Title: 시장설계이론1, 학교 선택 문제 (2)

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- ✓ **Dictated: 강은경, 강성호, 김신희, 김종백, 신원대, 현소형**

[00:00]

Okay. So, example that we have where the A faces to the pareto efficient to student
And TTC faces to be stable, actually has something special in terms of the school's priority structure. Okay?

So, we know I mean I can easily remind you that this sort of situation, this problem on the each side. Right?

Each mechanism doesn't always all cut. Okay? For all priority structure. Okay?

So, the particular priority structure that we have is kind of carefully chosen to create this example.

So, to give you an example. So, suppose that we know for sure the particular priority structure where non of problems right here. Okay?

So, that the one you can easily think about is the uniform priority. Okay?

Suppose every school has same ranking of students. Okay? So, this is the problem that you already sort of had to dealed with

in the problem cell. And among other things we know that there were the matching you get is unique.

That is unique stable matching. Okay? That's one thing that I asked you to show.

But then also I mentioned before that maybe last class in fact that the matching that you get in such situation

coincides with outcome of serial dictatorship. Okay? So if every school's ranking is same,

that there is a guy who is ranked the top for every school, ritht? In the priority structure of every school.

So, that guy basically is assigned to the school that he likes the most.

In other words that he is the first guy in the serial dictatorship who makes the best choice among cell of all schools. Okay?

Now, the guy who is ranked second at all schools, okay? Is the guy who makes the second choice. Okay?
He can argue it recursively to show that serial dictatorship coincide with the deffered acceptance algorithm outcome.

When the priorities of the all schools are the same. Okay?

So, and we know that the serial dictatorship. The outcome is pareto efficient from the perspect of student. Okay?

So, that means that you know we don't have the problem like that. In that case is stable and pareto efficient. Okay?

Likewise in that case their outcome also coincide with TTC outcome. Which you can easily show as well.

So, that means that the outcome of TTC is also stable. Okay? So, then you can ask a more general question

about under what kind of priority structure do we expect to guarantee pareto efficiency emerging from the deffered acceptance algorithm. Okay?

So, this is the question that Haluk Ergin who visited here actually a couple years ago actually talking about this particular results

in detail. He asked this question. Okay. And so, what's given? Priority structure of the part of school.

So, the question is this. So, priority structure and this is the profile of corus capacities. Okay?

One for eaches. This is vector of capacity number for one for each school. Okay?

So, the question is that what's the set of these things? They will guarantee pareto efficiency under deffered acceptance algorithm. Okay?

So, under what structure of priority and profile of [?0:04:22] would the outcome of deffered acceptacne algorithm be pareto efficient

from the student perspective regardless of their preferences. Okay? That's the question.

And the answer is this has to with not being able to find the particular form of cycle.

And I am going to have just call it Ergin cycle for reason there be clear later.

Because there is another cycle I am going to talk about later. This Ergin cycle is made of these two schools A and B. Okay?

[05:00]

And 3 students I, J, K. Such that this is called cycle condition. You must have cycle of this kind. Okay?

So, clearly here right at this stage you will see the failure of this uniform ranking.

Okay? Ranking of uniform we know that you know cannot have an inefficiency.

So, here there is school A who ranks I over J and J over K. And yet there is another school B

who rank reversely, ranks K over I. So, if you go back to example, this is exactly what you have. Right?

A likes A. I more than J more than K. And yet K likes B more than I. So, J can be elsewhere.

And we will have still gotten the same problem. Okay? Just I, J, K and then K, I. Okay?

This is a little more complicated. So, you will see that each school has one quarter each you don't need the second condition. Okay?

So, this is there only because we allow for the quarters of schools to be more than one. Okay?

This is for scarcity in condition. That's why score S. You know.

There is possibly empty this choice sets of agents. So, NA and NB, those are none of rapping sets.

But possibly empty. Okay? Sets of people who do not include these guys. Okay?

Such that NA are the people who A likes more than J. So, UA of J is upper control set for school A.

The set of students who school A prefers over J. That means that this is NA's set of students

that school A prefers over J, the second drawing. And NB is the set of agents that school B prefers over I.

Okay? And there is NA. This set is one fewer than the capacity of A. Number of school B

is one fewer than the capacity of B. Okay? So, that means that.. So, if you think about

A. Right? A is faced with competition. So, remember who J was. J was the guy who ended up

getting assigned to C. The worse school. Right? Not being able to get in A. Okay?

For him, there is a huge competition for A in some sense that are number of students A really like. Okay?

Over J. Okay? So, in other words that at this fewer than capacity. Okay?

So, in some sense, what this means is that there is only one C. You know, given that all these like school A.

Then you know, J is loosing those seats to these students here. We have specifyed preferences because

when you talk about a result like that we give out self the freedom of specifying whatever preferences they would like

and try to clear inefficiency. And yet you should not be able to. Right? That's the aim which is why

you don't have to specify anything about student's preferences. Everything used in terms of school's priority.

And profile of a capacity. That means that there are students that will out compete J, lean in J competing

only for one seat. Okay? And same for B and I. Okay? Essentially what this condition is trying to say

is effectively this is acheived to there is one seat for each school A and B.

So, like I said, if each school has a single seat, the second condition holds vacuity for field.

Why? because we can choose NA and NB to be null set, empty set.

Because that you know, 1 minus 1 is 0. So, the cardinality of this will be what? 0.

[10:00]

Cardinality of this will be 0. And these conditions will be truly satisfied. Which is why I said before that if there are huge our one weaked one, then, this is only important condition, which is satisfied. Okay?

Before and here we say if you don't have.. So, if the underlined structure here.. They are given. Okay?

That's not satisfied. There is no cycle. Okay? In this sense that satisfy both of these. Okay?

If at his one of them, he is not satisfied. That will say that the underlined structure for artisfacturay orgin acyclic effect. Okay?

So, to get the possibility of inefficiency, you need to have both of them. Okay?

At least one of them fails, then we are guaranteed to have inefficiency. I am getting high of myself actually.

I got in the results of it. But the point here is.. Just go back to example. We show that there is urgin cycle.

Because each has unique quarter. And we get exactly condition C satisfied. So, that is orgin cycle. Okay?

Which means this is main result. Given that priority structure. This is the deffered acceptance algorithm outcome. Okay?

Resulting relative associated with this priority structure. This pareto efficient means that you know,

the outcome of pareto efficiency is regardless of the preferences of agents. Okay?

For all preferences profiles of agents. In fact only if it is acyclical. Okay? So, if the underlined structure involves

set of orgin cycle which the previous example had. Then, what that means is not pareto efficient.

while I mean by that precisely is that you can find a set of profile of preferences of agents.

Such that the outcome is not efficient. That means that we always have inefficiency.

What it means that you can not guarantee inefficiency meaning that there is the profile of preferences

such that you will get inefficiency. Okay? So, this is the orgin acyclical.

So, if priority structures orginate acyclical, then no matter what the preferences are you get pareto efficiency. Okay?

Likewise it's not acyclical. Then there will be a set of preferences for each you get inefficiency. Okay?

If you want to guarantee pareto efficiency for all preferences, you must have this. Okay?

Which is why the result is kind of difficult to get is very beautiful proof.

So, you should do that some point trying to understand the proof. So, here are..

This structure involves orgin cycle. Which means that we are able to come up with a set of preferences which produces inefficiency.

Now, there is counter part or dual of the other result that is being used.

There is a connection between.. Remember the same example we have pointed out two states. Okay?

The failure of pareto efficiency of the A. But also instability of TTC. Okay?

So, kind of another sense that you know, TTC is unstable. If and only if the a is inefficient.

It is a sort of connection between the two in some sense. We will say it is not if and only if result.

But I mean you get some implication like that. And to do so, let me just begin with another condition.

which looks like orgin acyclical. It just now called differently.

[15:00]

Again the same question here the question being as under what priority structure can we guarantee stability of TTC outcome.

Okay? And condition has to do with in distance of what we call [?15:19] cycle named after [?15:22].

So, the first condition of cycle.. So, another words for there to the cycle you must then both conditions satistified.

The first condition is exactly the same as before. Okay? Second condition is even worse in some sense.

But it's a little bit different. So, again but here there is no NB there. Just that NA now. Okay?

I guess that you know, nor this choice. That's of agents. You should just copy down. So, get rid of that.

There is no set possibly empty set NA including agents you know, excluding agents I, J, K

such that these are agents. Either the school A prefers over I or school A prefers over J. Okay?

But there not the people that B prefers over K. Okay?

And the number of students cardinality of their set should be exactly this. Okay?

So, again strategy fact that this is the same condition the only thing that is different about. This has to be the second condition.

Each one is over. Can you say that? We can possibly say that suppose you have an orgin cycle.

That means that we have two sets like that. Okay? Look at set NA. This belongs to that set, subset of that guy.

So, that means that if you have an orgin cycle then, you must have both of these. Okay?

So, you must have C. You must have S. Okay? The fact you must have S means that there must be aset like that, NA. Okay?

That's the same set also satisfied.. I should call that S prime. should also satisfy S prime. Okay?

So, what that means is that once we have an orgin cycle, we also have castom cycle. Okay?

So, there being orgin cycle implys there being castom cycle. Okay?

So, that means when we don't have castom cycle, we say the priority structure is castom acyclical.

That means K acyclical implys orgin acyclical. Okay?

make sense. Right? Because that simply means not this implys not that. Right?

So, in other words and the main result is that this is jet paper by Aumer Castom in 2006.

The result is seem like flavor but except these are different issue.

TTC is stable if and only if the underlined priority structure is castom acyclical. Okay?

So, that means that since this is the same as TTC being stable. Okay?

And this is same thing as the A being pareto efficiency for students. Right?

there was the condition right?

there was the condition, that is Ergin scissor [19:41] and this is the castern scissor [?19:42] , right?

so that means that this is ture ok?

that means that if the underlined priority structures is such that we always have a stability from TTC , TTC is always stable

[20:00]

then, we guarantee to have the A be pareto efficient ok?

that means that which condition is more difficult to be satisfied?

[?20:18] pareto efficient , what TTC being stable

the first or second , I mean second priority

it is hard to guarantee TTC to be stable , then for DA being to be pareto efficient

this result says that right?

whenever TTC is stable, you are guranteed to have DA being preto efficient ok?

and it could have shown this actually directly right?

it could have shown that directly why? Because

suppose TTC is stable . Suppose TTC is stable ok?

so in other word is that once one TTC , the matching that we get is stable ok?

now the second result that it prove in the first class says that DA produces the student optimal , student stable matching

it gives you the stable matching ok?

that is best , there is kind of dominate by , there is no other

I mean, it is actually best , uniformly best from perspective of the students among all stable matchings

if the matching we get from TTC is stable ok?

and the best gives you , and then TTC produces stable matching ok?

and DA produces the student optimal stable matching

that means that the matching here weakly pareto dominate the matcting here

this is pareto efficient , it must be, there must be same right?

so we know this condition is hard, but we could have shown it directly without going through that

of course that is not the old, get out of this result

there are maybe scense of evacuating getting out of this result

the other thing is that the difference are varience only because only the case where some schools has more than one seat

because there is exactly one seat , then condition is not the exactly same , this condition is identical

so here is the question ok?

can we come up with a priority structure for which DA is pareto efficient but TTC is not stable

now that we know that this is harder than that

we could have found the gap large

sort of think about the set of priority structure under which DA is pareto efficient ok?

so this is the DA set of structure , priority structure by DA is PA

this subset of that of priority structure where TTC is stable

my question is can you find something here ok?

that is part of the problem says

so try to see if you can do it.

so to do so of course

I mean, let me give you a hint

the example is kind of similar to them I mean in some sense right?

similar to , in some sense this condition must be satisfied. There must be, first condition must be satisfied

why because we are talking about TTC nothing stayed in this case right?

so for TTC nothing is stable, there must be a kestern cycle which requires condition C to besatisfied ok? Condition C to be satisfied

so the priority structure example we should try to probably example that looks like this in terms of school

you don't need, maybe main idea is C actually in the case

[25:00]

so we have to be basically have this priority structure. The other secene though to think about is that to find something here ok? At least one school must have a quota exceeding one.

if your quota is exactly same , this is eqaul to one. We know that the second condition becomse vaccuous

this conditions are same ok?

so free to , to find some thing , you need to assume that at least one school has more than one quota ok?

it is a thing , now, so the other problem in school choices indifference which we havent discussed at all

schools do not have , some schools tend to have priority is a very fine , priority tends to be cores. There are large indifferences because in case of coincidence boston school district which is also more less same you know at our school district

you prioritize three students based on only small number of criteria so whether or not we have sibling sister or brother can be the same school in which case we get a higher priority remember? In a higher priority class

and sencond of all, whether you live in a work zone mean that you live very close to a given school ok? In which case you get a very high priority

so you can both criteria on that, we have sibling attend your school and then you live in a work zone then we have the highest priority class ok?

if you have a sibling but not to work zone , then it second, if you don't have sibling live in work zone it is first we have neither you are in the first category

it is a partition into for senses essentially ok? There are a lot of students belong to same sense meaning that there will be , there is no bases for discriminate students we need a same priortiy in class ok?

so there are indifferences. So to learn deffered acceptance algorithm to learn TTC any of those, we need to have a way of breaking types in this case. Because you know how to treat students, you need to have ranking

two different ways to do it, one is single type ranking , the other is mutiple type breaking

single type ranking is to mean that if you draw lottery number ok? You older than all the students but every school is the same older essentially with the same lottery number to this side forgets higher priority

in multiple type ranking, you separate the lottery for each school ok?

so some officials in the school district initially though that this is not good , this is better

because there are scense very unfair right? If there are bad lottery number , your school that every school initially right?

you are cheated barerly by all schools. Barerly here even if have bad number for one school you have hope to getting remember in other shcool

turns out that however that is not, actually this is better from the effiecient prospective

but you know all kinds of things happen here with the indifferences , there can be multiple on dominated stable matchings we already show that right? In the example, there is not optimal stable matching

can find two stable matching produced by deffered acceptance algorithm using different lotteries ok?

this is the example what we use

in case of indifferences by at least one school by at least one woman in the example we have

we get two different matching which are not rankable terms of map , men's preferences ok?

there is no stable matching, there is no optimal stable matching, if all schools are indifferent STB gives an expert pareto efficient matching

because all schools are indifferent basically school's priority determine completely by the lottery and if all schools use the same lottery basically the mechanism becomes identical to random serial dictatorship ok?

[30:00]

they use the same serial order essentially so therefore we know that the result is expert priority effiecinet

multiple priority type ranking in efficient how do you know?

suppose that schools have no rankings ok? Schools have no rankings. No priorites there are all indifferent everybody but it's so happened if you learn MTB mutiple type breaking rule

this could be the random lottery order ok? And we know that in that case the matching is not pareto efficient for student

but with STB we know get that situation right? If it is ideal K for one school , it is ideal K for members and every same right?

so there we get Ergin simplicity basically ok?

and we get pareto efficiency.

so we did number 3. these are exactly same example to make the point. Here is another examlple to point that you may not even with STB ok? You may not even get constrain efficiency

meaning that you may, if you learn deffered acceptance algorithm , what we may get is an outcome where the matching is stable of course but it is not , there maybe another stable matching then pareto dominate matching ok? So that is solution

here is the example everybody , every class has one seat. These are preferences of agent 1 to 3

x,y,z are the schools , each will one seat and these are the priorities ok?

there are indifferences denoted in this way ok?

school X likes 1 more than 2 or 3 but it is indifferent between 2 and 3 ok?

here is one way to do a type breaking to break a tie let's say the outcome of type ranking 1,2,3 in that order

so 2 3 this guy is ranked in this way suppose there are order you draw 1,2,3 in that order

between 2 and 3 , 2 is another 3 between 1, 3 rise another 3 between 1 and 2 we get that

there is a particular realization under STB ok?

remember when you do STB, it doesn't really alter the underline priority structure

you STB is use the only to break the ties ok? So only to break ties between two guys

I mean you stick to preserve structure under ranking whereby 1 is better that 2 or 3 right?

so that is what we get

[student speaking]

sure so this could be a particular realizaiton it's so happened by coincidence the ranking way is the same

but then we can [?33:48] something different

this is for one school , this could be for other school and so on right?

that is what happens in MTB right

so in some sense there is no for first we get any nice result MTB becomes efficiency , that is why first focused attention on MTB what I am saying that even with STB, you may get clearly bad result

I mean we know already that the best possible circumstance algorithm the rest optimal there are matching the resulting matching that will not be pareto efficient

here what we are saying is that it may not be constrain efficient in the sense that It may be pareto dominated by another stable matching not just any matching

this is exactly same thing reflicated and we learn , here is what we get

one is assigned for X , two is assinged to Y , three is assigned to C

they all are assinged to second second best choices ok?

[35:00]

now there are another matching whereby 1 is assigned to X , 2 is assinged to Z , three is assigned to Y

it is pareto dominates that guy ok? And it can show that this is also stable not just pateto dominate that guy, this is actually stable

so stability means that no bloking fair for the other two blocking fair, there fairs forming a blocking fair must strictly prefer ok?

what they are getting

so the only guy z rise , the only guy that don't block is actually 2 is getting Z he is getting Y

the only guy who may actually form a block this one right?

1 is currently getting X ok? Which is second best

so he may want to form blocking fair with Y ok?

so 1 likes Y over X , whatever Y between 1 and the party Y is assinged , matched with C right?

so Y and 1 cannot form a blocking fair because even though 1 likes Y over X ok?

Y doesn't like 1 strictly more than C because then indifferent ok?

now to form a blocking fair both parties preferes 2, this is still a stable matching and that is actually pareto dominate

so it is , here is some a bit trying that is not going to spend much time on

the idea basically is that this result by Ergin in AR which basically suggest the way to fix this problem , way to guarantee constrain efficient matching at the end , stable constrain matching

so what this suggets is the following start with any stable matching ok?

you can get a stable matching by learning a deffered acceptance algorithm ok? It may not be called constrain efficient just as example we are straight

but you will get some stable matching once we get stable matching , you learn additional algorithm that finds a cycle, it is like TTC ok? You point to a school that is better than what we are assigned to ok? So and it first , we form a cycle like that

but when we exquite the cycle, find the cycle whici doesn't violate stability which is why it is called stable improvement cycle algorithm ok?

and in steps you find the cycle and exquite cycle in such a way that doesn't violate underline stability so let us decide contrain efficient cycle

getting so find a cycle subtracted constrain of deserving stability ok?

so the detail I mean you can read paper

because and running out of time I would like to mention at this one additional point which has this kind of completely different from kind of point that we made beforehand

some of actually message that I sent before this country trivial

so what I am trying to say here is that so far we have looked at only ordinal preferences ok?

but there are not situations ,well you may care about cardinal welfare

why do you like cardianl welfare? It is suppoesed to ,you know, preference intensive this issue

let me give you an example, so there are three students 1,2, and 3

three schools A,B and C , each school has one seat

and suppose that schools are completely indifferent ok?

and every student has same ordinal ranking over school, over students

but there are preperences intensities are different ok?

[40:00]

so everybody lies, these are von neumann morgenstern intuitive values ok?

this is student 1 value for A is 4 , B is 1 and 0. so everybody likes A more than B , B more than C

but this two guys they really like A more than B ok?

once they are switched from A to B, they suffer a lot, ok?

relative to the amount that suffer you get from B to C

well this guy do not suffer as much when he switched from A to B relarive to the suffering that he will have when he switches from B to C
remember here every number sums to 5 the same number so you think of this is normalization ok?

now, this is also extreme example in some sense you know, I am assuming that every students same ordinal ranking ok?

and I am assuming also that schools have no priority ok?

but approximately this is not such a bad example, it is not a bad description of reality

because if you think about you can put yourself into shoes patterns, they tend to care about same schools, I mean, rankings at patterns tend to have over school , tend to be very similar , I mean they care about same politics of school, they care about the safety, they care about academic performance of school and so on of course

they have same criterion you tend to have same sort of ranking

although a person he need there are some differences

what about the fact that schools don't have the strict priorities , I mean, their practice are at best cores

in many cases, they don't really care right?

we have fair school authority and you are the one who sets the school priority for school

I mean, in korea, I think there is one thing that they care about which is that they want to limit the seats assigned for each school

to those students will leave very very far away ok?

perhaps in order to minimize the morning time commute perhaps right?

because that's externalities, you can create a lot of people commuting then increase the traffic problem

but other than those issues ... in some sense this is an extreme example

but this is not such an unrealistic example, that's why I am trying to say.

now suppose you run DA, what happens here,

first of all if you you can say [?42:49] based-on ex-post efficiency ok?

everybody I've said on your rankings

no matter how you are assigned it can be ex-post efficient ok?

so you cannot really evaluate different mechanism based-on ex-post efficiency

even ordinal efficiency

even ordinal efficiency wise there is no distiction ok?

now however you run DA what will be the outcome?

everybody, it's stretegy proof so everybody's rank is the same

and school is independent

they use lottery to prioritize

no matter what lottery that they use as long as lottery choose that everybody the same

what happens will be there it's completely random assignment

and each agent is assigned to A, B and C, D equal priorities one third one third one third

so if you calculate expected exilities

you get the utility number summed up to 5 divide by 3

one sort of that guy one sort of that guy right?

It's up 5 or 3 ok for everybody

there is however that's the pi of dominating from the accentic welfare sense

by another assignment where you assign student C to school B for sure ok?

in that case you get how much? 2 ok?

you randomize you assign 1 and 2 between A and C the equal probability ok?

then what do you get?

one half of that and one half of that you'll get 2

so everybody gets 2 which is greater than ok?

[45:00]

so resulting random assignment you get from DA is not palliative efficient ok?

even if you use the single type STB, B single type

you're guaranteed to have in case student-school is independent?

you're guaranteed to have palliative efficieny ex-post

so palliative efficiency doesn't mean much

acentic efficiency however you get different outcome

you can evaluate it

now in fact surprisingly you get this second result implemented on the both the mechanisms

why? Because you see the this dominant stretegy for each student 1,2 to rank truthfully on the both

because you care so much about A so they have A

everybody ranks C the worst

because you're guaranteed to that no matter how your ranking is

so you're ranking that the bottom

but these 2 guys A and the top ok?

even that these guys play that very it is the best response for number 3 guy to reverse to ranking returned to 2

because if it din't, what happens?

then everybody's rank is the same?

then the assignment you get is one third one third one third

you'll pay off you're expected to pay off if you find 4 or 3

if you reverse that what happens?

your rank B at the top then you are the only one applied for step to both tops school B

this 2 apply to A half ranking

you are the only one ok?

school B is one seat and you're guaranteed to admit

school admits you B admits you for sure

because how the schools rank you which determines by these lotteries ok? It doesn't matter

what matters most importantly is how you rank the school that's used to ok?

you get B for sure

and these 2 guys will randomly assign between A and C because A ranking is the same

so in this case the both implements is the best

which is that I mean certainly boston expect weakness is the failure of stretegy proofness ok?

but example like that in terms of acentic palliative efficiency you like boston at all why?

because boston mechanism outcome is more sort of reflex the preference intensiveness

let me say first of all you don't get stretegy proofness

if you think about how important it is stretegy proofness in this example

what are you doing with DA?

you simply use the lottery to assign the students

you get completely pure random assignment

you don't have to go through a fancy mechanism like DA to get that right?

to have stretegy proofness becase you know stretegy proofness you can achieve it in a based improved way

and assign then arbitrary random fashion

you get stretegy proofness because my message doen't matter

for instace you can assign students based-on their names

that will be one way to randomize and then

you get you gurantee proofness essentially

it's not a big deal to get stretegy proofness in that sense

and here in fact DA is not no different essentially

it does no more than lottery lotteries assignment

um it's one thing

the other thing to know this here is that it's not so bad no to also have stretegy proofness on the boston mechanism

in fact it's the very fact that boston mechanism allows you to be stretegic

but lead to this nice result

becase the fact that in fact when they say lie it sounds it's bad

[50:00]

here lie means that it's kind of inducing an agent to self select based-on their preference intensivenss

allowing to play stretegically is a way to allow him to communicate his preference intensiveness

the fact that he care B so much more than A relative to the other

can be communicated on the boston mechanism ok?

so DA doesn't allow students to communicate preference intesities

in fact this is consistent with some of the complaints from their parents and they switch from DA boston to DA mechanism

so you say that one guys and one parents are considering assistance

what you call this stretegy

it's um many say manipulating preferences stretegizing sounds bad

but you have to think about the real consequences of it

you may at least sound nice corporate

this is also very observation under school indifferent

in fact what's determining factor what's determining is lottery number you get ok?

instead of how you prioritize ok?

lottery number detach your determinat fate? Ok?

more than how you rank the school ok?

so in any case so let me just say one more thing

we actually generalize our result

this is a AR short paper we have this year Fabuary showing

in case all students have same ordinal rankings and school's area are indifferent

subgeneralization in the earlier example

and but one what we did this is the part of the exam the problems I had to say that

the second paper which unified deffered acceptance algorithm

so allows parents and students to communicate their preferences

so you are using deffered acceptance algorithm

but modify certain expectable ok?

what do you do it?

the base frame of it's the same of DA namely we ask each student to submit ordinal rankings of schools ok?

and then your school is also asked to rank students

today students they can if there are undeline priorities and they express that

will allow we ask students to send additional message

what we called target school message ok?

basically in that case write down another name of school ok?

so the message consists of the name of particular school and then

once you collect all this information

there is what you do ok?

when you randomly prioritize

I mean in case schools have indifference if schools don’t have indifferences

and additional message has no mine

basically the same all DA

schools have indifferences over some students

then you have to rely on lottery ok?

that's where the target business analysis ok?

so what we do is particular two things ok?

you produce 2 random priorities T and R

so ordering all the students, order list of students

so that for each school

first school looks at intrinsic priorities ok?

and then within the class of students that school is indifferent ok?

within then the way, the type way is followed ok?

first of all they divide the group of students to two groups

one group who have targeted me write down writen down me as the target school

[55:00]

the other group who they havn't done it they didn't write, wrote down some other schools ok?

now the way I prioritize is that we shuffle the priorities essentially

it will be favor of students who targeted me ok?

so but then how do I rank among those people who target me

but one is used to rank them

what about you know ranking across students who didn't target me ok?

I am using another is to rank of those of them

but then those who targeted me are going to be favor relative to those who didn't ok?

so I'm going to through elevate the priorities of those students who targeted me ok?

so once you and then that's how you produce the priorities for each school ok?

using the underline priority structure first of all

and second of all in case of differences using who targeted that school and didn't target the school

and using thes two lists to produce the ranking ok?

so that's one it is for school and that list is used to break ties in case

in terms of the ordinal messages the ranking you preserve the stretegy proofness

stretegy for each student to rank schools truthfully

this stretegic element of the game is limited to this targeting business ok?

so that means that it's important to specify what school as which school as list as target school

because that matters for tie making

in case of you being a tie making

if you want to have a favor of children from a school

you'd better target tha school ok?

ok so in case where schools have namely the no indifferences

the mechanism describe to you what I called kada?

choice of deffered acceptance is exact the same

there are no reason for breaking ties because threre are indifferences

in case you have indifferences however kada is different from DA STB or DA MTB for example

but you know example like one we discussed where boston mechanism and DA

we expect kada to the better

actually this is type O

this will be B

you can see in that example

one and two will target A ok?

and get the favor of achievmnet from schools A ok?

but 3 given that C will target B ok?

so if you learn DA everybody including C first apply to because they have a dominant stretegy truth

in terms of ordinal preference

they will apply to A but then A look at students all 3 studnets applying to school A look at who targeted who didn't

these two targeted and that sort of randomly chosen based-on this priority random priorityness

so one of the them will be chosen one of them will reject it and this guy should reject it

the second down this guy reject it

there this guy had targeted B ok?

and then this guy didn't

so this guy will get assigned to B ok?

so this target business even though it's very simple

so way of allowing students to signal their cardinal preference intensities

and then information will be used equilibrium you know way attain school assignment

I havn't had time to talk about the detailed result

but main analysis about this this is true in that sense the kada result produce better outcome in terms of welfare than standard DA

[60:00]

sure because it is equilibrium in that example student number 3 could have palliative A

then what happened?

one third one third one third

so he knows if it target A then it get the same outcome as the A

if it target B he can't get a teaching himself expected to get a 2 which is better?

so one has placed stretegically

so target business again we have to be clearly in terms of how we communicate the message about what you want a comprehensive this mechanism

to parents we don't intend target schools to be the best school necessarilly

in something that you want to get a target as a target school

meaning that you want a target school that you have some chance of getting it ok?

so in some sense this is a way of self selective students in some sense

this guyy will be the guy who lose best

why didn't he assgin to B?

in terms of preferences for not targeting A

this guy is strong this accentive ok?

and that's how mechanism works ok?

that part is stretegic

we think that their scope of stretegic behavior is limitted here

in kada in comparison with boston mechanism

boston mechanism is really everything you do stretegic

well is here effective stretegic place limitted

only two type acting procedure ok?

in some sense that it's sort of balancing the trade of a few with

it sort of compromise ok?

you maintain some amount of stretegy proofness ok?

at the same time you try to do better in terms of facilitating communication of cardinal preferences

so anyway that's just the if you have teaser of all leader of paper

but you at least know how kada works I am assigning you a question which ask you to server something like this

it's sort of exams that are really different

so I haven't assigned it yet but I will do so

so the problem set was Tuesday I think

and but there one more review that Wednesday

we from next Wednesday I'll have a in class exam ok?

it's not an open book

it's a make out two and a half hour this is enough time

I could ask you to prove something

but subjected to constraint that it's the proof that I've done in the class

and comment that proof is not going to be very complicated ok? Let's

because I want you to remember

and you can also come from problem set

but then I'm providing answers right?

so again you are trying to have opportuniy to review them all

because wanting to understand once quite different to looking at it several times

trying understanding the same several times

then becomes really very familiar and then very useful very useful

ok that's it