

**SESSION E: CONSUMER CHOICE - PHONE PLANS**

**MODERATOR: JOE MULHOLLAND, FTC**

**PRESENTER: EUGENIO MIRAVETE, University of Texas, Austin**

MR. MULHOLLAND: We're magically back on schedule again. This is the first of two sessions that will report on research into how consumers make decisions, and in particular how they respond to new information generated by their own usage patterns.

In this first session, Eugenio Miravete will discuss his research on the choice of phone plans by customers. Professor Miravete has held positions at New York University, the University of Pennsylvania, and he is currently an associate professor of economics at the University of Texas at Austin.

MR. MIRAVETE: I don't see it here. Here we go. So this is joint work with Ignacio Palacios-Huerta's work, but actually I'm going to do just a little bit on this paper, and I'm going to present results coming from other papers of mine, so I want to thank Joe for inviting me to this conference.

I'm not a behavioral economist. I'm delighted to be here. It doesn't mean that I'm anti-behavioral. It's just that I grew up doing different things, but then suddenly some of my work, it appears it has something to do with this.

Anyway, so here you are. You have the disclaimer. You're very fortunate. I'm actually only going to talk about the non-

structural work that I have done, so maybe like the match to econometrics that I've been doing. It doesn't fall in this area.

Anyway, so I have to keep you awake. At this time, we may have problems of rational inattention in the audience. Anyway, so this is what I plan to do. I'm going to discuss the paper with Ignacio, give you a little bit of the motivation, and then perhaps what is more interesting is to talk about this data, because we've been talking this morning about labs, experiments and so on.

Anyway, so here I have data, which I think it's interesting just looking into real decisions of consumers, and it's actually very -- I think it's still a very rich data set for comparing with many of the other data sets that I've seen, so perhaps people are interested in learning about this data and using it.

Then the goals of the papers are looking at the effects. There is an econometric twist behind it, okay, so it's looking at the effect of the inertia, on whether the consumers learn or not, whether the issue is of state dependence, which is a very difficult one in econometrics which can help us to say something about whether the consumers learn or they don't, and then I'll tell you a little bit more. I'm going to broadcast my other papers and a paper of somebody else, and I'm going to tell you things that I come from the Brigle Isle area, mostly working on

telecomms, sharing some information. Perhaps it would be useful. People will look at this literature as something interesting for the behavioral economics field.

Anyway, so what's the basic message of the talk? I think telecomms offer an excellent area of study for researchers interested in behavioral economics. Data exists. It's easy to collect. You just have to convince someone to release the data to you, which is perhaps a little more difficult.

What we can learn from this particular type of experiment is that in the results in general, they tend to switch tariff choices responding to very low potential gains, and that's the

then I'm going to rewrite the introduction and throw the introduction away that I have now.

So the idea is that we have -- that making decisions is costly, so we can develop some sort of habit and inertia, and in principal, if potential gains are low, it would be rational actually not to revise these decisions all the time, okay?

How low? See, that's sort of like the question, should we revise our decisions when we are facing potential losses of thousand of dollars? What about when we are making -- we have potential losses of hundreds, maybe about \$5, \$6 a month, so that's a question that is -- that it could -- I think the role of this paper is to put some bounds to this potential gains, and then as a consequence, I understand this is a reduced form of paper, we could say something about how big this potential deliberation costs are, and they are small according to again this particular application.

One big problem that applied econometricians have that I guess is not present in the lab is if the effect of unobserved individual and unobserved heterogeneity, so we have consumers, and we may observe lots of things about them, their race, their age, education and so on, but we also don't observe things, and then we have to resort either to reach data sets like perhaps this one where you have a panel and try to control for these



campaign of Sprint, and these guys were nobody, and just by breaking this complex contracts of the competitors in the long distance market, they just got a share of consumers, and that was successful.

So maybe there is room there to attract consumers, but anyway, what do we learn from this data set again? Consumers make mistakes. Those mistakes are non-systematic, and it appears to respond to potential gains of this amount of five, six thousand or so in principal, and this is a reduced form model. You can rule out inattention and impulsiveness and things like that.

The data: The data is old. It's from the middle of the '80s, when deregulation -- after the break up of AT&T and South Central Bell has to ask for permission to introduce optional calling plans. So they run these experiments. People had been on flat rate all the time, and they run these experiments.

Consumers were not aware that they were under an experiment, so actually they put two CDs under this experiment for six months, the second half of '86, but they collected lots of information in the first half, and we have information on the demographics. Actually on expectation usage, they asked: How many phone calls are you making every week, and then I actually know what is the number of phone calls that they are making in

the spring when there is no pricing, nothing, so you can in principle say here we can measure -- we have a measure of what is the bias of those consumers, and then they choose two plans, either a flat tariff or a measured option with certain features.

Here I don't know if you see anything, here the sort of things you have, the bias, things related to age, whether you've gone to college, things like that, so actually this is the distribution of underestimation of consumption so the red line is the distribution when people are asked, how many phone calls do you make, and the blue line is actually the number of phone calls, so, yes, there is bias so people are underestimating consumption.

The question is whether this underestimation of consumption actually has any effect, whether they are -- whether consumers are going to end up paying more than they should have. It's sort of more or less symmetric, and it happens that they don't, so, yes, I underestimate my consumption at, I don't know, 50 phone calls a week, and actually I'm going to make 60, so what happens in this data set is actually with 50 phone calls a week you're already better off subscribing to the flat tariff option which indeed is that they subscribe to, so in terms of tariff choice, they are not making a mistake afterwards.

This table just shows looking at measured -- the choice, the

joint choice between measured and tariff option and the usage, and it goes one-on-one. In principle, the measure option is you sign up for low levels of consumption, and the low usage -- anyway, so you have the effect of the different demographics. Interestingly there's a very high positive correlation between the two of them.

I'm going to leave that here. What we have here is the following: In the second half of 1986 they collected data only for three months. You can trace the history of consumers, what they do, whether they are on flat, flat, flat, this is the first column, or whether they are on flat, flat measured or whether they are on flat measured flat. This is the different parts.

So this is actually the hard econometric problem when actually we can be identical. Suppose we are all identical, but we actually for one reason or another, maybe some of these errors or some of these random shots, we are going to make a mistake, and we choose one thing or the other, okay. That makes us immediately different. So we are different depending on what is the sequence of tariff plans that we have chosen and what is our level of consumption, okay, so what the paper tries to do is to control for exactly that sort of an observable heterogeneity, whether we are different because we have differing experiences in the past, okay?



One criticism that I normally get on this data set is well, 90 percent of the people actually choose flat and always stayed on the flat tariff, so how can you claim there is any sort of learning? Well, what about the distinction that Professor Lazear was making this morning? What about the average and the marginal guy? This guy actually choose a flat plan. Most of them were high usage consumers so they're actually choosing the right one, whether you want them to switch. The ones that mostly switched are the ones who subscribe to the measured service. They may make mistakes and then they reverse. They go back so in principle, the question is yes, we make mistakes. Do we see people making mistakes systematically? The answer is no.

I'm going to skip all this and you're happy that I don't go over this. So basically this is looking at these three months. Looking at these three months the econometrics goes like this. Looking at these three months, these are all the potential packages you can follow. Flat will measure whether you have a high or low consumption level and then it starts here, and we start accumulating different histories.

So essentially you're looking at -- we're going to be looking at each node, which chooses what in the next stage. So this translates into some instrumenting for the economics. Forget the first column. So the second one is wrong in the sense

that the instrumenting is doing -- is done wrongly, and what do we learn from here?

We learn here that people who are on measured tariff in the past period are actually more likely to be on the measured tariff in the next period so we have some sort of inertia and people who have low usage are the ones choosing the flat tariff.

When we do the right one, over here, the signs are reversed once we have taken into account the possibility of updating expectations. This one is just looking at whether you are on flat or measured, whether you choose the wrong tariff option in the previous period.

If we will look to the second column, it looks like I made the wrong tariff choice in the previous period. I am making a wrong tariff choice today, and we conclude that we are irrational that we are making these mistakes. Again the sign changes. These very high statistics are proof that we have an endogeneity problem there that the third column takes care of.

I've already been given the five minute warning, so now the rest of the papers. So this paper is looking at the effect of potT2 leoTjT\*sav thse previous perfecclss. So this2.27etheos. So thitim ta

What else? This other paper goes more into the heavy structural extenuation and is doing the following. This paper looks at a discrete continuous choice where consumers are choosing every single period, which tariff plan are they subscribed and how much they're going to consume. The interesting part is that we take advantage of the panel, and we include some bayesian updating of the expectations and what do we get?

Well, the results and the econometrics, they follow the basic dynamics of the data, who learns? The people whose on measured service. If someone is on flat tariff and they end up paying \$18.70 forever doesn't know if they're going to end up paying more or less if they switch. They have actually to do something. They have to invest. They have to experiment, switch tariff plans and see whether they pay more or less. They have never been billed before. If you are in a measured plan, immediately you can figure out whether you're paying more or less than 18.70 and you switch.

Well, compared to these two different sets of information, the people who are on measured service learn faster. That's what we learn from that paper, okay?

Now, let's call some other people, not only me, so Katja Seim and Brian Viard also have papers looking at telecomms where

they document that there is learning in the choice of tariff plans, okay, when we have competition, not just monopoly. This is a particularly interesting paper by Economides, Seim and Viard, and they have an amazing data set for the State of New York, and they look at what happens when entry in the local market is permitted and somebody AT&T in this case can actually offer both local and long distance.

So lots of people switch, and what they get from this data set is an average, increasing welfare and most people switch not only tariff plans but switching carriers. They are going to end up reducing their monthly bill, so again you want some sort of rational risk spot.

So let me finish with this, which is totally different. Katja and Brian, they also document looking at the data for the tariff plans in the cellular telecomm industry that after the 1996 Telecommunications Act there was entry, and after entry happens, we thought that the companies are offering more options. I have that information for that industry ten years before, and what I can do is have all the details about the data set.

And in this data, in this paper, I don't have consumer information, but I have all the tariffs offered by the firms and then you can look at -- tariffs are relatively simple. You have peak of peak. Then you have an allowance per month so what you

can get from this is you actually can view the tariff for any pattern of consumption possible.

So what happens in some companies is offering four options, and one of them is always more expensive than the combination of the other three. That's what I'm going to call in this paper deception, okay? These are the fact that one particular tariff is the least expensive one only for three minutes out of a thousand minutes, which is very unlikely that we are going to end up over there.

So I have this information and I have the data for monopoly and for duopoly. Dupoly, the entry is exciting. It's fantastic but a mistake that the Federal Communication Commission made in awarding these licenses, and you can compare these two, and you can compare what is the immediate effect of a second company entering this market, and what is the effect five years down the road? And guess what?

The second firm enters. He comes with much simpler tariffs. Initially it's confusing depending how you measure the new -- the situation and competition. We have more complex tariffs, more deceptive pricing, five years down the road as the economic theory predicts. We have much simpler tariffs, and deception basically disappears, and I'm saying I've been given the zero minute warning already so I better leave.

Thank you.

(Applause.)

shown up.

So for the '60s kids among us, I went and searched Google until I found this quote substituting the word market for war, and I was sort of wondering what happens if you go to the trouble to have one and nobody shows up.

The next is "if you like the 1040, you'll love this." Doug Hale was up until recently an economist in the Energy Information Administration, Department of Energy and is probably more responsible for anybody for what the Washington policy community knows about electricity economics by holding a variety of seminars and things like that, and when we were talking about how a residential electricity sales were working, we were talking about that and over some beers, he gave me this quote, and you'll see why in not too long.

The last is from my dad. Now, my dad is actually too gentele to use the word idiot, so it's actually somewhat politer than this. In a past life when I worked at the Antitrust Division, I was very very peripherally associated with the break up of the phone company, associated enough to basically get a staff T-shirt and that was about it, came in -- but I sort of very believed in it, so unlike my dad, who to this day, if an ad comes on TV or something like that, will not let the opportunity go by without yelling at me about: What am I supposed to do if my

phone doesn't work and how come I have to buy this and yada yada yada, and it's unfair if someone gets rates lower than mine and all this kind of stuff.

But it isn't just my dad. If people remember back then, see some of us here are old enough, that was an extremely unpopular thing to do, and it wasn't unpopular because the American public is dominated by Bob Crandles who never saw an antitrust case they liked, but in fact it's because people really didn't like the fact that they were going to be forced to do a whole bunch of things they never had to do before.

And the way I interpret this is in some sense people were revealing a preference not to choose, and for a profession that takes revealed preferences seriously, I thought that there had to be something here.

Now, I think Eugenio's paper -- he's modest by the way. I think it's great. You should read -- the introduction is fine, don't throw it away. It's wonderful. As he said it didn't take a big difference to get people to make a choice that seems economically reasonable. So I don't have the time or expertise to get into the model of that.

The key thing here is he put up for briefly one of his tables, Table 3 I believe, which I think is probably going to be the key for most of us who weren't going to work through the



econometrics, and basically it was what was going on, and the one suggestion I would be would be to expand that table a little bit.

As he pointed out a lot of the people don't switch during the sample period, and most of those, the lion's share he said kept the flat rate service. I had sent -- I don't know whether he had heard that comment from other people. He had gotten a copy of these slides before he spoke, which I suppose for discussants is always a risky thing to do.

But one of the thing that I was sort of curious about. I think that's basically the main thing is just like how big is the problem here again, associating the program with income and demographics and stuff like that is interesting, but for a lot of people who are sort of wondering what's working and what's not in a fundamental way, you want to know the -- you want to know how big are the errors being made by the people who are making them, and as I recall the table, things are just sort of averaged over all of it.

Okay. So we do we know from electricity? I just have a minute so I'm going to race through some demonstrations here. So there's reluctance to choose, and there's been extensive effort at persuasion required, and a lot of times people have chosen not to choose, and that happens in lots of other consumer markets as well.

What I want to talk about here is just showing what kind of things do people do to persuade them that markets are good for them? This is Alberta, one of the more successful ones on Canada. If you can't read this, that's okay. It's hard to read on the actual web site, but that's a table of all the things you're supposed to fill out to decide whether or not -- what you should choose your electricity supplier, name contact, name, phone number, price, basic figure charge, what's the fixed rate, what's the variable rate, what's the energy charge per kilowatt hour? How many people here know what a kilowatt hour is? How many people know how much you pay for kilowatt hour?

I've been studying electricity for ages. I barely know what a kilowatt hour is, and I still don't know how much I pay for one. Terms of the agreement, so on and so forth, and as we would expect, they only had 6 percent switching, and they had to extend residential service deregulation.

And there's a quote from the former, one of the major electricity companies in Alberta. The best line here, the most relevant for this session is the one about two-thirds of the way down starting: "Customer inertia is even more of a reality for a product with little to distinguish options in terms of price savings or consumer benefits," so on and so forth, so is this worth doing?

This is my favorite: Shopping is easy in Pennsylvania, one of the more successful jurisdictions for doing this. You have a happy family over here, just looking forward to shopping for their electricity provider, how to shop for a supplier. One, using the chart on the opposite page, which I didn't reproduce, enter the supplier's name, their company's price to compare, that's the kind of the comparison with the existing company, call each electricity generation -- call each supplier to find out what price they're offering, yada yada, for you to save, subtract this, write the average number of kilowatt hours, multiply line 3, divide by a hundred yada yada, so on.

Here are a few questions with a smile on your face that you can ask your electric generation supplier, and it goes on like that, and there's your list of all the things. Monthly savings,

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was thinking about this is I've been teaching a class in economics of law at UMBC this semester, and I happened to see something on behavioral economics and economics, so I downloaded the paper off SSRN and started reading, and it goes on and on about the famous thing about putting out the coffee mugs and discovery that people don't bother to trade them and somehow deciding that the coast theorem is wrong because someone sitting in a seminar doesn't say, Hey, I'll give you 4.95 for that coffee mug.

Now, I think we get closer on economizing costs of cognition here, and there's a lot on that. Some of that in terms of framing I'm not exactly sure about, but I think in terms of people relying on rules of thumb they can be tricked on, I think that's right.

Just to end, I think this is something that Eric Johnson mentioned or put in a somewhat different way, which is what if they're in some sense internal transactions costs? What we know from the coast theorem or the sort of converse of it I guess is

I'll end very quickly here, as I'm asked to do, just to stay there's kind of been a dearth of policy recommendations here or policy of any specific thing other than we have to be careful about disclosure so I'll give you one.

Maybe it's rational not to open a lot of markets. Maybe it in effect economizes on some very real costs. Actually I believe John was talking before about how we need to get people to be more sophisticated. I think Eric actually had it right. Thinking is costly. You want to do things not to try to get to be more sophisticated, but make them so you don't have to be sophisticated, so in some sense there may be a lot of things where in fact like my dad with the phone company, a lot of people might be a lot happier for things that are sufficiently homogenous, just say look, I have more important things to do, you take care of it or it's too complicated for me to deal with, you take care of it, and I'll just leave it at that.

Thanks very much.

(Applause.)

MR. MULHOLLAND: We have time for questions, comments.

MR. PAUTLER: I have one question. My name is Paul Pautler. Tim, I was just wondering whether the price differences in electricity were large enough to get anyone to shift. I guess Eugenio's results show that in his telecom markets people, at

least the 10 percent that shifted, shifted for relatively small amounts.

Were the expected savings in electricity large enough to get

Now, the way I sort of tried to get around that a little bit was that when I was -- where I wrote the paper from which I was drawing that stuff, there was a group that I don't know if they're still around, called Center for Advancement of Electricity Markets that would actually rate jurisdictions on how open their retail markets were, and I picked the ones that were the most open, and ones that -- so the reason I didn't look at California when I was doing that work was because they weren't the most open for reasons like that, but these are the jurisdictions which were in some sense the most favorable, not that they were that favorable.

MS. HOGWART: I have to state and spell my name. I'm Jeanne Hogarth, J E A N N E, French spelling H O G A R T H, like the artist. I'm with the Federal Reserve Board, and I have to issue a disclaimer that my question has nothing to do with the Federal Reserve Board, the Federal Reserve Bank or their staff.

In thinking about what's rational, I'm becoming a little concerned because now I have to shop for my mortgage. Countrywide alone offers a hundred different kinds of combination of fees and interest rates and types. MBNA offers over 1,500 different kinds of combinations of credit cards. I have to shop for my homeowners' insurance. I have to shop for my electricity. I have to shop for my phone service.

We haven't touched on food labeling and trans fats. When do I get to work for the Federal Reserve? I mean, how much is too much? What's a rational expectation for us to have about the rational man?

MR. BRENNAN: I think that's a fair question. I think it's easy to answer if you assume the cost of choice is zero. Once you assume it's not, then all of a sudden there's a real margin out there. How one makes that -- studies like Eugenio's can help make that in some situations although people are going to say, well, yeah, but go local versus flat rate, that was just two choices. Basically that was kind of simple, and mortgages are sort of complicated and other things, it's -- that's one thing where I wish I had a good answer to the question.

One possible thing would be to just, and I'm sort of throwing this out, in some sense to pay attention to revealed preferences, however they get revealed. In the cases like the



who does all this research for you. If we can learn something, I don't know, from this latest paper that I mentioned, is it actually maybe we are just looking at one moment and tariffs are incredibly complicated, and when you increase competition,

sentence, thinking is costly, and I know that people are talking about something more than a simple linear opportunity cost of time. That would make rationalization easy, but it's fairly clear that at the margin I think what you're saying but I would really like some elaboration, that the thinking at the margin is very costly, perhaps. For our initial decisions where decision-making is fun, what movie to go to tonight, for example, decision-making is rewarding and therefore not very costly.

But where it comes to a homogenous product, I think what you're saying is that there is some extra cost or at the margin where we just do not want to make that sort of decision but I would really like some elaboration on what those costs are.

MR. BRENNAN: Well, for me and Eugenio's research speaks to this, so he should speak to this as well. I don't think that the costs are greater with homogenous products. I don't think the benefits of thinking are lower so it just isn't worth doing. It's a -- my own hobby is guitar playing, and I'll spend hours pouring over the catalogs I get in the mail, looking at web sites, comparing this, that and the other and so on.

I mean, at some point you say what would be viewed as a painful search cost for some people for me is actually enjoyable but that's because that's a very non-homogenous product, but for something like electricity where from the -- with a possible

exception of Green Power is a pretty undifferentiated product. There are other technical reasons why it's hard to market on the basis of worldwide availability, that it just may not be worth the dime.

Now, I don't know again, the psychologists in here can speak to this with far more expertise than I do, but things about people can only balance so many decisions in their head and that sort of stuff, so there's a consent that as we have more and more things to worry about, certain things would be sort of kicked to the side, and homogeneous things that are fairly homogenous may be in that category.

MR. MIRAVETE: I don't know what limits the entry in the electricity market. Remember the pricing and long distance telecoms 15 years ago was complicated. Compare that, try to get the brochures of 15 years ago and compare it to the tariffs today. It's much simpler so I don't know.

Maybe it's just looking at one particular issue, one other aspect of this paper is we are through talking about very small amount of potential gains, but the decisions, whether implicit or explicit, are made every month so it's relatively easy to update so if we make these decisions for life, and we discover at retirement that we made the wrong choice or retirement plans, that's -- I mean, I wouldn't take the results here to translate

immediately to that other industry.

MR. MULHOLLAND: Well, thanks very much. We'll have a break and start back at 3:15.

(A brief recess was taken.)