we are going to build a pain measure for each transaction. Which looks at where patients get care and then thinks about the demands and that since that insurers have certain hospitals in

their network and use that to predict the markups from a transaction. We're going to flag transactions that generate an increase and willingness to pay of 5% or more. I'm going to try to get through a lot period I'm not going to do a deep dive into the methods.

We've built over the last couple of years of database which we think is comprehensive of all mergers. That happened in the US hospital sector in the last 20 years. We are going to focus on mergers from 2010 to 2015. We are going to bring together claims database from healthcare costs which can have all claims from Aetna, Humana, and United. Third of the individuals in the US are private health insurance. And we're going to do a diff and diff. Take into account stagger or timing period introduce hospital fixed effects and do matching pair and see what happens to hospitals prices post a merger.

Over time, we are seeing that about 25% of the transactions we see in the hospital sector could have been flagged. As sort of crossing the threshold. There in the 2010 guidelines. Substantially raise the HI of the emerging parties. And when we split these deals down into the price effects they have, on mergers, we see that mergers that debris concentration in a meaningful amount. Increased prices 5 to 7%. Conversely I think it's also really important to point out 80% of transactions that don't lead to meaningful change in PH I really don't have a major impact on prices.

We also do this with the pain measure, we see some of the results. Mergers we can predict as bad, turn out to be bad. We take that as evidence that there is potentially under enforcement. Part of what is suggestive, that it is funding related, when we look at the nature of the deals that are happening across time. The deals that are flagged by the horizontal guidelines and where the FDC is taking action. We begin to see the story playing out. The average deal in our sample is raising HI by about 460 points. The average deal flagged by the guidelines is raising HI by 1800 points.

The average deal where there's been enforcement action raises one of the merging parties, age HI, the maximum increase we see in a particular transaction. By about 3400 points or predicted price increase of about 23%. These are really, really pragmatic deals. It turns out there are a bunch of five to 15% mergers. That appear to be going through. And what we want to you in the 2nd paper is say, what are the consequences? Of those mergers occurring. So the reason I think it's so important to look at this, it's because of employer sponsored health insurance in the US.

The modal individual gets his or her health insurance through an employer. And what this does is it creates a mechanical link between what's happening in healthcare markets, consolidation for example, and what's happening in labor markets. And we can go back to some of the theory that Larry Summers sketched out in the late 80s that says look, when the cost of fringe benefits go up, that's paid for by workers. And embedded in most of the theories as this idea that workers value the benefits that they're getting. They value it dollar for dollar. In theory there isn't a distortion.

A lot of literatures looked at the impact of new benefits. Extending for example, maternity benefits and found dollar for dollar pass through into wages. Very different about the price increases generated by hospital mergers appeared it isn't creating a change in benefits that workers necessarily value. We don't see these transactions raise quality. What they do is they make existing benefits more costly. Under those circumstances the theory begins to shift. You might not think that workers can internalize that cost. Be willing to give up wages. As a result we might see changes in the extensive merger. We are actually seeing job losses.

Instead of wage cuts. The second reason that they think it's so important, really development of this recent literature. That's positive that the way we finance healthcare in the US, employer sponsored health

insurance, is becoming and should be viewed as one of the leading drivers of quality nationwide. This is work

[INAUDIBLE] Angus Deaton. And the basic idea is that wages vary amount within firms. But insurance premiums do not. And so in practice they look a whole lot like a head taxed. And we often think of head taxes as quite regressive. You can think of an insurance plan for SSI that cost on average \$6000 per person. A firm can save \$12,000 by letting go of 225 thousand a year workers. They can save 6000 by going \$1000 worker pick when healthcare costs go up they are much larger person share of income workers and they may potentially bear the burden of rising prices.

When Amy and Owen have done simulations it suggests that if you think of it this way, over the last 30 to 35 years, rising health spending could potentially be the leading driver of income and inequality in the US. Larger than the effects of trade outsourcing. Automation or lack of growth. In real minimum wages. So, what we want to do in this paper is trace through the causal effect of rising healthcare prices. On these downstream labor markets. You don't want the causality to right to left. Doing pretty well, maybe that increases demand on their workers for health insurance.

We know from Kate and Robbins work that may increase prices. We want something that's going left to right in terms of causality. That's where hospital mergers come in. We think it's a useful shock to think about the downstream consequences of rising prices. We also think given the importance of mergers, this allows us to say OK, what are the downstream consequences of these transactions. Bring together all this rich data, we talk about the merger database and claims data, data on insurance premiums from the department of labor for a fairly small set of firms fully insured. Work with etai and Corbin who are at the treasury and IRS.

Have access via them the universal tax returns. Securely. Also say sadly this doesn't therefore reflect the views of the US treasury. Because they are their. Also have access to the CDC's restrictive mortality data. Tell you how that feeds in in just a second. And to give you the sort of punch line, we see the dollar increase in prices raises held spending by a dollar. Unsurprising. Health spending when it goes up by a dollar, raises insurance premiums by a dollar. And then we see complete pass through, in fact higher than complete pass through for reasons we'll talk about into the labor market.

We see a 1% increase in healthcare spending, lowers firm payroll and the account of workers by 4/10 of a percent. And the reason that is such a big effect, is because most of us have dependence. The insurance plan to purchasing isn't just for you, it's potentially you, your partner, and your children. We see that because individuals are losing their jobs, tax revenue collected by the federal government goes down. And we actually see pretty substantial health consequences. Because it turns out losing your job can be devastating. For your health. So, let's think about a merger. That softens competition.

And allows the merging parties to raise their prices. In some ways we think the relative elasticity demands actually pretty low. The dead loss of an old school Chicago census is actually pretty small because quantities don't fall. But this merger really represents as a transfer from consumers to producers. The vast majority of folks get their health insurance, or get their healthcare funded by insurance because they're not paying for it themselves period and we can think of this increase in price, leading to an increase in premiums of five. Because this is linked to employment, we can think of this increase as raising the cost of retaining a worker by 5 as well.

Now it's critical is when there is an increase in price. It's raising the cost of retaining all workers. Not just those who consume healthcare. This worker was in a factory who didn't consume healthcare last year.

Going to become more expensive to retain, simply by virtue of having employer sponsored health insurance. We can think this leads to a downward shift in demand for labor. And the question is whether this shows up on the extensive margin. That's really going to be the function of the survey come out the way we think about taxes, the demand and supply elasticity is, and there's all sorts of reasons we can think this is going to be employment.

And all sorts of reasons we think the instances are going to fall in lower income workers. First is again this idea of a head tax. It's a much larger portion of change and then the cost of retaining workers for lower skilled, potentially lower paid persons. We think this could apply to demanded workers. If there's a range of demand for different worker types, then all the workers become equally more costly to employ, you might think there is more elasticity demanded workers are going to be let go pick the third is really elastically supplied workers. Downward wage agilities.

On the extreme and I'm thinking about something like minimum wage period practice I'm thinking about my own lab. I don't have any pay flexibility for my research assistance. Turns out the biggest price increase we see post merger and our data is actually the all politics in this one are local. That raises the cost of retaining our a is by raising health insurance premiums. I can't pay an RA less. All I can do is hire fewer RA's. In practice I can't have half eight unit of Ra's. I'm letting potential hole RA's go. So, what we want to do in this paper is establish this causal chain.

Let me walk you through each instead of our steps. To make that happen. We are going to build a panel affirms, we are going to focus on firms in the US inside and outside the healthcare sector. 15 employees. Using EIN and the tax data. And then we're going to link to all of the W twos per EIN. For each firm, I think in the US, over 50 employees, manage the workers they have based on the number of W twos we see. And the total payroll which is going to be the sum of the incomes on the W twos.

We are then going to map health spending on to firms. It's a little tricky because you can't merge the claims data together with the tax data. We are going to proxy health spending by thinking about where each firms worker lives. And we're going to think of the firm's health spending as a product of where their employees get care which providers. How much care they receive. Measure in the claims data. And the prices that providers would seek here. So yales health spending is a function of how many people from the specific county is, where we have employees, and which providers, how much care they get, quantity, times the price of that care.

Then what we are going to do is map the price effects of mergers onto that measure. We can't just regress firms health spending onto labor outcomes so we're going to instrument them. And our instrument is going to hold a healthcare quantities fixed. It's going to hold the providers, we think firm employees go to fixed. And allow the only thing that adjust health spending overtime to be that firms exposure to the price increases from transactions. Here's the intuition, most of Yale's employees are located in the haven county. We know from claims data that most of these folks get their hospital care at Yale maven.

We know that the Yale maven merger raised prices. Let's call it 25%. And so yales really exposed to price increases from that transaction. The local power company in Connecticut has some of its workers in new haven but they also have workers across the state. Partially exposed to that transaction. The FTC or maybe Harvard is going to have some folks who actually live in new haven. So some of their workers are going to be exposed to that merger because that's where they get care. It's going to be a pretty small portion. We are going to do that estimation for every employer and every hospital merger across the US.

Wheel innocence have this measure of how exposed every employer was to the price increases of all the transactions that were happening nationwide based on where their patients get care. Or their employees get care. And the nature of the price increases across all transactions. And the key assumption, what we are going to have to prove to you, is those changes in hospital prices from these mergers aren't correlated with changes in firms, payroll, or unemployment. We are going to go to huge pains to show you that. Some ways the most convincing is actually this panel on the right period this is going to be with local labor market outcomes.

We can do the same exercise with firms. We're going to show you the correlation between changes and county level increases in prices for the mergers and things like local spending for beneficiary per person changes in income for the pre period and a percent change in the share unemployed. And what you see is the scale of the price increase induced by transactions is uncorrelated with our pretreatment trans and local economic conditions. C come with the same thing at firms. The thing we are going to show you, and I don't have time to really build in today, we can draw huge chunks of our sample.

We can throughout the firms that are growing a lot or not growing at all. Firms with high wage growth, low wage growth. Continue to see the same results. OK, so, let's go through our data results. The first, and this is a log level, a dollar increase in healthcare prices raises healthcare spending by a dollar per when you think for a fully insured firm, self insured firm, this shouldn't be a huge surprise, but it's the data. Next we are going to look at health insurance premiums. We have to look at 5000 firms. We have a pretty limited data set.

Pretty limited sample of firms with insurance premiums data. And what we're going to see is roughly a dollar for dollar pass through. Because we've had to cut down our sample so much to do this, we are going to lose a little power. But we are going to see roughly dollar for dollar pass through. And what we can measure really well with data is whether firms employees have a health savings account. You might think with exposure to higher prices merger firms might shift the workers and health savings accounts. We see no evidence from the IRS data that workers are more exposed to mergers or taking out health savings accounts and the tax data.

One of the things you can do instead of measuring mergers is, we can actually use willingness to pay. One of the things reassuring is when we rebuild our instrument using willingness to pay we get almost identical results. What about what's happening on the labor side? What we are seeing is actually a slightly greater than dollar for dollar passed through. These are log points you've got to ship the decimal place a little bit. 1% increase in healthcare prices. Is lower in payroll and the account of workers and firms by 3/10. Of a percent. Right, it's robust, tossing out huge chunks for sample.

Using willingness to pay instead of our post merger diff and diff estimates. And what we see is that all of this, is driven by changes, at non healthcare firms. Some of the work we are doing going forward is looking at where the Reds go. What is happening in the healthcare sector. Tunein and in about a year for those results. When you look at our event studies, you can see that these employment changes, and these income changes or payroll changes are happening immediately after firms exposure. To the price increases from these local transactions. And what's really important to note here is that these point estimates are equally scaled, suggested changes we are observing are happening on the extensive margin.

When firms are exposed to these prices, they are letting workers go. Now cover these point estimates seem really big and one of the things we've done a lot in this paper is try to scale our point estimates to

other literatures to make sure they are sensible. One of the things, there really isn't fair developed literature, is a payroll tax literature. We can scale our point estimates to be one percentage point increase in payroll. What we know from the payroll tax is 1% increase in payroll taxes if we look at the US studies, Johnson and all, the governor, Galino.

We see that 1% payroll is going to get you somewhere between 1.5%, 82%, decreases. And employment. And that's exactly what we find. We are fairly converted by that. The effects we see scale up with other sorts of payroll taxes. Other things that induce costs on firms for obtaining workers. One of the questions we had is, are we actually seeing workers separated from the labor market, or are we simply seeing the reallocation of workers across firms Quebec we are going to take our exposure measure, we're going to aggregate that to the county level and think how exposed individual counties were to rising healthcare costs from mergers in their areas and what we are going to do is come up with measures of county level economic outcomes.

Income per capita, the share of workers who previously had earnings but had 0 earnings come of their became fully separated from the market, workers that filed for unemployment insurance, again became fully separated from the labor market. And what we see is a point estimate on employment that's about 1/3 of the size. One person in healthcare spending is going to get you a little less than a sort of 10th of a point increase in unemployment which given average unemployment rates locally is actually pretty big. 2/3 of the folks who lose their job at a firm when health spending goes up find employment at other establishments, 1/3 lose their job and become wholly separated from the labor market.

What we can do is say who are these workers? We can see their incomes in the past. And we can bend them into \$10,000 income bins based on their historical income. And what we see in some sense reassuringly, we don't see huge changes in employment for workers earning less than \$20,000 a year. Folks that are unlikely to have health insurance. But what we do see is concentrated on workers earning 20,000 and \$100,000 a year. No effects on workers earning over \$100,000 a year. It's lower and middle income workers who are the ones becoming separated from the labor market.

I think this is a critical point. What is the impact of a dollar increase in prices? On labor market outlook locally? And what we see is that dollar increase in prices lowers local labor income by \$1.33. It turns out there is a dead loss from these hospital mergers. It's just happening in the adjacent labor market.

Because demand elasticity for hospitals is pretty low quantities don't go down. The reduction in quantity is actually happening among workers. I think that's really really important to point out. There is a literature which in some ways I really wasn't familiar with.

But I should have been. And it's the downstream health consequences of losing your job are enormous. A1 year mortality for individuals who lose their job increases by about 50%. And so if we look at the literature over time, we see somewhere in the order of one of the 600 to one and 300 the individuals who lose their job die within a year. On average the traffic accident, self harm, or overdose. And the question is do we see this? We see a sizable jump in folks separated from the labor market. Are we seeing them lose their life down the line?

Bring in CDC's strict mortality data. Use case ND and measure of deaths and despair. We're going to focus on suicides and overdoses. We are going to leave out alcohol related conditions because we think that takes some time to accumulate. We are going to have a placebo outcome. Our main outcome we're going to focus on individuals between 25 and 64. Folks we think have esi. We are going to measure the

desk over 65 who aren't going to be the ones losing their job. Focus on all mortality exclusive of death and despair and then we're going to focus on cancer mortality.

And what we are going to see is 10% increase in healthcare spending or 1% increase in healthcare prices. It's going to lead about one additional death per 100,000. In the area. We're not going to see any changes. That are significant among folks over 65. No overall significant changes in mortality. No overall significant changes in cancer mortality. And once again can scale our estimates to give a some sense of whether we should be comfortable with what we are seeing here and what we see is about one in 173 of the folks in our sample who lose their job died within the year.

In fact it's two years after the mergers. It's a year after the job loss which happened after the transactions. We are a little higher than the literature and we think that happens for two reasons. First, we are measuring this at the peak of the opioid epidemic. And if you look at the relationship between job losses and mortality, is increasing over time as fentanyl and oxycontin become more -- we are right there at the peak, which is why we think this is so high. Second the rest of the literature is measuring effects of job losses. We are measuring the effects of total labor market separations.

About 2/3 of the folks don't become who lose their job don't become fully separated from the labor market. If you scale up these point estimates, we are the right in line with the rest of the literature. Here's where I think the results are so important for the work. That the agency is doing. One of the things we can do with our empirical approach, her classes of transactions, or individual transactions, is say what the cumulative effect of those mergers are. On labor market outcomes and mortality. So, we can say look, the average merger in our sample raises prices by 1.2%.

Taking a step back to the first paper, we can say that raises health spending on the order of about \$250 million a year. So come with the 50 mergers that happened, there one year effects are about \$250 million. That's bigger than the entirety of the enforcement budget for the FTC and those effects are going to persist over time. Or, we can look at the average effect of merger that raised the HI by 200 points to a net increase of HIV over 28 net HI over 2500 points. And what we can show is those transactions are going to lead to \$16,000,000 and reduced income, dropped to 0 in the next, job losses.

And one death. From an opioid overdose. And critically, what we're going to see is because folks are losing their jobs, because income per capita is going down, we see a concurrent reduction. And federal income tax revenue of about 7 million. And so you can think look, if this enforcement action, if an enforcement action on average cost about \$5,000,000, simply measure relative to the gains and revenue to the treasury. From more taxes, more tax revenue because folks are employed. Those enforcement actions end up being cost effective for the federal government. So, what is the sort of summary? Because of this mechanical link between what happens in healthcare markets and labor markets, the mergers that we see happening in healthcare sector, having downstream consequences for workers. Who pays for the price increases, its workers, it's lower income workers, middle income workers not upper income distribution. How are they paying for it? They're paying for it with their employment. A small chunk of them are paying for it with their lives. There is deadweight loss from mergers showing up in an adjacent labor market and it turns out merger enforcement actions are likely in this sector going to be cost effective.

So, with that come and turn it back over and take some questions.

[APPLAUSE]

[>>] Hi. You asked me to ask a question, so here's my question.

[LAUGHTER] The metrics of this, so, you're using the merger effect as an instrument for the change in prices. Now, when we do like the way we do a lot of our merger effects, we are trying to really and affect, we are very conservative in a way that we measure things. Big control groups big strategies fairly conservative. Now suppose because we do this we are vastly underestimating the true price of a merger. How would that pass through to the, if I remember correctly 1.5% or something like that. Suppose it's like in reality the truth is five, 6, seven percent how does that map through to the estimates?

[>>] So, one I think the reason to take our estimate pretty seriously and one answer to your question pick the first we actually get super similar estimates when we use willingness to pay. When we think those still have measurement error to them and they may have some modeling error, but they are so strongly correlated but I actually am pretty confident in our diff point estimates. If you thought the diff point estimates are way too low, it's just going to change that. It's going to mute down the effect of rising spending on employment period but I think given the willingness, I don't think that's what's happening necessarily.

Right. I don't think we are.

[>>] Hi is that, really provocative arguments here. If I remember correctly, when I was working at FTC, it's not just economists or lawyers in FTC don't want to crack down on hospital mergers, it's also not even resource problem. We don't have people working on those. But in some cases the state or some local laws, they can give exemption to the enforcement action from federal agencies like FDC. So, I wonder whether you thought about that as kind of a way to change the enforcement action

[>>] It's a really great question. I don't think this pair is a question of lack of will from the agency or visibility into these transactions. Like what you've raised is a really good point about states willingness to go along. I think there's a really good example of it right now. There is a straight 2 to one merger right now. The FTC, the state has come out what is called a certificate of public advantage. Which shields the transaction itself from federal investigation. They have to see issued a public comment which I thought was wonderful. Said depending on how you measure it it's going to reach the HI locally from 5000 to 10,000.

That's not good. That's likely a problematic merger. Our estimates are this transaction is going to lead to price increases, 20%. We can use our simulations to say, our guess is about 800 job losses. I think it's two things, one is an implication of the work and one is talking about the work with the whole communities. I think the first is this idea that when these mergers happen, first we don't see clear evidence they increase employment at the emerging parties. And generally they lead to widespread decreases in employment overall. It's leading to net reductions in employment.

I think a lot of what folks think about at the state or local level is these are big pillars of the economy. When they come together it's going to be good. I think our evidence doesn't suggest that's the case. And this is the Tobin mission but I think it's true for all of us, how do we have those conversations locally? It's getting the subtlety out there, it's talking to state cheese and policyholders and we know this is hard, we know you are under enormous pressure. Here is our best at these transactions can suggest.

[>>] Do you think there's anything from your results that we can learn about effective quality from mergers, for example you show the deaths from, deaths of despair from unemployment, but you're not finding results for other types of diseases, such as cancer and things like that. Can we learn anything, should we learn anything about the quality effects of mergers Quebec

[>>] That's a good question. I think our work and we have it in that first paper, doesn't show any evidence of quality changes and emerging parties. Positive or negative. I think that's consistent with the work Daphne and others have done. I think the best evidence on the post merger effects of quality is that after hospitals merge the effects are neutral or negative. I think our work supports that. The larger overseeing evidence less competition and no concurrent changes at quality.

[>>] Alright, thank you.

[>>] Cool, thanks everybody.

[APPLAUSE]

[>>] And that concludes our conference. I want to thank all of our presenters and in addition to that I want to thank all of our audience members. None of this happens without all of you engaging with us. Asking your questions. And I also want to thank folks at home who may be tuning in to the webcast. Thank you for your attention. Now, if you remember at the very beginning I said there was going to be a pop quiz. So, what do we do with our name tags? We are going to give them back to the table where you picked them up from so that we can reuse them again.

And for our visitors, what do you do with the lanyards, with the plastic empty C visitors badge quement those go to the security desk. Alright come with two different places. Name tags to the desk where you picked up your name tags and the security badge goes back to the security desk. Alright, and with that, thank you so much, safe travels and we look forward to seeing you all again next year. Add our, oh, what number is it now? 18th. It will be the 18th annual FTC microeconomics conference.