Models for regionalizing economic data and their applications within the scope of forensic disaster analyses

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The impact of natural hazards on the economic system can be observed in many different regions all over the world. Once the local economic structure is hit by an event direct costs instantly occur. However, the disturbance on a local level (e.g. parts of city or industries along a river bank) might also cause monetary damages in other, indirectly affected sectors. If the impact of an event is strong, these damages are likely to cascade and spread even on an international scale (e.g. the eruption of Eyjafjallajökull and its impact on the automotive sector in Europe). In order to determine these special impacts, one has to gain insights into the directly hit economic structure before being able to calculate these side effects. Especially, regarding the development of a model used for near real-time forensic disaster analyses any simulation needs to be based on data that is rapidly available or easily to be computed.

Therefore, we investigated commonly used or recently discussed methodologies for regionalizing economic data. Surprisingly, even for German federal states there is no official input-output data available that can be used, although it might provide detailed figures concerning economic interrelations between different industry sectors. In the case of highly developed countries, such as Germany, we focus on models for regionalizing nationwide input-output table which is usually available at the national statistical offices. However, when it comes to developing countries (e.g. South-East Asia) the data quality and availability is usually much poorer. In this case, other sources need to be found for the proper assessment of regional economic performance. We developed an indicator-based model that can fill this gap because of its flexibility regarding the level of aggregation and the composability of different input parameters.

Our poster presentation brings up a literature review and a summary on potential models that seem to be useful for this specific task. Moreover, some sample data from our own applications for developed and developing countries are shown. The use of the different methodologies for the calculation of indirect losses in the field of forensic disaster analyses is also to be discussed. Finally, we give an outlook on the further utilization of these models aiming for the simulation of indirect losses.