[INTRO]

Hello everybody,My name is Álvaro Gutierrez and today I am going to present you a work with Martina Vandebroek and Michel Melders in the context of discrete choice modelling. In particular, within a sub-family of models called regret minimization models.

[AGENDA]

Basically today we are going to review 4 different regret models, the relationship among them, and some econometric details regarding them, such as ASC and robust standard errors.

[Regert?] [MOST IMPORTANT SLIDE]

Random regret minimization models. Present an alternative way to model choice behavior. In particular, departing from the notion of utility, and replacing it with the notion of regret.

So… the question remains, what is it regret?

Is this feeling that what you choose, is not superior in every aspect to all other alternatives that were available for you. This is really common in real life, because it’s spectacularly rare to find alternatives that are superior in every attribute to all the others. For example

[Table appears!]

Here is a hypothetical situation where you hace 3 alternatives, etireely described by its total time, and total cost.

We can see an obvious trade off between time and cost, the more you pay, the faster you arrive, BUT…

Who want’s to pay more? And who wants to spend more time on the train/bus or whatever that is

If we chose alternative 2!

Well.. alternative 1 is faster… (I could avoided this 4 minutes in this jam…)

And alternative 3 is cheaper…(I could have saved this euro)

Then Regret models will formalize and minimize this notion of the regret!

[RUM v.s RRM]

WE now need to see the differences between the Utility models and Regret models.

Using our last example, in a linear utility model we will have this:

[equationa appears]

Systematic part (in this is linear) and also and error, which captures what we do not observe in the decision making process.

[random regret minimization RRM appears]

In the regret counterpart is the same, we will have a systematic part + an error.

[first bullet point appears]

So the whole presentation will be DEVOTED to characterize this R star and how we formalize this notion of regret, mathematically.

[second bullet point appears]

Also, as we did in the Utility model, we have a part of the utility that came from TIME and another from cost, then we will do the same with the regret, we are going to disentangle which parts of the regret comes from the Time and the Cost.

[Early Model Chorus et al 2008]

As I said, the whole presentation is going to be devoted to characterize R\*, here is the first way:

\*Red regret coefficient attribute m appears\*

This is the estimable parameter that captures the degree of the regret.

\*Attribute level appears\*

This is how we capture the regret from EACH ATTRIBUTE.

Assumptions here:

[on slide]

[Early Model Chorus et al 2008] Example

We will exemplify with the regret that the first alternative in out example:

The outer max operator mean, that just the maximum regret of the two comparison alternatives is going to be considered by the systematic regret.

In blue we can see the regret produced by the comparison of alternative 1 and 2 for all the attributes. While in red can see the regret produced by comparing the first with the 3rd one.

Given that we have two attributes we need to sum the regret produced by the comparison of the first and second for each attribute, in this case, time and const, and add them up.

[Taste parameter interpretation] [SECOND MOST IMPORTANT SLIDE]

What matters here is that we are comparing the attribute level with THE OTHER ALTERNATIVES. If the attribute level in the other alternatives increases then your regret increases (positive parameter). For example, in transport context you can add to the questionary the attribute confort level, where sometimes could be captures with the probability to get a seat in a bus. Then if the attribute level, in this case, the confortable level, increases in another non-chosen alternative, then my regret increases because I would like to travel sit down, and not standing up. So then, parameter is expected to be positive.

On the contrary, a negative parameter will means that if the level of the attribute increases in non-chosen alternatives, your regret dismisses. Which is fairly clear in the case of cost. If the non-chosen alternatives increase their price, I definitely do not regret, because mine now is cheaper.