

# REGIONAL INEQUALITY, CONVERGENCE, AND ITS DETERMINANTS – A VIEW FROM OUTER SPACE<sup>1</sup>

Christian Lessmann<sup>\*\*</sup> and André Seidel<sup>\*\*\*</sup>

This version: 28.08.2016

---

**Abstract:** This paper provides a new dataset of regional income inequalities within countries based on satellite nighttime light data. First, we empirically study the relationship between luminosity data and regional incomes for those countries for which regional income data are available. Second, we use our estimation results for an out-of-sample prediction of regional incomes based on the luminosity data. These results enable us to investigate regional income differentials in developing countries that lack official income data. Third, we calculate commonly used measures of regional inequality within countries based on predicted incomes. An investigation of changes in the dispersion of regional incomes over time reveals that approximately 67-70% of all countries experience sigma-convergence. Forth, we study different major determinants of within-country changes in inequality, i.e., the determinants of the convergence process. We find evidence for an N-shaped relationship between development and regional inequality. Resources, mobility and trade openness are also very important.

*JEL:* D30, E01, E23 O11, O15, O57, R10.

*Keywords:* regional inequality, spatial inequality, sigma convergence, panel data, luminosity data, economic development.

---

---

<sup>1</sup> We are grateful to the participants in research seminars and conferences at the Friedrich Schiller Universität Jena, the 5th Workshop on Regional Economics at the Ifo Institute Dresden and the annual meeting of the development economics group of the German Economic Association in Heidelberg for their many helpful comments. We also thank Rafael La Porta for providing us regional income data and shape files.

<sup>\*\*</sup> Corresponding author; TU Braunschweig, Ifo Institute Dresden Branch & CESifo; c.lessmann@tu-braunschweig.de; +49 531 391-2592.

<sup>\*\*\*</sup> TU Dresden, Germany; andre.seidel1@tu-dresden.de; Phone: +49 351 463-33972.