

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Pavla Blahova
Advisor:	Karel Janda
Title of the thesis:	Genetically Modified Biofuels in the Context of Central Europe

OVERALL ASSESSMENT *(provided in English, Czech, or Slovak):*

This thesis is dealing with a very unique and original topic which as far as I know was not really covered in the economic literature so far. The topic of the thesis is the investigation of perspectives for genetically modified sources (feedstock) for biofuels. Given that globally Eastern Europe is considered as one of a few regions which have a good perspective for biofuels development, the regional concentration of the thesis is a good one.

The topic of the thesis is a very challenging one since it requires to join two very separate strands of literature – literature dealing with biofuels and literature dealing with genetical modifications (GM) and in addition to use the standard tools of economic analysis. In this case regression analysis.

While both the topics of biofuels and GM are very important, policy relevant and intellectually exiting areas of current frontiers of research in environmental and agricultural economics, the very fact of recent nature of these phenomena creates hard barrier to research in this area. The unavailability of sufficient data may be the primary reason why such an interesting research question was not already adressed in top level journals in agricultural and natural resource economics.

Actually there already exist high quality papers by a top researchers in the field dealing with GM in the most relevant crop - maize - for biofuels in the US. However these two papers (Nolan and Santos, 2012, Xu at al., 2010) are dealing only with maize grain yield. While it is definitely interesting topic, it is not as relevant for the future perspectives of biofuels as the topic of this thesis. This thesis is dealing with GM modification in maize (corn) with respect to advanced technologies of biofuels based on cellulosic biofuels as opposed to current first-generation bioethanol which is based on grains.

While the topic of this thesis is definitely very ambitious and original, the already mentioned data deficiencies together with very restrictive legal framework for GM in EU make this topic very chalenging. In order to really address the important policy dimension of the problem of future perspectives of biofuels in Europe, the analysis should not be concerned just with Czech data, but with the data on large potential biofuels producers like Poland, Ukraine, Russia. Also the analysis of corn GM is just a proxy for really relevant and promissing sources of cellulosic biofuels like the miscanthus and similar biomass sources. However, the existing legal restrictions on

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Pavla Blahova
Advisor:	Karel Janda
Title of the thesis:	Genetically Modified Biofuels in the Context of Central Europe

GM crops rule out the Polish, Ukrainian (and most likely Russian too) data since the GM crops are not allowed there. Actually Czech Republic is one of a very few European (in a wide meaning of this term, over and above EU) countries in which some GM crops are allowed. Therefore the Czech data provide a unique chance for analysis of GM data in the Central European conditions. While the analysis of data on miscanthus or similar crops would be definitely preferable to the analysis of maize GM, such data are most likely not available. One reason is the current development of GM technologies, which are most developed for important cash crops like maize or soybeans. The other is even deeper uncertainty concerned with research on biofuels relevant cellulosic crops which is still in very early stages in general, not even speaking about GM. However it should be emphasized that development of new varieties of biofuel crops like the members of miscanthus family is very much linked with the advances in GM.

To provide an even more important contribution to the literature, the logical next step in the analysis would be to provide wider modelling platform which would be able to utilize the agronomical information about various relevant crops (both traditional food crops and the new perspective biofuels feedstock) and to model the possibilities in the improvement of their production and economic performance when GM would be introduced. Because of the restrictions on GM use (especially in the Europe), such a model would really have to model the GM biofuels, i.e. not just take a current data and provide some econometric estimates, but to take data from one sample (such as U.S. laboratory or field trials of cellulosic biofuels feedstock) combine them with data from other sample (such as field trials of agricultural commodities in the Czech Republic) and provide prediction on the level of available land masses in wide areas of Poland or Ukraine.

The thesis is well researched with respect to literature sources. Pavla Blahova not only studied the relevant literature over the period of more than one year, but she also used the unique possibility to listen to presentation by the leaders in the fields of biofuels and GM, as presented on the conferences of European Association of Environmental and Resource Economists and European Association of Agricultural Economists, which both luckily happened to be in Prague in 2012.

In the empirical part of the thesis Pavla Blahova properly uses the regression analysis of panel data, which is just the most advanced tool suitable for Bc. students at IES FSV UK.

The thesis is written in a good English and properly uses the most advanced state-of-the-art typesetting LATEX platform, the use of which becomes more and more widespread among the IES FSV UK students thanks to the effort of Tomas Havranek in helping the IES students to make this right choice in advanced scientific

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Pavla Blahova
Advisor:	Karel Janda
Title of the thesis:	Genetically Modified Biofuels in the Context of Central Europe

typesetting. The thesis is nicely structured into two major blocks. Firstly the descriptive part, dealing with introductions to biofuels and GM. Secondly the analytical empirical part dealing with econometric analysis of GM maize in the Czech Republic.

This thesis is a very much bachelor thesis in the sense that it just forms a first step in the direction of proper scientific investigation of perspectives for genetically modified biofuels in Central Europe. But it is definitely a very good first step which provides a very good preparation for further important research on intersection of so important development topics as GM and biofuels. In addition the proper scientific investigation of GM provides an important contribution to the wider debate about pros and cons of GM in the context of the development of humankind, our civilization and the environment of Earth.

As a conclusion, I recommend this thesis for the defense and I recommend the grade Excellent (grade 1).

References:

Elizabeth Nolan and Paulo Santos. The Contribution of Genetic Modification to Changes in Corn Yield in the United States. *American Journal of Agricultural Economics*, 94(5):1171-1188, 2012.

Zheng Xu, David A. Hennessy, and GianCarlo Moschini. Have biotech seeds increased maize yields? In 2010 Annual Meeting, July 25-27, 2010, Denver, Colorado, number 61303. *Agricultural and Applied Economics Association*, 2010.

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
<i>Literature</i> (max. 20 points)	19
<i>Methods</i> (max. 30 points)	29
<i>Contribution</i> (max. 30 points)	23
<i>Manuscript Form</i> (max. 20 points)	19
TOTAL POINTS (max. 100 points)	90
GRADE (1 – 2 – 3 – 4)	1

NAME OF THE REFEREE: Karel Janda (the advisor for this thesis)

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Pavla Blahova
Advisor:	Karel Janda
Title of the thesis:	Genetically Modified Biofuels in the Context of Central Europe

DATE OF EVALUATION: *May 18, 2013*

Karel Janda

Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

Strong Average Weak
20 10 0

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

Strong Average Weak
30 15 0

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

Strong Average Weak
30 15 0

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Strong Average Weak
20 10 0

Overall grading:

TOTAL POINTS	GRADE		
81 – 100	1	= excellent	= výborně
61 – 80	2	= good	= velmi dobře
41 – 60	3	= satisfactory	= dobře
0 – 40	4	= fail	= nedoporučuji k obhajobě