

COST Action IC1205 on Computational Social Choice: STSM Report

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Host: Péter Biró

Host institution: Institute of Economics, Hungarian Academy of Sciences

Host country: Hungary

Dates: 17/11/2013 to 30/11/2013

Purpose of the STSM: initiate a formal and rigorous analysis of the allocation scheme in the EU student exchange program, which is known as “the Erasmus programme.”

Description of the work carried out:

A known problem of the current procedure is that some institutions import more students than that they export, and thus end up with a negative financial balance. Therefore, an important question is whether there exists a balanced mechanism that in addition satisfies some desirable properties.

In our literature exploration we found a recent working paper “Tuition Exchange” by Umut Mert Dur and M. Utku Ünver (September 2013) that studies tuition exchange programs, which are related to the Erasmus program. Dur and Ünver mention in Section 2 that “The Erasmus student exchange program among universities in Europe is another example of a market to which we can apply our [their] findings.” However, they do not provide further details. In personal communication with the authors we were told that they were finalizing a separate paper on the Erasmus program.

Nonetheless, we decided to move ahead and study the Erasmus program independently. In fact, we soon realized that balanced allocation schemes (based on bilateral agreements) can be formalized as circulations (from graph theory). In view of the cyclic nature of the “circulation problem under preferences” it seems natural to consider a generalization of the so-called Top Trading Cycles mechanism (proposed by David Gale, and applied in a wide range of models, e.g., house allocation, school choice, etc.). TTC is strategy-proof and satisfies other desirable properties in many of the “standard” models. However, we discovered by means of a relatively simple example that the generalized TTC is not strategy-proof in our context. We strongly believe that the generalized TTC always yields a circulation that pertains to the strict core or that is at least Pareto-efficient. Then, our example triggers several questions. First of all, can we prove that there is no strategy-proof mechanism that is Pareto-efficient? Second, is the generalized TTC strategy-proof for certain type of agents? At the moment we only have a limited number of results.

We also found a close relation between the proposed model and the model described in Szilvia Pápai (2003). We are in contact with her and possibly she joins this project.

Future collaboration and foreseen publications:

The applicant and host will stay in contact and continue their collaboration on the project.

Confirmation of successful execution of the STSM:

On behalf of the host institution, Péter Biró confirms that the STSM was successfully executed. For further queries please contact him: biro.peter@krtk.mta.hu

Other comments:

I presented a paper in a workshop organized at the Institute of Economics, Hungarian Academy of Sciences, on November 21, 2013. I also gave a seminar presentation at Corvinus University, Budapest, on November 25, 2013. See also: <http://gametheory.uni-corvinus.hu/GTsemeng.html>