Abstract

The main topic of the dissertation thesis is the evaluation of the influence of socio-geographical exposure and other factors (natural: altitude, inclination of slopes, productivity of land) on the extensification processes of the land use in Czechia in the period of more than 160 years, 1845–2010. Emphasis is also placed on the associated losses of agricultural and arable land, given that afforestation and increase of grassland took place essentially at the expense of that land. The main data source is the “Database of long-term land use changes in Czechia (1845–2010)”, LUCC Czechia, based on cadastral records. It is a detailed monitoring which covers almost 9,000 so-called stable territorial units. Both the extensification processes and the overall intensity of land use (using the coefficient of ecological importance) are evaluated. Given that most of the Czechia’s territory is still used as agricultural land, the thesis also includes an overview of the evolution of the selected agricultural intensity indicators. Attention is likewise paid to the wider context of land use changes at the European level.

The essential part of the thesis is to build models of socio-geographical exposure of Czechia, which are comparable with the data on land use in the time horizons of 1845, 1896, 1948, 1990 and 2010. The main components of the models are micro- and meso-regional settlement exposure (location to centres of relevant level), traffic exposure (location relative to major roads and railways), and population density. The main advantage of these detailed, spatially explicit models of exposure is that they capture the development of exposure throughout the period under study, which has not been used in any of the previous works aimed at the long-term changes of land use in Czechia. These models can be nevertheless used in differently focused research as well, e.g. to identify the long-term outer and inner peripheries and thus complement the knowledge of (not only) geographical research of peripheral areas. They can be likewise used as a basis for the regional development planning of these territories.

Using the created models in the case of Czechia it is possible to evaluate the validity of the classical theories which strive to explain agricultural land use in different periods: the theory of differential rent (more precisely differential rent I, i.e. the quality of natural conditions and location to the settlement centres) and Thünen's theory of intensity. The quantitative evaluation, which is based on correlations, multiple linear
regression, and geographically weighted regression (which takes into account the specifics of spatial data, especially spatial autocorrelation and non-stationarity), is complemented by the interpretation of the driving forces acting at “deeper” levels, the so-called intermediate and underlying factors. Inspirational knowledge from the social metabolism research was also used.

The post-1989 period is subject to increased attention in this thesis due to the suspicion that the main data source (i.e. the cadastral records) lost to some extent its informative ability in this period in terms of land use classes – especially after 2000. Additional data sources on agricultural land use are available for this period (LPIS, Agricultural censuses and Farm Structure Surveys) so that they could be compared with each other; CORINE Land Cover data is also used. This is followed by an explanation of these differences which reached 500–600 thousand hectares of agricultural land. The thesis is appropriately extended by the already published studies, focusing in detail on smaller areas within Czechia.

**Key words:** socio-geographical exposure, model, land use, extensification, differential rent, agricultural and arable land losses, Czechia